BEFORE

THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

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In re: R-822169, etc. Pennsylvania Public Utility Commission, et al. vs. Pennsylvania Power & Light Company
Investigation into a requested $315 million dollar annual rate increase. Hearing.

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Harrisburg, Pennsylvania

April 8, 1983

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Pages 2215 to 2276, inclusive

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Verbatim report of hearing held in
Hearing Room 1, North Office Building,
Harrisburg, Pennsylvania,

Friday,
April 8, 1983,
at 10:00 a.m.

BEFORE

JOSEPH J. KLOVEKORN, ADMINISTRATIVE LAW JUDGE

- - - - -

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JUDGE KLOVEKORN: Shall we begin? I call to order this hearing in R-822169, Pennsylvania Public Utility Commission versus Pennsylvania Power and Light Company.

Do we have any preliminary matters before we begin today's witnesses?

MR. POPOWSKY: Your Honor, perhaps it would be best if I identified certain interrogatory responses that are relative to Mr. Cotton's testimony. There are eight such responses. I have handed three copies to the reporter and one copy to Your Honor and to each of the parties present, if I could just have those identified with the PP&L exhibit numbers. They would be 200.282020, 200.282188, 200.182034, 200.282049, 200.182125, 200.182123, 200.282234 and 175.182007.

JUDGE KLOVEKORN: Without objection, they are so identified.

(Whereupon, PP&L Exhibit Numbers 200.282020, 200.282188, 200.182034, 200.282049, 200.182125, 200.182123, 200.282234 and 175.182007, were produced and marked for identification.)

MR. POPOWSKY: Thank you, Your Honor. The OCA has Mr. Cotton available, if we could proceed with him first.

MR. YOUNG: Fine.

JAMES D. COTTON, called as a witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. POPOWSKY:

Q Would you please state your name and business address?

A James D. Cotton, C-o-t-t-o-n. My business address is 456 Main Street, Ridgefield, Connecticut 06877

Q Thank you.

MR. POPOWSKY: Your Honor, I have handed to the reporter and previously distributed to all parties copies of a document entitled, "Testimony of James D. Cotton, Re Accounting Issues in Docket Number R-822169", and I'd like to have that document marked for identification as OCA Statement Number Five.

JUDGE KLOVEKORN: Without objection, it will be so identified.

(Whereupon, OCA Statement Number Five, Testimony of James D. Cotton, was produced and marked for identification.)

MR. POPOWSKY: And I have also distributed to all parties and to the court reporter a document entitled, "Supplemental Testimony of James D. Cotton Re Accounting Issues", which was a cover page and two pages of testimony, and I'd like to have that document marked as OCA Statement Number 5A.

JUDGE KLOVEKORN: Without objection, it will be so identified.

(Whereupon, OCA Statement Number 5A, Supplemental Testimony of James D. Cotton, was produced and marked for identification.)

BY MR. POPOWSKY:

Q Mr. Cotton, do you have before you copies of documents that have been identified as OCA Statement Number Five and OCA Statement Number 5A?

A Yes.

Q Referring to OCA Statement Number Five, am I correct that that consists of a statement of direct testimony with 28 schedules attached?

A Yes, it does.

Q And OCA Statement Number 5A is a statement of direct testimony?

A That is correct.

Q Now, was this testimony and the accompanying schedules prepared by you or under your direct supervision?

A Yes, they were.

Q Do you have any additions or corrections you would like to make to your testimony at this time?

A Yes, I have a couple. On Schedule 10, Page 2, at the very bottom under footnote B, there is a word tax, and that word should be ton, t-o-n.

Also, as part of my testimony, I recommend that the company make an estimate of the tax credit for increasing research activities. I also recommended that that amount be applied to the revenue requirement in this case.

Since I made that recommendation, the company has come forward with an estimate for the credit for increasing research

activities, and that is found in Interrogatory Response Number 200.282234. In that response, the company has estimated this credit to be about $126,000 for the test period.

I now recommend that pro forma income taxes be reduced by this amount. I will make this adjustment on any revised schedules that I will submit later in these proceedings.

Q Am I correct that you are referring there to your testimony at Page 40 and 41 of Statement Number Five?

A Yes, that is correct.

MR. POPOWSKY: And, Your Honor, that is one of the interrogatory responses that has been identified for the record this morning.

BY MR. POPOWSKY:

Q Do you have any other additions or corrections?

A Yes. At Schedule 14, Page 3 of 3, under Sources A, it says the information obtained informally from company. That is correct, and since that time there has been a follow-up interrogatory written response which is identified by the company as being 175.182007.

MR. POPOWSKY: Your Honor, that is also one of the interrogatories that has been marked for identification this morning.

BY MR. POPOWSKY:

Q Do you have any other additions or corrections?

A No, I do not.

Q With those additions and corrections, is the testimony set forth in Statement Five and 5A and the schedules attached thereto true and correct to the best of your knowledge, information and belief?

A Yes, they are.

MR. POPOWSKY: Your Honor, I'd like to move the admission of Statement Number Five with attached schedules one through 28 and Statement Number 5A at this time subject to any later objection by counsel.

JUDGE KLOVEKORN: Without objection, your motion will be granted.

(Whereupon, OCA Statement Number Five and attached schedules 1 through 28 and OCA Statement Number 5A, were admitted into evidence.)

MR. POPOWSKY: Thank you, Your Honor. Mr. Cotton is available for cross examination.

JUDGE KLOVEKORN: Mr. Young.

CROSS EXAMINATION

BY MR. YOUNG:

Q Good morning, Mr. Cotton.

A Good morning, Mr. Young.

Q As a preliminary matter, I just have a number of figures, and, perhaps all of them will lend themselves to the same clarification with you by way of illustration on Page 6 of your testimony.

In adjustment G, you indicate that the revenue requirement reduction is approximately 442,000 for revenue for reconnected customers. Schedule 12, that number under recommended position is 432,000. There's a difference of approximately $10,000.

It's not significant, but I was simply curious as to why the figures aren't consistent.

A The revenue requirement reduction is different because in this instance, there is perhaps a different revenue factor that was used, and there is a revenue factor adjustment that I have made at Schedule 28, Page 1 of 2, or it may have something to do with taxes. Those are the two possibilities.

Q Well, the revenue factor which you use on Schedule 28 tends to reduce company positions by .0237, is that correct?

A Yes, that's correct, and that would be one of the two possibilities I just alluded to.

Q Isn't that included in your adjustment U on Page 9?

A Yes, it is. So, it's not that one. It probably has to do with taxes.

Q Well, let's look at another one just to see if we can pin this down. The pension costs on Page 6 are listed as 1,066,000. On Schedule 13 the pension cost adjustment is listed as 1,042,000.

A Yes, that's correct. All of these would have the same feature. That's correct.

Q And how do taxes explain a 22,000, 24,000 difference; e.g., on pension costs between what you show on Page 6 and what you show on Schedule 13?

A Well, perhaps I ought to explain how I got these revenue requirement reduction figures in the introduction. The way I did that was I took the adjustment, and we can use; e.g., the pension adjustment, and that was $1,042,000. I then took out the income tax effects which were 49.77 percent as shown on Schedule 26, and I multiplied it times the revenue factor of 2.0375, and that is how every one of those numbers was derived.

Q In the case on Page 7, decommissioning expenses, which is some 444,000, that's Item L on that sheet, that shows an adjustment of 444,000. Schedule 17 is 218,000.

A That's correct.

Q That's a tax effect that more than doubles the adjustment in that case.

A No. If you look at Schedule 17, Page 1, the related income tax calculation is made on Line 6, so in that particular instance the 218 is just multiplied times the 2.0375. I might add the 2.0375 is the effective revenue multiplier of the company, and is the company's number.

Q I take it it's the numbers that are listed in Pages 5 through 9 of your testimony that are your recommended adjustments therefore, and not the numbers that appear in the

relevant schedules.

A No, they are the numbers that appear in the relevant schedules. This is merely an introduction showing the revenue requirement reduction or increase resulting from these adjustments, and if you add them all up, I might add, hopefully you will come to the difference between the company's position and my position.

Q If I can direct your attention to Page 10 of your testimony, is the position taken here with respect to electric plant held for future use the same that you took in the PP&L rate proceeding at R-08003114 in 1980?

A Well, certainly, my recommendation would be that electric plant held for future use not being included in rate business is the same. Yes, it is.

Q And in that proceeding, your adjustment was not accepted by the commission, is that not correct?

A In that particular proceeding, that's correct. It was not accepted by the commission. However--

Q Has this adjustment been accepted by the commission in any of the cases in which you have recommended it? In Pennsylvania?

A In Pennsylvania. No.

Q And I take it that your reference to the statute passed in Pennsylvania on December 30, 1982, which is referred to on Page 11 has been incorporated in this proceeding solely

on the advice of your counsel?

A Yes, Counsel did advise me that this statute applies directly to the inclusion or execution of electric plant held for future use in rate base.

Q You have made no independent study of that matter?

A In what regard?

Q As to when, indeed, the statute does apply or not.

A No, I did not.

Q If we can turn now to Page 13, your testimony there indicates that the company's witness has indicated that the company's estimated coal inventory level at test year end was overestimated on average by 2.96 dollars per ton. Can you indicate what witness made that statement, and at what page of the transcript?

A Yes. I have the transcript pages. Those are pages 1140 and 1141, and I believe it was witness Scheffley.

Q Are you aware that the company's coal claim is based on an average rolling inventory price?

A On Exhibit C-6, Page 2, I was aware that the price used was the average inventory price per ton at 7-31-83.

Q Did you interpret that to mean the application of a 731 price to the inventory at that date?

A Yes, I did.

Q Therefore, you interpreted Mr. Scheffley's statement to refer to that price per ton which had been applied to that

inventory?

A That's correct.

Q On Page 15, you refer on Line 6 to your adjustment for excess capacity and say that your adjustment is consistent with commission practice, particularly with decision R-79060865 in the Philadelphia Electric case. Was the adjustment in the Philadelphia Electric case to which you refer applied to a percentage of total production plant or was there a selection of particular old peaking units and similar units in that adjustment?

A Well, I should explain. When I say my adjustment is consistent with commission practice in that particular case, I am talking about the methodology whereby I had made an adjustment not to allow a return on, but allow a return of certain portions of rate base. It was Dr. Rosen's determination of what portions of that rate base; i.e., what units the adjustment would apply to. I did not make that determination.

Q I see. Are you aware of any case since that Philadelphia Electric case in which the commission has followed this practice you referred to?

A No. I am not aware of any of those.

Q Are you aware that they have not followed the practice since that time?

A No, I am not aware of that either.

Q Page 18 of your testimony, you make an adjustment

of some $432,000 for five customers that have been reconnected. Have you made any study during this same time period of the test period as to when any additional customers had been disconnected during that time?

A No, I have not. This was a specific company adjustment where they excluded 18 customers specifically on the basis that they would be disconnected, and this is a specific adjustment responding to that adjustment effectively.

Q Which grows out of an interrogatory as to when any of the 18 have been reconnected, is that correct?

A That's correct.

Q But you did not pursue in the broad basis of equity as to when any further customers had been disconnected during the same time frame that these five were reconnected?

A Well, that question has a characterization concerning the broad basis of equity. I accepted the company's estimate that X-number of customers would be disconnected other than these 18 which, in fact, five were reconnected.

Q Did you make any analysis as to when actual sales in the test period were running above or below budgeted levels either on an aggregate or on a per customer basis?

A No, I did not.

Q Referring to your Page 19 where you have made an adjustment to pension expense--

A Page 19?

Q Yes. The adjustment proposed is 1,042,000 on a Pennsylvania jurisdictional basis, is that correct?

A Yes, that's correct.

Q Did you make any allocation between the electric employees and the steam employees in developing this adjustment?

A No, I did not make a separate allocation along those lines. I didn't think one was necessary.

Q Did you make any adjustment to this pension cost increase to reflect those portions of pension costs which would be capitalized and those portions which would be experienced?

A No, I did not.

Q Did you make any analysis of the actual pension costs being experienced by the company in the test year?

A No, I did not. The reason I didn't do any of those things is that question 93 of Set 2, accounting revenue requirements of the OCA is a rather specific question. Using this future test year and the results from this future test year to ask if there are any assumptions which affect pro forma pension expenses.

Q Pro forma pension expenses would include expenses for the steam employees as well as the electric and expenses that would be capitalized as well as those that would be experienced, would it not?

A No. When a cost is capitalized, it is not an expense.

Q It's a pension expense, is it not, and then it is capitalized?

A No, it is not.

Q If you will look at Schedule D 6 of Exhibit Future 1 to which that interrogatory refers, isn't it clear that some 60 percent is expensed and the balance is capitalized in the pension expenses?

A That's correct, and that's why the question talked about pension expenses. Open to--

Q Pension expenses that you are comparing to are the 28,704 at the top of that D-6 Schedule, are they not, before any adjustment is made for capitalization or expense?

A That's right, and that's why the question asks for expenses.

Q You have used the 27,617 which is obviously a substitute for the 28,704,000?

A That's correct.

MR. POPOWSKY: Could I interrupt just for clarity of the record. You referred to Interrogatory Number 93, and that's been identified, Your Honor, as PP&L Exhibit 200.282188. I apologize for the interruption.

MR. YOUNG: That's satisfactory.

BY MR. YOUNG:

Q Referring to your tree trimming expense adjustment which appears on Page 20, as I understand, this is based on an

average of tree trimming expenses for four years, is that correct?

A Yes, that is correct.

Q Did you make any adjustment to your average for changes in miles of transmission and distribution line over that four years?

A No, I didn't, although I asked the expert who I talked with on the telephone under Mr. Berish's supervision, when there were significant additional piles to be trimmed, and he said while there has been some, there are no new large areas that require tree trimming.

MR. YOUNG: Your Honor, I'd ask that that latter part of that response be stricken as pure hearsay. I didn't think the witness has provided any evidence on this, and we certainly can't have him providing something that Mr. Berish said to him in some informal conference.

MR. POPOWSKY: Your Honor. I don't believe that's a proper objection. We tried to cross examine, I believe, first Mr. Bernini and then Mr. Berish on tree trimming. Then we were advised we could have an informal conference with the company. The staff was involved, I believe, in that informal conference, and to the extent that Mr. Cotton relied on any statements made by the company, he can say so. That doesn't necessarily mean that it's true, and the company can come in and say it's not true. He certainly has a right to say what he

relied on.

MR. YOUNG: I don't even think that's correct because we had an understanding at the very beginning that any informal conversations between OCA and company witnesses would be reduced to writing before the data would be used in the case. Therefore, there's nothing reduced to writing or produced by the OCA that would say the new lines acquired and built by the company in the last four years don't have any trees on them.

MR. POPOWSKY: It would be quite simple for the company to present a witness to state whether or not Mr. Cotton's understanding is correct.

MR. YOUNG: We propose to do that but I think the witness' statement to the contrary should be stricken from the record.

MR. POPOWSKY: Your Honor, it

It doesn't indicate the truth of what that individual said. It does indicate Mr. Cotton's understanding of what he was told is, and it presents the basis for his statement.

MR. YOUNG: I don't think that was even in response to the question. The question was when he made any adjustment for additional lines, and he said no. That was a sufficient answer to the question.

MR. POPOWSKY: He made his statement, and he explained why he made no adjustment.

JUDGE KLOVEKORN: I'll overrule the objection. We will

receive it into the record for the limited purpose.

MR. POPOWSKY: Thank you, Your Honor.

BY MR. YOUNG:

Q On your Schedule 14, Page 2 of 3, you have a $7.30 unit cost per tree trimmed. Could you explain to us where that figure comes from? I believe it's referenced as obtained informally from the company, but we can't identify that number in any way.

A Yes. That was also in the same telephonic conversation with Mr. Berish and the tree trimming expert.

Q You have just supplied us this morning with Interrogatory 175.182007 which shows the number of trees projected to be trimmed for 1983 and the cost thereof. Did you check with whether that supports a figure of $7.30?

A No. That supports a figure of $7.53. That $7.30 was the number I received in that conversation, and I can check that.

MR. YOUNG: Well, Your Honor, I would again ask that Schedule 14 and this adjustment be stricken, then, if again we are presenting testimony on the basis of informal conversation.

MR. POPOWSKY: Your Honor, first of all, that would not be a grounds to strike the testimony. It, perhaps, would be a grounds to adjust the number used and, also, Your Honor, we did present--we did ask to have this put in writing. We received

an informal--this was an informal data request that was provided by Mr. Berish, which was received after Mr. Cotton prepared the testimony, and we put it into the record.

I don't know what more we can do. We put the company's numbers as well as our numbers into the record, and the company can tell us if Mr. Cotton is incorrect. I certainly don't believe that that's a proper grounds to strike his testimony which was based on the best information he had available at the time.

MR. WILMARTH: Your Honor, and to protect, if I may, my interests that they may appear later in the proceedings, I feel it is appropriate to add that I likewise feel that a hearsay objection to this type of testimony is not appropriate.

MR. YOUNG: It's not only appropriate, Your Honor, but the presentation of this type of testimony runs directly contrary to the understanding which existed with the OCA in connection with the development or the scheduling of informal conferences.

It was specifically agreed that we would reduce to writing anything that the other party proposed to use. This is not reduced to writing. It purports to make adjustments on the basis of some conversation that nobody has a record of.

MR. POPOWSKY: Your Honor, first of all, the derivation or the origin of that agreement was based on our ability and our ability of our nuclear consultants and MHB to hold informal

conferences with company officials. As you recall, there are numerous, numerous informal data requests which Mr. McClelland has now put into the record, and it was in order to faciliate discovery in that complex area of the case that that agreement arose. There are two areas of accounting where, despite the fact that we cross examined, I believe it was Mr. Bernini first and then Mr. Berish, first on tree trimming, and then on maintenance expense.

In both areas, I think if you review the transcript, you will see that those particular witnesses who were the company's witnesses were not able to provide complete, factual responses.

Mr. Cotton then undertook to ask additional interrogatories and also hold informal data conferences with the company so that we could get our testimony on time, given the short span between the time of cross examination and the time his testimony was due.

Those two specific areas, against expense and tree trimming at the time he wrote his testimony, he relied in part on data that was given to him by company witnesses under the supervision of Mr. Berish. I think we have done everything we could to--

MR. YOUNG: Why don't we let His Honor rule on the subject.

MR. POPOWSKY: Your Honor, I'd like to complete my

response. I think we have done everything we could to present a complete record, and if the company now says in those two areas, tree trimming and Holtwood maintenance expense. If Mr. Cotton is incorrect, the company can present rebuttal testimony to that effect by the appropriate witnesses.

JUDGE KLOVEKORN: I'll overrule the objection.

MR. POPOWSKY: Thank you.

BY MR. YOUNG:

Q Mr. Cotton, have you made any analysis of the actual tree trimming expense being experienced in the test period to date?

A I have made no analysis of the few months of data that have been made available. My own opinion is that that's not enough data to really draw any conclusions that are meaningful.

Q In connection with your adjustment on Page 22 with respect to the operation and maintenance of Holtwood, did you make any analysis of other generating stations as to whether their operating and maintenance costs went up or down?

A Yes, I did review the other generating stations, and I felt they were fairly normal and fairly reasonable.

Q Was, however, a substantial reduction in the O & M costs for Brunner Island, was there not which you did not return to some sort of average level?

A That's correct, and as I mentioned in my testimony,

I believe, in another part of my testimony, introductions of new base load plants should probably reduce operations and maintenance expenses at other units. So, I am not surprised that there is a significant reduction at one of the other units.

Q You are not surprised that there's a reduction at Brunner and the test year because of the introduction of what unit?

A Susquehanna. I am talking generally about any unit. Any other unit.

Q What other units besides Susquehanna were brought on in the test period?

A None.

Q Have you made any analysis of total production plant O & M to determine how it has compared with the budgeted level?

A You mean actual amounts year to date?

Q Yes.

A No, I have not.

Q Turning to Schedule 16 of your testimony, do you know whether the company provided for any deferral of income taxes on this property loss?

A No, I do not. I treated it as a current expense, which is, I might add, a rather conservative way of looking at it.

Q Do you have Schedule D-17 of Company Future 1 there? Page 1, Line 7? Doesn't that schedule show a reversal of deferred income tax in the amount of $296,000?

A Yes, it does.

Q Do you know whether any of that reversal relates to Stony Creek?

A No, I do not, but I assume that a full income tax effect is a current expense.

Q If some $209,000 of that adjustment related to Stony Creek, that would have a significant impact on your adjustment, would it not?

A No, it wouldn't because I took this as a current income tax expense.

Q But the reversal of this deferral is also included in the total calculation of operating income, is it not?

A Yes, it is. As I just said, I treated it as --

Q There's no question on the record.

A Okay.

Q Are you aware that Stony Creek project was undertaken jointly with Metropolitan Edison?

A Yes, I am.

Q Are you aware that the five year amortization of Metropolitan Edison's loss in this project was approached by the Pennsylvania Commission in April of 1981?

MR. POPOWSKY: Your Honor, I'd like to object to that

question just on the grounds that I believe he's referring to a Commission order. If you have a Commission order, could it be shown to Mr. Cotton?

MR. YOUNG: I'll show him the order if I want to refer to anything in it. I am simply asking him if he is aware of it. Either he is or isn't he.

THE WITNESS: Yes, I am aware of it. I am aware of it because one reason it is in response to 175-28205 by the company.

MR. POPOWSKY: Could I ask that we be provided with the document number and the page site at which that normalization was allowed?

MR. YOUNG: We'll be glad to provide you with that.

MR. POPOWSKY: Thank you.

BY MR. YOUNG:

Q Are you aware that in March of 1980, Stony Creek was designated a wild and scenic river under the Pennsylvania Scenic River's Act of 1972?

A Yes, I am.

Q Is this the environmental effect or factor that you referred to causing the company to remove it from possible future use?

A What page are you referring to?

Q Line six of your page 24. You say due to environmental difficulties it was decided to abandon the project.

A Yes, that was a fact that was included in the

consideration of manning this project. That's my understanding.

Q Is your decision to remove this amortization again based on advice of counsel with respect to the act passed December 30, 1982, in Pennsylvania?

A That's one reason. Another reason is that in Pennsylvania, it is my understanding, and it's been my experience that when a company sells land at a profit, those profits are not then flowed to rate payers.

This is really the flip side of that in that there's been a loss on this property, and the losses therefore to be consistent with that other policy, should not be paid for by rate payers.

Q Will you give us a case reference from which you ascertained that that is the policy of this state?

A Yes. That was the Philadelphia Suburban case. I don't have a docket handy, but I'll provide it to you.

Q Did that case involve property which had been used and useful and included in the rate base when it was transferred?

A Some did and some did not. The Pennsylvania Gas and Water Company case, and I'll get you a docket on that one.

Q Referring to Page 30 of your testimony, Line 4, you say the company wishes to recover its total rate case expense claim of 232 in the first year of new rates. Do you understand that that's only half of the company's rate case

expense, however, do you not?

A Yes, I understand that is half of the company's claimed rate case expense.

Q Referring to Page 32, have you made any analysis as to the type of projects in which EPRI is engaged?

A The research and development projects.

Q Does that research and development relate to operations or to construction of nuclear plants or do you know?

A I don't know specifically, but some of the research they do, it is my understanding that some of the basic research they do is very basic fundamental research.

Q Which could relate to operation of nuclear plants?

A It could.

Q Mr. Cotton, if I could refer you back just a moment to your Page 18, revenue from new service applications.

A Yes.

Q I take it in order to generate $432,000 worth of revenue, these customers would have to use the kilowatt hours of power, would they not?

A They'd have to take service of kilowatt hours of power, yes.

Q Have you made any adjustment to increase the company's expenses to reflect the expense of serving these customers?

A No, I have not.

Q On Page 35 of your testimony, at Line 17, you say the company is flowing this excess back to the rate payers over the life of the associated assets, which could be as high as 33 years. Have you made any analysis as to whether all of this balance would be flowed back to those customers in that time frame?

A Could you repeat the question?

Q Have you made any analysis as to whether all of the balance, the deferred income tax balance that you say the company is flowing back to customers, would be flowed back to them under current procedures by the end of the life of the associated asset?

A Yes. By the life of the associated asset, those deferred taxes should be flowed back to rate payers. That's conceptually true.

Q And would be, would they not?

A Yes, that's correct.

Q So the only reason for making this adjustment was that there was a change in the tax rate?

A The reason for making the adjustment is that the rate did change on January 1, 1979, and the taxes will be paid at the rate of 46 percent instead of 48 percent, thereby leaving a two percent surplus that was paid for rate payers prior to January 1, 1979, and the idea behind this adjustment is to flow to those rate payers who paid at the 48 percent rate

these tax benefits as soon as possible.

Q If there had been no change in the tax rate, you would not have proposed an adjustment, correct?

A That's correct.

Q When you say there's a two percent surplus, that goes to my original question. Have you made any calculation to determine whether, at the end of the amortization period that is now proceeding, there will be a two percent surplus?

A No, there won't be a two percent surplus, but there was a two percent surplus at January 1, 1979, and there is a million dollar surplus that has been calculated by the company.

Q And in the normal accounting procedures that will be flowed back to the customers over the life of the company, will it not?

A That's correct. What we are talking about is a long period of flowback versus a rapid period of flowback.

Q And the only reason for shifting to a rapid period of flowback for this piece is because the tax rate was changed?

A That's right. In those present -- January 1979 rate payers overpaid.

Q Well, they paid what the law provided at that time, did they not?

A That's correct.

Q I refer to your adjustment on Page 37 and 38 with respect to investment tax credit. If the company had not set

up the investment tax credit with respect to Susquehanna on its balance sheet in this proceeding, would that have had any impact at all on the size or magnitude of the rate increase requested?

A On its balance sheet was your question?

Q Yes.

A I really didn't study the balance sheet amount. What I studied was the amount that is, the company is including for prospective rates, which is found on D-1, Page 1, and that amount is 113,759,000. There is no actual balance sheet as of July 31, 1983, and I don't know if it would be relevant if there is one.

Q Well, this appears on column 9, does it not, of D-1, Page 1?

A Yes, it does.

Q If the company had not reflected it in Line 9, the same amount would simply have appeared on Line 6, would it not?

A You mean if they did not choose to utilize the investment tax credits, the current taxes would be higher?

Q Yes.

A Yes, that's a fair statement.

Q The only reason this appears on column ten is because for balance sheet purposes, the company placed this amount in a deferred tax category, is it not?

A I would say the reason it appears here is the

company is reflecting its operations and part of its operations would be to take a considerable amount of its taxable income and apply investment tax credits towards that.

Q But, in fact, those tax credits can only be used when the company, in fact, has operating taxable income, is that correct?

A In proportion, yes.

Q In proportion.

MR. YOUNG: That's all the cross I have, Your Honor.

JUDGE KLOVEKORN: Mr. Wilmarth.

MR. WILMARTH: No.

JUDGE KLOVEKORN: Mr. Mann.

MR. MANN: I have one question. I am David Mann with Susquehanna Alliance.

CROSS EXAMINATION

BY MR. MANN:

Q In your adjustment for the excess capacity you have chosen to use the ten percent cut adjustment to calculate the revenue requirement adjustment, is that correct? Of the three options, you took the ten percent cut of all plant in service?

A Yes, I took the overall cut.

Q Have you calculated the adjustment to revenue requirement that you would make if you were to take the other two options, one of which is a combination of Susquehanna and Martin's Creek, and the other one is using just Susquehanna?

A Yes, I have made those calculations, and I have made those calculations--

MR. YOUNG: I object to that question. I think this is the OCA's witness. The OCA didn't put that data in. We haven't cross examined on it, and I don't see why counsel should be able to develop or the gentleman should be able to develop some further evidence on his own behalf from somebody elses' witness in this case.

MR. MANN: The witness in his testimony refers to the other two options, and in fact, calculates the net plant value. I am asking if he took it further and calculated the revenue adjustment.

JUDGE KLOVEKORN: I will overrule the objection.

THE WITNESS: I made those two calculations assuming the full cost of Susquehanna, not the net cost after audit adjustments. I just want to be clear on that. For the total Susquehanna option, the revenue requirement decrease that I calculate is 300,944,000, and for the Martin's Creek/Susquehanna option, I calculate a revenue requirement decrease of 130,609,000.

MR. GADSDEN: May I have that number again?

THE WITNESS: 130,609,000.

MR. MANN: Thank you. I have no further questions.

MR. POPOWSKY: Could we have a few minutes, Your Honor?

JUDGE KLOVEKORN: Why don't we take a five minute recess.

(Whereupon, a brief recess was taken.)

AFTER RECESS

JUDGE KLOVEKORN: Back on the record. Mr. Popowsky.

MR. POPOWSKY: I have just one question, Your Honor.

REDIRECT EXAMINATION

BY MR. POPOWSKY:

Q There was some discussion about the cost per tree in the tree trimming adjustment. If you were to use a cost per tree of $7.53 rather than $7.30, would there still be an adjustment?

