

OTS Statement No. 1
Dated: June 27, 1997

JV
8-28-97
HSS

R-00973954

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PENNSYLVANIA POWER AND LIGHT COMPANY

Docket No. R-00973954 **DOCKETED**

SEP 03 **1997**

Direct Testimony

of

Michael J. Gruber

PROTHONOTARY'S OFFICE

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Concerning:

Stranded Cost Issues

**DOCUMENT
FOLDER**

1 Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS
2 ADDRESS?

3 A. My name is Michael J. Gruber. My business address is PO Box 3265,
4 Harrisburg Pennsylvania 17105-3265.

5
6 Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

7 A. I am employed by the Pennsylvania Public Utility Commission in the Technical
8 Division of the Office of Trial Staff as a Fixed Utility Valuation Engineer.

9
10 Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL
11 BACKGROUND?

12 A. Attached to my testimony as Appendix A is a statement that describes my
13 educational background and employment experience.

14
15 Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

16 A. The purpose of my direct testimony in this proceeding is to address the level of
17 allowable stranded cost and its recovery for the Pennsylvania Power and Light
18 Company (Company). I have the following recommendations:

19
20 1) that the Commission use a 6.6% treasury bond rate for the common equity
21 component used in determining the Company's risk free cost of capital in place
22 of the 11.5% requested by the Company,

1 2) that the amount collected for fossil fuel decommissioning be placed into a
2 non-qualifying trust fund and kept separate from the Company's other expenses
3 so as to ensure that the money will be there when the units are retired,
4

5 3) that the Commission order a sharing of the calculated stranded cost between
6 the stockholder and the Company's distribution customers on a 90%/10%
7 (ratepayer/stockholder) basis.
8

9 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

10 A. I have divided my testimony into four sections. Section I contains my
11 discussion and recommendation concerning the common equity return used to
12 determine the Company's stranded generation costs. Section II is a discussion
13 of fossil fuel decommissioning. Section III is a discussion of a sharing of the
14 stranded cost between ratepayer and stockholder. Section IV is a summary of
15 all of the Office of Trial Staff recommendations, including both my
16 recommendations and those of OTS witnesses Reed and Deardorff from OTS
17 Statement No. 2 and 3, respectively.
18

19 **SECTION I -- COMMON EQUITY RETURN FOR THE DETERMINATION OF**
20 **STRANDED COST**

21 **Q. PLEASE EXPLAIN THE CONCEPT OF STRANDED COST.**

1 A. On December 3, 1996, Governor Ridge signed into law the Electricity
2 Generation Customer Choice Act (Act). The Act changes how retail electric
3 service in Pennsylvania will be provided. It mandates the phase-in of customer
4 choice of generation supplier commencing January 1, 1999. In enacting these
5 changes, the Pennsylvania Legislature recognized that certain generation-related
6 costs would not be recoverable in a competitive generation market. As a result
7 the Act established standards and mechanisms providing for the recovery of
8 "transition" and/or "stranded" costs found by the Commission to be just and
9 reasonable. Section 2803 of the Act defines the categories of such costs that
10 are eligible for recovery, while Section 2808(C) sets forth the principles to be
11 followed by the Commission in reviewing stranded cost claims.

12

13 **Q. WHAT IS THE DEFINITION OF STRANDED COST?**

14 A. According to section 2803 of the Act, stranded costs are:

15 an electric utility's known and measurable net electric generation-
16 related costs, determined on a net present value basis over the life
17 of the asset or liability as part of its restructuring plan, which
18 traditionally would be recoverable under a regulated environment
19 but which may not be recoverable in a competitive electric
20 generation market and which the commission determines will
21 remain following mitigation by the electric utility.

22

23 **Q. AS THEY RELATE TO GENERATION PLANT, WHY DO STRANDED**
24 **COSTS EXIST?**

25 A. Stranded costs exist because of the differences between a regulated and a
26 competitive market. In a regulated environment, an electric utility had an

1 obligation to serve any customer within its geographic service territory. In
2 some cases the utility was required to make investments and/or agreements that
3 it would not have made in a competitive environment.

4 In a regulated environment, the utility is provided the opportunity to
5 recover its costs and earn a return based upon the risk involved in recovering its
6 prudently incurred investment in providing service. In a competitive
7 environment, the rate a energy supplier will receive will be determined by the
8 market and not a regulatory commission.