A Yes. Referring to Schedule 14, Page 1, using a calculation based on the $7.53, if that's the correct number, the amount of the adjustment would be reduced from $941,000 to approximately $800,000.

MR. POPOWSKY: I have no other questions, Your Honor.

JUDGE KLOVEKORN: Thank you.

THE WITNESS: And I will make that adjustment in my revised schedules.

MR. POPOWSKY: Thank you, Mr. Cotton.

MR. YOUNG: Nothing further.

JUDGE KLOVEKORN: If no further questions, the witness is excused.

MR. WILMARTH: We are scheduled to call as our first witness, Dr. Richard Nellis. I have previously provided to the court reporter and all parties of record the requisite copies of a document labeled, "Trial Staff Statement Number 11", and

another trial staff exhibit number 11A.

RICHARD E. NELLIS, called as a witness, having been duly sworn, was examined and testified as follows:

MR. WILMARTH: Your Honor, the just referenced two documents labeled Statement Number 11 and Exhibit Number 11A, and I ask at this time that they be marked for purposes of identification.

JUDGE KLOVEKORN: Without objection, so identified.

(Whereupon, Trial Staff Statement Number 11 and Trial Staff Exhibit Number 11-A, were produced and marked for identification.)

DIRECT EXAMINATION

BY MR. WILMARTH:

Q Dr. Nellis, do you have before you copies of documents that have just been marked for identification as Statement Number 11 and Exhibit 11-A?

A Yes.

Q Are you the witness responsible for the preparation of those documents?

A Yes, I am.

Q Are there any corrections to either the statement or exhibit that you wish to note at this time?

A Yes. First of all, so I don't forget this one, the page numbers in the duplication process got lost from many of the pages of the exhibit which is 11-A, and they should be numbered consecutively 1 through 20.

Page 2, Line--it looks like 14 and a half, the word doctoral is spelled wrong. I just want everybody to know I know how to spell it.

On Page 7, lines 9 through 13, apparently a line was lost here in the typing, and I missed it in the proofreading. If one were to refer to Chart Four and also to Table Four, one would see the situation that actually the staff recommendation here, the staff methodology--

Q Excuse me, Dr. Nellis, your reference to Chart Four is Page 6 of Exhibit 11-A for any of those who would like to follow along.

MR. YOUNG: That's the one that has the number on it.

THE WITNESS: That one does have a number, yes. The staff methodology and the company methodology under a lot of assumptions, of course, result in the same annual payment through 1995. Then, the staff payment would be higher, 1996 to 2003, and lower thereafter.

On Page 10, line 10, I refer to Charts Five and Six, and that should be Six and Seven. That's all that I am aware of.

BY MR. WILMARTH:

Q Subject to the changes and corrections that you have just noted, if I were to ask you today the questions contained in Statement Number 11, would your responses be the same as contained therein as corrected?

A Yes.

Q Are those answers true and correct to the best of your knowledge, information and belief?

A Yes, they are.

MR. WILMARTH: Your Honor, at this time, I would ask that the documents that have been marked for purposes of identification as Statement Number 11 and Exhibit Number 11 be admitted into the record subject, of course, to any timely motion to strike that may be made by any party.

JUDGE KLOVEKORN: Without objection, motion is granted.

(Whereupon, Trial Staff Statement Number 11 and Trial Staff Exhibit Number 11-A, was admitted into evidence.)

MR. WILMARTH: Dr. Nellis is available for cross examination at this time.

CROSS EXAMINATION

BY MR. YOUNG:

Q Dr. Nellis, just a few general questions. Does your calculation as generally developed in your testimony and in the exhibits address the issue of interim retirements with respect to this plant?

A Not any more than Mr. Beamer's did, to my knowledge.

Q And how about interim additions? The same would be true?

A The same would be true, yes.

Q And would you be proposing that interim retirements and additions, as they or if they occur, be cut over in the

same years as the principle part of the plant or would you check them over--

A I am not really prepared to talk about that. I am not sure what Mr. Beamer's proposal was on that, and, therefore, I have no position.

Q Is there any reason why you dropped from modified sinking fund to straight line in two years rather than one?

A Where are you referring?

Q Page 2 of your exhibit, Schedule 2.

A I think mathematically that--let's see. We are talking about years 1999 to 2000, 2001. Yes. The reason why is because it doesn't come out exactly right at the end of the year. It would probably come out 2260 to maybe the middle of the year 2000.

In other words, for the numbers to add up as they should--did you follow my answer on that, Mr.--

Q Your answer is you used two because it wouldn't come out in one.

A Right. One and a half or something like that is about where it comes out.

Q I take it you could also have used three?

A I wouldn't have any justification for that, because as I say, it didn't come out at the end of 1999. It come out somewhere in the year 2000 would be the calendar dropping off point. Since these are only annual dollars here, that's

reflected in that number of 187 there.

Q Are you proposing the same cut every year for units one and two or haven't you addressed that question?

A I am not proposing anything for unit two in this proceeding.

MR. YOUNG: I have no other questions.

JUDGE KLOVEKORN: Thank you.

MR. POPOWSKY: We have no cross examination, Your Honor.

JUDGE KLOVEKORN: Mr. Zwally?

MR. ZWALLY: Yes, a few, Your Honor.

CROSS EXAMINATION

BY MR. ZWALLY:

Q Dr. Nellis, in reviewing your background, it appears you do not have engineering background. Is that generally correct?

A Yes, sir, that's true.

Q In your testimony you indicated that Mr. Gruber, who I believe is an engineer on the staff, assisted you in preparation of your testimony here, is that correct?

A Yes.

Q Did you, or to your knowledge did Mr. Gruber, either prepare or review any study concerning the physical characteristics of the depreciation of nuclear plant, either this plant or nuclear plants in general?

A I did not, and Mr. Gruber did not, as it pertains to

my testimony. He may have done for his own testimony, but he did not for purposes of this testimony.

Q Fine.

A To my knowledge.

Q Now, I believe that both the modified sinking fund method and your proposal, which is also a sinking fund method, but not the same type of modification as the company's, is that correct?

A I have trouble even with the word sinking fund, but anyway, for purposes of your question, yes.

Q Okay. The methods do assume that there will be slower depreciation in the earlier years and accelerating rate out until the point that you would reach straight-line? Is that generally correct?

A Would you repeat that? I think that's true, but I'd like to hear it again.

Q The rate of depreciation is slower than the earlier years, and then increases at a faster rate or a higher rate each year until you reach the straight-line point under both methods?

A No, not the depreciation with respect to mine. With respect to mine, we have been referring to the crossover point comes when the undepreciated balance is equal to what the undepreciated balance would have been under straight-line.

Q I understand. At that point it would drop back in

year 17, is that correct?

A Yes.

Q If we look at Schedule 2, Page 2, of your exhibit, I think I can clarify my question. Your method assumes, looking at column one, a higher rate of annual depreciation in each year from year one to year 17, is that correct?

A Yes.

Q Fine, and then at year 17, if it comes uniform rate under the remaining life of the plant?

A Yes.

Q Now, my question is you have no information or basis to testify that that, in effect, is typical of the way in which the plant will physically depreciate over its life?

A No. Mr. Beamer had nothing like that either. This is the depreciation, and I suspect this is true of Mr. Beamer's, but I can't speak for him.

The depreciation figure is simply what's left over when you subtract the return, the dollar amount of the return, from the 222.6 which the company indicated that it could live with, and the depreciation is simply the residual.

Q I understand that. I think Mr. Beamer's testimony was consistent with that.

MR. WILMARTH: Could we have a clarification? When you talked about the physical depreciation, what you are really referring to is physical deterioration?

MR. ZWALLY: Yes. Physical wear and tear of the plant.

BY MR. ZWALLY:

Q I believe your recommendation or your methodology also assumes a 12 and a half percent rate of return over the life of the plant?

A Yes.

Q Is that correct?

A Yes. Again, only so that my tables were comparable to Mr. Beamer's. Twelve and a half percent is what he used.

Q I understand. Do you agree that if the rate of return of the company increases over the life of the plant, all other things being equal, the dollar amount of the capital recovery between the straight-line method and your method will, in effect, increase? In other words, your method will result in--

A Of course, you'll have deferred payments, so yes, you would.

Q Now, if you would refer to Page 5 of your testimony, and also I am looking at the paragraph beginning on Line 4, and I believe that also refers to Chart 2, which is found on, I believe, Page 4 of your exhibit.

A Yes.

Q My question is, is it correct that your statement in your testimony and Chart 2 were prepared on the premise that the rate of return over the life of the plant would be a

constant twelve and a half percent?

A Yes.

Q And would you agree that if, in effect, because of inflation, the rate of return applicable to plant increased over the plant life that Chart 2 would not be an accurate representation with respect to a comparison of the methods?

A No, I would not agree with that.

Q You do not? Would you explain that, please?

A No, because your question proposed I indicated the rate of return increasing with the rate of inflation.

Q Yes.

A And, therefore, the inflation factor that would be used to deflate would increase, and we would be back just about where we are here.

Q Well, then, I don't think I understand the difference between Chart one and Chart two of your exhibit.

A All right. As you asked, and I responded, the chart one is predicated on twelve and a half percent throughout the life of the plant.

Q And also is referring to constant dollars.

A Chart one also assumes a 5.9 percent--let's start again. The twelve and a half percent throughout the life of the plant also assumes 5.9 percent inflation throughout the life of the plant.

Q I'm sorry. Which chart was that?

A The general dollars with which I constructed all of this. The assumption of a twelve and a half percent rate of return throughout the life of the plant includes a 5.9 percent rate of inflation, and, therefore, since Chart one was constructed with that twelve and a half percent return, and things were to go up to that point, Chart two is taking the same dollars and deflating them year by year by 5.9 percent.

Now, if the rate of return were to go up due to inflation, and I understood your question to mean consistent with inflation, so that it became 13 percent and inflation became six point something, if they were congruent, then you have, yes, these numbers would be bigger here, but when I deflated them--

Q When you saw these numbers would be bigger here, you mean on which chart?

A Chart one. When I deflated them by the higher inflation rate, I would be right back where I am on Chart two now.

Q But to be clear, in terms of preparing Chart 1 and Chart 2, you applied a constant rate of twelve and a half percent to the rate base in each year?

A Right.

Q Do you agree that the rate of return with respect to this company will increase over the life of the plant, above the twelve and a half percent level?

A I don't know. I have no--

Q You have no opinion on that?

A I have no feeling for that.

Q In the event the rate of return claimed by the company in later rate cases is higher than twelve and a half percent, you wouldn't propose that the return applicable to this plant remain at twelve and a half percent? That wouldn't be part of your testimony?

A That's correct, it would not.

Q You would assume, under your methodology that the rate of return requested by the company granted by the Commission in later rate cases would be applied to this plant?

A Yes, that's true.

MR. ZWALLY: No further questions.

JUDGE KLOVEKORN: Thank you. Mr. Mann.

MR. MANN: No.

JUDGE KLOVEKORN: Any redirect?

MR. WILMARTH: I think we are all right now, no.

JUDGE KLOVEKORN: No further questions for the witness? Dr. Nellis, you may be excused. Thank you very much, sir.

MR. WILMARTH: At this time, Your Honor, we would like to call to the stand, Mr. Witold M. Pechul. Your Honor, while Mr. Pechul is preparing his materials, let me note that I have this morning delivered to the court reporter three copies of each document labeled, Staff Statement Number 2, Staff Exhibit Number 2-A and Staff Exhibit Number 2-B, and I previously

provided copies of such documents to all parties of record. I would ask at this time that they be so marked for purposes of identification in this proceeding.

JUDGE KLOVEKORN: Without objection, they will be so identified.

(Whereupon, Trial Staff Statement Number2, Trial Staff Exhibit Number 2-A and Trial Staff Exhibit Number 2-B, were produced and marked for identification.)

WITOLD M. PACHUL, called as a witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. WILMARTH:

Q Mr. Pachul, you presently have before you copies of the documents that have just been marked for identification?

A Yes.

Q Are you prepared to go ahead at this time or are you still shuffling papers?

A No, I am done.

Q Take your time. Are you the witness responsible for the preparation of all three documents?

A Yes, sir.

Q Are there any changes or corrections to any of the three you wish to note at this time?

A Yes. I would like to make some corrections on Exhibit 2-A, Page 13. There's a formula, two formulas, and

the top formula, OSF equal, not minus.

Q Excuse me, where is that?

A Page 13, the upper formula has a minus sign. It should insert an equal sign, and I have one correction on Page 20.

MR. YOUNG: Of Exhibit 2-A?

THE WITNESS: Two-A, sir. I would like to insert in the second line behind the word examples, Exhibit AAW-1, into the first of those tables. That's all.

BY MR. WILMARTH:

Q All right. Mr. Pachul, if I were to ask you today the questions contained in Statement Number 2, would your answers be the same as the answers contained therein?

A They would be the same.

Q And are those answers true and correct to the best of your knowledge, information and belief?

A Yes.

MR. WILMARTH: Your Honor, at this time I would ask that documents identified as Staff Statement Number 2, Exhibit Number 2-A and Exhibit Number 2-B be allowed as evidence into this proceeding, admitted into the record subject to any timely motion to strike that may be made by any party.

JUDGE KLOVEKORN: Without objection, the motion will be granted.

(Whereupon, Trial Staff Statement Number 2,

Trial Staff Exhibit Number 2-A and Trial Staff Exhibit Number 2-B, were admitted into evidence.)

MR. WILMARTH: Mr. Pachul is available for cross examination.

CROSS EXAMINATION

BY MR. YOUNG:

Q Mr. Pachul, I guess we could best proceed if you would get exhibit 2-A, Page 15 and 2-A, Page 1 in front of you. Two-B, Page 1.

MR. WILMARTH: What are the references, Counsel?

MR. YOUNG: Two-A, 15 and 2-B, Page 1.

THE WITNESS: I'm sorry. I didn't take with me this 2-B.

MR. WILMARTH: I can give you a copy unless you need to go up and get your own marked copy.

THE WITNESS: I'd prefer to have my marked copy, if I could just run up.

MR. WILMARTH: Your Honor, could we have a very brief recess for that?

THE WITNESS: You can give me your copy.

MR. YOUNG: I don't think you will need any notes from it. If you do, we can have you go upstairs.

MR. WILMARTH: Mr. Pachul, you just indicate at any time if it's necessary for you to have your marked copy.

THE WITNESS: I think I can work with it.

BY MR. YOUNG:

Q Now, referring to Page 15 of Exhibit 2-A, I take it that the table 2.10-1 there sets forth that your estimate, in column one, it sets forth your estimate of the cost of dismantling one unit using the 1948 prices that were included--1978, I'm sorry, prices that were used in the NUREG/CR-0672 report?

A That's correct.

Q And that to move from those numbers to the numbers appearing in the third column you have simply applied a factor of 45.86 percent to reflect inflation in the period from '78 to '83?

A That's correct.

Q And then, the fourth column purports to be the company's estimate of decommissioning expense shown opposite your numbers on a relatively comparable basis?

A That's correct.

Q On Page 1 of Exhibit 2-B, you indicate at the bottom that the cost of one--well, the bottom of page one. I am a little confused as to what that $118.8 million is, and how it relates to the numbers that are on Exhibit 2-A, Page 15.

A Now, the Table 2 on Page 15 as you mention is a copy. The first column and the second column copy from the NUREG, NRC NUREG studies. What I did, I escalated the data in column one to a column three, and then I compared the data with the company's figures.

Now, that doesn't mean that the column three is the actual cost of the decommissioning of Susquehanna Unit Number One. The calculations which are shown on Exhibit 2-B, Page 1, they are fully independent of the escalation of the figures which are shown on column 3.

The purpose of it is just to see how the respondent -- to show the difference between my escalation methodology from 1978 to '83, and the company methodology. As you can see, by comparing the figures in column 2 and 4 --

MR. WILMARTH: Columns 3 and 4?

THE WITNESS: Three and four. You will note that if the company will use just an escalation factor, the figures would be pretty close in item number one. You have on the left side three million. In column 3, 3,355,000 and the respondent has 11,669,000.

BY MR. YOUNG:

Q I am trying to tie in the total numbers, if you please, and I guess if we can --

A You cannot tie them.

Q If we go down to line 11, on Page 15, you show a cost in 1978 dollars of 43.55 million, and that's exactly the same as the number that appears in the middle of page 1 of 3 of 43.550 million.

A Could you repeat your question or reasoning?

Q Your column 1, line 11, on Page 15.

A Yes, sir.

Q -- has a figure of 43.550.

A That's correct.

Q And that's the same as the figure that appears in the two-thirds of the way down the page of page 1, Exhibit 2-B of 43.550.

A Oh, yes. Now, you like to tie me --

Q Let's proceed from there. Then you adjust that number by 99.9941. Why do you do that? On Page 1 of Exhibit 2-B That's an adjustment, I take it, on that schedule to reflect some thermal power rating?

A That's correct.

Q That's an adjustment that you did not make on Page 15.

A No because you see, the two plants are fully different. I mean, in the sense of thermal power. The different facility on the basis of which this table was established is the Washington Public Power Supply System Nuclear Project 2. In this particular plant capacity is thermal units 3,320 megawatt thermal where Susquehanna is 3,293 megawatt thermal.

If you apply the formula, the OSF formula which I corrected, you will get slightly different results because the entire formula is designed, the purpose of the entire formula is to calculate the cost of dismantling and disposal of

radioactive portions of the plant in a framework of certain thermal megawattage, and if you will permit me to clarify --

Q I think that's enough, Doctor. I don't really need any further answer on the subject. If I could refer you back to Page 15, if I understand it, on lines 1, 2 and 3, your costs have simply been taken from 1978 to 1983 by this single factor of .4586?

A That's correct.

Q And you made no analysis of the individual costs which are a component of that original calculation to see whether they, in fact, have moved at that average rate or not?

A Do I understand you, you asked me two questions. One, whether the factor is correct?

Q No. You answered that, and you said yes, it was correct. My next question is have you made any analysis of the individual cost components of your estimate in column 1 to see whether, in fact, they move on average at a rate of 45.86 percent?

A In the NUREG publication, NRC publication was presented in 1978 values, and until this date, no new publication which will update the figures and the entire research effort was published.

I understand that a new publication is in the works. Nonetheless, this has not happened. I wouldn't have any reason whatsoever to change the methodology which is very

comprehensive developed by the people, authors, of this particular NRC publication. In fact, I will say it is the only Bible by which you can go to calculate the cost of decommissioning of a nuclear power plant.

Q If --

A Chances are that the costs may go down because the technology progresses at a fast speed, so what was thought to be the right tool to be used in '78 may be not used in 40 years from today.

Q And conversely, some particular prices that you used and that were part of your column 1 estimate may have --

A It's not my column 1.

Q Could I finish my question, please. Part of the unit prices that were included in the calculation on which you relied in column 1 may well have escalated by a thousand or 1500 percent instead of 45, may they not?

A Which one do you mean? Which -- prices?

Q You haven't made any examination of individual prices at all, have you, that were included in that original study and their price movement?

A No because there was -- the answer is no.

Q For example, the price of burial of radioactive wastes which was used in the NUREG study was $2.65 a cubic foot. If you would accept subject to check that the current price list for that activity is $15.73 per foot, that would be

substantially more than a 45 percent increase, would it not?

A I will not accept this reasoning for the following --

Q I don't ask you to accept the reasoning. I ask you if that would be more than a 45 percent increase from 2.65 to 15.73?

A Subject to check, it may be so.

Q That's the only question I have, Doctor. Now, if we could refer to your Exhibit 2-B, Page 2, under subheading little c. If I understand your testimony, the staff estimate for decommissioning unit 1 at 90 percent of that cost for PP&L's share is $53,460,000. Is that correct? Page 2 of 3.

A Yes.

Q That's labeled Staff Estimate, $53,460,000.

A Yes.

Q And is that $53,463,000 in 1983 prices, is it not?

A May I have time to study? Yes, that's correct. That's $53 million staff estimate.

Q That's at 1983 prices?

A That's correct.

Q Whereas the decommissioning is expected to occur in 2023, is it not?

A That's correct, too.

Q Now, still referring to Page 2, if I understand your sub-paragraph little e, the Staff's annuity is $183,972?

A That's correct.

Q And it's your testimony that if that amount is put away annually at eight and a half percent interest, the compan would have 53,460,000 in the year 2023?

A That's correct, provided inflation is zero --

Q Is zero?

A --and the interest rate is constant.

Q Right. All right. Now, when this $183,972 would then be your recommended allowance as an expense for the compan on an annual basis, would it not?

A It will be just for one year if you read my testimony What I mean by that, if in today's knowledge of the interest rate we can assure that for one year the interest rate will survive at eight and a half percent. Should the interest rate change next year, we would calculate another annual annuity formula in which the input will be at new interest rates.

Now, since inflation is not constant --

Q Is what?

A Since inflation is not included in this formula, I said in my testimony I will adjust for inflation yearly after the factual inflation is known.

Q What adjustment have you made for the income taxes that the company will pay on the 183,972?

A This is not my area of testimony. Some other people picking up -- some other staff members picking up the parts of my testimony, and deal with income tax. I cannot give you the

answer to it, sir.

Q Well, if, in fact, the company has to pay federal income taxes on the $183,000, it won't have that much to put in its annuity calculation, will it?

A I cannot comment on it. I am not familiar with it.

Q You have made no allowance for it yourself?

A No. The financial experts, staff members will take care of the income taxes and implications.

MR. YOUNG: I have no other questions, Your Honor.

MR. POPOWSKY: No questions, Your Honor.

MR. MANN: No questions.

JUDGE KLOVEKORN: Redirect?

MR. WILMARTH: May I have a moment with the witness, Your Honor?

(Pause.)

REDIRECT EXAMINATION

BY MR. WILMARTH:

Q Mr. Pachul, in response to a question by counsel for PP&L, you indicated that should experience change in interest rates -- I believe that was your answer. Should we experience a change in interest rates, we would make an adjustment, we being the Commission. We would make an adjustment to reflect that and also to reflect competently any experienced inflation to recalculate this annual annuity.

Is it your recommendation here this morning that as part

of its final order, the Commission institute some sort of a periodic adjustment procedure?

A No. I didn't mean that. The company may come with a new rate filing each year, second year or third year. At the time the company traced the inflation rates and the interest rates. I am willing to recognize if they calculate th adjustment as they occur, if that is clear.

Q Would it be possible for the company to obtain recognition through rates of increased inflation rate at any time other than through the filing of a general rate increase?

A No. Let's assume --

MR. YOUNG: I object to that question. I don't see how this witness' qualifications would give him any basis for answering.

JUDGE KLOVEKORN: Sustained.

MR. WILMARTH: We have nothing further, Your Honor.

MR. YOUNG: One question.

RECROSS EXAMINATION

BY MR. YOUNG:

Q In relation to the answer you have just given to counsel, are you suggesting that the company would be made whole for inflation which had already occurred on each of these occasions?

A Yes.

Q As well as for changes in interest rates which had

already occurred?

A Not occurred. You can use the current year inflation if the data are clear, but the inflation rate, we would like not to operate with two unknowns. If we can eliminate one. Inflation rate is difficult to reflect. Any bond invested today is supposed to bring certain profit, has certain built-in inflation factor in it at least for a year.

Q Well, let's assume that since we are being hypothetical that PP&L postpones its next rate filing until 1987 --

A That would be nice.

Q And that during that time, there is an annual inflation rate of 10 percent, and that during that time interest rates on tax-free government bonds go from eight and a half to six and a half. There will be a substantial deficiency in the fund as of 1987, will there not?

A I think if you would be my manager, I would not prove that because I would never permit the company to incur any losses in this magnitude just due to delay in filing a new rate case.

Q So you would permit them to recover or recoup whatever had been lost in that time frame?

A Of course, I would permit them because in my opinion the costs of decommissioning are supposed to be fair to the customers as well as to the company. This is my principle on which I work, and I do not believe that this

hypothetical case will ever occur on a scale of seven years.

Q I think that was four years, I proposed.

A You said seven in the beginning.

Q I said 1987 which would be four years.

A Of course, I would permit the company to recoup any losses which occur during the time.

MR. YOUNG: I have no further questions.

JUDGE KLOVEKORN: If there are no further questions of the witness, the witness is excused. Thank you very much, Mr. Pachul. Is there anything further for this afternoon?

MR. POPOWSKY: Are there any other witnesses?

MR. WILMARTH: We have no other witnesses. I just wanted to confirm the company's intent that we present all witnesses scheduled for next week starting on Wednesday rather than Tuesday as scheduled right now.

MR. YOUNG: At 9:30. We have a couple rebuttal witnesses who have some constraints on their time. Mr. Brennan, who is producing rebuttal testimony, can be here on the 20th, but not on the 19th, and Mr. Baldwin would prefer to go on the 19th, if that's possible.

We were also contemplating, I guess, that on the 19th, Mr. Curtis and Mr. Hecht would be available for cross with respect to their rebuttal testimony.

MR. QUAIN: Your Honor, I am handling the rate of return area, and the 20th presents a direct conflict. I am presenting

another proceeding that day.

MR. MCCLELLAND: Is Brennan available on any other day?

MR. YOUNG: Only the 22nd.

MR. GADSDEN: He is going to be in Arizona on the 19th. He is available on the 20th. He is scheduled to be cross examined on another proceeding on the 21st. Would be available on the 22nd, I would suppose.

MR. MCCLELLAND: I am not certain of Mr. Rothschild's availability, but I'll attempt to find that out.

MR. POPOWSKY: Could I give one other date for one of our witnesses which is a bad day? The 22nd is unavailable for Mr. Oliver, so assuming Mr. Baldwin goes on the 19th, we prefer that all the rate structure be done either the 19th, 20th or 21st, as long as it's not the 22nd.

MR. YOUNG: One thing we haven't established is when rate structure rebuttal testimony is due.

MR. POPOWSKY: My understanding is it's due today.

MR. YOUNG: Ours will be due. You'll have Baldwin's today.

MR. POPOWSKY: We are not filing rebuttal rate structure testimony.

MR. YOUNG: Maybe none of the rest of them are either. That might eliminate some sur-rebuttal.

MR. MANN: It was my understanding one of the days I missed that there was some motion for rebuttal testimony at

some of the public hearings. Is that going to be filed on the 15th?

MR. YOUNG: Yes.

MR. MANN: Would it be possible to have that since I am about the only one that can't have it hand delivered to have it federal expressed to me that day so I'll have the weekend to deliver it? Would it be possible to file that a day earlier?

MR. RUSSELL: I don't believe it would be. We could make an attempt. If we send it out federal express on Friday --

JUDGE KLOVEKORN: Let's go off the record.

(Whereupon, a brief discussion was held off the record.)

JUDGE KLOVEKORN: Back on the record.

MR. POPOWSKY: In reviewing Dr. Rosen's testimony, there were six interrogatories referred to which were not previously identified as PP&L exhibits, and I would like to identify them at this time, and I will distribute them to any parties who wish. They are 200.382028, 200.282092, 200.282100, 200.282212, 200.582034 and 200.582015. Could I have those marked for identification?

JUDGE KLOVEKORN: Without any objection, they will be so identified.

(Whereupon, PP&L Exhibit Numbers 200.282028, 200.282092, 200.282100, 200.282212, 200.582034 and 200.582015, were produced and marked for

identification.)

MR. POPOWSKY: Now, there probably will be other interrogatories that we will be viewing in the next week, and we will probably ask to have additional interrogatory answers identified. Is there any date by which you would like that to be done, or could we do that on the last day of hearings?

MR. YOUNG: I guess we'd prefer that you do it next week if you are going to do it, unless it's something new developed by the rebuttal testimony.

MR. POPOWSKY: I think we could do that by next week except for matters that come up on rebuttal or sur-rebuttal. That's all I have, Your Honor.

JUDGE KLOVEKORN: If we have nothing further --

MR. QUAIN: I still think we have outstanding the question of when Mr. Brennan is going to be scheduled.

JUDGE KLOVEKORN: That's why we have co-counsel.

MR. MCCLELLAND: I still have to look into when Mr. Rothschild can get in here, and, of course, I'd also like to see his rebuttal testimony.

MR. YOUNG: You will get that today?

MR. QUAIN: It would help me if we are going to do Brennan if we do it first thing in the morning, and I can maybe postpone my witness in the other proceeding to the afternoon.

MR. YOUNG: That would be fine.

JUDGE KLOVEKORN: If there is nothing further, this

hearing stands adjourned until we will next convene in Harrisburg on April 13. This hearing stands adjourned.

(Whereupon, at 12:15 p.m., the hearing ended.)

- - - - -

I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me during the hearing of the within cause, and that this is a true and correct transcript of the same.

Eugene W. Holbert

EUGENE W. HOLBERT, CP
Registered Professional Reporter

HOLBERT ASSOCIATES
1001 North Second Street
Harrisburg, Pennsylvania 17102

The foregoing certification of this transcript does not apply to any reproduction of the same by any means unless under the direct control and/or supervision of the certifying reporter.

Pennsylvania Power & Light Company
Response to Interrogatories
of the Office of Consumer Advocate
Set I Dated January 3, 1983
Docket No. R-822169

Q. 20. If any contraction revenues in the future test year are the result of discontinued service, provide the following:

a) the reason that service was discontinued (out of business, etc.)

b) whether any new applications have been received for service at the location of the discontinued customer

c) if (b) is positive, provide an estimated service date and an annual revenue estimate of the new customer at current rates.

A. 20. a) During the future test year PP&L anticipated 18 firms to discontinue service for the following reasons:

Reason	Number of Customers
Out of Business	3
Firm or plant closing	13
Relocation	2

b) PP&L has received five applications for new service at the 18 disconnect locations.

c) The total annual revenue estimate for the five firms in (b) is $432,000.

Pennsylvania Power & Light Company
Response to Interrogatories
of the Office of Consumer Advocate
Accounting/Revenue Requirements - Set II
Dated January 17, 1983

Docket No. R-822169

Q.93. Regarding any accrual or pension assumptions or estimates that may have been used in estimating the future test years results, to date, have any of these assumptions been actualized or changed which affect pro forma pension expenses? If yes, provide the charges and quantify their effect on pro forma income.

A.93. The latest retirement plan actuarial report for the plan year beginning July 1, 1982 indicates that the pro forma estimated annualized pension cost for the future test year would be $27,617,000 in lieu of the $28,704,000 as shown on Schedule D-6 of Exhibit Future 1.

Although review of the actual experience of individual components of a budget will show variation from the initial estimate, examination of the estimated operating income and the actual results of operation provide a better indication of the Company's financial condition. As reflected in Exhibit MJB 9B operating income for the first 5 months of the future test year (August - December 1982) is under budget by approximately $16 million.

Docket No. R-822169

Q.E-12 Refer to Exhibit Regs. III, Attachment III-A-18, p. 9. The Company is claiming an additional $1,458,448 in tree and brush control costs over the July 31, 1982 level. Provide a detailed explanation of this increase. Include a table of line mileage for the years ending July 31, 1982 and 1983. Provide the quantity and unit costs of herbicides used for brush control for both years.

A.E-12 Following is a schedule of anticipated tree and brush control costs for the future test period ended July 31, 1983 compared to the historic test period ended July 31, 1982.

	12 Months Ended July 31		
	1983 (Projected)	1982	Change
Trim or Remove Trees			
Number	846,129	809,893	
Cost	$9,252,296	$7,794,299	$1,457,997
Spray			
Acres	4,099	3,166	
Cost	$ 591,849	$ 385,183	206,666
Hand Cut			
Acres	844	1,172	
Cost	$ 501,283	$ 547,903	(46,620)
Other, Primarily Side Trim Transmission Right-of-way	$ 427,572	$ 587,167	(159,595)
		Total Change	$1,458,448

The increase for trimming or removing trees of $1,457,997 is due to an increased number of trees to be worked on, increased labor and equipment costs, and a change in policy to remove more trees rather than trimming. Removing trees is initially more expensive but it eliminates recurring trimming costs.

The increase of $206,666 for spraying is due to increased acreage and increased spraying costs including the cost of herbicides.

The miles of line for the years ending July 31, 1982 and July 31, 1983 is not available. Miles of line is determined at calendar year end. Following are the miles of line at the end of each year.

	1981	1980	1979
Distribution	48,268	47,912	47,279
Transmission	1,084	1,012	980
Total	49,352	48,924	48,259

The quantity and unit costs of herbicides for each test period are not available. Costs of herbicides are included along with labor and equipment costs in the actual and anticipated rates billed by contractors.

M. J. Berish
200.282049

Pennsylvania Power & Light Company
Response to Interrogatories
of the Office of Consumer Advocate
Set I Dated January 3, 1983

Docket No. R-822169

Q.49. Are any amortization of property losses being charged to pro forma income? If so, please provide all details.

A.49. The following amortizations of property losses have been included in pro forma income:

	Test Period Ending July 31	
	1982	1983
Manor Coal Plant	$325,215	$309,000
Stony Creek	234,880	403,000
	$560,005	$712,000

Pennsylvania Power & Light Company
Response to Interrogatories of the
PUC Trial Staff - Set XIV
Dated February 18, 1983

Docket No. R-822169

Q. T-8. With regard to the Company's claimed $139,333,000 test year Accumulated Deferred Income Tax balance, provide a breakdown between state and federal accumulated deferred taxes indicating for federal deferrals the amount deferred at 48% and the amount deferred at 46%.

A. T-8. See Attachment 1 of this response.

PENNSYLVANIA POWER & LIGHT COMPANY

Accumulated Deferred Taxes On Income
As of July 31, 1983
(Thousands of Dollars)

	As Reported	Adjustment (a)	ProForma
Accelerated Amortization Property			
Certified defense facilities			
Federal	$ 214	$ -	$ 214
State	24	-	24
Pollution control facilities			
Federal	2,142	-	2,142
State	2	-	2
	2,382	-	2,382
Liberalized Depreciation			
Class life depreciation system			
Federal	33,726	(1,060)	32,666
State	8,095	-	8,095
Deduction of costs of removing retired depreciable property			
Federal	11,578	-	11,578
State	2,797	-	2,797
	56,196	(1,060)	55,136
Accelerated Cost Recovery System (ACRS)			
Susquehanna property			
Federal	107,110	-	107,110
State	-	-	-
Other property			
Federal	12,046	-	12,046
State	-	-	-
	119,156	-	119,156
Test Power - Martins Creek			
Federal	5,458	-	5,458
State	1,216	-	1,216
	6,674	-	6,674
Test Power - Susquehanna			
Federal	(38,321)	-	(38,321)
State	(9,773)	-	(9,773)
	(48,094)	-	(48,094)
Conversion to Monthly Billing			
Federal	2,405	-	2,405
State	614	-	614
	3,019	-	3,019
Total Accumulated Deferred Taxes on Income	$139,333	$(1,060)	$138,273

(a) Adjustment required to reflect utilization of 46% versus 48% Federal income tax rate.

Pennsylvania Power & Light Company
Response to Interrogatories of the
PUC Trial Staff - Set XIII
Dated February 16, 1983

Docket No. R-822169

Q.T-6. Provide a schedule which lists by amount by vintage year the Investment Credit Carryforwards available to the Company as of the end of the future test year; identify portions of such available carryforwards as associated with Susquehanna Unit I, Susquehanna Unit II and Other.

A.T.6. IRS Reg. Sec. 1.46-1 (m) sets forth the order in which the available investment tax should be utilized. Unutilized deferred investment tax credits as of December 31, 1982 and the order of utilization are shown in Attachment 1 of this response.

Pennsylvania Power & Light Company

Unutilized Deferred Investment Tax Credits and Potential Utilization, Amortization at Pro Forma Present and Proposed Rates

(Thousands of Dollars)

Vintage		Description	Amount of Deferral	Utilization	Amortization	Utilization	Amortizat
1978	10%	Progress Payment - SSES Unit 1	$ 3,925	$ 3,925	$ 101	$ -	$
		Progress Payment - SSES Unit 2	2,565	2,565	-	-	
	1%	ESOP	3,484	2,616	-	868	
	.5%	ESOP	1,421	-	-	1,421	
1979	10%	Owned	9,235	-	-	9,235	28
		Leased	440	-	-	440	4
	10%	Progress Payment - SSES Unit 1	17,465	-	-	17,465	44
		Progress Payment - SSES Unit 2	21,323	-	-	21,323	
	1%	ESOP	4,964	-	-	4,964	
	.5%	ESOP	2,159	-	-	2,159	
1980	10%	Owned	11,644	-	-	11,644	35
		Leased	503	-	-	503	5
	10%	Progress Payment - SSES Unit 1	15,410	-	-	15,410	39
		Progress Payment - SSES Unit 2	8,265	-	-	8,265	
	1%	ESOP	3,571	-	-	3,571	
	.5%	ESOP	1,736	-	-	1,736	
1981	10%	Owned	15,217	-	-	6,211	18
		Leased	803	-	-	-	
	10%	Progress Payment - SSES Unit 1	20,750	-	-	-	
		Progress Payment - SSES Unit 2	7,946	-	-	-	
	1%	ESOP	4,472	-	-	-	
	.5%	ESOP	2,213	-	-	-	
1982	10%	Owned	13,200	-	-	-	
		Leased	1,540	-	-	-	
	10%	Progress Payment - SSES Unit 1	15,000	-	-	-	
		Progress Payment - SSES Unit 2	19,000	-	-	-	
	1%	ESOP	4,874	-	-	-	
	.5%	ESOP	2,437	-	-	-	
		Total		$ 9,106	$ 101	$105,215	$ 1.7
		PUC Jurisdictional		$ 8,544(a)	$ 95	$105,215(b)	$ 1.7

(a) Exhibit Future 1, Schedule D-1, Column 7, Line
(b) Exhibit Future 1, Schedule D-1, Column 9, Line

Note: Amounts shown for 1982 are estimates.

200.282234

Pennsylvania Power & Light Company
Response to Interrogatories
of the Office of Consumer Advocate
Accounting/Revenue Requirements - Set IV
Dated January 28, 1983

Docket No. R-822169

Q.129. Please provide an estimate for the future test year for the "Credit for Increasing Research Activities."

A.129. As stated in PP&L response 200.282030, the "Credit for Increasing Research Activities" is not reflected in the future test year since the IRS has not issued regulations on this new credit provision; therefore, there is uncertainty as to the calculation of a valid credit.

For purposes of responding to this interrogatory only, the Company has estimated this credit to be about $126,000 for the test period which is the estimate for the calendar year 1983.

Pennsylvania Power & Light Company
Informal Data Request
Of the PUC Trial Staff

Docket No. R-822169

Q.7. Re: PP&L response 200.182106 and 200.182034, provide a breakdown of the category Trim or Remove Trees into the number and cost of trees trimmed and the number and cost of trees removed.

A.7. Following is the requested data:

	1979	1980	1981	1982
Trim Trees				
Number	646,604 1/	549,520	618,321	692,097
Cost	$2,906,055	$3,209,508	$3,929,741	$4,765,143
Remove Trees				
Number	159,788 1/	144,708	162,640	179,258
Cost	$2,568,386	$2,769,282	$3,508,032	$3,524,213

	12 Months Ended July 31, 1983 Projected	1982
Trim Trees		
Number	659,981	647,155
Cost	$4,969,657	$4,475,232
Remove Trees		
Number	186,148	162,738
Cost	$4,282,639	$3,319,067

1/ The number of trees trimmed or removed as shown on PP&L response 200.182106 should have been 806,392 and not 806,892.

PA. PUBLIC UTILITY COMMISSION
DOCKET NO. R-822169 FOLDER NO. ___
EXHIBIT NO. PP&L 175.182007
HEARING AT Hbg. DATE 4/8/83
REPORTER G. Holbert

PENNSYLVANIA POWER & LIGHT COMPANY

TESTIMONY OF

JAMES D. COTTON

RE

ACCOUNTING ISSUES

DOCKET NO. R-822169

MARCH, 1983

TABLE OF CONTENTS

I. STATEMENT OF QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is James D. Cotton and my business address is 456 Main Street, Ridgefield, Connecticut.

Q. WHAT IS YOUR PRESENT OCCUPATION?

A. I am a consultant for the Georgetown Consulting Group, Inc.. Georgetown Consulting Group, Inc. is a financial consulting firm that specializes in utility regulation.

I have previously testified on regulatory matters in the states of California, Connecticut, Kansas, New Jersey, New York, Ohio, Pennsylvania, and Vermont.

Q. PLEASE SUMMARIZE YOUR PROFESSIONAL EXPERIENCE.

A. My experience in the utility industry is varied and well balanced. I have worked for a utility company, served as a consultant to state agencies, and even served as a Controller for a Cable T.V. Company.

Prior to my current position, I was associated with Citizens Utilities Company - a utility company which provides electric, gas, water, wastewater and telephone service to various communities in ten states from Vermont to Hawaii. I was employed by Citizens for four years. During the first two years at Citizens, I prepared the operating and capital

budgets for all services except telephone. I also prepared various operating reports and analyzed operating variances for management review. I was then promoted to a position in the rate department. As a rate economist, I prepared numerous rate filings.

Prior to my association with Citizens, I spent one year with the New York Daily News as its corporate financial analyst. I prepared operating budgets, analyzed operating variances, and prepared state and federal tax returns.

Before my association with the News, I spent 2-1/2 years with Time Incorporated. At Time, I started as a staff accountant and advanced through various assignments until I was promoted to Business Manager of the Cable T.V. Division - a controllership job.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I received an MBA in Finance from Columbia University and a BA from Franklin & Marshall College.

II. SCOPE AND PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to recommend a level of pro forma operating income and measures of value that in conjunction with the rate of return testimony submitted by Office of Consumer Advocate (OCA) witness Rothschild can be used to determine a revenue requirement award for the Pennsylvania Power and Light Company.

These recommendations are based on my testimony and the testimonies of OCA witnesses Dr. Rosen, Mr. Minor, Mr. Bridenbaugh, and Mr. Rothschild.

III. SUMMARY OF CONCLUSIONS

Q. WHAT ARE YOUR CONCLUSIONS CONCERNING MEASURES OF VALUE, PRO FORMA INCOME AND REVENUE REQUIREMENTS?

A. My conclusions are as follows (See Schedule 1):

1. PP&L has a future test year measures of value of $3,167,926,000.

2. PP&L has a future test year pro forma income of $312,560,000.

3. Based upon my recommendations and the recommendations of the witnesses listed in Section II, I recommend that the rates charged by PP&L to its Pennsylvania jurisdictional customers should be increased by no more than $138,028,000 (See Schedule 1). Should either of the two alternative overcapacity adjustments recommended by Dr. Rosen be accepted by the Commission, the revenue award would be considerably less (See Section V. D.). My recommendation of $138,028,000 is in contrast to the $296,068,000 (Company Exhibit Future 1, D-1, page 1) requested by the Company. Both these amounts exclude the effect of the state tax surcharge revenues.

IV. INTRODUCTION

Q. CAN YOU EXPLAIN THE REASONS WHY YOUR RECOMMENDATIONS DIFFER FROM THAT OF THE COMPANY?

A. Yes. There are several appropriate adjustments that need to be made to the Company's position. These adjustments can be summarized as follows:

a) For both regulatory and legal reasons, the Company should not have included a claim for electric plant held for future use. This results in a decrease in revenue requirements of approximately $2,408,000.

b) The Company's future test year coal inventories were overestimated. This results in a decrease in revenue requirements of approximately $977,000.

c) The Office of Consumer Advocate witnesses Minor and Bridenbaugh are proposing a reduction in the allowable costs of SSES Unit No. 1. This results in a decrease in revenue requirements of approximately $44,311,000.

d) The Office of Consumer Advocate witness Rosen is proposing a reduction in revenue requirements for excess capacity. This results in a reduction in

revenue requirements of approximately $54,655,000 for the most conservative option utilized for my revenue requirements recommendation.

e) There is an increase in measures of value due to the interest and preferred stock dividend lag offsets. This results from all the aforementioned reductions in measures of value. This increases revenue requirements by approximately $745,000.

f) The overall cost of capital found by the Company is 12.71%. The recommended cost of capital found by OCA witness Rothschild is 12.03%. This difference results in a lower revenue requirement of approximately $44,151,000.

g) The Company did not include an estimate of revenues for reconnected customers. This results in a revenue requirement reduction of approximately $442,000.

h) The Company overestimated its pension expense. This results in a revenue requirement reduction of approximately $1,066,000.

i) The Company did not normalize its tree trimming

expense. This results in a revenue requirement reduction of approximately $964,000.

j) The Company did not normalize the operations and maintenance expense relating to its Holtwood generating unit. This results in a revenue requirement reduction of approximately $548,000.

k) The Company should not have included the amortization of a property loss (Stony Creek). This results in a revenue requirement reduction of approximately $395,000.

l) The Company overstated the appropriate claim for decommissioning. This results in a revenue requirement reduction of approximately $444,000.

m) The Company did not use the current method of computing its spent nuclear fuel disposal costs. This results in a revenue requirement reduction of approximately $2,438,000.

n) The Company overestimated its rate case expense normalization. This results in a revenue requirement reduction of approximately $79,000.

o) The Company did not exclude EPRI expense relating to Susquehanna Unit 2 which is currently under construction and which was not made claim for by the Company in this proceeding. This results in a revenue requirement reduction of approximately $479,000.

p) The Company did not present its pro forma EEI expense consistent with current Commission practice. This results in a revenue requirement reduction of approximately $173,000.

q) The Company continues to maintain a deferral for certain income taxes accrued at the pre-1979 48% corporate income tax rate. Elimination of this excess results in a revenue requirement reduction of approximately $872,000.

r) The Company did not include any amortization of its current provisions for investment tax credits. Based upon my revenue requirement recommendation, this adjustment results in a revenue requirement reduction of approximately $1,728,000.

s) The Company did not adjust its test year income for a

Commission finding related to consolidated income tax losses in a prior PP&L rate case. This results in a revenue requirement reduction of approximately $1,031,000.

t) The Company should be required to make an estimate of its tax savings due to the "Tax Credit for Increasing Research Activities."

u) The Company's Revenue/Income Factor should be calculated to include amortization of the provision for the investment tax credit. Recalculation of the Revenue/Income Factor reduces revenue requirements by approximately $1,624,000.

V. MEASURES OF VALUE

A. Electric Plant Held for Future Use

Q. WHAT IS YOUR POSITION CONCERNING ELECTRIC PLANT HELD FOR FUTURE USE?

A. Plant held for future use is conceptually the same as CWIP. In fact, in many cases, plant held for future use is immature CWIP. Like CWIP, it would be possible for the Company to receive a return on Plant Held for Future Use either by including it in measures of value or by accruing AFUDC on it.

From the ratepayers point of view, including plant held for future use in measures of value charges today's ratepayers for plant that may not be used and useful to ratepayers for many years, if ever. Therefore, from a regulatory point of view, plant held for future use should be excluded from measures of value until such time as it is used and useful to ratepayers.

Q. DO YOU HAVE ANY COMMENTS CONCERNING THE INCLUSION OF PLANT HELD FOR FUTURE USE IN MEASURES OF VALUE?

A. Yes. On December 30, 1982, the Governor of Pennsylvania signed into law a statute amending the Pennsylvania Public Utility Code, 66 PA. C.S. as follows:

Section 1. Title 66, Act of November 25, 1970 (P.L. 707, No. 230), known as the Pennsylvania Consolidated Statutes, is amended by adding a section to read:

Section 1315. Limitation on Consideration of Certain Costs for Electric Utilities.

Except for such non-revenue producing, non-expense reducing investments as may be reasonably shown to be necessary to improve environmental conditions at existing facilities or improve safety at existing facilities or as may be required to convert facilities to the utilization of coal, the cost of construction or expansion of a facility undertaken by a public utility producing, generating, transmitting, distributing or furnishing electricity shall not be made a part of the rate base nor otherwise included in the rates charged by the electric utility until such time as the facility is used and useful in service to the public. Except as stated in this section, no electric utility property shall be deemed used and useful until it is presently providing actual utility service to the customers.

Section 2. This Act shall be applicable to all proceedings pending before the Public Utility Commission and the courts at this time. Nothing contained in this Act shall be construed to modify or change existing law with regard to ratemaking treatment of investment in facilities of fixed utilities other than electric utilities.

Section 3. This Act shall take effect immediately. Act amending Title 66 (Public Utilities) of the Pa.C.S., No. 335, December 30, 1982 (to be codified at 66 Pa.C.S. #1315).

I have been advised by counsel that it is the position of the OCA that this statute directly applies to the inclusion of electric plant held for future use and that it precludes its inclusion in measures of value.

Q. WHAT IS YOUR ADJUSTMENT?

A. My recommendation therefore in light of both the regulato
reasons and advice of counsel is to exclude the total amou
of $11,819,000 in electric plant held for future use fr
measures of value (See Schedule 8).

B. Coal Inventories

Q. DO YOU HAVE AN ADJUSTMENT TO MAKE TO THE COMPANY'S CLAIMED COAL INVENTORIES?

A. The Company's witness has indicated that the Company's estimated coal inventory level at test year end was overestimated on average by $2.96 per ton. Therefore, on Schedule 10, page 2, I have recomputed the Bituminous coal prices reducing them by the average $2.96 amount.

Q. WHAT IS THE RESULT OF YOUR CALCULATIONS?

A. The result is that I recommend a reduction to measures of value of $4,798,000 (See Schedule 10).

C. Cash Working Capital

Q. HAVE YOU MADE ANY ADJUSTMENT TO CASH WORKING CAPITAL?

A. Yes. I have adjusted the interest and preferred and preferenced stock lag offsets to cash working capital consistent with my recommended position on measures of value. This adjustment significantly increases measures of value by $3,656,000.

Q. HAVE YOU MADE SIMILAR ADJUSTMENTS TO CASH WORKING CAPITAL FOR EITHER THE WORKING CAPITAL REQUIRED FOR OPERATION AND MAINTENANCE EXPENSES OR ACCRUED TAXES?

A. No, I haven't. These results would not significantly impact measures of value. However, I would like to point out that when the Commission makes its findings on measures of value and pro forma income, it would be appropriate to recompute these amounts consistent with its findings.

D. Excess Capacity

Q. HAVE YOU MADE AN ADJUSTMENT TO REFLECT DR. ROSEN'S RECOMMENDATION THAT THE COMPANY'S RATES BE REDUCED BECAUSE OF AN EXCESS CAPACITY SITUATION?

A. Yes, I have made this adjustment in Schedule 6. I believe that my adjustment is consistent with Commission practice particularly with Decision R-79060865 in the Philadelphia Electric case.

The adjustment methodology adopted in that case and which I use here is to allow PP&L to continue to recover depreciation and other operating costs associated with the excess Mws, but not allow PP&L to earn a return on the net plant investment.

Q. WHAT IS THE IMPACT OF YOUR ADJUSTMENT?

A. The impact of my adjustment is to decrease net plant by $268,243,000 (See Schedule 6) and revenue requirements by approximately $54 million.

Q. DR. ROSEN HAS SUGGESTED THREE SEPARATE ADJUSTMENTS FOR EXCESS CAPACITY. WHICH ONE HAVE YOU USED FOR YOUR REVENUE REQUIREMENT RECOMMENDATION?

A. For my revenue requirement recommendation, I have used the method of reducing total net production plant by 945 Mws or by

approximately $268,243,000. I have chosen this method becaus
it produces the lowest reduction in revenue requirements ($5
million) and is, therefore, the most conservative. I would
point out, however, that if the Commission chooses the
recommendation by which 945 Mws of SSES Unit 1 and Martins
Creek 3 & 4 were excluded or, if 945 Mws of SSES Unit 1 were
excluded, this would decrease revenue requirements by a
substantially greater amount (See Schedule 6 - Note).

E. SSES Unit I Audit Adjustments

Q. WHAT WAS YOUR ASSIGNMENT CONCERNING THE SSES UNIT I AUDIT ADJUSTMENTS PROPOSED BY THE MHB WITNESSES TESTIFYING ON BEHALF OF THE CONSUMER ADVOCATE?

A. My assignment was to quantify their proposed adjustments for revenue requirements including the computation of AFUDC.

Q. HAVE YOU MADE THESE QUANTIFICATIONS?

A. Yes, and they have been included in my overall revenue requirement recommendation. I have made both adjustments to rate base as reflected in Schedule 7 and adjustments to pro forma income which are reflected on Schedule 25. The impact of the audit adjustments is to decrease measures of value by approximately $139,088,000 and increase pro forma operating income by $7,727,000. The revenue requirement impact of this adjustment is $44,311,000.

VI. OPERATING INCOME

A. Revenues from New Service Applications

Q. DID PP&L MAKE AN ADJUSTMENT TO PRO FORMA TEST YEAR REVENUES TO EXCLUDE CUSTOMERS WHO WERE ANTICIPATED TO DISCONTINUE SERVICE?

A. Yes. PP&L anticipated eighteen firms to discontinue service during the future test year. The revenues from these discontinued firms were therefore not included in the future test year. However, the Company assumed for their pro forma revenue claim that none of these discontinued customers would return or be replaced. To date, PP&L has already received five applications for new service at the eighteen disconnected locations. More reconnections may occur in the future. I believe, therefore, that at least the revenues attributable to the five new customers should be pro formed back into the test year.

Q. HOW MUCH DOES THAT AMOUNT TO?

A. The Company's total annual revenue estimate for the five new firms is $432,000. I recommend that pro forma test year revenues be adjusted by this amount (See Schedule 12).

B. Pension Expense

Q. WHAT IS THE ISSUE WITH REGARD TO THE COMPANY'S CLAIM FOR PENSION EXPENSE?

A. The issue is that the Company has received a more recent estimate of its annualized pension cost for the future test year beginning August 1, 1982.

The effect of this latest retirement plan actuarial report shows that the pension cost for the future test year would be $27,617,000 rather than the amount of $28,704,000 as claimed by the Company.

Q. WHAT IS YOUR ADJUSTMENT?

A. I have adjusted the Company's pension expense claim downward by the difference in the actuarial report estimate of approximately $1.1 million. This is equivalent to $1,042,000 on a Pennsylvania jurisdictional basis (See Schedule 13).

C. Tree Trimming Expense

Q. PLEASE EXPLAIN YOUR UNDERSTANDING OF THE COMPANY'S TREE TRIMMING PROGRAM?

A. Each year the Company trims and removes trees which are in its right of way to avoid destruction to their distribution and transmission lines. Beginning in 1978, the Company went to a policy of removing rather than trimming some trees with the expectation that removal, although much more expensive, will in the long run result in significant savings. Reference to Schedule 14, page 3, shows that on average for the four years from 1979 to 1982, 788,234 trees were trimmed or removed. It also shows a very consistent percentage of removed trees to total trimmed or removed trees of 20.5%. This is in contrast to the Company's test year claim which shows that a total of 846,129 trees are estimated to be trimmed or removed, and that 22.0% versus 20.5% of these trees will be removed.

Q. HOW DO THE COMPANY'S FUTURE TEST YEAR ESTIMATES COMPARE WITH THE HISTORICAL TEST YEAR?

A. The number of trees trimmed or removed in the future test year is 4.4% higher than in the historical test year. The percentage of trees being removed is likewise considerably higher in the future test year compared with the historical test year (186,148 vs. 162,738).

Q. WHAT IS YOUR ADJUSTMENT?

A. I have made a normalized calculation of tree trimming costs based on an historical average number of trees trimmed or removed. The result is that I have made an adjustment to tree trimming expense of $941,000 (See Schedule 14).

D. Operation and Maintenance Expense for the Holtwood Generating Stations

Q. HAVE YOU REVIEWED THE FUTURE TEST YEAR OPERATIONS AND MAINTENANCE EXPENSES FOR THE HOLTWOOD STEAM AND HYDRO GENERATION STATIONS?

A. Yes. The information provided by the Company is as follows:

Holtwood Steam:	Amount ($)	(% Increase)
Year Ended 7/31/81 (Actual)	$5,889,593	
Year Ended 7/31/82 (Actual)	6,202,948	5.3%
Year Ended 7/31/83 (Est.)	7,148,735	15.2%

Holtwood Hydro:		
Year Ended 7/31/81 (Actual)	$2,765,217	
Year Ended 7/31/82 (Actual)	3,065,099	10.8%
Year Ended 7/31/83 (Est.)	3,729,426	21.7%

In both the cases of the Steam and Hydro units, the future test year estimated increases in operation and maintenance expense substantially exceed the prior year actual increases.

Q. HAS THE COMPANY EXPLAINED WHY THE FUTURE TEST YEAR ESTIMATED INCREASES SO GREATLY EXCEED THE PRIOR YEAR ACTUAL INCREASES?

A. Yes, in discussions with the Company, they were able to highlight several of the differences. These differences ranged from rebuilding the furnace sidewalls to buying a spare

parts inventory. Generally speaking, the Company indicated that much of the future test year work at these stations was work that had been pushed off in prior years and was overdue. The test year O&M for these two generators has not been pro formed at a normal level as it should be but is higher than normal because of make-up work not done in prior years due to budget constraints.

Q. WHAT DO YOU RECOMMEND?

A. In light of the above, I recommend that the future test year amounts be normalized. Rates should be set on normal conditions not abnormal conditions such as making up for overdue maintenance. In my opinion, given the data available, the best calculation of a normal future test year expense is to take the average of the two years of historical data and one year of future test year data. To this average, which in time would be July 31, 1982, I have added 7.5% for inflation and wage increases. This results in normalized amounts of $6,895,000 vs. $7,140,735 proposed by the Company for Steam and $3,426,000 vs. $3,729,426 proposed by the Company for Hydro (See Schedule 15). Therefore, my total adjustment amounts to $535,000 (Pa. Jurisdictional).

E. Amortization of Stony Creek Property Loss

Q. PLEASE GIVE US SOME HISTORY ON THE STONY CREEK PROJECT?

A. The Stony Creek project was scheduled to be a pumped storage generating station. PP&L was a fifty percent partner with General Public Utilities. Due to environmental difficulties, it was decided to abandon the project. The PP&L investment loss in the project which included land as well as some engineering charges amounts to approximately $1.2 million. The Company for ratemaking purposes plans to write the loss off over five years at the rate of $234,880 per year.