9
10 **Q. WHAT IS THE COMPANY'S CLAIM FOR STRANDED COST**
11 **RELATED TO GENERATION PLANT?**

12 A. The Company has claimed a total of \$3,570,180,000, of which \$2,851,961,000
13 is for nuclear and \$718,219,000 is for fossil, in stranded costs for its generation
14 plant (Company Exhibit JRS-1, Tab B, Page 1 of 117)

15
16 **Q. HOW DID THE COMPANY CALCULATE ITS STRANDED COST?**

17 A. The Company's first step was to estimate what the price of electricity will be in
18 a competitive market over the remaining life of its generating units. The second
19 step was to calculate the amount of electricity the Company's generation stations
20 could supply. Then by multiplying the estimated market rate for energy by the
21 estimate of energy produced, the Company was able to estimate the revenue that
22 would be achieved in a competitive market.

1 An estimated revenue stream was then calculated under traditional rate
2 base/rate of return regulated environment and compared to the estimated
3 revenues in the competitive market. The net present value of the difference
4 between the two revenue streams is the stranded cost claimed by the Company.
5

6 **Q. DO YOU AGREE WITH THE METHODOLOGY USED BY THE**
7 **COMPANY TO DETERMINE STRANDED COST?**

8 A. I consider the methodology the Company used to calculate stranded cost
9 acceptable. However it is my opinion that one of the inputs used by the
10 Company in its stranded cost model are inappropriate for this calculation.
11

12 **Q. IN YOUR OPINION, WHICH INPUT IS INAPPROPRIATE?**

13 A. The Company used the common equity return allowed by the Commission in its
14 last rate proceeding at R-00943721. I believe the use of this common equity
15 return is inappropriate.
16

17 **Q. WHY IS THE USE OF THE COMMON EQUITY RETURN**
18 **DETERMINED IN THE COMPANY'S LAST BASE RATE PROCEEDING**
19 **INAPPROPRIATE?**

20 A. The revenue requirement in the Company's last rate proceeding was based upon
21 a traditional regulatory environment. In that environment, revenues approved
22 by the Commission are not guaranteed. Under regulation, rates are set to

1 provide the Company the opportunity to recover the calculated revenue
2 requirement. If a Company does not earn the revenues allowed, no allowance is
3 made to alter future rates to insure the collection of the revenues not collected.
4 Therefore, in its calculation of the common equity component of the cost of
5 capital the Commission allows for a certain amount of risk. In this proceeding,
6 the level of stranded cost determined by the Commission will be amortized over
7 a nine year period with a true up at the end of each year. Therefore, the
8 Company is *guaranteed* recovery of its stranded cost and the risk involved drops
9 to zero (Section 2808 F of the Act).

10
11 **Q. WHAT EFFECT WILL USING THE COMPANY'S RECOMMENDED**
12 **11.5% COMMON EQUITY RETURN HAVE ON COMPETITION?**

13 A. In my opinion, it will have little or no effect on competition in general.
14 However, it will greatly affect the price current Company ratepayers will pay
15 for electricity.

16
17 **Q. WHY WOULD THERE BE LITTLE OR NO EFFECT ON**
18 **COMPETITION?**

19 A. Once the level of stranded cost is determined, it will be placed into the
20 Competitive Transition Charge (CTC) and recovered as a non-bypassable
21 surcharge. All ratepayers who receive service from the Company will pay this
22 surcharge regardless of their energy supplier.

1 As the Company points out, the price for electric generation energy will
2 be determined by the market. Assuming that the Company has calculated the
3 Market Clearing Price for Generation (MCPG) accurately, the removal of
4 stranded cost puts the Company on an even footing with other power suppliers
5 and the price of generation will fluctuate with the market. Everyone will have
6 stranded costs added to their bill, so it should not affect competition directly.

7
8 **Q. WHAT IS THE CTC?**

9 A. The Act defines the CTC as:

10 "a non bypassable charge applied to the bill of every customer
11 accessing the transmission or distribution network which (charge)
12 is designed to recover an electric utility's transition or stranded
13 costs as determined by the Commission under sections 2804
14 (relating to standards) and 2808 (relating to competitive transition
15 charges)." 66 Pa. C.S. & 2803

16
17
18 **Q. COULD THE LEVEL OF THE CTC AFFECT COMPETITION
19 INDIRECTLY?**

20 A. Yes. If the CTC is too high, a large user may choose to locate elsewhere or opt
21 to use some other form of power.