Q. DO YOU AGREE WITH THE COMPANY'S AMORTIZATION CLAIM FOR RATEMAKING?

A. No. I have been advised by counsel that it is the position of the OCA that Section 1315, "Limitation on Consideration of Certain Costs for Electric Utilities" which I have previously quoted at length in my section on "Electric Plant Held for Future Use" precludes the Commission from accepting the Company's amortization proposal on the grounds that said property is not used and useful in providing actual utility service. This project never has actually provided utility service.

Q. WHAT ADJUSTMENT HAVE YOU MADE?

A. I have added the amount of amortization back to pro forma income of $386,000 (See Schedule 16).

F. Decommissioning Expense

Q. DO YOU AGREE WITH THE COMPANY'S CLAIM FOR DECOMMISSIONING EXPENSE?

A. No, I do not. In my opinion, decommissioning expense should be based upon the best possible estimate of future costs. The Company's claim is based upon a "conservative" (most costly) estimate of the cost of decommissioning plus an additional claim for a 25% contingency above and beyond the estimate.

Q. WHAT ARE THE ALTERNATIVE METHODS?

A. The Company has based its cost estimate on dismantling. At the present time, the two alternative methods are entombment and mothballing, both much less expensive than total dismantlement.

Q. WHICH IS MORE LIKELY OF THE THREE METHODS?

A. There is no generally accepted consensus. However, I believe that the ultimate method chosen will be based on safety and economic considerations. Among the alternative methods available today, immediate dismantlement is by far the most expensive. It should be noted that there is a 39 year accrual period before these decommissioning costs will actually be realized. It is also important to realize that during the 39 year accrual period, the amount charged ratepayers can be

adjusted. The Commission should not feel locked into a decision now as to how much decommissioning is going to cost vs. many years from now.

Q. DO YOU HAVE ANY OTHER COMMENTS REGARDING COMPLETE DISMANTLEMENT?

A. Yes. In his testimony, the Company witness shows that to date there have been eleven decommissionings of units rated greater than 10 Mws. Of the eleven, only one was by complete dismantlement and most of the others were by some form of mothballing. Therefore, there is certainly no history of complete dismantlement as the commonly used method. In fact, mothballing would appear to be the most commonly used.

Also, the Company's claim is based on a quoted price for the transportation of radioactive items to a far Western disposal site. As time goes on and more units are decommissioned, it is possible that closer burial sites may become available.

Q. HAVE YOU MADE AN ADJUSTMENT?

A. Yes. My recommendation is to adjust the Company's decommissioning costs claim downward by the 25% contingency. I believe this is a conservative adjustment to the Company's proposal for all the reasons mentioned above. This would

reduce the test year net cost of decommissioning by $218,000 (See Schedule 17).

G. Spent Nuclear Fuel Disposal Costs

Q. DO YOU AGREE WITH THE COMPANY'S CLAIM FOR SPENT FUEL DISPOSAL COSTS?

A. No. This is because the traditional methodology used by the Company to compute spent fuel disposal costs has been mooted by the recent congressional enactment of the Nuclear Waste Policy Act of 1982. Section 302 of the Act requires the Department of Energy to assess uitilities at the rate of 1 mill per Kwh for each Kwh generated in a nuclear power generator. These charges will be made to pay for the shipment and ultimate permanent disposal of spent fuel discharged on or after April 7, 1983.

Q. WHAT DOES THE 1 MILL/KWH EQUATE TO IN TERMS OF TEST YEAR EXPENSE?

A. The Company has assumed for the test year Susquehanna Unit No. 1 will generate 5,400,000Mwhs. Therefore, at a rate of 1 mill/Kwh, the test year expense for spent fuel disposal costs should be $5,400,000. This is in contrast to the $8,153,000 claimed by the Company. Therefore, I have made a downward adjustment to the Company's position of $1,197,000 (See Schedule 18).

H. Rate Case Expenses

Q. HOW DOES THE COMPANY PROPOSE TO TREAT RATE CASE EXPENSES?

A. The Company wishes to recover its total rate case expense claim of $232,000 in the first year of new rates. The result of this method would be that if new base rates remained in effect for longer than one year, the Company would overcollect its allowable rate case expenses. For example, if the Company's rate case expense claim was granted and new rates lasted for two years, the Company would have collected 2 x $232,000 or $464,000 during the rating period.

Q. DO YOU BELIEVE THAT NEW RATES WILL BE IN EFFECT FOR MORE THAN ONE YEAR?

A. Yes, for several reasons. First, the Company has responded that it does not not know how long new rates as a result of this proceeding will be in effect:

> Q. Then do you have an opinion as to how long the rates in this case are likely to be in effect?
> A. I do not. That would depend on many factors which I really don't have a feel for at this time.
> TR. 329

Second, while the Company has been very active in filing for new base rates in the last several years, the filings have averaged approximately 15 months; not 12 months between

filings. Third, it seems reasonable that the next base rate case would be filed in anticipation of the commercial operation of Susquehanna Unit No. 2 which I understand is approximately 18 months behind Susquehanna Unit No. 1. This last factor is probably the most significant. Therefore, it is reasonable that the Company's normalization period for rate case expenses should be 18 months not the 12 months as the Company has claimed.

Q. WHAT IS YOUR ADJUSTMENT?

A. I have adjusted rate case expenses to reflect a one and a half year normalization period. This results in an adjustment to rate case expense of $(78,000) (See Schedule 19).

I. EPRI Expenses

Q. WHAT IS EPRI?

A. EPRI stands for the Electric Power Research Institute and it is described as a non-profit organization established to perform research projects and to transfer information and technology. As a utility which participates in EPRI, PP&L gets the benefit of the research that EPRI does. For these research and development services, PP&L estimates it will incur an expense of $4,072,000 in the future test year.

Q. WHAT IS THE ISSUE WITH REGARD TO THE EPRI EXPENSE?

A. Approximately 24% of the EPRI budget is specifically for nuclear research activities. Therefore, the Company test year EPRI claim would include $977,000 for nuclear research activities. To date, the applicability of the nuclear research must be for Susquehanna 1 and for Susquehanna 2. These are the only units PP&L has or has ever had that nuclear research activities could possibly benefit. While Susquehanna 1 is going into service in the future test year, Susquehanna 2 is not. Susquehanna 2 is in CWIP and accruing AFUDC. Because the type of work EPRI does is rather basic fundamental research of a highly technical nature, specific amounts paid EPRI for nuclear research activities cannot be specifically assigned to one of the two units. The $977,000, therefore,

should be viewed as a common nuclear expense. Since Susquehanna 2 has been excluded from consideration in this case, I recommend that one-half of the common nuclear expense of $977,000 or $468,000 (Pa.) be excluded from pro forma test year expense (See Schedule 20).

Q. HOW WOULD YOU RECOMMEND THE $488,000 FOR NUCLEAR RESEARCH FOR SUSQUEHANNA 2 BE TREATED?

A. There are several ways it could be treated, but I would recommend that it be capitalized as CWIP and treated as a cost of Susquehanna 2. The Company should then accrue AFUDC on it.

J. Edison Electric Institute Expense

Q. WHAT IS THE ISSUE REGARDING EEI EXPENSE?

A. The Company has made a test year claim of $474,000 for its test year Edison Electric Institute expense. Of the $474,000 claim, $300,000 is for annual dues and $174,000 is for advertising or communication.

In a very recent decision in the Duquesne Light Company case R-822173, the Commission was not satisfied that the advertising portion of the EEI expense benefited Duquesne Light ratepayers and disallowed that portion of EEI expenses for advertising.

Q. WHAT DO YOU RECOMMEND?

A. Based on the Commission's recent decision, I recommend disallowance of the amount of $174,000 claimed by the Company in the future test year (See Schedule 21).

K. Amortization of Surplus Deferred Income Taxes

Q. WHAT IS THE ISSUE WITH REGARD TO AMORTIZATION OF THE SURPLUS IN THE COMPANY'S DEFERRED INCOME TAX BALANCE?

A. Because of the change in the statutory federal income tax rate from 48% to 46% effective January 1, 1979, the Company's current accumulated deferred income tax balance contains excess tax reserves, i.e., deferred taxes which were computed at the old 48% corporate tax rate instead of the current 46% rate. At my request, the Company determined that if the entire deferred income tax balance had been computed at the current tax rate of 46%, this balance would be $989,000 lower (on a Pennsylvania Jurisdictional basis) at future test year end. This $989,000 which is now included as an excess tax reserve in the Company's accumulated deferred tax balance, has been financed by ratepayers on the premise that the Company would in the future be paying taxes at a rate of 48%. The Company is flowing this excess back to the ratepayers over the life of the associated assets which could be as high as 33 years.

Q. WHAT IS YOUR RECOMMENDATION?

A. I recommend that the surplus in the deferred income tax reserve, created by the reduction in the corporate income tax rate from 48% to 46% be returned to ratepayers over a period

of two years. This results in an increase to test year operating income of $476,000. I have also adjusted deferred income taxes by the same amount (See Schedule 22).

Q. WHY DID YOU CHOOSE TWO YEARS FOR THE AMORTIZATION PERIOD?

A. Ideally, this surplus tax deferral should be returned to the same ratepayers who paid for these deferrals. The more rapid the return, the greater is the likelihood that those ratepayers who funded this surplus reserve will be the recipients of these benefits.

L. Amortization of Investment Tax Credit

Q. WOULD YOU EXPLAIN THE INVESTMENT TAX CREDIT?

A. The investment tax credit is a federal tax reduction that becomes available to the Company as a result of having made certain capital investments. In essence, it is both a source of income and of cash to the Company through income tax savings. Both the source of income aspect as well as the cash benefits are only minimally shared by the Company with ratepayers.

At the time the investment tax credit was enacted in the early 1970's, utility companies were given three options. The first option was that the unamortized balance of the investment tax credit should be applied as a rate base deduction and that the annual amortization of this ITC be kept by investors. The second option was that the amortization of the credit which related to the useful life of the asset, should be flowed through to income over the life of the asset with no rate base deduction. The third option which was only present for certain companies, allowed the credit to flow through to income or to be treated in any way deemed appropriate.

The option which was selected by PP&L was option 2, the amortization over the useful life of asset with no rate base deduction. This option was most advantageous to the Company

and least advantageous to the ratepayers. The ratepayers appear forced to bear this inequity due to the federal government's mandate.

Q. WHAT IS THE ISSUE HERE?

A. The Company is asking ratepayers to bear a further inequity. Although PP&L is an Option 2 Company and claimed a pro forma expense of over $113 million dollars in ITC in the future test year, it is flowing none of this amount to ratepayers either as a rate base deduction or as an amortization over the useful life of the plant. As an Option 2 Company, the Company should be flowing $1,844,000 of this provision to Pennsylvania ratepayers.

Q. WHAT IS YOUR ADJUSTMENT?

A. I have made a pro forma adjustment to the future test year to flow $848,000 in ITC amortization to ratepayers in the future test year (See Schedule 23). This amount is considerably lower than the amount that would be computed under the Company's claimed revenue requirement, but is consistent with my recommended revenue requirement (See Schedule 23).

M. Consolidated Income Tax Adjustment

Q. PLEASE EXPLAIN THE CONSOLIDATED INCOME TAX ADJUSTMENT?

A. In the last PP&L case at R-80031114, the Commission made a downward adjustment of $2,624,357 to be amortized over a five year period, or $525,000 per year, in recognition of PP&L's prior consolidated tax losses. The Commission said:

> The fact that Respondent makes payments to Oneida equal to the tax savings derived from Oneida's losses does not alter our reasoning, but rather reinforces it. This payment does not alter the amount of taxable income reported on the consolidated return. Further, although not addressed, it is possible that the funds utilized to pay Oneida were ratepayer supplied through payments made in prior years for a level of income taxes offset by the Oneida loss. Accordingly, we shall grant Staff's exception and reduce Respondent's claim for income taxes by $525,000.

Despite the Commission's order, PP&L did not make the $525,000 adjustment in the future test year in the present case.

Q. WHAT IS YOUR ADJUSTMENT?

A. In light of the Commission's previous order, I have made an adjustment of $525,000 to PP&L's pro forma income tax expense (See Schedule 24).

N. Tax Credit for Increasing Research Activities

Q. WHAT IS THE "TAX CREDIT FOR INCREASING RESEARCH ACTIVITIES?"

A. This tax credit was explained by the Company's witness as follows:

> A. It's a tax credit which is equivalent to a certain percent of the amount of research and development over that assigned in the base year. I think the base year is June of '81. To any extent the R&D expenditures are greater in that base year, a certain percent can be used as a tax credit. There are no regulations, that I know of, issued as yet and consequently it is difficult to determine exactly what the IRS would conclude should be used as R&D for purposes of determining this tax credit.
>
> TR. 361

Q. HAS THE COMPANY MADE ANY ADJUSTMENT FOR RATEMAKING PURPOSES TO REFLECT THIS CREDIT?

A. No, the Company has not adjusted its pro forma income taxes to reflect the flow to ratepayers of this tax savings. The only reason given is that there are currently no regulations as to the handling of this adjustment for ratemaking purposes.

Q. HAS THE COMPANY MADE AN ESTIMATE OF THE CREDIT?

A. Yes, the Company has estimated the amount of the credit but at the time of the writing of this testimony had not responded as to the actual amount.

Q. WHAT DO YOU RECOMMEND BE DONE WITH THIS CREDIT FOR RATEMAKING PURPOSES?

A. The Company should be required to make its best estimate of the credit and include its effects in the final pro forma income tax calculations in this case.

O. Interest Deduction for Income Tax Purposes

Q. HAVE YOU ADJUSTED THE INTEREST DEDUCTION FOR INCOME TAX PURPOSES CONSISTENT WITH YOUR RECOMMENDED MEASURES OF VALUE?

A. Yes. I have made this calculation on Schedule 27 of my testimony. It is consistent with my recommendation of pro forma measures of value.

P. Adjustment to Revenue/Income Factor

Q. HAVE YOU MADE AN ADJUSTMENT TO THE REVENUE/INCOME FACTOR?

A. Yes. If the Commission accepts my recommendation concerning the amortization of the provision for investment tax credits, it will be necessary to adjust the Company's revenue/income factor. I have made this computation on Schedule 28. It reduces the revenue/income factor from 2.0375 to 2.0138.

PENNSYLVANIA POWER & LIGHT COMPANY

REVENUE REQUIREMENT AT ORIGINAL COST MEASURE OF VALUE

FUTURE TEST YEAR ENDED JULY 31, 1983

($000)

		Company Position	Adjustment	Recommended Position
1.	July 31, 1983 - Original Cost Measure of Value	$3,588,858 (A)	$ (420,932)	$3,167,926 (I
2.	Rate of Return	12.71% (A)	(0.68%)	12.03% (I
3.	Required Operating Income (Line 1 x Line 2)	456,270 (B)	(75,169)	381,101
4.	Test Year Operating Income	310,960 (B)	1,600	312,560 (I
5.	Operating Income Deficiency (Line 3 - Line 4)	$ 145,310 (B)	$ (76,769)	$ 68,541
6.	Revenue/Income Ratio	2.0375 (C)	(.0237)	2.0138 (C
7.	Revenue Requirement Increase (Line 5 x Line 6)	$ 296,068 (B)	$(158,040)	$ 138,028

SOURCES: (A) Company Exhibit Future 1, C-1, page 2.
(B) Company Exhibit Future 1, D-1, page 1.
(C) Company Exhibit Future 1, D-1, page 2.

$$\frac{\$101,129 + \$194,939}{\$\ 49,634 + \$\ 95,676} = 2.0375$$

(D) Schedule 2.
(E) Testimony of James A. Rothschild.
(F) Schedule 3.
(G) Schedule 28, page 1 of 2.

PENNSYLVANIA POWER & LIGHT COMPANY

MEASURES OF VALUE

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	Company Position	Adjustments		Recommended Position
Electric Plant				
Electric Plant in Service	$4,338,888	$(471,630)	(B)	$3,867,258
Reserve for Depreciation	852,081	(53,649)	(D)	798,432
Net electric plant in service	3,486,807	(417,981)		$3,068,826
Additions and Deductions				
Electric plant Held for Future Use	11,819	(11,819)	(D)	-
Pollution Control Projects	2,572	-		2,572
Net Additions and Deductions	14,391	(11,819)		2,572
Total Electric Plant (net)	3,501,198	(429,800)		3,071,398
Working Capital				
Cash Working Capital	26,039	3,656	(E)	29,695
Fuel Stock and Materials and Operating Supplies	193,598	(4,798)	(F)	188,800
Total Working Capital	219,637	(1,142)		218,495
Deductions				
Accumulated Deferred Taxes on Income	129,973	(10,010)	(G)	119,963
Customer Advances for Construction	163	-		163
Customer Deposits	1,841	-		1,841
Total Deductions	131,977	(10,010)		121,967
Measure of Value (Net)	$3,588,858	$(420,932)		$3,167,926

SOURCES:
(A) Company Exhibit Future 1, C-1, page 2.
(B) Schedule 4
(C) Schedule 5
(D) Schedule 8
(E) Schedule 9
(F) Schedule 10
(G) Schedule 11

PENNSYLVANIA POWER & LIGHT COMPANY
RECOMMENDED PRO FORMA TEST YEAR OPERATING INCOME
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

Company Position - Pro Forma Future Test Year Operating Income	$310,960	(A)
Recommended Adjustments:		
1. Revenues from New Applications	432	(B)
2. Pension Expense	1,042	(C)
3. Tree Trimming Expense	941	(D)
4. Normalized O&M Expense for Holtwood Stations	535	(E)
5. Stony Creek Write-Off	386	(F)
6. Decommissioning Costs	218	(G)
7. Spent Nuclear Fuel Disposal Cost	1,197	(H)
8. Rate Case Expenses	78	(I)
9. EPRI Expense	468	(J)
10. EEI Expense	169	(K)
11. Amortization of Surplus Deferred Income Taxes	476	(L)
12. Amortization of Investment Tax Credit	848	(M)
13. Consolidated Income Tax Amortization	506	(N)
14. SSES Unit 1 Audit Adjustments	7,727	(O)
15. Tax Effects of Adjustments	(13,423)	(P)
16. Pro Forma Test Year Operating Income	$312,560	

SOURCES:
(A) Exhibit Future 1, D-1, page 1.
(B) Schedule 12.
(C) Schedule 13.
(D) Schedule 14.
(E) Schedule 15.
(F) Schedule 16.
(G) Schedule 17.
(H) Schedule 18.
(I) Schedule 19.
(J) Schedule 20.
(K) Schedule 21.
(L) Schedule 22.
(M) Schedule 23.
(N) Schedule 24.
(O) Schedule 25.
(P) Schedule 26.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENTS TO ELECTRIC PLANT IN SERVICE
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

	(1) Company Position (A)	(2) Adjustment for Over-capacity (B)	(3) SSES Unit #1 Audit Adjustment (C)	(4) Total Adjustment (D)	(5) Recommended Position (E)
1. Plant in Service - PA	$4,338,888	$(321,666)	$(149,964)	$(471,630)	$3,867,258

SOURCES:
(A) Company Exhibit Future 1, C-1, page 2
(B) Schedule 6
(C) Schedule 7
(D) Column 2 + Column 3
(E) Column 1 - Column 4

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENTS TO RESERVE FOR DEPRECIATION

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	(1) Company Position (A)	(2) Adjustment for Over-capacity (B)	(3) SSES Unit #1 Audit Adjustment (C)	(4) Total Adjustment (D)	(5) Recommende Positio (E)
1. Reserve for Depreciation-PA	$852,081	$(53,423)	$ (226)	$(53,649)	$798,432

SOURCES:
(A) Company Exhibit Future 1, C-1, page 2
(B) Schedule 6
(C) Schedule 7
(D) Column 2 + Column 3
(E) Column 1 - Column 4

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT FOR EXCESS CAPACITY

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	Total Production Plant-Co. (A)	Less: SSES I Audit Adjustments (B)	Total Production Plant After Audit Adjustment (C)	Adjustment for Overcapacit (D)
1. Production Plant - PA:				
2. Plant in Service	$2,699,803	$(149,964)	$2,549,839	$(321,666)
3. Depreciation Reserve	(423,261)	226	(423,487)	53,423
4. Net Production Plant	$2,276,542	$(149,738)	$2,126,352	$(268,243)

5. $\frac{945 \text{ MWS (E)}}{7,491 \text{ MWS (E)}} \times \$2,549,839 = \$321,666$

$\frac{945 \text{ MWS (E)}}{7,491 \text{ MWS (D)}} \times \$(423,487) = \$53,423$

$\frac{945 \text{ MWS (E)}}{7,491 \text{ MWS (E)}} \times \$2,126,352 = \$268,243$

Note: The net plant value per MW of Susquehanna Unit 1 (after Audit Adjustment) is $1,426,000 (PA), and for Martin's Creek 3 and 4 is $170,000 (PA). If all 945 MWS of SSES Unit 1 were excluded from net plant, the reduction to net plant in service would be $1,347,763,000. If equal portions of SSES No. 1 and Martin's Creek 3 and 4 were excluded from net plant, the reduction to net plant in service would be $556,278,000.

SOURCES:
(A) From Page 2.
(B) Schedule 7
(C) Column 1 - Column 2
(D) Line 5
(E) Per testimony of Richard Rosen.

PENNSYLVANIA POWER & LIGHT COMPANY

TOTAL PRODUCTION PLANT - PENNSYLVANIA JURISDICTION

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

		Plant in Service	Depreciation Reserve	Net Plant in Service
1.	Total Production Plant (A)	$2,927,897	$(441,981) (E)	
2.	Less: Susquehanna (A)	1,666,509	(2,470)	
3.	Total Production Plant less Susquehanna	$1,261,388	$(439,511)	
4.	PA Jurisdictional Factor (B)	.958	.958	
5.	Total Production Plant less Susquehanna - PA	$1,208,410	$(421,052)	
6.	Susquehanna - PA (C)	1,491,393	(2,209)	
7.	Total Production Plant-PA (D)	$2,699,803	$(423,261)	$2,276,542

SOURCES:
(A) From Company Exhibit Future 1, C-2, page 1.
(B) From Company Exhibit AJB-3
(C) From Company Exhibit Future 1, C-1, page 1, 2 x Line 2.
(D) Line 5 + Line 6
(E) From Company Exhibit DSH-3.

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO MEASURES OF VALUE FOR SSES UNIT 1 AUDIT ADJUSTMENT

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	Company Position	Adjustment	Recommende Position
SSES Unit 1 Measure of Value (PA)			
Electric Plant in Service	$1,499,760	$(149,964) (B)	$1,349,7
Reserve for Depreciation	2,259	(226) (C)	2,0
Total Electric Plant (net)	$1,497,501	$(149,738)	$1,347,7
Working Capital			
Cash Working Capital	(7,496)	1,116 (D)	(6,3
Fuel Stock, Materials and Operating Supplies	157	-	1
	(7,339)	1,116	(6,2
Accumulated Deferred Taxes on Income	(52,538)	9,534 (E)	(43,0
Adjustment to Measures of Value for SSES Unit 1 Audit Adj.	$1,437,624	$(139,088)	$1,298,5

SOURCES:
(A) Company Exhibit Future 1, C-1, page 2.
(B) Page 2.
(C) Adjustment by 9.999%, page 3.
(D) Note: Adjustments to the Working Capital for the lag in interest and preferred stock dividends are made in aggregate at Schedule 9.
(E) Reflects 9.999% of Deferred Taxes for ACRS only:

$$\frac{\$52,538}{\$59,016} \times 9.999\% \times \$107,110 \text{ (Future 1-C-7).}$$

PENNYSLVANIA POWER & LIGHT COMPANY

ADJUSTMENT FACTOR FOR SSES UNIT 1 MEASURES OF VALUE - PA

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

Adjustment Factor for SSES Unit 1
Measures of Value

1.	Total Adjustments for SSES Unit 1 Audit Adjustment for Plant - PA	$ 149,964	(A)
2.	Electric Plant in Service - PA	1,499,760	(B)
3.	% of Adjustment to Total (Line 1 ÷ Line 2)	.09999	

SOURCES: (A) Page 3.
(B) Company Exhibit Future 1, C-1, page 2.

PENNSYLVANIA POWER & LIGHT COMPANY

PLANT IN SERVICE ADJUSTMENT FOR SSES UNIT 1 AUDIT ADJUSTMENT

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

Adjustments for Susquehanna Unit 1
Audit Adjustments (A):

	Amount	Date Expended
Containment		
(1) Wetwell modifications	$ 2,720	10/79
(2) System & component rework, 1980 on	32,020	12/81
(3) Material adjustments (excess hangers on Unit 1)	6,060	3/82
IGSCC		
(1) Outstanding PP&L claim on GE for pipe and safe and rework	1,200	10/80
Electrical Problems		
(1) Voltage Drop in AC & DC circuits	2,100	1/82
(2) Replace failed cables	1,800	1/82
Anchor Bolts		
(1) Test, Repair or Replace improperly installed anchor bolts	2,700	9/81
Advanced Control Room (ACR)		
(1) Unrecovered backcharge claim on GE for ACR revisions and corrections	520	1/81
Subtotal of Adjustments	49,120	
AFUDC on the Above Projects	7,354 (B)	
	56,474	
Reallocation of Special Engineering Studies	4,722	
Project Delay		
(1) Six months delay of Unit 1 & Common	125,000	
Total Adjustments for SSES	$186,196	
Less 10% for AEC	(18,620)	
	$167,576	
PA Jurisdictional Factor	.8949 (C)	
Plant in Service Adj. for SSES Unit 1	$149,964	

SOURCES: (A) From OCA Exhibit. (B) Page 4.
(C) $\frac{\$1,499,760}{\$1,675,858} = \frac{\text{PA SSES Plant}}{\text{Total Company}} = .89492$

PENNSYLVANIA POWER AND LIGHT

AFUDC ASSOCIATED WITH
RECOMMENDED PLANT DISALLOWANCE

($000'S)

YEAR	MONTH	% AFUDC RATE	$ CONST. DISALL.	BAL. FOR AFUDC	AFUDC
1979	11	.684	2720	2720.00	18.6048
	12	.684		2738.605	18.73206
1980	1	.697		2757.337	19.21864
	2	.697		2776.555	19.35259
	3	.697		2795.908	19.48748
	4	.697		2815.396	19.62331
	5	.703		2835.019	19.93018
	6	.703		2854.949	20.07029
	7	.703		2875.019	20.21139
	8	.703		2895.231	20.35347
	9	.703		2915.584	20.49656
	10	.703		2936.081	20.64065
	11	.703	1200	4156.721	29.22175
	12	.703		4185.943	29.42718
1981	1	.77		4215.370	32.45835
	2	.77	520	4767.829	36.71228
	3	.77		4804.541	36.99496
	4	.77		4841.536	37.27983
	5	.77		4878.816	37.56688
	6	.77		4916.382	37.85614
	7	.77		4954.238	38.14764
	8	.77		4992.386	38.44137
	9	.77		5030.827	38.73737
	10	.77	2700	7769.564	59.82564
	11	.77		7829.389	60.28630
1982	12	.77		7889.675	60.75050
	1	.764	32020	39970.43	305.3740
	2	.764	3900	44175.80	337.5031
	3	.764		44513.30	340.0816
	4	.764	6060	50913.38	388.9782
	5	.764		51302.36	391.9500
	6	.764		51694.31	394.9445
	7	.773		52089.25	402.6499
	8	.773		52491.90	405.7624
	9	.773		52897.66	408.8989
	10	.773		53306.55	412.0597
	11	.773		53718.61	415.2449
	12	.773		54133.85	418.4547
1983	1	.773		54552.30	421.6893
	2	.773		54973.99	424.9489
	3	.773		55398.93	428.2337
	4	.773		55627.16	431.5439
	5	.3865		56258.69	217.4398
	TOTAL		49120		7356.185

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO ELECTRIC PLANT HELD FOR FUTURE USE

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	Company Position	Adjustment	Recommended Position
1. Electric Plant Held for Future Use - PA (A)	$11,819	$(11,819)	-

SOURCE: (A) Exhibit Future 1, C-1, page 2.

PENNSYLVANIA POWER & LIGHT COMPANY

CASH WORKING CAPITAL

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

		Company Position	Adjustment	Recommended Position	
1.	Cash Working Capital:	(A)			
2.	Interest Lag	$28,022	$(3,489)	$24,533	(1
3.	Preferred & Preference Stock Lag	1,683	(167)	1,516	(C
4.	Adjustment to Cash Working Capital	$29,705	$(3,656)	$26,049	

SOURCES: (A) Company Future 1, C-5, pages 5 and 6 x PA Juris. .9617.
(B) Page 2
(C) Page 3

PENNSYLVANIA POWER & LIGHT COMPANY

PRO FORMA INTEREST PAYMENT

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

(A):	Description	Total	Semi-Annual	Quarterly
1.	Measures of Value (B)	$3,167,926	$3,167,926	$3,167,926
2.	Capitalization rates: LT debt	48.4%	48.4%	48.4%
3.	Embedded debt cost	11.25%	10.01%	1.24%
4.	Pro forma interest (Line 1 x 2 x 3)	$ 172,493	$ 153,481	$ 19,012
5.	Daily amount (Line 4 ÷ 365)		$ 420	$ 52
6.	Days to mid-point of interest payment		91.2	45.6
7.	Less: Revenue lag days		34.2	34.2
8.	Interest lag days		57.0	11.4
9.	Interest offset to measures of value (Line 5 x L8)	$ 24,533	$ 23,940	$ 593

SOURCES: (A) Company Exhibit Future 1, C-5, page 5.
(B) Schedule 2.

PENNSYLVANIA POWER & LIGHT COMPANY
PRO FORMA PREFERRED DIVIDEND PAYMENTS
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

(A)	Description		Amount
1.	Measures of Value at July 31, 1983 (B)		$3,167,926
2.	Capitalization ratio: Preferred and Preference stock		16.3%
3.	Embedded preferred cost		9.43%
4.	Pro forma dividends (Line 1 x 2 x 3)		$ 48,694
5.	Daily amount (Line 4 ÷ 365)		$ 133
6.	Days to midpoint of preferred dividend payments	45.6	
7.	Less: Revenue Lag Days	34.2	
8.	Preferred and Preference lag days		11.4
9.	Preferred and preference stock dividend offset to measures of value (Line 5 x Line 8)		$ 1,516

SOURCES: (A) Company Exhibit Future 1, C-5, page 6.
(B) Schedule 2.

PENNSYLVANIA POWER & LIGHT COMPANY
COAL STOCK INVENTORY ADJUSTMENT
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

	Company Position (A)	Adjustment	Recommended Position (B)
1. Coal Stock	$77,426	$(4,975)	$72,451
2. PA Jurisdictional Factor (C)	.9644	.9644	.9644
3. Coal Stock	$74,670	$(4,798)	$69,872

SOURCES: (A) Exhibit Future 1, C-6, page 2.
(B) Page 2.
(C) Exhibit Future 1, C-1, pages 1 and 2.

PENNSYLVANIA POWER & LIGHT COMPANY

COAL STOCK INVENTORY ADJUSTMENT

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

Description	Coal Stock in Tons	Revised Price Per Ton at 7/31/83 (B)	Total Inventory Value
(A): Bituminous			
Brenner Island	600,000	44.04	$26,424
Sunbury	120,000	40.57	4,868
Martins Creek	140,000	43.90	6,146
Montour	625,000	44.71	27,944
Keystone	89,800	30.55	2,743
Covemaugh	105,800	40.89	4,326
			$72,451

SOURCES: (A) Exhibit Future 1, C-6, page 2.
(B) Price per tax adjusted downward by $2.96/ton.

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO ACCUMULATED DEFERRED TAXES ON INCOME

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

Accumulated Deferred Taxes on Income:

1.	Company Position Accumulated Taxes on Income		$129,973 (A)
2.	SSES Audit Adjustment	$ (9,534) (B)	
3.	48% to 46% Deferred Tax Adjustment	(476) (C)	
4.	Total Adjustments		(10,010)
5.	Recommended Accumulated Taxes on Income		$119,963

SOURCES: (A) Exhibit Future 1, C-1, page 2.
(B) Schedule 7, page 1.
(C) Schedule 22.

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT FOR REVENUE FROM NEW APPLICATIONS

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	Company Position	Adjustment	Recommended Position
1. Revenues from New Applications (A)	$ -	$432	$432

SOURCES: (A) Company Interrogatory Response 200.282020.

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO PENSION EXPENSE

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	Company Position	Adjustment	Recommende Position
1. Adjustment to Pension Expense (A)	$28,704	($1,087)	$27,617
2. PA Jurisdictional Factor (B)	.959	.959	.959
3. Adjustment to Pension Expense	$27,527	($1,042)	$26,485

SOURCES: (A) Company Interrogatory Response 200.282188.
(B) From Company Exhibit AJB 3, pages 9 and 46.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO TREE TRIMMING EXPENSE
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

	Company Position	Adjustment	Recommended Position
1. Total Tree Trimming Expense	$9,252 (A)	$(959)	$8,293 (B)
2. PA Jurisdictional Factor (C)	.982	.982	.982
3. Adjustment to Tree Trimming Expense - PA	$9,085	$(941)	$8,144

SOURCES: (A) Company interrogatory Response 200.182034.
(B) Page 2
(C) Company Exhibit AJB, pages 9 and 46.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO TREE TRIMMING EXPENSE
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

	4 Year Average Number (A)	Future Test Year Cost/Unit (B)	Normalized Tree Trimmin Expense
1. Average Number of Trees Trimmed	626,636	$ 7.30	$4,574,443
2. Average Number of Trees Removed	161,599	$23.01	3,718,393
3. Total Trees Trimmed or Removed	788,235		$8,292,836

SOURCES: (A) Page 3.
(B) Obtained informally from Company.
(C) Column 1 x Column 2.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO TREE TRIMMING EXPENSE
FUTURE TEST YEAR ENDING JULY 31, 1983

(A):	1979	1980	1981	1982	4 Year Average Number
1. Average Number of Trees Trimmed	646,604	549,520	618,321	692,097	626,636
2. Average Number of Trees Removed	159,788	144,708	162,640	179,258	161,599
3. Total Trees Trimmed or Removed (L1 + L2)	806,392	694,228	780,961	871,355	788,235
4. Average Percentage of Trees Removed (Line 2 ÷ Line 3)					20.5%

SOURCES: (A) Information obtained informally from Company.

PENNSYLVANIA POWER & LIGHT COMPANY
NORMALIZED OPERATION AND MAINTENANCE EXPENSE FOR THE HOLTWOOD STATIONS
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

		Company Position (A)	Adjustments	Recommended Position (C)
1.	Holtwood Steam Station Maintenance	$ 7,149	$(254)	$ 6,895
2.	Holtwood Hydro Station Maintenance	3,729	(303)	3,426
3.	Total	$10,878	$(557)	$10,321
4.	PA Jurisdictional Factor (B)	.96149	.96149	.96149
5.	Normalized Operation and Maintenance Expense for the Holtwood Stations	$10,459	$(535)	$ 9,924

SOURCES: (A) Company Exhibit I, I-B-2, and information received informally.
(B) Jurisdictional Separation .96149 from Exhibit AJB-3.
(C) Page 2.

PENNSYLVANIA POWER & LIGHT COMPANY

NORMALIZED OPERATION AND MAINTENANCE EXPENSE FOR THE HOLTWOOD STATIONS

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

1. Average maintenance expense for the two historical and one estimated period (A):	Holtwood Steam	Holtwood Hydro
Year Ended 7/31/81	$5,889,593	$2,765,217
Year Ended 7/31/82	6,202,948	3,065,099
Year Ended 7/31/83	7,148,735	3,729,426
Average	$6,413,759	$3,186,581
7.5% Factor for Inflation and Salaries and Wages	1.075	1.075
2. Normalized Operation and Maintenace Expenses for the Holtwood Stations	$6,894,791	$3,425,575

SOURCES: (A) Company Exhibit I, I-B-2, page 3, 4, and 5.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO STONY CREEK WRITE-OFF
($000)

1.	Amount in Future Test Year for Stony Creek Write-off	$403	(A)
2.	PA Jurisdictional Factor	.958	(B)
3.	Adjustment to Stony Creek Write-off	$386	

SOURCES: (A) Company Interrogatory Response 200.282049.
(B) From Company Exhibit AJB-2, pages 12 and 52.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO DECOMMISSIONING COSTS
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

	Company Position	Adjustment	Recommended Position
1. Annual Accrual for Decommissioning Costs	$2,644 (A)	$(506)	$2,138 (B)
2. Pa. Jurisdictional Allocation (C)	.8949	.8949	.8949
3. Annual Accrual for Decommissioning Costs Pa. (D)	2,366	(453)	1,913
4. Deferred Income Taxes Related to Decommissioning Costs	(1,366) (E)	262	(1,104) (B)
5. Pa. Jurisdictional Allocation (C)	.8953	.8953	.8953
6. Deferred Income Taxes Related to Decommissioning Cost-Pa.	(1,223)	235	(988)
7. Total Adjustment to Decommissioning Costs (F)	$ 1,143	$(218)	$ 925

SOURCES:
(A) Exhibit Future 1, D-12, page 1
(B) Page 2
(C) Company Exhibit AJB-3
(D) Line 1 x Line 2
(E) Exhibit Future 1, D-17, page 1
(F) Line 3 - Line 6

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO DECOMMISSIONING COSTS
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

1.	Company Estimated Cost of Decommissioning Susquehanna 1 & 2	$229,101 (A)
2.	Less 25% Overall Contingency	(43,849) (A)
3.	Estimated Cost Less Contingencies	$185,252
4.	PP&L Share @ 90% (L3 x .90)	$166,727
5.	Susquehanna Unit No. 1 Cost (50%) (L4 x .50)	83,363
6.	Estimated Life of Unit	39 years
7.	Annual Accrual (L5/39)	$ 2,138
8.	Deferred Income Taxes (.5167 x $2,138)	$ (1,104)

SOURCES: (A) Company Exhibit AAW-1, Table 2, page 6

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO NUCLEAR FUEL DISPOSAL COST

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

	Company Position	Adjustment	Recommended Position
1. Annual Accrual for Nuclear Fuel Disposal Costs	$ 8,153 (A)	$(2,753)	$ 5,400 (B)
2. Pa. Jurisdictional Allocation (C)	.9001	.9001	.9001
3. Annual Accrual for Nuclear Fuel Disposal Costs (D)	7,339	(2,478)	4,861
4. Deferred Income Taxes Related to Nuclear Fuel Disposal Costs	(4,213) (E)	1,423	(2,790) (B)
5. Pa. Jurisdictional Allocation (C)	.9001	.9001	.9001
6. Deferred Income Taxes Related to Spent Nuclear Fuel Disposal-Pa.	(3,792)	1,281	(2,511)
7. Total Adjustment for Spent Nuclear Fuel Disposal Costs-Pa. (F)	$ 3,547	$(1,197)	$ 2,350

SOURCES:
(A) Exhibit Future 1, D-13, page 1
(B) Page 2
(C) Company Exhibit AJB-3, pages 8, 12, 44, 52
(D) Line 1 x Line 2
(E) Exhibit Future 1, D-17, page 1
(F) Line 3 - Line 6

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO NUCLEAR FUEL DISPOSAL COST

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

1.	Mwhs of Generation for Susquehanna 1 for the Future Test Year	5,400,000 Mwhs (A)
2.	DOE Charge per Mwh for Spent Fuel Disposal	$ 1.00 (B)
3.	Estimated Future Test Year	$5,400,000 (C)
4.	Deferred Income Taxes (.5167 x $5,400,000)	$(2,790,180)

SOURCES: (A) Tr
(B) Federal Register/Vol. 48, No. 25/February 4, 1983
(C) Line 1 x Line 2

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO RATE CASE EXPENSES

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

1.	Amount of Future Test Year Rate Case Expense	$ 232 (A)
2.	Annual Expense Assuming Base Rates Will be in Effect 18 Months (L1 x .667)	154
3.	Adjustment to Rate Case Expenses (L1 - L2)	$ 78

SOURCE: (A) Company Exhibit Future 1, D-7

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO ELECTRIC POWER RESEARCH INSTITUTE (EPRI) EXPENSE

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

1.	Future Test Year EPRI Expense	$ 4,072	(A)
2.	% to Nuclear Research	24%	(B)
3.	Portion of Future Test Year EPRI Expense for Nuclear Research (L1 x L2)	$ 977	
4.	Estimated Portion of Nuclear Research for Susquehanna 2	50%	
5.	Adjustment to EPRI Expense (L4 x L5)	$ 488	
6.	Pa. Jurisdictional Allocation Factor	.959	(C)
7.	Adjustment to EPRI Expense - Pa.	$ 468	

SOURCES: (A) Company Exhibit III-A-29, page 8
(B) Tr. 433
(C) Company Exhibit AJB-3, pages 9, 46

PENNSYLVANIA POWER & LIGHT COMPANY

EDISON ELECTRIC INSTITUTE (EEI) EXPENSES

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

		Company Position	Adjustment	Recommended Position
1.	Edison Electric Institute Expense:			
2.	Test Year Dues	$ 300	$ -	$ 300
3.	EEI Advertising & Communication Expenses	174	(174)	-
4.	Subtotal	$ 474	$(174)	$ 300
5.	Pa. Jurisdictional Factor (A)	.959	.959	.959
6.	Edison Electric Institute	$ 456	$(169)	$ 287

SOURCES: (A) From Exhibit AJB-3, pages 9 and 46.

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT FOR DEFERRED FIT FROM 48% TO 46% RATE

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

1.	Adjustment for Deferred FIT from 48% to 46% Rate	$ 1,060	(A)
2.	Amortization Over 2 Years (L1/2)	530	
3.	Pa. Jurisdictional Factor	.899	(B)
4.	Adjustment for Deferred FIT From 48% to 46% Rate - Pa.	$ 476	
5.	Adjustment to Deferral Reduction From Measures of Value	$ (476)	

SOURCES: (A) Company Interrogatory Response 200.182125
(B) Company Exhibit AJB-3, pages 12,52

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT FOR AMORTIZATION OF FUTURE TEST YEAR INVESTMENT TAX CREDIT

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

Adjustment for Amortization of Future Test Year ITC (A):

	Type of Property	Amount (000)	Amortization Period (Yrs.)	Annual Amortization
1. 10% Progress Payments	39 years	$36,800	39	$ 943,590
2. Leased Property	10 years	943	10	94,300
3. 10% Owned Property	33 years	27,090	33	820,909
4.		$64,833		$1,858,799
5. Less: Non-Jurisdictional		(562) (B)	39	(14,410)
6. Adjustment for Amortization of Future Test Year Investment Tax Credit		$64,271		$1,844,389
7. Revenue Requirement Factor				.46 (C)
8. Recommended Adjustment				$ 848,418

SOURCE: (A) From Company Interrogatory 200.182123

(B) $64,833 From Line 4
-64,271 From Page 2.
$ (562)

(C) $\frac{\text{Recommended Revenue Requirement}}{\text{Company's Proposed Increase}} = \frac{\$138,028}{\$296,068} = .466$

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT FOR AMORTIZATION OF TEST YEAR INVESTMENT TAX CREDIT
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

		(A)
1.	Test Year Investment Tax Credit Deferral	$113,759
2.	Less: ITC ESOP Credits	(17,335)
	ITC for SSES Unit 2	(32,153)
3.	Total ITC Deferral to be Amortized for the Future Test Year	$ 64,271

SOURCES: (A) From Company Interrogatory Response 200.182123

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT FOR CONSOLIDATED INCOME TAX AMORTIZATION
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

	Company Position	Adjustment	Recommended Position
1. Adjustment for Consolidated Income Tax Amortization (A)	$ -	$ 525	$ 525
2. Pa. Jurisdictional Factor (B)	.964	.964	.964
3. Adjustment for Consolidated Income Tax Amortization	$ -	$ 506	$ 506

SOURCES: (A) Opinion and Order - R-80031114, p. 32
(B) From Company AJB-3, pages 4, 36

PENNSYLVANIA POWER & LIGHT COMPANY
INCOME ADJUSTMENT FOR SSES UNIT 1 AUDIT ADJUSTMENT
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

1.	Income Adjustments:		
2.	Book Depreciation Expense	$ 1,343	(A)
3.	Federal Income Taxes - Depreciation Provision	7,423	(B)
4.	State Income Taxes - Depreciation	(1,039)	(C)
5.	Total Income Adjustment for SSES Unit 1 Audit Adjustment	$ 7,727	(D)

SOURCES:
(A) Page 2.
(B) Page 3.
(C) Page 4.
(D) ITC amount will be a function of the Revenue Factor.

PENNSYLVANIA POWER & LIGHT COMPANY

ADJUSTMENT TO BOOK DEPRECIATION EXPENSE FOR SSES UNIT 1 AUDIT ADJUSTMENT

FUTURE TEST YEAR ENDING JULY 31, 1983

($000)

1.	Future Test Year Book Depreciation Expense Susquehanna Unit 1	$13,432	(A)
2.	Audit Adjustment Factor	.0999	(B)
3.	Adjustment to Book Depreciation Expense for SSES Unit 1 Audit Adjustment	$ (1,343)	

SOURCES: (A) PA Jurisdictional from Company.
(B) Schedule 7.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO FIT FOR SSES UNIT 1 AUDIT ADJUSTMENT
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

		Pennsylvania Jurisdiction
1.	Test Year Provision for Federal Income Tax Depreciation for SSES Unit 1	$74,233 (A)
2.	Audit Adjustment Factor	.09999
3.	Adjustment to FIT for SSES Unit 1 Audit Adjustment	$ 7,423

SOURCES: (A) From Company - Informal Discovery.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT FOR STATE TAX DEPRECIATION FOR SSES UNIT 1 AUDIT ADJUSTMENT
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

1.	Adjustment for State Tax Depreciation:		
2.	Tax Depreciation	(A)	
3.	Less: ACRS Adjustment - SSES	$(194,057)	
4.	Net Tax Depreciation	13,841	
5.	Modified Sinking Fund - Tax Depreciation	$(180,216)	
6.	Company Position - State Tax Depreciation	13,730	(B)
7.	PA Jurisdictional Factor	(166,486)	
8.	Company Position - State Tax Depreciation - PA	.8950	(C)
9.	Disallowance Factor for Audit Adjustment	$(149,003)	
10.	Reduction in State Tax Depreciation - PA	.09999	
11.	Adjustment for State Tax Depreciation for SSES Unit 1 Audit Adjustment (D)	$ (14,899)	
		$ 1,039	

SOURCES: (A) D-16, page 1 and 2 and Informal Discovery.
(B) From Company - Informal Discovery.
(C) Using FIT Depreciation Factor:

$$\frac{\$173,679}{\$194,057} = .8950$$

(D) Line 10 x .06977 (State Tax Rate)

PENNSYLVANIA POWER & LIGHT COMPANY
INCOME TAX EFFECT OF RECOMMENDED ADJUSTMENTS
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

Items: (1-8) (A)

		Amount
1.	Revenues from New Applications	$ 432
2.	Pension Expense	1,042
3.	Tree Trimming Expense	941
4.	Normalized O&M Expense for the Holtwood Station	535
5.	Rate Case Expenses	78
6.	Stony Creek Write-Off	386
7.	EPRI Expense	468
8.	EEI Expense	169
9.	Interest Deduction Adjustment (B)	22,919
10.	Total	$26,970
11.	Tax Rate	49.77%
12.	Tax Effect of Recommended Adjustments	$13,423

SOURCES: (A) Schedule 3.
(B) Schedule 27

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO INTEREST DEDUCTION FOR INCOME TAX PURPOSES
FUTURE TEST ENDING JULY 31, 1983
($000)

(A):

		Amount	
1.	Recommended Measures of Value	$3,167,926	(B)
2.	Long-term debt ratio	48.4%	
3.	Embedded cost of long-term debt	11.25%	
4.	Annualized interest (Line 1 x 2 x 3)	$ 172,494	
5.	Company Annualized Interest - PA	195,413	(C)
6.	Decrease in interest deduction (L5 - L4)	$ 22,919	

SOURCES: (A) Company Exhibit Future 1, D-16, page 3.
(B) Schedule 2.
(C) Recomputed using Company PA measures of value.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO REVENUE FACTOR
FUTURE TEST YEAR ENDING JULY 31, 1983

	Company Position (A)	Adjustment	Recommended Position (B)
1. Adjustment to Revenue Factor	2.0375	(.0237)	2.0138

SOURCES: (A) Company Exhibit Future 1, D-1, page 1.
(B) Page 2.

PENNSYLVANIA POWER & LIGHT COMPANY
ADJUSTMENT TO REVENUE FACTOR
FUTURE TEST YEAR ENDING JULY 31, 1983
($000)

	Rate Increase	
	(A)	
1. Operating Revenues	$296,068	
Less:		
2. Taxes Other Than Income	6,793	
3. Income Taxes		
Federal	18,567	
State	20,183	
4. ITC		
Deferral	105,215	
Credit	(1,706)	(B)
5. Total Operating Expenses	149,052	
6. Operating Income	$147,016	
7. Revenue Factor (Line 1/Line 6)	2.0138	

SOURCES: (A) Exhibit Future 1, D-1, page 1.
(B) Based on the following:

$$\frac{\$105,215 \text{ (C)}}{\$113,759} \times \$1,844,389 \text{ (D)} = \$1,706$$

(C) Company Exhibit Future 1, D-1, page 1.
(D) Schedule 23.

PENNSYLVANIA POWER & LIGHT COMPANY

SUPPLEMENTAL TESTIMONY OF

JAMES D. COTTON

RE

ACCOUNTING ISSUES

DOCKET No. R-822169

MARCH, 1983

THIS PROCEEDING?

A. Yes, I am.

Q. HAVE YOU REVIEWED THE COMPANY'S PROPOSAL REGARDING THE AMORTIZATION OF THE DEFERRED COSTS RELATING TO SUSQUEHANNA 1?

A. Yes. The Company wishes to recover the net operating costs and carrying charges less energy savings associated with Susquehanna 1 during the period between when the unit becomes commercial and new base rates become effective. The Company then wishes to charge ratepayers for these costs, collecting them in rates over five years by way of a special surcharge beginning on April 1, 1984. Therefore, if the Commission were to accept the Company's proposal, the total rate increase granted could be greater than the Company's initial request in this proceeding.

Q. PLEASE COMMENT ON THIS PROPOSAL.

A. First, it is my understanding that it is the position of the Office of Consumer Advocate (OCA) that any attempt to increase the total dollars requested in this case above $315 million is illegal and should be rejected on that ground, and that the procedure proposed by the Company for collection of these costs is not permitted by the Public Utility Code.

Moreover, it is the position of the OCA that such an adjustment represents an improper attempt to retroactively recoup expenses.

requirements caused by investment in new assets in other rate proceedings in which I have been involved. For example, when Penn Power started up Bruce Mansfield 3 and when West Penn started up Pleasants 2, there was no such treatment. It would be a very troubling regulatory problem to determine how the Commission would propose to draw the line. Would any new investment qualify for such treatment? Would large transmission projects, for example, qualify? Would wage increases that took effect before a rate order qualify? Approval of such an item would confuse the regulatory process. In addition, it is difficult to determine when the operation and maintenance expenses are truly incremental. In other proceedings in which our firm has been involved, the addition of generation from a base nuclear unit has reduced operations and maintenance expenses for other units.

In the event the Commission does consider the Company's request, however, it would be preferable to treat these carrying charges, net of fuel savings, the same as all other capitalized items. All other capitalized costs are amortized over the life of the plant. Such a treatment would be comparable to the treatment of capital charges, operating and maintenance costs, and test power revenues during the test period prior to commercial operation.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Trial Staff Statement No. 1
Witness: R. E. Nellis
Date:

PENNSYLVANIA PUBLIC UTILITY COMMISSION

V.

PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NO. R-822169

DIRECT TESTIMONY

of

Richard E. Nellis, Ph.D

Concerning:

Capital Recovery of Unit 1 of
Susquehanna Steam Electric Station

SUMMARY

The Staff recommends an alternative to the capital recovery methodology for the Susquehanna Steam Electric Station which is proposed by Respondent. While the Staff recommendation would not affect the claimed revenue requirement for capital recovery for Susquehanna Unit 1 in this proceeding, it would result in a smaller total capital recovery for Unit 1 over its anticipated life span. The difference in the two methodologies would be about $207 million over the life span of Unit 1.

Q. Please state your full name and business address.

A. My name is Richard E. Nellis, and I am employed by the Pennsylvania Public Utility Commission, Box 3265, Harrisburg, Pennsylvania 17120.

Q. What is your position with the Public Utility Commission?

A. I am an economist in the Electric Division of the Bureau of Rates.

Q. What are your duties and responsibilities?

A. I participate as an expert witness in major rate proceedings, and I am the coordinator of computer activities for the Bureau of Rates.

Q. Would you briefly describe your professional background?

A. I hold the A.B. degree from Cornell University, the M.A. from Bucknell University, and the Ph.D from Pennsylvania State University. My doctural program was strongly oriented toward econometric and quantitative methods, and I have subsequently attended several seminars in statistical methods. I was employed for about fifteen years in private industry holding managerial positions in advertising, sales and production, and I taught economics at the college level for approximately five years. A resume of my professional background is attached to this statement as Appendix A.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to recommend an alternative to Respondent's proposed "modified sinking fund" for the capital recovery of Unit One of the Susquehanna Steam Electric Station,

and to demonstrate the impact of some alternative capital recovery methods on different ratepayers over time. I was assisted in the preparation of this statement and the accompanying exhibit by Mr. Michael V. Gruber, an engineer in the Electric Division of the Bureau of Rates.

Q. Do you have some words of explanation concerning Trial Staff Exhibit No. 11-A before we proceed further?

A. Yes. The exhibit consists of three parts: schedules, charts, and tables. The schedules, found on pages 1 and 2, constitute my recommendation in this proceeding. The charts, pages 3-11, graphically represent the impact of the capital requirements of the Susquehanna station on Respondent's ratepayers over the life of the plant, under proposed and alternative capital recovery methodologies. The tables, pages 12-20, provide the actual data which is illustrated on the charts.

Q. What is your recommendation?

A. My recommendation is that the capital recovery methodology illustrated in Schedule 2 of Trial Staff Exhibit No. 11-A, page 2, be adopted in lieu of the proposal of Respondent which is illustrated in PP&L Exhibit JOB 3, page 6. The Company's proposal is described by Mr. Jack O. Beemer in PP&L Statement No. 6, page 17 starting at line 11, through page 21, line 13.

Q. How does your recommendation affect Respondent's claimed revenue requirement for the Susquehanna station in this proceeding?

A. It has no effect on Respondent's claim in this proceeding, however it would result in a somewhat lower capital recovery for the station over the life of the plant. Schedule 1 of my exhibit (p. 1) compares the first year's revenue requirement under the company's proposed "modified sinking fund" with my recommendation, and with conventional methodology. It is my understanding that the usual methodology in this jurisdiction is straight line depreciation with interim retirements. My calculations, based on data supplied by PP&L, indicate that both Respondent's proposal and the Staff's recommended methodology, result in a revenue requirement that is approximately $28.5 million less than what might otherwise be claimed in this proceeding.

Q. How do the revenue requirements compare over the life of the plant?

A. The more depreciation that is accrued in the early years, the faster the remaining value of the asset declines, and therefore the smaller is the amount that is collected from ratepayers for return on investment. Thus, depreciation methodologies which require the greatest annual capital recovery in the first years are those which lead to the smallest capital recovery over the life of a plant.

Chart 1, page 3 of my exhibit, illustrates the total capital recovery, depreciation plus return, under the three methodologies. As indicated, my recommendation would result in a smaller total cost to ratepayers than the "modified sinking fund", but both

proposals would result in a greater amount than the method of straight line depreciation with interim retirements. The actual dollars are shown on Table 1 (page 12).

Chart 2 is the same as Chart 1 with the effects of inflation removed, assuming an annual inflation rate of 5.9%. As this chart indicates, the differentials between the methodologies are greatly reduced when inflation is taken into account.

Q. If your recommendation results in the same revenue requirement as Respondent's in this proceeding, but in a lower capital recovery over the life of the plant, then it must follow a different pattern of annual recovery over time, is that true?

A. Yes, and I have attempted to demonstrate this on Chart 3 (p. 5). This chart represents the anticipated 39 year life span of the plant, 1984-2022, along the left side, and millions of nominal dollars along the top and bottom. The solid line represents the annual capital recovery for Unit #1 under the Staff's recommended methodology. The line formed by the "M's" represent capital recovery under the "modified sinking fund", and the line of "I's" represent capital recovery under straight line depreciation with interim retirements. You will note that at about 1995 the line of M's falls to the left of the solid line, and at about 2002 the M's are to the right of the solid line. What this means is that under the Staff recommendation, PP&L customers in the period 1996-2001, would be paying more for Unit 1 than under Respondent's proposal, and from 2002 on, they would be paying less. Under both Staff and Company proposals,

customers would be paying less for Unit 1 up until 1990, and more thereafter, than under the conventional methodology.

Q. Will you describe how the methodology used in constructing your Schedule 2 (Exh. 11-A, p. 2) differs from that used in constructing the schedule on page 6 of PP&L Exhibit JOB 3?

A. As I understand the testimony, PP&L proposes an annual recovery of $222.6 million for depreciation and return until such time as the annual depreciation reaches what it would have been under straight line methodology without interim retirements. A comparison of pages 4 and 6 of the PP&L exhibit indicates that this would occur in year 10, or 1993. At that time the net plant balance would be depreciated on a straight line basis, without interim retirements.