22
23 **Q. HOW WOULD THE USE OF AN 11.5% RETURN AFFECT THE
24 CURRENT COMPANY RATEPAYERS?**

25 A. Use of an 11.5% common equity return, as claimed by the Company, would
26 insure that the Company will recover a *guaranteed* profit, in a risk free

1 situation, equal to what it would have had the opportunity to recover in the
2 regulated environment. In my opinion, this would raise the CTC to an
3 unacceptable level.
4

5 **Q. DOES ALLOWING THE COMPANY TO USE AN 11.5% COMMON**
6 **EQUITY RETURN GIVE IT A COMPETITIVE ADVANTAGE?**

7 A. The possibility exists that allowing the Company to use an 11.5% common
8 equity return could give it a competitive advantage. If the Commission were to
9 use that common equity return, thereby *guaranteeing* the Company's
10 profitability using a risk derived return during the CTC risk free time period
11 (something this Commission has never done), the Company would be in the
12 position of being able to use a lower profit margin for its actual production and
13 sale of its electricity, giving it an advantage over other competitors who may
14 not have the benefit of the CTC for their profit margin.
15

16 **Q. WHAT PART OF THE COMPANY'S STRANDED COST CLAIM DOES**
17 **THE COMMON EQUITY RETURN REPRESENT?**

18 A. Using the Company's methodology, with the common equity return at zero, the
19 Company's stranded cost drops to \$2,404,758,000 from the \$4,610,961,000 in
20 the Company's claim.

21 The effect of setting the common equity return to zero is a reduction of
22 the overall return to 4.26% (Page 1, Schedule 1, OTS Exhibit No. 1). Page 2

1 of my Exhibit No. 1 Schedule 1, is the recalculated stranded costs using this
2 return. Page 3 shows a calculation of the difference between the Company's
3 claim using an 11.5% common equity return and the use of a 0% common
4 equity return. As can be seen from my calculation, \$2,206,203,000 or 47.8%
5 of the Company's stranded cost claim is attributable to common equity return.

6
7 **Q. DOES THIS SCHEDULE ILLUSTRATE ANYTHING ELSE?**

8 A. Yes. An examination of my schedule illustrates that if you eliminate profit, the
9 Company's fossil fueled generation would have no stranded costs associated
10 with it. The Company's use of an 11.5% common equity return, produces
11 stranded costs associated with the fossil fueled units of \$718,219,000. However
12 by using a zero return for common equity the stranded cost associated with the
13 fossil fueled units is a negative \$164,489,000 for a positive benefit for
14 ratepayers.

15
16 **Q IS IT YOUR POSITION THAT THE COMPANY NOT BE GRANTED**
17 **ANY COMMON EQUITY RETURN FOR THE DETERMINATION OF**
18 **STRANDED COST?**

19 A. No.

20
21 **Q. WHAT COMMON EQUITY RETURN DO YOU RECOMMEND BE**
22 **USED TO DETERMINE STRANDED COST?**

1 A. I am recommending the use of a 6.6% return for common equity.

2

3 **Q. HOW DID YOU DEVELOP A 6.6% RATE FOR THE COMPANY'S**
4 **COMMON EQUITY RETURN?**

5 A. The 6.6% return that I am recommending was supplied to me by OTS witness
6 Deardorff and is the currently projected interest on 9 year treasury note.

7

8 **Q. WHY ARE YOU RECOMMENDING THE USE OF THE 9 YEAR**
9 **TREASURY BOND RATE FOR THE COMMON EQUITY RETURN**
10 **RATE IN THE CALCULATION OF STRANDED COSTS IN THIS**
11 **PROCEEDING?**

12 A. As I previously explained, one component of the common equity return allowed
13 in a traditional rate proceeding is an allowance for risk. It is my position that
14 the risk faced by the Company in recovering its stranded cost is near zero,
15 therefore the common equity return should reflect a near zero risk.

16 Further, I recognize that some return is necessary or the Company would
17 have trouble getting investors to invest in the Company, therefore I am using
18 the nine year Treasury note rate as a zero risk return given that time period.

19 (See OTS Statement No. 3)

20

21 **Q. WHAT EFFECT DOES YOUR RECOMMENDED 6.6% COMMON**
22 **EQUITY RETURN HAVE ON THE COMPANY'S COST OF CAPITAL?**

1 A. My use of a 6.6% common equity cost of capital results in an overall weighted
2 cost of capital of 7.25% and an after tax rate of 5.71% (Page 1, Schedule 2 of
3 OTS Exhibit No. 1).