The Staff recommendation is that the constant annual payments be continued a few years longer until such time as the undepreciated plant balance is as low as it would have been under the method of straight line depreciation without interim retirements. A comparison of Schedule 2 of my exhibit (p. 2) with page 4 of the PP&L exhibit indicates that this would occur in year 17, or 2000. Thereafter, the straight line depreciation schedule would be followed.

Q. What does Chart 4, page 6 of Exhibit 11-A, illustrate?

A. Chart 4 is the same as Chart 3, except that Unit 2 of Susquehanna S.E.S. has been included. The issue before the Commission in considering Respondent's proposal and Staff or any other alternative,

is the financial impact on future customers. In my view it would be an empty exercise to consider this issue without reference to Unit 2.

Data for Unit 2 was constructed using the same assumptions as for Unit 1, with the exceptions that

1) the anticipated life span is two years less, and

2) the anticipated cost of Unit 2 depreciable plant when it goes into service is $1,790.6 million.

Using similar methodologies for both units, my recommendation would result in higher recoveries than PP&L's proposal through the year 2003, and lower thereafter. The method of straight line with interim retirements would have the highest recovery to 1990, and the lowest thereafter.

Q. Referring to Table 4 (p. 15), which provides the supporting data for Chart 4, the amounts in each column, when they change, change only every other year. Why is this?

A. All of the tables in the exhibit, and therefore, all of the charts, were constructed under the assumption of a rate proceeding every other year. It is my understanding that Respondent does not plan another rate filing until 1984 when Susquehanna Unit 2 is expected to come into service. This, together with PP&L's history of filings, indicates that every-other-year is a reasonable assumption.

Q. Since there is such a great difference between Charts 1 and 2, pages 3 and 4 of Exhibit 11-A, demonstrating the effects of inflation on

the total capital recovery, one would presume that adjusting for inflation would have effects on annual capital recovery also, is this so?

A. Yes, and this is illustrated on Chart 5 (p. 7). This chart presents the same information as Chart 4, except that it is in terms of 1982 dollars - assuming an annual inflation rate of 5.9% throughout the life of the plant. As before, the solid line represents the annual capital recovery under the Staff's recommended methodology; the line formed by the "M's", capital recovery by Respondent's proposal; and the "I's", capital recovery under straight line with interim retirements. This indicates that in terms of purchasing power, regardless of methodology, the annual capital costs of the plant to customers falls off very rapidly after 1986, and the difference between methodologies largely disappears. By 1996 the annual cost of both units is less than the initial annual cost of Unit 1 only and in the last five years of service, the annual capital recovery for both units is about 10% of the initial annual cost to customers of Unit 1 alone.

Q. Does this mean, for example, that for customers in the 1991-1995 period, Susquehanna will cost less than for customers in the 1986-1990 period?

A. So long as there is a positive inflation rate, yes.

Q. Is this any matter of concern?

A. Yes. Apparently there are some who argue that inasmuch as all customers over the life of a nuclear plant will receive the benefits of its greatly reduced fuel costs, all customers should equally share the capital costs.

Q. Does this line of thinking give rise to methodologies alternative to what we have discussed thus far?

A. Again, yes. I have been pursuing one line of thought under which a capital recovery schedule is constructed in real terms, that is, without any element of inflation in it. This capital recovery schedule could be based on <u>any</u> depreciation methodology -- straight line, straight line with interim retirements, equal total payments, or whatever. The annual capital recovery that is produced by this is then adjusted upward for inflation, and the return that is booked is calculated on the inflation-adjusted rate of return. This procedure is also being investigated by Staff of the New York State Department of Public Service.

Q. Have you made any calculations along these lines that are germane to this proceeding?

A. Yes I have, and the results are presented in Charts 6, 7, 8, and 9 (pp. 8-11), and supporting Tables 6, 7, 8 and 9 (pp. 17-20).

On Chart 6, the first bar represents the total capital recovery for Susquehanna under the Staff recommendation, the second bar represents capital recovery under the conventional straight line with interim retirements, and the third and fourth bars represent

two inflation-compensated methodologies. I first invite you to compare Chart 6 with Chart 7.

Chart 6 represents the total capital recovery as it would be booked, in nominal dollars. Chart 7 presents the same information, except deflated to 1982 dollars. The first thing that we notice is that the large discrepancy between the first two bars and the second two bars is largely mitigated when the effects of inflation are removed.

Q. What do the third and fourth bars on Charts 5 and 6 represent?

A. I have termed the methodologies used for the third bar "real straight line depreciation with interim retirements". That is, it is the method of straight line depreciation with interim retirements compensated for the effects of inflation.

The methodology of the fourth bar I call "constant real payments". This method yields essentially equal annual costs to ratepayers over the life of the plant when the effects of inflation are removed.

The annual capital recovery of the four methodologies is shown on Chart 8. This is in nominal dollars. The Staff recommendation is represented by the solid line, real straight line with interim retirements by the line of "R's" and constant real payment by the "C's". It is apparent on both Chart 8 and Chart 9 that the inflation-compensated methodologies have a smaller impact on customers until about 1996, and then greater thereafter.

Chart 9 represents the same information as Chart 8, but adjusted for inflation. Also, note that the scale on Chart 9 is vastly reduced from that on Chart 8. Here it is apparent that under the method of constant real payments, the cost of Susquehanna to ratepayers is constant over the life of the plant once Unit 2 comes into service. The method of real straight line depreciation with interim retirements still produces a declining annual capital recovery, but the discrepancy between the early years and the later years is not nearly as great as with my recommended methodology or with the conventional methodology.

Q. Finally, would you explain how the so-called inflation-compensated methodologies are calculated?

A. For hypothetical purposes, let's assume we have a plant that cost one million dollars, which went on line in 1980, and which has an estimated life span of ten years. Our cost of capital is 8.15% and the inflation rate is 3.00%. For simplicity, let us use straight line depreciation.

Page 1 of Appendix B shows the calculation of the real rate of return, that is, the rate of return without an inflation component. I have, again for simplicity, assumed annual compounding. The calculation yields a real rate of return of 5%.

Page 2 of the appendix is the capital recovery schedule that is associated with our initial assumptions. Column 1 is the annual depreciation, column 2 is the undepreciated balance, column 3 is the return on the undepreciated balance at a real rate of 5%, and

column 4 is the annual revenue requirement -- column 1 plus column 3.

On page 3 the annual requirement is inflated to nominal dollars. Column 1 is the same as column 4 of page 2. Column 2 is the inflation factor for each year, produced by compounding 3% annually. Column 3 is column 1 times column 2, the annual capital payment in inflated dollars.

Page 4 of Appendix B is the capital recovery schedule in nominal, or inflated dollars. This schedule is produced based on the annual capital payment computed on page 3 (column 4 on this page), and an inflation-included return rate of 8.15%. As with page 2, column 1 is the annual depreciation, column 2 the undepreciated balance, column 3 the annual return at 8.15%, and column 4, the total annual capital recovery. Note that whereas the schedule of annual depreciation is altered, it nevertheless sums to one million dollar the original cost of the plant.

Q. To recapitulate, is it correct that your recommendation in this proceeding is embodied only in Schedules 1 and 2, pages 1 and 2 of Exhibit No. 11-A?

A. Yes, and this recommendation is offered as an alternative to Respondent's proposal.

Q. The Charts and supporting Tables of the Exhibit are provided only for purposes of comparing your recommendation with other alternatives, is that correct?

A. Yes.

Q. Does this conclude your prepared testimony at this time?

A. Yes it does.

APPENDIX A

Resume of Professional Background of Richard E. Nellis

Education

A.B., Cornell University, 1952
M.A., Bucknell University, 1968
Ph.D., The Pennsylvania State University, 1977

Professional Organizations

American Economic Association
International Association of Energy Economists
Eastern Economic Association
Pennsylvania Conference of Economists

Present Position

Operations Researcher ('82-), Electric Industry Consultant ('81-'82), Bureau of Rates, Pennsylvania Public Utility Commission. Past member of the Commission's EDP Steering Committee and former Chairman of the Technical Coordination Committee. Coordinated work of the Commission's computer operation, and was responsible for installation of a computerized utility information and strategic planning system. Conduct research on economic issues related to utility regulation, and participate in major investigations as a technical expert and advisor.

Previous Positions

1977 - 1981: Economist ('77 - '79), Electric Industry Advisor ('79 - '81), Bureau of Rates, Pennsylvania Public Utility Commission. Participated in major rate proceedings as a technical expert and advisor. Conducted research on economic issues related to electric utility regulation. Member, Technical Coordination Committee.

1977: Faculty Research Assistant, Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University. Conducted research on the determinants of direct private foreign investment in U.S. manufacturing.

1968 - 1976: Lecturer in Economics, Lycoming College, Susquehanna University, and Bucknell University. Conducted courses in principles of economics, intermediate economic theory, money and banking, economics of human resources, and labor-management relations.

1968 - 1975: Assistant Professor of Economics, Williamsport Area Community College, Williamsport, PA. Conducted courses in principles of economics, international economics, comparative economic systems, and industrial relations.

1962 - 1968: Production Manager, Walnut Acres, Inc., Penns Creek, Pa., grower, processor, and retailer of cereals and flours, and canned and frozen fruits and vegetables.

1959 - 1962: Vice-President, Production, Hallmark Industries, Inc., McClure, PA., manufacturer of steel cabinets and casework for hospitals, laboratories, and schools.

1952 - 1959: Advertising-Sales Manager, Wood-Metal Industries, Inc., Kreamer, PA., manufacturer of wood cabinets and casework for homes, schools, and hospitals.

Research

"Determinants of Performance of U.S. Nuclear Generating Stations," 1981, unpublished.

"The Cost of Power Station Construction Delays," presented at the annual meeting of the Eastern Economic Association, April 11, 1981, and the National Regulatory Research Institute's Workshop on Electric Utility Construction Cost Overruns, August 13, 1981.

"The Objective Function of the Multinational Firm with Flexible Exchange Rates," presented at the annual meeting of the Eastern Economic Association, May 10, 1979.

"Measuring the Cost of Capital in Rate Proceedings", with Robert L. Packard, presented to the Pennsylvania Conference of Economists, June 8, 1978; and NARUC Biennial Regulatory Information Conference, October 18, 1978.

"Direct Private Foreign Participation in the United States Food System", with Wayne A. Schutjer, Progress Report No. 366, University Park, Pa.; The Pennsylvania State University, College of Agriculture, Agricultural Experiment Station, 1977.

Determinants of Direct Private Foreign Investment in the Manufacturing Sector of the U. S. Food System, 1977, doctoral thesis.

"The U. S. Dollar, the Price of Gold, and Some Related Matters, Since 1968," 1973, unpublished.

"The International Value of the Dollar, 1968-1971: An Approach," 1972, unpublished.

"Gold and Certain Foreign Exchange Prices, January 1, 1968 thru December 31, 1971," 1972, unpublished.

Some Aspects of Public Policy Toward Business in Yugoslavia, 1968, master's thesis.

CALCULATION OF REAL RATE OF RETURN

$$c = r+i + \frac{ri}{p}$$

c: annual cost of capital

r: annual real rate of return

i: annual inflation rate

p: compounding period

Solving for r

$$r = (c-i) / (p+i)$$

Example

c = 8.15%

i = 3%

p = 1 (annual)

r = (.0815 - .03) / 1.03 = .0500

= 5.00%

STRAIGHT LINE DEPRECIATION
EXAMPLE OF INFLATION-COMPENSATED METHODOLOGY
FILE: SUBQAPPEND THOUSANDS OF CONSTANT DOLLARS

DATE RANGE : 1/1981 - 1/1990 , 1

(1) ANNDEP ANNUAL DEPRECIATION
(2) BALANCE UNDEPRECIATED BALANCE
(3) ANNRET ANNUAL RETURN @5.00%
(4) ANNCAP REVENUE RQRMNT, CNSTNT $

DATE	1	2	3	4
1/1981	100.00	900.00	50.00	150.00
1/1982	100.00	800.00	45.00	145.00
1/1983	100.00	700.00	40.00	140.00
1/1984	100.00	600.00	35.00	135.00
1/1985	100.00	500.00	30.00	130.00
1/1986	100.00	400.00	25.00	125.00
1/1987	100.00	300.00	20.00	120.00
1/1988	100.00	200.00	15.00	115.00
1/1989	100.00	100.00	10.00	110.00
1/1990	100.00	0.00	5.00	105.00
Total	1000.00		275.00	1275.00

STRAIGHT LINE DEPRECIATION
EXAMPLE OF INFLATION-COMPENSATED METHODOLOGY

FILE: SUSQAPPEND

DATE RANGE : 1/1981 - 1/1990 , 1

(1) ANNCAP REVENUE RQRMNT, CNSTNT $
(2) INFLFACT INFLATION FACTOR @ 3.00%
(3) NANNCAP REVENUE REQRMNT, NMNL $

DATE	1	2	3
1/1981	150.00	1.03	154.50
1/1982	145.00	1.06	153.83
1/1983	140.00	1.09	152.98
1/1984	135.00	1.13	151.94
1/1985	130.00	1.16	150.71
1/1986	125.00	1.19	149.26
1/1987	120.00	1.23	147.58
1/1988	115.00	1.27	145.68
1/1989	110.00	1.30	143.53
1/1990	105.00	1.34	141.11

STRAIGHT LINE DEPRECIATION
EXAMPLE OF INFLATION-COMPENSATED METHODOLOGY
FILE: SUSQAPPEND THOUSANDS OF NOMINAL(INFLATED) DOLLARS

DATE RANGE : 1/1981 - 1/1990 , 1

(1) NANNDEP ANNUAL DEPRECIATION
(2) NOMBAL UNDEPRECIATED BALANCE
(3) NANNRET ANNUAL RETURN @ 8.15%
(4) NANNCAP REVENUE REQRMNT, NMNL $

DATE	1	2	3	4
1/1981	73.00	927.00	81.50	154.50
1/1982	78.28	848.72	75.55	153.83
1/1983	83.81	764.91	69.17	152.98
1/1984	89.60	675.31	62.34	151.94
1/1985	95.67	579.64	55.04	150.71
1/1986	102.02	477.62	47.24	149.26
1/1987	108.66	368.96	38.93	147.58
1/1988	115.61	253.35	30.07	145.68
1/1989	122.88	130.48	20.65	143.53
1/1990	130.48	0.00	10.63	141.11
Total	1000.00		491.12	1491.12

Trial Staff Exhibit No. 11-A
Witness: R. E. Nellis
Date:

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PENNSYLVANIA POWER & LIGHT COMPANY

Docket No. R-822169

EXHIBIT

to accompany the

Direct Testimony

of

Richard E. Nellis, Ph.D.

Concerning:

Capital Recovery of Unit 1
of Susquehanna Steam Electric Station

SUSQUEHANNA STEAM ELECTRIC STATION

First Year Revenue Requirement
Company, Staff, and Conventional Methodologies
(millions of dollars)

	Modified Sinking Fund[a]	Staff Recommendation	Straight Line Depreciation With Interim Retirements
Annual Depreciation	14.82	14.82	43.39
Return	207.78	207.78	207.78
Total Revenue Requirement	222.60	222.60[b]	251.17[c]

[a]PP&L Exhibit JOB 3, p. 6, line 1, last column.

[b]Schedule 2, line 1, column 3.

[c]Table 3, line 1, column 3.

Trial Staff Exhibit No. 11-A, p. 1
Schedule 1
Witness: R. E. Nellis

Schedule 2
Witness: R. E. Nellis

SUSQUEHANNA S.E.S. UNIT 1; STAFF-RECOMMENDED CAPITAL PAYMENT METHOD
FILE: SUSQ1STAFF MILLIONS OF NOMINAL DOLLARS

DATE RANGE : 1/1984 - 1/2022 , 1

(1) ANNDEP ANNUAL DEPRECIATION
(2) BALANCE UNDEPRECIATED BALANCE
(3) ANNRET ANNUAL RETURN @ 12.5%
(4) ANNCAP TTL ANN'L CAPITAL PMT

DATE	1	2	3	4
1/1984	14.82	1647.44	207.78	222.60
1/1985	16.67	1630.77	205.93	222.60
1/1986	18.75	1612.02	203.85	222.60
1/1987	21.10	1590.92	201.50	222.60
1/1988	23.73	1567.19	198.87	222.60
1/1989	26.70	1540.49	195.90	222.60
1/1990	30.04	1510.45	192.56	222.60
1/1991	33.79	1476.65	188.81	222.60
1/1992	38.02	1438.63	184.58	222.60
1/1993	42.77	1395.86	179.83	222.60
1/1994	48.12	1347.75	174.48	222.60
1/1995	54.13	1293.61	168.47	222.60
1/1996	60.90	1232.72	161.70	222.60
1/1997	68.51	1164.20	154.09	222.60
1/1998	77.07	1087.13	145.53	222.60
1/1999	86.71	1000.42	135.89	222.60
1/2000	62.78	937.64	125.05	187.83
1/2001	42.62	895.02	117.20	159.83
1/2002	42.62	852.40	111.88	154.50
1/2003	42.62	809.78	106.55	149.17
1/2004	42.62	767.16	101.22	143.84
1/2005	42.62	724.54	95.89	138.52
1/2006	42.62	681.92	90.57	133.19
1/2007	42.62	639.30	85.24	127.86
1/2008	42.62	596.68	79.91	122.53
1/2009	42.62	554.06	74.58	117.21
1/2010	42.62	511.44	69.26	111.88
1/2011	42.62	468.82	63.93	106.55
1/2012	42.62	426.20	58.60	101.22
1/2013	42.62	383.58	53.28	95.90
1/2014	42.62	340.96	47.95	90.57
1/2015	42.62	298.34	42.62	85.24
1/2016	42.62	255.72	37.29	79.91
1/2017	42.62	213.10	31.97	74.59
1/2018	42.62	170.48	26.64	69.26
1/2019	42.62	127.86	21.31	63.93
1/2020	42.62	85.24	15.98	58.60
1/2021	42.62	42.62	10.66	53.28
1/2022	42.62	0.00	5.33	47.95
Total	1662.26		4372.67	6034.93

Trial Staff Exhibit No. 11-A, p.
Chart 1
Witness: R. E. Nellis

*Table 1

*Table 2

Trial Staff Exhibit No. 11-A, p.
Chart 2
Witness: R. E. Nellis

SUSQUEHANNA STEAM ELECTRIC STATION UNIT 1
A N N U A L C A P I T A L R E C O V E R Y*

DATE RANGE : 1/1984 - 1/2022 , 1

(M) MSF — MODIFIED SINKING FUND
(S) STF — STAFF RECOMMENDATION
(I) INT — STRT LN W/INT RTRMNTS

MILLIONS OF NOMINAL DOLLARS

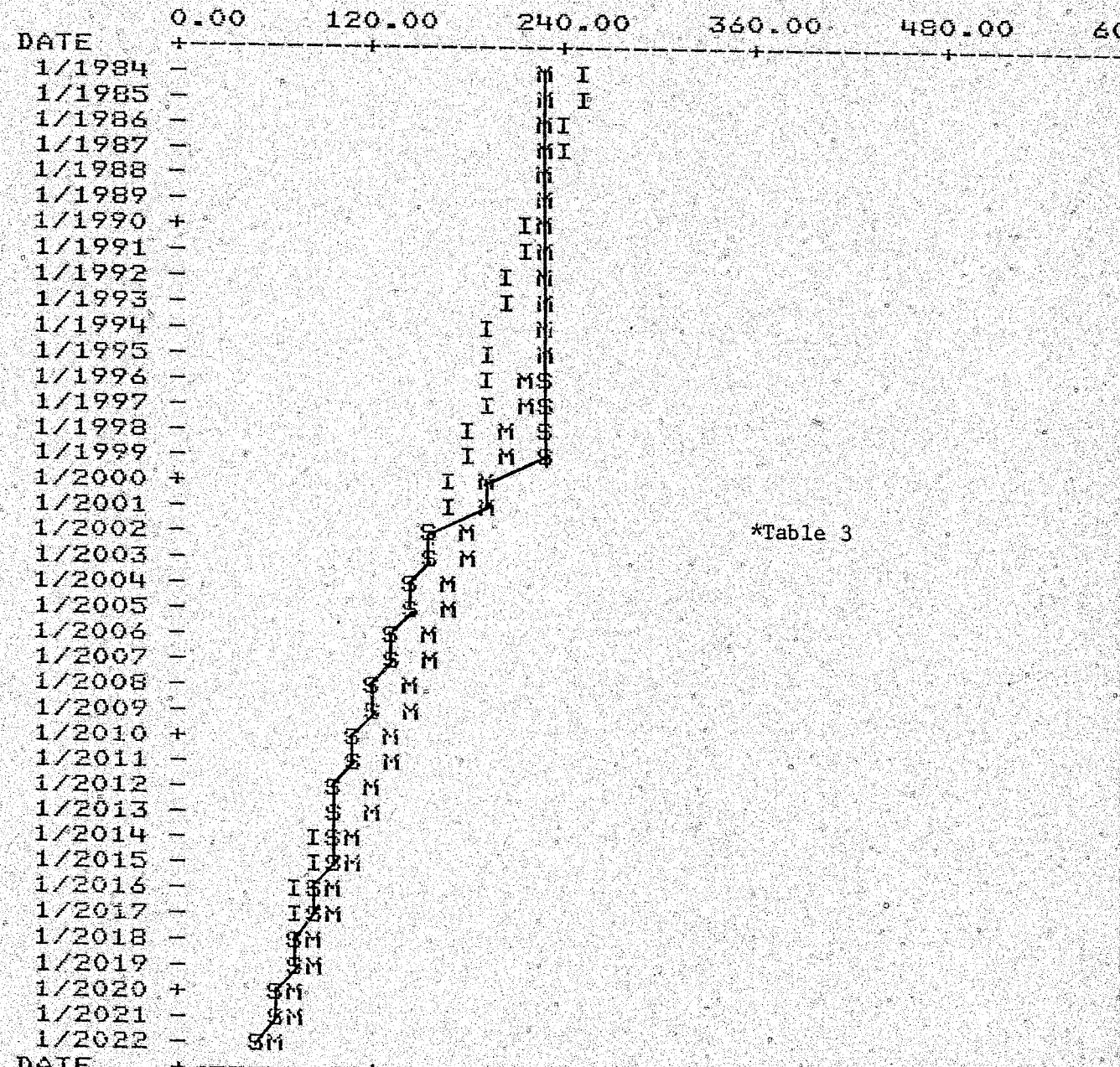


*Table 3

SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 & 2
A N N U A L C A P I T A L R E C O V E R Y*

DATE RANGE : 1/1984 - 1/2022 , 1

(M) MSF — MODIFIED SINKING FUND
(S) STF — STAFF RECOMMENDATION
(I) INT — STRT LN W/INT RTRMNTS

MILLIONS OF NOMINAL DOLLARS

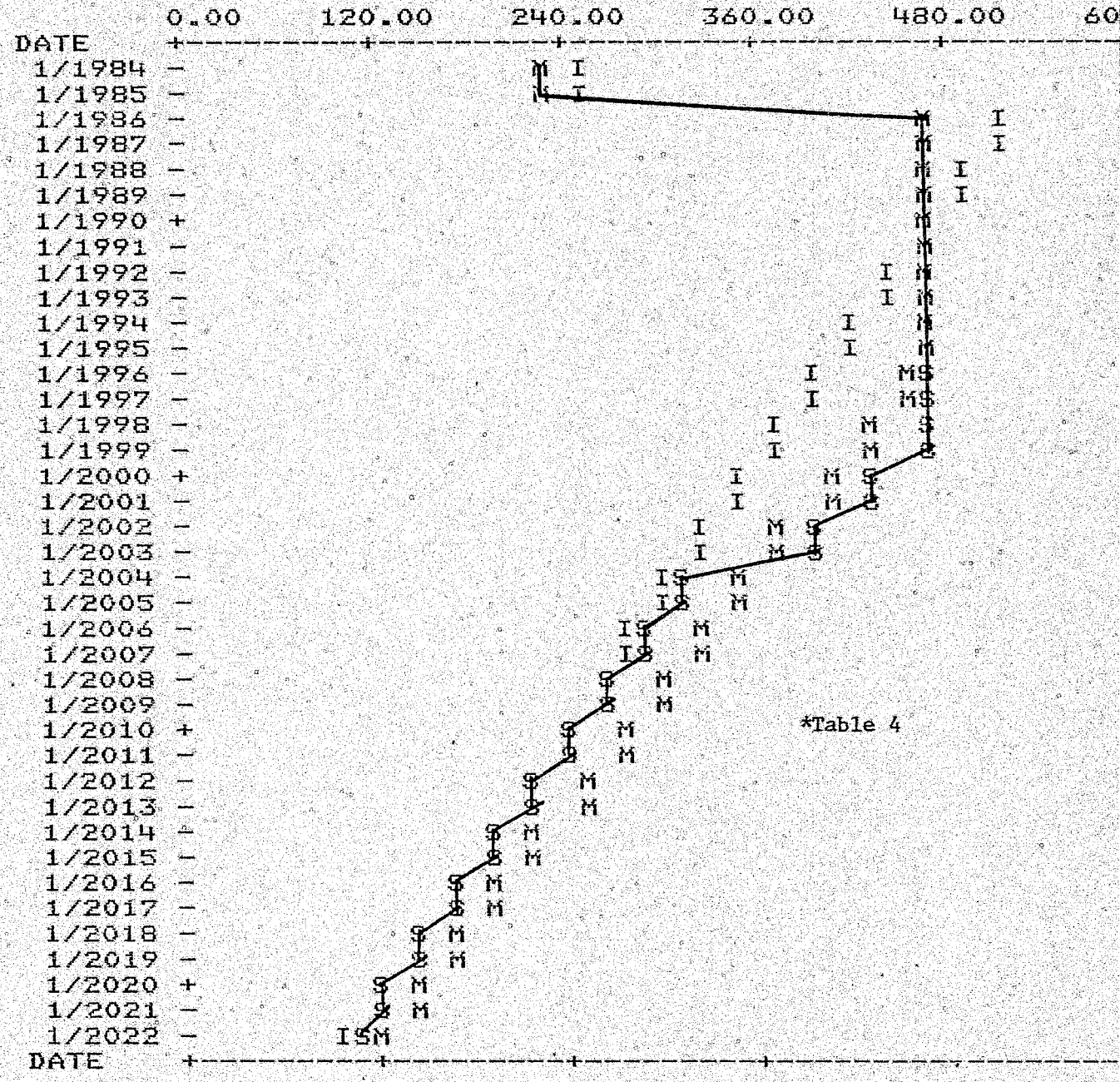


*Table 4

SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 & 2
A N N U A L C A P I T A L R E C O V E R Y*

DATE RANGE : 1/1984 - 1/2022 , 1

(M) MSFR — MODIFIED SINKING FUND
(S) STFR — STAFF RECOMMENDATION
(I) INTR — STRT LN W/INT RTRMNTS

MILLIONS OF 1982(DEFLATED) DOLLARS

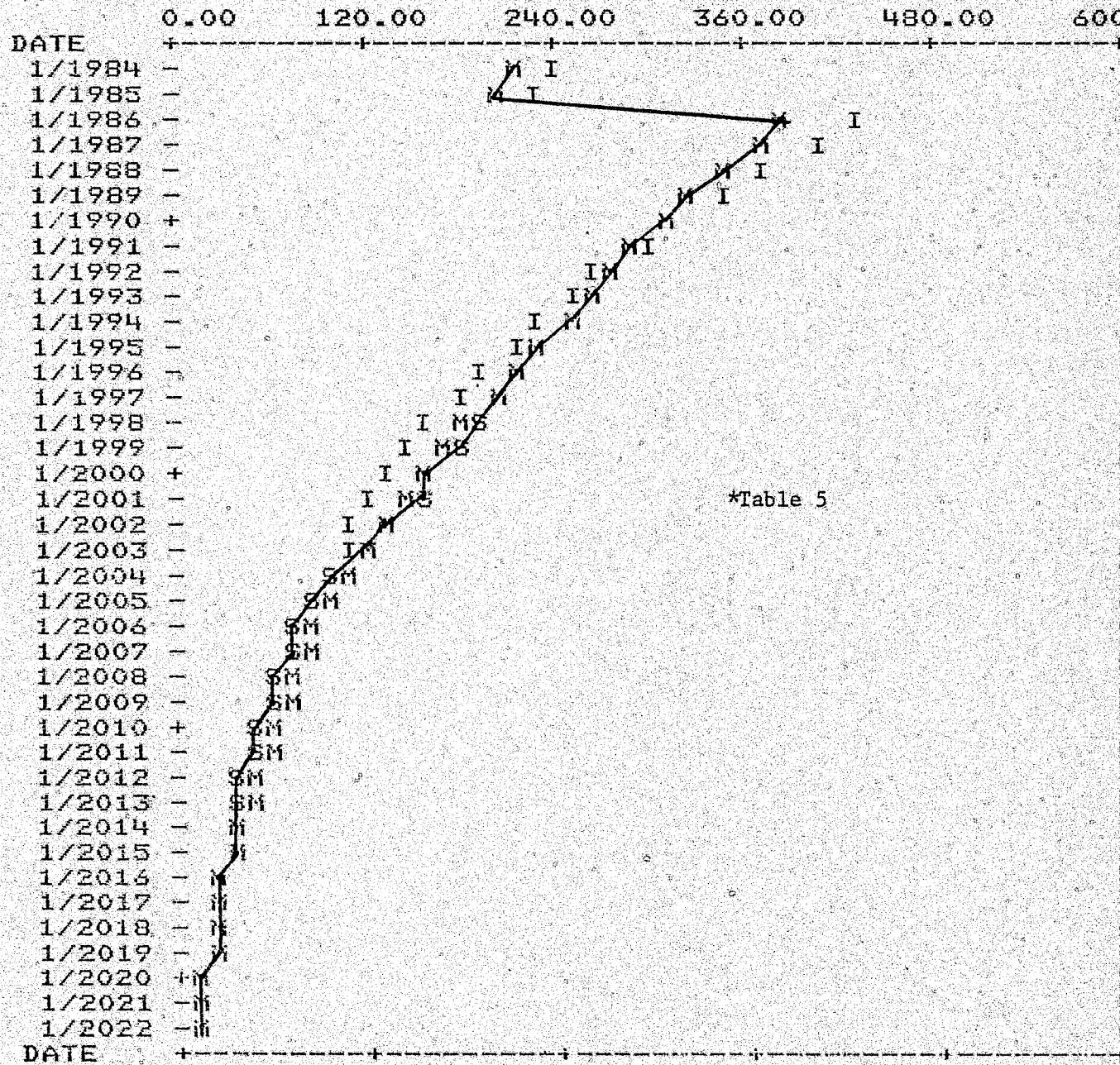


*Table 5

[a]Table 1

[b]Table 6

Trial Staff Exhibit No. 11-A, p.
Chart 6
Witness: R. E. Nellis

[a]Table 2

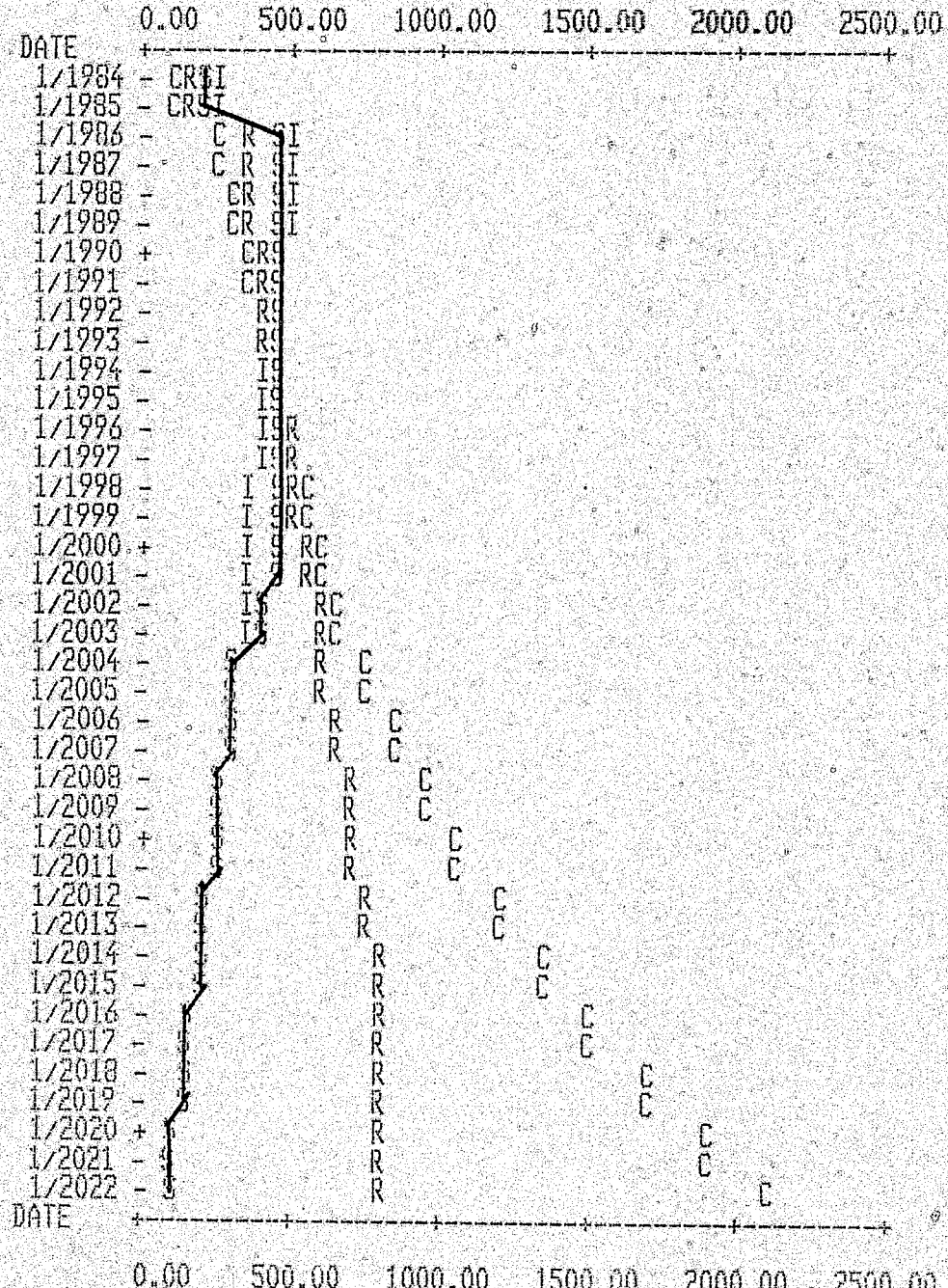
[b]Table 7

rial Staff Exhibit No. 1J-A, p.
Chart 7
Witness: R. E. Nelms

DATE RANGE : 1/1984 - 1/2022 , 1

($) STF STAFF RECOMMENDATION [a]
(I) INT STRT LN W/INT RTRMNTS[a]
(R) RSI RL STRT LN W/INT RTRMNTS[b]
(C) CRP CONSTANT REAL PAYMENT[b]

MILLIONS OF NOMINAL DOLLARS



[a]Table 4 [b]Table 8

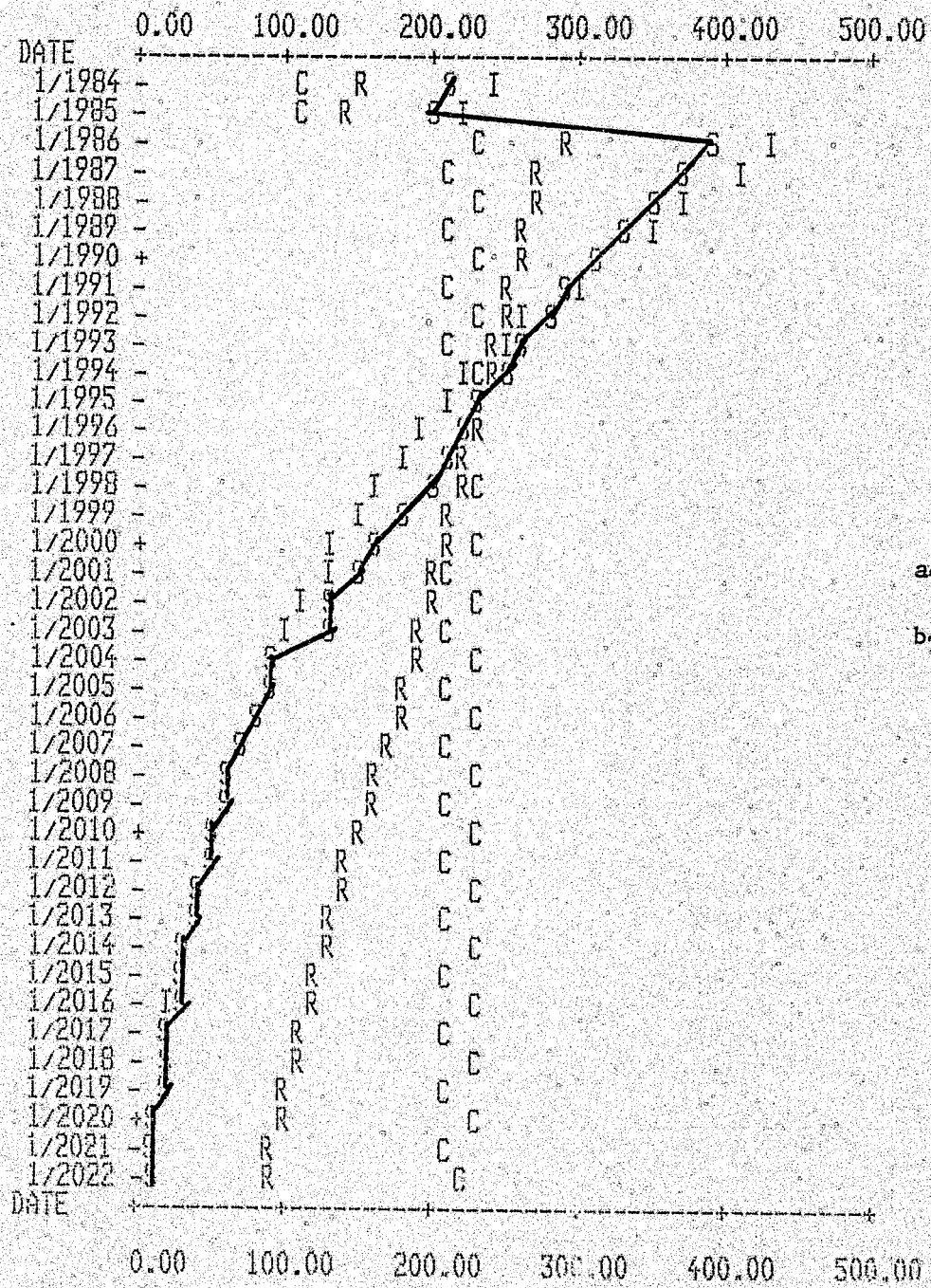
Witness: R. E. Nellis

SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 & 2
ANNUAL CAPITAL RECOVERY

DATE RANGE : 1/1984 - 1/2022 , 1

(S) STFR STAFF RECOMMENDATION[a]
(I) INTR STRT LN W/INT RTRMNTS[a]
(R) RSIR RL STRT LN W/INT RTRMNTS[b]
(C) CRPR CONSTANT REAL PAYMENT[b]

MILLIONS OF 1982(DEFLATED) DOLLARS



[a]Table 5

[b]Table 9

Trial Staff Exhibit No. 11-A,
Table 1
Witness: R.E. Nellis

SUSQUEHANNA STEAM ELECTRIC STATION
Units 1 & 2

Total Capital Recovery

MILLIONS OF NOMINAL DOLLARS

Company, Staff, and Conventional Methodologies

	Mod'd Sinking Fund	Staff Recommendation	Strt Ln w/Int. Retirements
Unit #1[a]			
Depreciation	1,662.26	1,662.26	1,662.26
Return	4,661.08	4,453.95	4,214.24
Total #1	6,323.33	6,116.21	5,876.50
Unit #2			
Depreciation	1,790.60	1,790.60	1,790.60
Return	4,825.86	4,639.04	4,317.32
Total #2	6,616.46	6,429.62	6,107.92
Total	12,939.79	12,545.83	11,984.42

[a]PP&L Exhibit JOB 3, p. 6.

Trial Staff Exhibit No. 11-A,
Table 2
Witness: R.E. Nellis

SUSQUEHANNA STEAM ELECTRIC STATION
Units 1 & 2

Total Capital Recovery

MILLIONS OF 1982 (DEFLATED) DOLLARS

Company, Staff, and Conventional Methodologies

	Mod'd Sinking Fund	Staff Recommendation	Strt Ln w/Int. Retirements
Unit #1			
Depreciation	559.09	585.21	651.55
Return	2,359.53	2,302.53	2,180.98
Total #1	2,918.62	2,887.74	2,832.52
Unit #2			
Depreciation	553.33	579.32	649.98
Return	2,231.11	2,188.24	2,045.18
Total #2	2,784.45	2,767.56	2,695.16
Total	5,703.07	5,655.30	5,527.68

SUSQUEHANNA S.E.S. UNIT 1, ANNUAL CAPITAL RECOVERY
COMPANY, STAFF, & CONVENTIONAL METHODOLOGIES
FILE: SUS81CONF MILLIONS OF NOMINAL DOLLARS

DATE RANGE : 1/1984 - 1/2022 , 1

(1) MSF MODIFIED SINKING FUND
(2) STF STAFF RECOMMENDATION
(3) INT STRT LN W/INT RTRMNTS

DATE	1	2	3
1/1984	222.60	222.60	251.17
1/1985	222.60	222.60	251.17
1/1986	222.60	222.60	240.31
1/1987	222.60	222.60	240.31
1/1988	222.60	222.60	229.46
1/1989	222.60	222.60	229.46
1/1990	222.60	222.60	218.60
1/1991	222.60	222.60	218.60
1/1992	222.60	222.60	207.75
1/1993	222.60	222.60	207.75
1/1994	222.62	222.60	196.89
1/1995	222.62	222.60	196.89
1/1996	210.58	222.60	186.03
1/1997	210.58	222.60	186.03
1/1998	198.55	222.60	175.17
1/1999	198.55	222.60	175.17
1/2000	186.52	187.83	164.31
1/2001	186.52	187.83	164.31
1/2002	174.48	154.50	153.45
1/2003	174.48	154.50	153.45
1/2004	162.45	143.84	142.58
1/2005	162.45	143.84	142.58
1/2006	150.42	133.19	131.71
1/2007	150.42	133.19	131.71
1/2008	138.38	122.53	120.85
1/2009	138.38	122.53	120.85
1/2010	126.35	111.88	109.99
1/2011	126.35	111.88	109.99
1/2012	114.32	101.22	99.14
1/2013	114.32	101.22	99.14
1/2014	102.28	90.57	88.31
1/2015	102.28	90.57	88.31
1/2016	90.25	79.91	77.50
1/2017	90.25	79.91	77.50
1/2018	78.22	69.26	66.73
1/2019	78.22	69.26	66.73
1/2020	66.18	58.60	55.78
1/2021	66.18	58.60	55.78
1/2022	54.15	47.95	45.00
Total	6,323.33	6,116.21	5,876.50

Trial Staff Exhibit No. 11-A
Table 4
Witness: R. E. Nellis

SUSQUEHANNA S.E.S. UNITS 1 & 2, ANNUAL CAPITAL RECOVERY
COMPANY, STAFF, & CONVENTIONAL METHODOLOGIES
FILE: SUSQBO MILLIONS OF NOMINAL DOLLARS

DATE RANGE : 1/1984 - 1/2022 , 1

(1) MSF MODIFIED SINKING FUND
(2) STF STAFF RECOMMENDATION
(3) INT STRT LN W/INT RTRMNTS

DATE	1	2	3
1/1984	222.60	222.60	251.17
1/1985	222.60	222.60	251.17
1/1986	462.60	462.60	513.44
1/1987	462.60	462.60	513.44
1/1988	462.60	462.60	490.24
1/1989	462.60	462.60	490.24
1/1990	462.60	462.60	467.05
1/1991	462.60	462.60	467.05
1/1992	462.60	462.60	443.86
1/1993	462.60	462.60	443.86
1/1994	462.62	462.60	420.66
1/1995	462.62	462.60	420.66
1/1996	450.58	462.60	397.47
1/1997	450.58	462.60	397.47
1/1998	428.16	462.60	374.26
1/1999	428.16	462.60	374.26
1/2000	402.21	427.83	351.06
1/2001	402.21	427.83	351.06
1/2002	376.27	394.50	327.84
1/2003	376.27	394.50	327.84
1/2004	350.32	306.12	304.63
1/2005	350.32	306.12	304.63
1/2006	324.37	283.45	281.41
1/2007	324.37	283.45	281.41
1/2008	298.42	260.77	258.20
1/2009	298.42	260.77	258.20
1/2010	272.47	238.10	235.00
1/2011	272.47	238.10	235.00
1/2012	246.52	215.42	211.83
1/2013	246.52	215.42	211.83
1/2014	220.57	192.74	188.69
1/2015	220.57	192.74	188.69
1/2016	194.62	170.06	165.59
1/2017	194.62	170.06	165.59
1/2018	168.67	147.39	142.56
1/2019	168.67	147.39	142.56
1/2020	142.72	124.71	119.17
1/2021	142.72	124.71	119.17
1/2022	116.77	102.05	96.14
Total	12,939.80	12,545.83	11,984.42

Witness: R. E. Nellis

SUSQUEHANNA S.E.S. UNITS 1 & 2, ANNUAL CAPITAL RECOVERY
COMPANY, STAFF, & CONVENTIONAL METHODOLOGIES
FILE: SUSQBO MILLIONS OF 1982(DEFLATED) DOLLARS

DATE RANGE : 1/1984 - 1/2022 , 1

(1) MSFR MODIFIED SINKING FUND
(2) STFR STAFF RECOMMENDATION
(3) INTR STRT LN W/INT RTRMNTS

DATE	1	2	3
1/1984	210.20	210.20	237.18
1/1985	198.49	198.49	223.96
1/1986	389.51	389.51	432.31
1/1987	367.81	367.81	408.23
1/1988	347.32	347.32	368.07
1/1989	327.97	327.97	347.57
1/1990	309.69	309.69	312.68
1/1991	292.44	292.44	295.26
1/1992	276.15	276.15	264.96
1/1993	260.76	260.76	250.20
1/1994	246.24	246.24	223.91
1/1995	232.52	232.52	211.44
1/1996	213.86	219.56	188.65
1/1997	201.94	207.33	178.14
1/1998	181.21	195.78	158.39
1/1999	171.11	184.87	149.57
1/2000	151.78	161.45	132.48
1/2001	143.33	152.46	125.10
1/2002	126.61	132.75	110.32
1/2003	119.56	125.35	104.17
1/2004	105.11	91.85	91.40
1/2005	99.25	86.73	86.31
1/2006	86.78	75.83	75.29
1/2007	81.95	71.61	71.10
1/2008	71.19	62.21	61.60
1/2009	67.22	58.74	58.17
1/2010	57.96	50.65	49.99
1/2011	54.73	47.83	47.20
1/2012	46.76	40.86	40.18
1/2013	44.15	38.58	37.94
1/2014	37.31	32.60	31.91
1/2015	35.23	30.78	30.13
1/2016	29.35	25.65	24.97
1/2017	27.72	24.22	23.58
1/2018	22.68	19.82	19.17
1/2019	21.42	18.72	18.10
1/2020	17.11	14.95	14.29
1/2021	16.16	14.12	13.49
1/2022	12.49	10.91	10.28
Total	5,703.07	5,655.30	5,527.69

SUSQUEHANNA STEAM ELECTRIC STATION
Units 1 & 2

Total Capital Recovery

MILLIONS OF NOMINAL DOLLARS

Inflation-Compensated Methodologies

	Real Straight Line With Interim Retirements	Constant Real Payment
Unit #1		
Depreciation	1,662.26	1,662.26
Return	9,716.90	15,024.21
Total #1	11,379.16	16,686.47
Unit #2		
Depreciation	1,790.60	1,790.60
Return	9,425.81	14,223.69
Total #2	11,216.41	16,014.29
Total	22,595.57	32,700.76

SUSQUEHANNA STEAM ELECTRIC STATION
Units 1 & 2

Total Capital Recovery

MILLIONS OF 1982 (DEFLATED) DOLLARS

Inflation-Compensated Methodologies

	Real Straight Line With Interim Retirements	Constant Real Payment
Unit #1		
Depreciation	1,662.26	1,662.26
Return	1,998.34	2,678.46
Total #1	3,660.60	4,340.72
Unit #2		
Depreciation	1,790.60	1,790.60
Return	1,629.53	2,219.31
Total #2	3,420.13	4,009.91
Total	7,080.73	8,350.63

SUSQUEHANNA S.E.S. UNITS 1 & 2, ANNUAL CAPITAL RECOVERY
INFLATION-COMPENSATED METHODOLOGIES
FILE: SUSQBO MILLIONS OF NOMINAL DOLLARS

DATE RANGE : 1/1984 - 1/2022 , 1

(1) RSI RL STRT LN W/INT RTRNNTS
(2) CRP CONSTANT REAL PAYMENT

DATE	1	2
1/1984	155.66	121.18
1/1985	155.66	121.18
1/1986	338.52	268.21
1/1987	338.52	268.21
1/1988	365.11	300.80
1/1989	365.11	300.80
1/1990	393.17	337.34
1/1991	393.17	337.34
1/1992	422.64	378.32
1/1993	422.64	378.32
1/1994	453.46	424.28
1/1995	453.46	424.28
1/1996	485.51	475.82
1/1997	485.51	475.82
1/1998	518.63	533.62
1/1999	518.63	533.62
1/2000	552.58	598.45
1/2001	552.58	598.45
1/2002	587.07	671.15
1/2003	587.07	671.15
1/2004	621.70	752.68
1/2005	621.70	752.68
1/2006	655.99	844.11
1/2007	655.99	844.11
1/2008	689.31	946.66
1/2009	689.31	946.66
1/2010	720.91	1061.66
1/2011	720.91	1061.66
1/2012	749.85	1190.63
1/2013	749.85	1190.63
1/2014	775.02	1335.27
1/2015	775.02	1335.27
1/2016	795.06	1497.48
1/2017	795.06	1497.48
1/2018	808.37	1679.39
1/2019	808.37	1679.39
1/2020	809.25	1883.41
1/2021	809.25	1683.41
1/2022	799.98	2099.86
Total	22,595.57	32,700.76

SUSQUEHANNA S.E.S. UNITS 1 & 2, ANNUAL CAPITAL RECOVERY
INFLATION-COMPENSATED METHODOLOGIES
FILE: SUSQBO MILLIONS OF 1982(DEFLATED) DOLLARS

DATE RANGE : 1/1984 - 1/2022 , 1

(1) RSIR RL STRT LN W/INT RTRMNTS
(2) CRPR CONSTANT REAL PAYMENT

DATE	1	2
1/1984	146.98	114.43
1/1985	138.80	108.05
1/1986	285.03	225.84
1/1987	269.15	213.25
1/1988	274.12	225.84
1/1989	258.85	213.25
1/1990	263.21	225.84
1/1991	248.55	213.25
1/1992	232.29	225.84
1/1993	238.24	213.25
1/1994	241.37	225.84
1/1995	227.92	213.25
1/1996	230.44	225.84
1/1997	217.60	213.25
1/1998	219.49	225.84
1/1999	207.26	213.25
1/2000	208.53	225.84
1/2001	196.91	213.25
1/2002	197.54	225.84
1/2003	186.54	213.25
1/2004	186.54	225.84
1/2005	176.15	213.25
1/2006	175.51	225.84
1/2007	165.73	213.25
1/2008	164.44	225.84
1/2009	155.28	213.25
1/2010	153.35	225.84
1/2011	144.81	213.25
1/2012	142.23	225.84
1/2013	134.31	213.25
1/2014	131.08	225.84
1/2015	123.78	213.25
1/2016	119.90	225.84
1/2017	113.22	213.25
1/2018	108.71	225.84
1/2019	102.65	213.25
1/2020	97.04	225.84
1/2021	91.63	213.25
1/2022	85.54	224.72
Total	7,080.72	8,350.63

Staff Statement No. 2
Witness: Witold M. Pachul
Date:

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NO. R-822169

Direct Testimony

of

Witold M. Pachul

Concerning:

Decommissioning of Susquehanna Unit 1

SUMMARY

1. The ratepayers should provide funds for the cost of removal/dismantlement of radioactive portions of the Susquehanna Unit 1 nuclear power plant.

2. An annual annuity expense of $183,972, to be kept in escrow and invested in tax free Pennsylvania bonds, will cover the cost of dismantling and removing the radioactive portions of Susquehanna Unit 1.

3. An adjustment downward of $2,460,028 should be made to the Company's annuity claim for decommissioning, because the Respondent used:

   a. an improper methodology to estimate the cost of decommissioning of Susquehanna Unit 1, which resulted in an excessive overall decommissioning cost of this plant.

   b. a 7% annual interest rate earned on funds accumulated in the decommissioning escrow account which is in my opinion, too low.

   c. excessive rate of inflation in adjusting past year dollars into 1983 dollars.

Q. State your name and the address of your employer.

A. Witold M. Pachul. I am employed by the Pennsylvania Public Utility Commission, P. O. Box 3265, Harrisburg, Pennsylvania 17120.

Q. What is your current position with the Public Utility Commission?

A. I am currently employed as a Fixed Utility Valuation Engineer in the Bureau of Rates.

Q. How long have you been employed by the Commission?

A. I have been employed by the Commission continuously since April 1977 in the capacity of Fixed Utility Valuation Engineer in the Bureau of Rates.

Q. What is your educational background?

A. I received Diploma Civil Engineering Degree from the Carola Wilhelmina Technical University in Brauschweig, West Germany. A resume of my professional background is attached to this statement as Appendix A.

Q. Have you testified previously before this Commission?

A. Yes. I testified before this Commission in the following rate cases:

R-80011069: Duquesne Light Company, concerning decommissioning costs of Beaver Valley Unit No. 1.

R-80061225: Philadelphia Electric Company concerning spent fuel disposal cost for Salem Unit No. 1 and Peach Bottom Units Nos. 2 and 3.

R-811510: Pennsylvania Power Company concerning spent fuel disposal cost for Beaver Valley Unit No. 1.

R-811470: Duquesne Light Company concerning spent fuel disposal cost and decommissioning of Beaver Valley Unit No. 1, and

R-811601: Metropolitan Edison Company concerning spent fuel disposal cost and decommissioning of TMI-1 and Saxton nuclear power plants.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present my opinion as an engineer as to the annual level of expense recovery through rates necessary to cover the cost of removal/dismantlement of the radioactive portions of Susquehanna Unit 1 (S. Unit 1) nuclear power plant.

Q. Have you examined the Respondent's claimed adjustment for the decommissioning cost for Susquehanna Unit 1 (S. Unit 1)?

A. Yes.

Q. In your opinion, is the Respondent's claim reasonable?

A. No. The Pennsylvania Power & Light Company's (PP&L) annual accrual claim (D-12) in the amount of $2,644,000 for the decommissioning cost of the radioactive portion of S. Unit 1 is based on the following methodology: The Susquehanna Unit 1 will be continuously operating over a period of 39 years. After the plant ceases its operation the estimated decommissioning cost of the radioactive portion of the Unit 1 will amount to $103,096,000 (in 83 $) representing PP&L's 90% ownership share of the plant. This total amount is divided by the 39 years of service life of the plant resulting

in an annual accrual of $2,644,000, which will be deposited in the escrow account earning an annual interest of 7 percent. I disagree with three aspects in estimating the adjustment for the decommissioning cost of Unit 1: (1) the methodology used by the Respondent to estimate the cost of decommissioning of Unit 1 because it results in too high an overall decommissiong cost of the plant, (2) the 7% annual interest rate earned on funds accumulated in the decommissioning escrow account is too low, and (3) the Respondent used too high an inflation factor adjustment to transform past year dollars into 1983 dollars.

Q. Please describe briefly the history of nuclear reactor decommissioning.

A. There are numerous number of small reactors, that have been decommissioned. These little research swimming pool type reactors do not really teach us very much about decommissioning the large commercial type of reactor. They are so simple, being slightly more complicated than a spent fuel pool, and therefore, are not teaching us a whole lot about the major job of decommissioning of a commercial plant.

These reactors are ones that have been decommissioned from the first generation of reactors and are all fairly small with megawatts thermal (MWt) ranging from even a fraction to 256 megawatts. For perspective a major commercial power reactor today is 3,000 or more megawatts thermal. Susquehanna Unit 1 & 2 are above this range with 3293 MWt each.

We do not yet have experience on decommissioning of a large commercial power reactor because we do not have any decommissioned.

Some of the small reactors that were decommissioned are shown on Table SR-4, p. 2, Exh. 2-A, but please notice the majority were mothballed;

it can be seen throughout the Table. Mothballing is a temporary form of decommissioning. In a "nutshell," mothballing is just temporary storage. It is to remove the fuel and the easily removable radioactivity and then padlock the door and guard it. Very few reactors were entombed and only one small demonstration reactor Elk River was dismantled.

The NRC Staff is in the process of reappraising its regulatory position relative to the decommissioning of nuclear facilities. As a part of this activity NRC has initiated a series of studies through technical assistance contracts. These contracts are being undertaken to develop information to support the preparation of new standards covering the decommissioning cost of large commercial nuclear power plants.