4

5 **Q. WHAT EFFECT DOES THE USE OF A 6.6% COMMON EQUITY**
6 **RETURN HAVE ON THE COMPANY'S STRANDED COST RETURN?**

7 A. Using the Company's methodology and a 6.6% return for common equity, the
8 Company's stranded costs are \$3,671,499,000. This is a decrease of
9 \$939,462,000 (\$4,610,961,000 - \$3,671,499,000) from the Company's
10 stranded cost calculation. (See OTS Exhibit 2, Schedule 2, Page 2)

11

12 **Q. WHAT WOULD HAPPEN IF THE MCPG IS HIGHER THAN THAT**
13 **PREDICTED BY THE COMPANY?**

14 A. If the MCPG is higher than that predicted by the Company, The Company
15 would be in a position to increase its profits. The Company, having already
16 been compensated for its stranded costs, could increase profits simply by
17 following the MCPG. This, after all, is what competition is all about.
18 Therefore, any increase in the MCPG would allow the Company to increase its
19 profits over and above what it would collect under the projected price.

20

21 **Q. WHAT WOULD HAPPEN IF THE MCPG IS LOWER THAN THAT**
22 **PREDICTED BY THE COMPANY?**

1 A. If the MCPG is lower than predicted, the Company would have to charge a
2 lower price than that projected so as to remain competitive. This would
3 decrease the amount of profit collected by the Company.
4

5 **Q. WHAT IS YOUR POSITION WITH REGARD TO THE ACCURACY OF**
6 **THE PROJECTED MCPG?**

7 A. I have conducted no independent analysis to determine what the future MCPG
8 will be. However, I have done a comparison of the future MCPG as predicted
9 by the Philadelphia Electric Company, the Pennsylvania Electric Company,
10 Metropolitan Edison Company and Pennsylvania Power and Light in their
11 respective restructuring filings. This comparison shows that PP&L has
12 projected the lowest price for future generation. (See OTS Exhibit No. 1,
13 Schedule 3)
14

15 **Q. IS THERE ANY REASON TO BELIEVE THAT THE FUTURE MCPG**
16 **WILL BE THE SAME FOR THE COMPANIES THAT YOU**
17 **MENTIONED ABOVE?**

18 A. No. However, since these companies are all Pennsylvania companies, their
19 service territories are contiguous, and they are all PJM members, there is no
20 reason to believe that their future prices of electricity under competition will be
21 substantially different from each other.
22

1 Q. ARE YOU MAKING ANY ADJUSTMENT TO THE COMPANY'S
2 MCPG?

3 A. No. Even though the MCPG claimed by the Company is the lowest of the
4 companies I have compared them to, I am not making any adjustment to the
5 MCPG claimed by the Company.
6

7 Q. SHOULD THIS COMMISSION BE CONCERNED IF THE NEW
8 GENERATION COMPANY DOES NOT EARN THE COMMON EQUITY
9 RATE OF RETURN PERMITTED BY THIS COMMISSION FOR A
10 REGULATED UTILITY IN THE COMPANY'S LAST RATE
11 PROCEEDING?

12 A. No. The Commission will have no involvement in the magnitude of the profits
13 of electric generation companies in a deregulated competitive environment. The
14 newly formed generation company, formed by the Company, to meet
15 competition will earn a profit or not. How much it earns will not be the
16 concern of regulators. The Company has made the best estimate of what the
17 future price of electricity will be. Under competition, the stockholders of the
18 Company will have to live with the decisions of management and the vagaries of
19 the market to make money.

20 This Commission's concern with the viability of the generation company
21 is limited to the recovery of the revenue stream determined by the Commission
22 as stranded under the provisions of the CTC. Since the risk involved in the

1 recovery of the CTC is zero the calculation of stranded costs should also have a
2 zero risk return.

3
4
5 **SECTION II -- FOSSIL FUEL DECOMMISSIONING**

6 **Q. WHAT IS FOSSIL FUEL DECOMMISSIONING?**

7 A. Fossil Plant decommissioning is the dismantlement, removal and disposal of the
8 components of a fossil-fired steam generating facility at the end of its useful
9 life.

10
11 **Q. HOW ARE FOSSIL DECOMMISSIONING EXPENSES CURRENTLY
12 HANDLED IN PENNSYLVANIA?**

13 A. The Commission has traditionally allowed a utility to recover the net of positive
14 salvage and cost of removal on a current basis for book and ratemaking
15 purposes. The Commission has used a five year average of actually experienced
16 net salvage as a leveling device.

17
18 **Q. WHAT IS THE COMPANY'S CLAIM RELATED TO FOSSIL PLANT
19 DECOMMISSIONING?**

20 A. The Company has claimed a net present value of decommissioning expense for
21 fossil fueled generation plant of \$1,074,961,000. This is the sum on the

1 Company's fossil decommissioning shown on pages 20-23 of 117 in Company
2 Exhibit JRS -1.

3
4 **Q. HOW HAS THE COMPANY TREATED ITS FOSSIL FUEL**
5 **DECOMMISSIONING COSTS IN THIS PROCEEDING?**

6 A. The Company has included the cost of decommissioning each of its fossil fuel
7 power stations in the stranded cost analysis as a necessary future revenue
8 stream. These dollars have been present valued to 1999 dollars and their
9 recovery has been included in the CTC.

10
11 **Q. DO YOU HAVE ANY ADJUSTMENTS TO THE COMPANY'S CLAIM**
12 **FOR FOSSIL FUEL DECOMMISSIONING?**

13 A. I have no adjustment to the level of the Company's fossil fuel decommissioning
14 claim. My only concern with the Company's claim is what happens to the
15 money after it is collected.

16
17 **Q. WHAT ARE YOU RECOMMENDING WITH REGARD TO THE**
18 **COMPANY'S FOSSIL FUEL DECOMMISSIONING CLAIM?**

19 A. If the Commission allows the Company to include the fossil fuel
20 decommissioning claim in its stranded cost analysis, I recommend that the
21 Company be ordered to segregate the money collected for fossil fuel
22 decommissioning in a separate non-qualified trust fund. This fund would not be

1 accessible to the Company until it actually decommissions a fossil fueled power
2 station.

3

4 **Q. WHAT WOULD HAPPEN TO THIS FUND IF THE COMPANY WERE**
5 **TO SELL ONE OF ITS FOSSIL FUEL POWER STATIONS?**

6 A. If the Company sells a power station in the future, the fund would remain in the
7 custody of the Company. When the power station that is sold is
8 decommissioned the Company would disburse the appropriate amount of funds
9 from its decommissioning fund to the entity responsible for the
10 decommissioning. The Company would only be responsible for the amount of
11 decommissioning expense it has collected associated with that power plant, to
12 the extent that the cost is greater than the amount in the fund the Company who
13 owns the station would be responsible to make up the difference.

14

15 **Q. WOULD THERE BE ANY ACTUAL AFFECT ON THE AMOUNT OF**
16 **MONEY THE COMPANY WOULD COLLECT FOR FOSSIL FUEL**
17 **DECOMMISSIONING?**

18 A. No. I am not adjusting any part of the actual claims of the Company, I am just
19 recommending a change to what happens to the money after it is collected.

20

21

1 **SECTION III -- SHARING THE COST OF STRANDED COST BETWEEN**

2 **STOCKHOLDERS AND RATEPAYERS**

3 **Q. HAS THE COMPANY PROPOSED ANY SHARING OF STRANDED**
4 **COSTS BETWEEN STOCKHOLDERS AND RATEPAYERS?**

5 **A. No.**

6
7 **Q. WHAT IS YOUR PROPOSAL CONCERNING THE COMPANY'S**
8 **RECOVERY OF STRANDED COST?**

9 **A. I recommend that the Commission order the Company to share stranded costs**
10 **associated with net generating plant between the ratepayer and the stockholder**
11 **on a 90%/10% split.**

12
13 **Q. ARE YOU RECOMMENDING THE SHARING OF THE STRANDED**
14 **COSTS ASSOCIATED WITH REGULATORY ASSETS OR NUGS?**

15 **A. No.**

16
17 **Q. WHY DO YOU BELIEVE THERE SHOULD BE A SHARING OF**
18 **STRANDED COSTS BETWEEN THE RATEPAYERS AND THE**
19 **STOCKHOLDERS OF THE COMPANY?**

20 **A. I believe that sharing the stranded costs between ratepayer and stockholder is**
21 **appropriate because of the intent of stranded costs. If you accept the premise**
22 **that stranded costs are a utility's uneconomic costs in a competitive**

1 environment, and that only after their removal from the utilities cost of
2 generation can the utility be competitive in the generation of electricity,
3 requiring the ratepayer to absorb all stranded costs would reward the Company
4 being an inefficient producer of electricity.