As a result of these contracts the following studies were published up to this date:

1. Technology, safety and costs of decommissioning a Reference Pressurized Water Reactor Power Station. NUREG/CR-0130, Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission, June 1978, and an Addendum under the same title published in August 1979.
2. Decommissioning of Nuclear Facilities--An annotated Bibliography. NUREG/CR-0130, Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission, September 1978.
3. Facilitation of Decommissioning of Light Water Reactors, NUREG/CR-0569, Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission, 1979.
4. H.D. Oak et al., Technology, Safety and Costs of Decommissioning of a Reference Boiling Water Reactor Power Station, Pacific North-

west Laboratory for U.S. Nuclear Regulatory Commission NUREG/CR-0672, June, 1980.

In addition, the Atomic Industrial Forum (AIF) Incorporated, published in 1976 a significant study under the title An Engineering Evaluation of Nuclear Power Reactor Decommissioning Alternatives, the purpose of which is to provide detailed engineering information that will permit utilities to estimate the decommissioning cost of commercial power stations.

Q. You said that some of the small reactors were entombed and some were dismantled. What is the difference between the two decommissioning methods?

The NUREG/CR-0672 Report defines:

1. Entombment as:

"The radioactive materials and contaminated areas are decontaminated and the nonreleasable materials are confined within a monolithic structure that provides integrity to ensure the protection of the public from the entombed radioactivity for a time period of sufficient length to permit the decay of the radioactivity to unrestricted release levels. During the period of entombment, the property is maintained as necessary and remains restricted in use by the nuclear license."

2. Dismantlement as:

"The station is decontaminated and the radioactive materials are removed. Upon completion, the nuclear license is terminated and the property is released for unrestricted use."

"The main difference between a decommissioning method of BWR plant by means of entombment and dismantlement of the plant is that in the case of "entombment" only a portion of radioactive materials such as some amounts of decontaminated piping, spent fuel, and radioactive waste are removed from site and subsequently disposed off. In the case of "dismantlement and disposal" all radioactive materials of the plant are dismantled and removed from site, and the plant is subsequently released for unrestricted use of the property free of any residual radioactivity or any other health hazards to the public. Because the dismantling of a plant involves different activities and equipment requirements compared to the entombment of a plant, the cost estimates of decommissioning the same plant by either method will be different. Most importantly, any entombed plant is subject to "possession-only license" which means that a license is issued to a nuclear facility owner by the NRC entitling the licensee to own a nuclear facility but not to operate it. The consequences of "possession-only license" are associated with the cost of continuing care (surveillance and maintenance cost) during entombment which is estimated to be $40,000 in 78$) or 1.4586 x $40,000 = $58,344 per year for commercial type of plant according to NUREG/CR-0672 Report (1983 $).

Q. Did you estimate the cost of decommissioning S. Unit 1?

A. Yes.

Q. Have you promulgated or adopted a methodology to arrive at a reasonable decommissioning cost at the time the power plant will cease its operation?

A. I have estimated the cost of decommissioning S. Unit 1 on the basis of the AIF Study and NUREG/CR-0672 Report.

Q. Have you determined the amount of funds necessary for the decommissioning of S. Unit 1 employing the AIF Study technical information?

A. For comparison purposes, I have computed the cost of decommissioning of one "model" BWR (3579 MWt) by the removal/dismantlement method of the radioactive portion of the plant using the AIF method. The total (100% ownership) decommissioning cost amounts to $54.0 million in 1983 dollars, and at a 90% ownership to $54.0 x 0.9 = $48.6 million. The Respondent's claim for the decommissioning of S. Unit 1 (90% ownership) by the same method amounts to $103.096 million in 83 dollars. Consequently, according to the AIF estimating methodology the Respondent overestimated the cost of decommissioning S. Unit 1 by: $103.096 - $48.600 = $54.496 million.

It is important to note that the AIF Study's "model" BWR plant is 286 MWT larger than S. Unit 1 which has a thermal capacity amounting to

3293 MWt. Details of my computations with explanatory text are contained in the attached Exh. 2-A pages 1 through 6 and 16 through 17.

Q. Have you determined the amount of funds necessary for the decommissioning S. Unit 1 employing the NUREG/CR-0672 Report Methodology?

A. I have computed the decommissioning cost of S. Unit 1 by the removal/dismantlement of the radioactive portion using NUREG/CR-0672 study method. The total cost of removal/dismantlement of the radioactive portion of the entire plant amounts to $59.4 million ($83). PP&L's ownership share of decommissioning cost = $59.4 x 90% = $53.46 million ($83). (For detailed computation see Exhibits 2-A and 2-B). Respondent's estimate to decommission S. Unit 1 amounts to $103.096 ($83). Consequently, according to the NUREG/CR-0672 Report estimating methodology the Respondent overestimated the cost of decommissioning S. Unit 1 by: $103.096 - $53.460 = $49.636 million.

As a result of my research it is my opinion that PP&L's 90% ownership share of the deCommissioning cost of S. Unit 1 should amount to $53.460 million ($83).

Q. How should the decommissioning funds be accumulated and secured?

A. It is my opinion that the decommissioning cost of S. Unit 1 should be financed by means of a sinking fund payment to an outside escrow account invested in tax-free Pennsylvania bonds.

As shown in Exhibit 2-B, I have computed the annual annuity requirement of $183,972 dollars based on a service life of 39 years for the S. Unit 1. As a result of my computations, Respondent's annual accrual

claim amounting to $2,644,000 should be adjusted downwards by $2,460,028.

The application of the annual annuity formula to determine the annual accruals for the escrow accounts was approved by the Pennsylvania Public Utility Commission at R-78040599 (Penelec Co. v. P.U.C.) and at R-811470 (Duquesne Light Co. v. P.U.C.).

Q. Can you explain the reasons for using the NUREG/CR-0672 decommissioning cost estimate methodology to estimate the cost of decommissioning Susquehanna Unit 1?

A. The NUREG/CR-0672 report contains the results of a study sponsored by the Nuclear Regulatory Agency (NRC) to conceptually decommission a present-generation boiling water reactor (BWR) power station. The primary purpose of the study is to provide information on the available technology, the safety considerations, and the costs for the decommissioning of large BWR power station at the end of its operating life.

This report embodies the most comprehensive detailed analyses and procedures necessary to develop a decommissioning cost estimate of a BWR plant. This report consists of 938 pages containing 107 figures and 280 Tables. The validity of the calculation methodology is based on the evaluation of several major past studies on decommissioning of commercial nuclear power plants including:

a. A study developed by a working group of the Association of German Electric Companies, Vereingung Deutscher Elektrizitätswerke which was published in June 1976.

b. A study carried out for the Commission of the European Communities by Nuclear-Ingenieur-Service GmbH, which was published in November 1976 in Germany.

c. A study performed for the Atomic Industrial Forum (AIF) by the Nuclear Energy Services Division of Automation Industries, Inc., which was published in November 1976.

d. Comparative study of coal and Nuclear Generating Options for the Pacific Northwest, Vol. III, Analysis of the Nuclear Option, Section 7, Decommissioning of Nuclear Power Plants, Washington Public Power Supply System, June 1977.

Q. Is your cost estimate for the decommissioning of S. Unit 1 based upon a review and evaluation of NUREG/CR-0672 Report estimating methodology?

A. Yes, the findings of my review and evaluation of the NUREG/CR-0672 Study are presented in a report which I have prepared under the title "Estimation of Nuclear Power Plants Decommissioning (costs, and methods)". This report is a part of my testimony, and is contained in Exhibit 2-A.

In this report, I have recommended that the NUREG/CR-0672 Study methodology be used to estimate the cost of decommissioning (BWR) power stations.

Q. Could you describe briefly the NUREG/CR-0672 decommissioning cost estimating methodology?

A. The NUREG/CR-0672 cost estimating methodology develops scaling factor relationships for decommissioning cost and radiation, broken down into the following parts:

. component-specific scaling factors and reference-plant dismantlement costs for the reactor vessel, the reactor vessel internals, and the Reactor Building

. plant-specific scaling factors

. scaling factor relationship.

These components are described in the individual Final Safety Analysis Reports in sufficient detail to permit meaningful comparisons to be made with the corresponding components of the reference BWR.

The reference nuclear power plant in this study is a 3320-MWt (1155-MWe) boiling water reactor (BWR) being built by the Washington Public Power Supply System (WPPSS). The plant is designated as the WPPSS Nuclear Project No. 2 (WNP-2) and is located near Richland, Washington.

In all, seven BWR power plants, including the reference BWR and ranging in power rating from 1593 MWt to 3320 MWt, are used in developing the scaling factor relationship. The BWR power plants and their power ratings are: Vermont Yankee 1593 MWt; Oyster Creek, 1600 MWt; Monticello, 1670 MWt; Cooper, 2381 MWt; Dresden 2 or 3, 2527 MWt; Peach Bottom 2 or 3, 3293 MWt; and the reference plant, WNP-2 3320 MWt.

The methodology used to develop the scaling factor relationship is based on comparisons of the individual BWR plant components and on the estimated costs for immediate dismantlement of each of the reference BWR components. The component comparisons are made on the physical parameter (i.e., mass, surface area, volume, or some combination thereof) that is most appropriate for the particular component.

The component comparisons for a given BWR power plant determine component-specific scaling factors for that plant, which are weighted by cost factors based on the dismantlement costs for the respective reference-plant components and summed to create a plant-specific scaling factor. The various plant-specific scaling factors are used to develop the scaling

factor relationship.

The equation of the "best-fit" line through the plant-specific scaling factors is:

$$OSF = 0.267 + (2.035 \times 10^{-4})\ PPR$$

where OSF is the overall scaling factor for determining decommissioning costs and radiation dose and PPR is the plant power rating of the BWR power plant in question. This equation must be normalized to yield the total estimated cost and radiation dose for a given decommissioning mode at the reference BWR when evaluated at PPR_r = 3320 MWt. Thus, the desired scaling factor relationship is:

$$OSF = 0.32\ 4 + (2.035 \times 10^{-4})\ PPR$$

This equation is used to determine specific decommissioning costs and radiation doses for certain BWR power plants.

As shown on Figure A (page 14 of Exh. 2-A) the BWR nuclear power plants: Vermont Yankee (1533 MWt), Oyster Creek (1600 MWt), Monticello (1670 MWt), Cooper (2381 MWt) Dresden 2 or 3 (2527 MWt each), Susquehanna 1 or 2 (3293 MWt each), Peach Bottom 2 or 3 (3293 MWt each) and the Reference reactor--Washington Public Power Supply Nuclear Project No. 2 (WNP-2, 3320 MWt) fit almost perfectly on the NUREG/5 algebraic expression determining the Overall Scaling Factor (OSF) as a function of the thermal capacity of the plant.

Q. Can you summarize the Respondent's decommissioning cost estimaing methodology of S. Unit 1?

A. The Respondent determined the final cost of decommissioning the radioactive portion of S. Unit 1 in three steps:

1. The Respondent applied the NUREG/CR-0672 "methodology to S. Unit 1 configuration" and estimated the cost of decommissioning S. Unit 1,

by the immediate dismantlement method, to be $115.316 million ($83) and $213.690 million ($83) for both S. Units being dismantled concurrently.

2. The Respondent applied the "Elk/Bonus-based methodology to S. Unit configuration" and estimated the cost of decommissioning S. Unit 1, by the immediate dismantlement method, to be $144.199 million ($83) and $275.813 million ($83) for both S. Units being dismantled concurrently.

3. Subsequently, the Respondent "adjusted" the NUREG/CR-0672-based estimate to include an added contingency for the site disposal charges of contaminated material and process radioactive waste. The Respondent also "adjusted" the Elk River/Bonus-based estimate "to reflect a reduction in the changes developed using very large scaling factors". As a result of these adjustments the final estimated costs of immediate dismantlement of single S. Unit amounts to $123.024 million ($83) and to $229.101 million ($83) for dismantling both units concurrently.

Q. Do you agree with the Respondent's cost estimating methodology of dismantling S. Unit 1?

A. I do not.

Q. In what ways do you disagree with the decommissioning cost estimate of S. Unit 1 methodology as presented by the Respondent?

A. My disagreements with the Respondent's decommissioning cost estimating methodology for S. Unit 1 extend over several areas as follows:

1. The Inflation Factor Adjustments

The inflation escalation factors used by the Respondent to transform cost data into 1983 cost dollar values are too high when compared with the escalation factors used by the Staff resulting in a higher decommissioning cost of Unit 1. For example: The Respondent used an inflation escalation factor of 8.3% to convert 1982 dollars into 1983 dollars (Sec. 3.1.1 p. 8) while according to the Staff's best estimate this inflation calculation factor should amount to 5.7%. The excessive inflation factor adjustments result in too high a cost estimate of decommissioning S. Unit 1.

2. The Presentation of Decommissioning Cost in "Lump Sum: Dollar Values

The Respondent has presented in his estimation method of decommissioning cost of S. Unit 1, "Lump Sum" values (examples: See Exh. AAW 1: Table 2, p. 6; Table 3, p. 7, Table 4, p. 9; table 5, p. 22) the total of which exceeds 100 million dollars without providing any detailed supporting material and data on how these "Lump Sums" were derived.

The submission of a cost estimate for decommissioning of S. Unit 1 in excess of $100 million in the form of "Lump Sums" for the approval by the P.U.C. cannot be accepted in my engineering judgement.

3. Comparison of Staff's Estimated Cost for Dismantlement of Reference (WNP-2, NUREG/CR-0672 Report) Nuclear Power Plant with Cost Estimate of the Same Plant Developed by Respondent.

Table 2.10-1 (Exh. 2-A, p. 15) shows in column 1 the estimated cost of dismantling Reference BWR (WNP-2) in 1978 dollars.

Column 3 shows the decommissioning cost data of column 1 transformed into 1983 dollars by the Staff and column 4 shows the decommissioning cost data of column 1 transformed into 1983 dollars by the Respondent as shown on the PP&L Exh. AAW 1, Table 3, column 1.

A comparison of column 3 cost items with column 4 cost items indicate that the Respondent increased the disposal of radioactive materials (Items 1, 2 and 3) to $36.329 Million as compared to $12.658 Million estimated by the Staff. No reason is given in Respondent's testimony and Exh. AAW 1 to justify the additional $23.671 Million for the disposal of radioactive material.

The fact is that up to this date a Federal repository which will accept high level waste from commercial nuclear power plants does not exist. Consequently, the cost of shipment, as well as the fee for the final disposal of radioactive material cannot be verified.

Another element which shows a great increase in the Respondent's calculation is the cost of Nuclear Insurance (item 9 in Table 2.10-1, Exh. 2-A, p. 15). The Respondent's claim is $8.689 Million higher than the estimated cost of nuclear insurance estimate by the Staff. No valid reason is given by the Respondent to justify this level.

Similarly, the Respondent's fuel channel disposal claim (Item 15) is $1.3 million higher than the NUREG/CR-0672 Report.

Since the aforesaid disposal of radioactive materials cost increases, as presented by the Respondent, are based on a speculative location of a presently non-existant Federal repository, they cannot be accepted as credible and valid in the estimation of disposal cost of radioactive materials.

4. The Shipment Distance of Disposal of Radioactive Materials Assumed in the NUREG/CR-0672 Report

The NUREG/CR-0672 Report assumed that the shipment distance to a Federal repository which will accept radioactive materials is 1,000 miles.

The Map (See Exh. 2-A, page 31) subtitled Nuclear Power Reactors in U.S. shows the Location of approximately 70 reactors presently licensed by the NRC to operate. 55 or 78% of these reactors are located within a 1,000 mile radius from Harrisburg. This fact suggests very strongly that a logical place for a Federal high waste repository will be located somewhere in the eastern portion of the Nation to avoid the high cost of transportation, and minimize the chance for dangers to the general public associated with the transportation activities.

The Map on page 32 of Exh. 2-A shows places where existing nuclear radioactive waste is either buried or in temporary storage. Examination of the contents of this map indicates that half of the presently established temporary high and low-level radioactive disposal sites in the Nation are located within the 1,000 miles radius from Harrisburg, Pa., suggesting very strongly, that one of the future permanent Federal disposal repository will be located within the 1,000 miles radius territory.

Consequently, the Respondent's assumption that the radioactive materials resulting from the dismantling of S. Units 1 and 2 will be shipped on a highly speculative basis, to a presently non-existant "western" permanent repository cannot be accepted.

5. Comparison of the Contaminated Structural Components of the Reference Plant (WNP-2) With Susquehanna Unit 1 (S. Unit 1).

Almost all major WNP-2 and S. Unit 1 contaminated structural components are identical.

The differences between the WNP-2 plant and S. Unit 1 are minute and tend to offset each other. Consequently, the cost estimates for the dismantling of radioactive portions of each of the plants should be almost identical.

6. Comparison of the Discrepancies contained in the Respondent's Cost Value Table 4 (See Exh. 2-A, page 46) With Cost Values contained in Table I.3-3. (See Exh. 2-A, page 36) as Presented in NUREG/CR-0672 Report.

The following elements contained in Table 4 and in Table I.3-3, are identical:

a. The Title of each of the Tables: "Cost of Disposal of Neutron-Activated Materials"

b. Each of the 10 items component description (Column 0)

c. The description of columns 1 through 8 (in circles)

All data presented by the Respondent in Table 4, (Columns 1 through 8, Exh. 2-A, p. 46) are expressing "lump sums" of 1983 dollar values. No valid detailed documentation was submitted to the P.U.C. which will permit the detailed review and evaluation of these "lump sums," as this has been done in the NUREG/CR-0672 Report. As can be observed from Table 4 the equivalent dollar figures from Table I.3-3 are very close to the dollar figures shown in Table 4 under columns 1 and 2. However, the equivalent dollar figures shown under columns 3, 4, 5, 6, 7 and 8 are in the Respondent's Table 4 considerably higher than those contained in Table I.3-3 in the NUREG/CR-0672 Report. In fact, the Respondent's total disposal costs are higher by 8,314,409 dollars than those presented in the NUREG/CR-0672 Report.

As can be seen from Respondent's Table 4 the over 8 Million dollars difference is a result of:

a. Inflated costs for transport costs (Col. 3), handling surcharges (Col. 4), burial costs (Col. 5), Liner Surcharges (Col. 6) and Curie Surcharges (Col. 7).

b. The Respondent's assumption that the contaminated radioactive material will be shipped and disposed at a "Western disposal site" (Exh. AAW 1, p. 11).

The fact is that at the present time a Federal repository accepting radioactive waste does not exist. Consequently, the final location, design, cost of construction, cost of maintaining such repository and its associated disposal fee are not determined. For these reasons, the inflated costs for disposal of neutron-activated materials which are based on speculative and unrealistic assumptions that the radioactive waste will be shipped to a "Western" unidentified "disposal site" at the cost of $8,314,409 above the cost of disposal neutron-activated materials as shown in Table I.3-3 (NUREG/CR-0672 Report) cannot be accepted.

7. Respondent's Extrapolation of Decommissioning Cost of Unit 1 (S. Unit 1) from Boiling Nuclear Superheater (BONUS) Power Station, Ricon, Puerto Rico

The Bonus plant was a 50 MWt boiling water reactor with nuclear superheat which was entomed.

The Respondent in Exhibit AAW 1 extrapolated certain costs including the removal and disposal of spent fuel and radioactive waste from a small entombed Bonus (50 MWt) BWR plant, the dismantlement of Susquehanna

Unit 1 (3293 MWt) BWR commercial power plant. This was accomplished by a series of adjustments to convert the Bonus 1969 costs associated with the entombment of this plant into 1983 dollars.

Bonus Demonstration Reactor thermal capacity was 50.0 MWt, while the Susquehanna Unit 1 thermal capacity is 3293.0 MWt. In terms of thermal capacity S. Unit 1 is 65.86 times larger than the Bonus reactor and not "about 50" times larger as the Respondent claims.

The extrapolation, by the Respondent, of certain cost elements from a small entombed demonstration Bonus BWR to determine certain cost elements embedded in the overall cost of dismantling a large commercial S. Unit 1 BWR, by a series of unsupported adequately in detail adjustments which included the use of too high inflation factor adjustment, is unacceptable. It is also unacceptable, in my engineering judgment, to approve any cost element extrapolation from a small demonstration reactor to a large commercial plant on a basis of a highly speculative dollar value scale the magnitude of which is 1:65.86.

8. Respondent's Extrapolation of the Decommissioning Cost of Unit 1 (S. Unit 1) from Elk River (BWR), Minnesota

The Elk River Reactor (ERR) was a small 58.2 MWt boiling water reactor (not 73 MWt as Respondent claims), built under a USAEC demonstration program contract and operated by the United Power Association (UPA).

The Respondent in Exhibit AAW-1 extrapolated certain costs from a small dismantled demonstration reactor, Elk River (52.8 MWt), to determine the cost of dismantling of Susquehanna Unit 1 (3293 MWt). This was accomplished by; a series of adjustments to convert the 1973 Elk River decommissioning cost of $6.15 Million into 1983 dollars. In

terms of thermal capacity S. Unit 1 is 62.37 times larger than the Elk River reactor, and not "about 50 times" larger as the Respondent claims.

The Uranium 235 content of entire Elk River reactor core amounted only to 175.043 kgU and not to 4.17 tons or 4170 kgU as the Repondent claims. The Uranium - 235 content of entire S. Unit 1 reactor core amounts to 140,576 kgU. In terms of Uranium core capacity S. Unit 1 is 803.09 times larger than Elk River reactor.

The extrapolation, by Respondent, of certain cost elements from a small dismantled demonstration Elk River BWR to determine certain cost elements embedded in the overall cost of dismantling a large commercial S. Unit 1 BWR, by a series of unsupported adequately in detail adjustments which included the use of high inflation factor adjustment, is unacceptable. It is also unacceptable, in my engineering judgement, to approve any cost element extrapolation from a small demonstration reactor to large commercial plant on a basis of highly speculative dollar value scale the magnitude of which is 1:62.37, and whose reactor core capacities of kgU producing steam which turns turbines creating electricity vary on a scale 1:803.09.

A more detailed explanation in support of the above issues pertaining to items 1 through 8 is contained in Exhibit 2-A of this testimony.

Q. What is your recommendation?

A. I have reviewed and analyzed the Respondent's annual accrual claim amounting to $2,644,000 for the dismantlement and removal from site of the contaminated portion of the Susquehanna Unit 1 after the plant ceases its operation.

As a result of my investigation, I have concluded that the method-

ologies employed by the Respondent in the development of this claim cannot be accepted as valid and reasonable. For this reason I recommend that the Staff's annual annuity in the amount of $183,972 be accepted as the proper amount to decommission Susquehanna Unit 1. Consequently, the Respondent's claim should be adjusted downward by $2,460,028.

Detailed calculation supporting the development of the annual annuity together with explanatory text are contained in Staff's Exhibit 2-B.

APPENDIX A

Resume of Professional Background of Witold M. Pachul

Education

From 1945 to 1952 I studied at the Technical University of Braunschweig (Germany) and received a Diploma Degree in Civil Engineering, specializing in comprehensive statewide, regional and community planning and infrastructure design and development.

Since 1954, I am a Registered Professional Engineer of the Province of Ontario, Canada.

In 1957, I completed a computer programming and electronic data processing course.

In 1958, I completed a course of instructions in Highway Management.

In 1969, I completed a course of instructions in Presentation Skills including the following subjects:

1. Principles of Oral Communications.
2. Analyzing Audience Characteristics Utilizing Visual Aids.
3. Organizing Ideas.
4. Making the Presentation.

In 1970, I completed a Seminar in Public Expenditures analysis, conducted by the Institute on Human Resources Pennsylvania State University.

Since my employment with the P.U.C. I have completed the following:

a 7-day program in "Fundamentals of Service Life Forecasting"
a 2-day seminar on "Public Accounting and Finance",
a seminar entitled: "A Realistic Approach to Utility Rate Making",
a 7-day program on "Dynamics of Life Estimation".

Experience

April 1977 to present: Public Utility Engineer, Bureau of Rates, Pennsylvania Public Utility Commission.

Electric Division:

Reviewed and evaluated all utility rate filings for accuracy and methodology in the area of forecasting and depreciation.

Participated in on-site inspection of coal mines, and electric generation stations.

Assisted in the preparation of interrogatories, technical reports, graphical representations, recommendations, studies and testimony in these filings.

Water/Sewer Division:

Review rate design, cost of service allocation and consumer consumption analyses to evaluate the fairness of water and sewer utility rate structure.

Other Engineering Experience:

Feb. 1966 to March 1976: Highway Planner and Planning Analyst, Bureau of Advance Planning, Pa. State Department of Highways and Pa. State Dept. of Transportation. Carried out independent statewide regional and community transportation research studies. Coordinated transportation planning activities with Federal, State, Local and other agencies. Prepared socioeconomic impact studies of transportation facilities upon development of regions and communities. Developed legislative proposals. Prepared cost estimates for transportation facilities. Developed statewide transportation policies and programs and the administered Federal and State policies and programs.

Feb. 1964 to Feb. 1966: Regional Supervisor, Bureau of Community Development, Pa. State Dept. of Commerce: Supervised and administered contracts of local and regional comprehensive planning programs and urban redevelopment projects within 7 counties of the state. Conducted independent research studies and legislative proposals.

Jan. 1963 to Feb. 1964: Highway Design Engineer, McFarland and Johnson Consulting Engineers, Buffalo, N. Y.: Engaged in geometric design of the "Virginia-Carolina" multilevel interchange servicing the New York Thru-Way located in the redevelopment area of downtown of Buffalo, N. Y.

April 4, 1958 to June 1962: Bridge and Roads Design Engineer and Research and Standards Supervisor, Corporation of the City of Toronto, Dept. of Works, Ontario, Canada. Supervised staff engaged in the design, construction and maintenance of expressways, bridges, subways, roads interchanges and other facilities. Administered office operation including the preparation of annual budget and capital improvement program. Supervised consultants and contractors in the field. Supervised city laboratory and the development of improved consturuction methods, specifications and standards for design, materials and equipment. Coordinated the activities of six works department divisions, and other agencies jointly involved in city projects. Instituted a seminar for city inspectors and construction engineers supervising contracts in the field to improve the quality of contractors performance in the execution of city contracts. Served as an expert witness in a judicial inquiry concerned with contract performance irregularities discovered in the execution of city's contracts.

July 56 to April 58: Bridge and Roads Design Engineer, Muncipality of Metropolitan Toronto, Roads Department, Ontario Canada. Supervised staff engaged in the planning, design and construction of expressways, bridges, interchanges, intersection improvements and grade separations. Supervised consulting firms and contractors in the field. Approved contractors charges. Carried out negotiations with public utilities and others related to projects in which the municipality was jointly involved. Coordinated cosntruction projects in the field and administered office operations. Audited contract performance irregularities.

Jan. 1956 to July 1956, Planning Director, Oakville-Trafalgar-Bronte Planning Board, Ontario, Candada. Supervised staff and administered office operations.

Updatedcomprehensive devlopment plan for the three communities. Developed integrated roadway system servicing the planning area. Acted as a consultant to the Planning Board on all matters involving the development of the planning area.

June 1954 to July 1956. Engineering Audit Research Engineer and Bridge Design Engineer. Department of Highways of the Province of Ontario, Toronto, Canada. I was the key investigator and expert witness in a judicial inquiry involving contract overcharges amounting to hundred millions of dollars which occurred over a period in excess of ten years. I was re-estimating: materials, manpower and equipment used in several contracts "as constructed". Since many contract plans and documents were destroyed, the new estimates were based on newly made surveys, evaluation of contour maps, core drillings, aerial photographs, etc. Formulated new policies, specifications and procedures to prevent and eliminate the possibility of future contract overcharges and other irregularities.

In the capacity of Bridge Design Engineer, I checked designs and cost estimates prepared by consultants and designed one bridge.

1945-1952 Student at the Technical University Carolo Wilhelmina, Braunschweig, Germany.

1939-1945 Forced Laborer (Germany) engaged on various construction jobs such as building and highway construction installation of sewer and water mains, sewage treatment plants, etc.

Research and Publications

1. "Transportation Policies for Pennsylvania" (93 pages include 62 graphical presentations and tables)

   Circulation: 4200 copies, the distribution included all state's departments of Highways or Transportation, Pennsylvania legislators, universities, planning agencies, libraries, organizations, interested citizens, etc.

2. "Methodological Framework for the Development of Priorities schedule for Transportation Studies in Small Urban Areas"

   Circulation: 100 copies, the distribution included all state's departments of Highways or Transportation and all PennDOT Engineering District Offices.

3. "How A By-Pass Affects Your Community, Summary of Economic and Social Impact Studies"

   Circulation: 120 copies, the distribution included all Departments of Highways, District Engineering Offices (for use in public hearings), Planning Commissions, and citizens groups affected by a by-pass construction.

4. "Aesthetic Considerations in Highway Planning and Design".

5. "How to Improve the Service Life of Concrete Pavements, Sidewalks and Curbs"--a research project.

6. "A Model-Subdivision Regulations" circulation 150 copies distributed to Pa. local governments and planning agencies.

Trial Staff Exhibit No.2 -A
Witness: Witold M. Pachul
Date:

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PENNSYLVANIA POWER & LIGHT COMPANY

Docket No. R-822169

Exhibit to Accompany the

Direct Testimony

of

Witold M. Pachul

Concerning:

Decommissioning of Susquehanna Unit 1

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