5
6 **Q. WHY WOULD YOU BE REWARDING AN INEFFICIENT PRODUCER**
7 **IF THERE IS NO SHARING OF THE STRANDED COSTS?**

8 A. As is pointed out by Ronald E. Hill on page 5 of the Company's Statement No.
9 2:

10 "Those utilities who have been successful in controlling costs in the past
11 will have lower current rates and correspondingly lower stranded costs.
12 Conversely, those utilities with a higher cost of service will have higher
13 rates and higher stranded costs. It is my belief that those utilities with
14 high rates and high stranded costs should have more opportunity to
15 "mitigate" stranded costs through future mitigation than utilities with
16 lower costs and lower rates."
17

18 I agree with this statement and I think the Commission should provide
19 the incentive to mitigate stranded costs through the use of a sharing mechanism.
20 The inclusion of a company's total stranded costs would reward those utilities
21 who in the past have made less cost efficient judgments in their choices and
22 construction of generation capacity.

23
24 **Q. HAVE YOU READ MR. HILL'S TESTIMONY WITH RESPECT TO**
25 **THE MITIGATION EFFORTS ALREADY UNDERTAKEN BY THE**
26 **COMPANY?**

1 A. Yes.

2

3 **Q. DO YOU HAVE ANY COMMENTS ON THE MITIGATION EFFORTS**
4 **DISCUSSED BY MR. HILL?**

5 A. Yes. Mr. Hill highlights several Company efforts to reduce its costs. The
6 reduction of the Company's cost of debt by 30% (11.27% in 1985 to 7.97% in
7 1995), efforts to control O & M costs, a reduction in the number of employees,
8 reduced inventory costs, lower capital expenditures, and programs to increase
9 the efficiency of its generating units are the mitigation efforts mentioned and
10 each of these programs has had the effect of lowering stranded costs.
11 However, these are all courses of action that the Company is expected to do in a
12 regulated environment. In a regulated environment, a utility is responsible for
13 providing safe and reliable service at a reasonable price. The Commission is
14 responsible for seeing that the rates charged are as low as possible while still
15 providing the utility with its cost of service. All of the items Mr. Hill
16 mentioned as mitigation efforts by the Company are things that the Company
17 should do or should have done in the regulated environment. To allow the
18 Company to claim these actions as mitigation efforts is to reward the Company
19 for doing nothing more than it had a responsibility to do in the first place.

20

1 **Q. WHY SHOULD THE COMMISSION ORDER A SHARING OF**
2 **STRANDED COSTS BETWEEN STOCKHOLDERS AND**
3 **RATEPAYERS?**

4 A. If you do not share the cost, the Commission will be penalizing the efficient
5 utility by allowing the inefficient utility to recover all of its inefficiency in the
6 CTC. Even for a utility perceived to be efficient and well run, there are always
7 ways to become more efficient. Once stranded costs are determined and the
8 recovery begins, the Company is in the position that any future cost savings
9 will accrue to the benefit of the stockholder. As the Company moves to make
10 itself more efficient, it has the ability to increase profit and it will be the
11 ratepayer who will be contributing those profits. A sharing of the stranded costs
12 will return the benefits of the cost saving measures to those who bore the costs
13 in the first place.

14
15 **Q. WHY HAVE YOU CHOSEN A 10% SHARING FOR THE**
16 **STOCKHOLDER OF THE COMPANY?**

17 A. Deriving sharing percentages is an inexact science at best. Using various
18 percentages for different utilities allows the Commission to make adjustments
19 that will cause less efficient utilities to absorb a greater amount of stranded cost
20 than an efficient utilities. With regard to a specific percentage to be absorbed
21 by the stockholder, 10% is reasonable for this Company. A 10% absorption by
22 stockholders gives the Company a reasonable goal for making cost savings.

1

2 **Q. IS THERE ANY PRECEDENCE FOR YOUR USE OF A 90%/10%**
3 **(RATEPAYER /STOCKHOLDER) SPLIT?**

4 A. Yes. When the natural gas local distribution companies (LDC) were faced with
5 having to pay “take or pay” buyout costs of long term gas supply contracts, the
6 Commission approved a 90%/10% sharing between ratepayer and stockholder
7 as reasonable solution to the sharing issue.

8

9 **Q. WAS THE TAKE OR PAY ISSUE, A STRANDED COST ISSUE?**

10 A. No. However, the “take or pay” costs were costs incurred by the LDC when
11 the rules on how the LDC met its long term gas supply commitments to serve
12 were changed. In this respect the “take or pay” costs are similar to the
13 stranded costs incurred by the local electric utilities because both are buyouts of
14 long term costs which would have been incurred by the utility if the manner in
15 which the utility met its burden to serve had not changed.

16

17 **Q. WHAT SPECIFIC EFFECT DOES THE ABSORPTION OF 10% OF THE**
18 **STRANDED COSTS BY THE STOCKHOLDER HAVE ON THE**
19 **COMPANY’S STRANDED COST CLAIM?**

20 A. A 10% absorption by the stockholder will lower the CTC - for stranded costs
21 associated with generation plant by \$234,545,000 (OTS exhibit No. 1, schedule
22 4)

1

2

3 **SECTION IV -- SUMMARY OF RECOMMENDATIONS**

4 **Q. WOULD YOU BRIEFLY SUMMARIZE YOUR RECOMMENDATIONS**
5 **AND ADJUSTMENTS?**

6 A. Yes. I recommend (1) that the Commission reduce the Company's stranded
7 cost by \$939,462,000 by using the nine year Treasury note interest rate as the
8 common equity return when determining the Company's stranded cost, (2) that
9 the Commission order the Company to set up a non-qualified trust fund with the
10 money it collects for fossil fuel decommissioning, and (3) that the Commission
11 order a 90%/10% sharing of stranded costs between the ratepayer and the
12 stockholder reducing CTC allowance for of generation plant stranded cost by
13 \$234,545,000.

14

15 **Q. WHAT IS THE FINAL RECOMMENDATION OF THE OFFICE OF**
16 **TRIAL STAFF WITH REGARD TO THE LEVEL OF STRANDED COST**
17 **FOR THE PENNSYLVANIA POWER AND LIGHT COMPANY?**

18 A. OTS is recommending a CTC allowance for stranded cost for the Pennsylvania
19 Power and Light Company of \$3,168,681,000. This recommendation is shown
20 in OTS Exhibit No. 1 on Schedule 5. This summary page include all OTS
21 adjustments recommended in OTS Statements 1, 2, and 3.

22

1 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

2 A. Yes.

Education and Professional Background

In May, 1976, I received a B.S. in Civil Engineering from The Pennsylvania State University. After graduation, I was hired by the Pennsylvania Public Utility Commission and worked in the Valuation Section of the Bureau of Rates and Research in the area of electric and telephone valuation and depreciation. Later, when the Bureau was realigned into Divisions specializing in telephone valuation and depreciation. Later, I was transferred to the Engineering Section of the Electric Division to work on electric company valuation and depreciation.

In October, 1977, I participated in a special Depreciation Training Program sponsored by Western Michigan University in Kalamazoo, Michigan, entitled Fundamentals of Service Life Forecasting.

In the fall of 1977 and spring of 1979, I successfully completed accounting courses at the Harrisburg University Center which were sponsored by Elizabethtown College.

From 1977 through early 1987 I was a valuation engineer responsible for review and evaluation of claims for depreciation, original and trended original cost valuations, construction work in progress, plant held for future use, materials and supplies, and extraordinary property loss claim in many electric and telephone rate proceedings before this Commission.

In July, 1978, I participated in a special Depreciation Training Program sponsored by Western Michigan University at Calvin College in Grand Rapids, Michigan, entitled Dynamics of Life Estimation.

I took part in the early stages of the 1979 Triennial Review of The Bell Telephone Company of Pennsylvania Depreciation Studies which are submitted to this Commission and the Federal Communications Commission (FCC) for review and comment prior to the FCC's prescribing of annual depreciation rates for the next three-year period.

Under the Commission's reorganization in 1987 I was assigned to the Office of Trial Staff in the Engineering Section of the Analysis Division. In May of 1987 I was appointed as the Supervisor of the Engineering Section of the Engineering and Rate Design Division of the Office of Trial Staff, and made responsible for all rate base, engineering and depreciation issues.

When the Office of Trial Staff reorganized in February of 1994 I was assigned the position of assistant to the Division Chief of the newly formed Telecommunications/Water Division of the Office of Trial Staff.

My duties as assistant to the Division Chief of the Telecommunications/Water Division of the Office of Trial Staff

involved informal training of entry level engineers and work on unusual issues which occur in the various rate proceedings before the Commission in which the Office of Trial Staff becomes involved.

I currently work as a Fixed Utility Valuation Engineer III working on a variety of utility filings.

Early in my time at the Public Utility Commission, I was a valuation engineer in the following major rate proceedings before the Pennsylvania Public Utility Commission:

- (1) The Duguesne Light Company at Docket Number R.I.D. 373
- (2) The Pennsylvania Electric Company at Docket Number R.I.D. 392
- (3) The Metropolitan Edison Company at Docket Number R.I.D. 434
- (4) The Bell Telephone Company of Pennsylvania at Docket Numbers R.I.D. 367 and R-79060719
- (5) The Bethel and Mt. Aetna Telephone and Telegraph Co. at Docket Number R-77090452
- (6) The Mid-Penn Telephone Corporation at Docket Number R-77090462
- (7) The Commonwealth Telephone Company at Docket Number R-77090482

In addition, I have been a valuation engineer in various other informal rate investigations.

I have testified in the following cases:

General Telephone Company of Pennsylvania at R-7910062
West Penn Power Company at R-80021082, R-842632, and R-850220
Pennsylvania Power & Light Company at R-8003114, R-822169, and R-842651
Philadelphia Electric Company at R-80061225 and R-842590
Metropolitan Edison Company at R-80051196, R-811601, and R-842770
Pennsylvania Electric Company at R-80051197, R-811602, and R-842771
Pennsylvania Power Company at R-811510, R-832409, R-850267, and R-870732
UGI Gas at R-821899 and R-870602
Duguesne Light Company at R-850021, R-860378, and R-870651
Shickshinny Water Company at R-870764
Marion Height Water Company at R-870774
National Fuel Gas Distribution Company at R-881125, R-891218, and R-00942991
Arrowhead Public Service Corporation at R-891557
Duguesne Light Company at P-900485
General Public Utilities at P-910502 and G-900240
LP Water & Sewer at G-910255, A-230242, A-211770

Sunshine Hills Water Company at R-912023
West Penn Power at R-00922378
MPW Utilities Inc. at A-230026
Public Service Water Company at A-210025F002
UGI Utilities Inc. (Electric Division) at R-00932862
Pennsylvania American Water Company at R-00932670
National Utilities Inc. at R-00932670
Newtown Artesian Water Company at R-00943157
IntraLATA Interconnection Investigation at I-00940034

Some of the issues I have testified on include:

- 1) Depreciation and Service Life Analysis
- 2) Customer Contributions In Aid of Construction
- 3) Customer Advances for Construction
- 4) Construction Work in Progress
- 5) Material and Supplies
- 6) Post Test Year Plant Additions
- 7) Loan Financing and Repayment
- 8) Utility Plant Used and Useful in the Public Service
- 9) Cost of Gas
- 10) Take or Pay Obligations of Gas Utilities
- 11) Rules and Regulations for New Telecommunications Services
- 12) Contractual Obligations Between Utilities
- 13) Rate Structure and Tariff Issues
- 14) Excess Utility Plant Investment
- 15) Cost of Service and
- 16) General Prudence Issues

OTS Exhibit No. 1
Dated: June 27, 1997

**DOCUMENT
FOLDER**

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PENNSYLVANIA POWER AND LIGHT COMPANY

Docket No. R-00973954

Exhibit to Accompany

the

Direct Testimony

of

Michael J. Gruber

Concerning:

Stranded Cost Issues

DOCKETED
SEP 03 1997

Office of Trial Staff
 Cost of Capital Calculation For
 Pennsylvania Power & Light Company

	Balance Dec. 31, 1996	(1) Ratio	(2) Cost of Capital	(1) x (2) Weighted Cost of Capital	After Tax Rate
Long-term debt	\$2,744,256	47.0%	7.89%	3.71%	2.17%
Preferred stock	454,911	7.8%	7.10%	0.55%	0.55%
Common equity	2,637,839	45.2%	0.00% *	0.00%	0.00%
	<u>\$5,837,006</u>	<u>100.0%</u>		<u>4.26%</u>	<u>2.72%</u>

Stranded Cost
0% common Equity Return

<u>NPV (thousands of \$)</u>	<u>1/1/99</u>
NUCLEAR	(1,527,865)
FOSSIL	163,888
NUG's	(656,870)
REGULATORY ASSETS	<u>(383,911)</u>
NPV TOTAL	<u>(2,404,758)</u>

Stranded Cost Comparison

Company Claim	\$4,610,961
0% Common Equity	<u>\$2,404,758</u>
Difference	\$2,206,203

Office of Trial Staff
 Cost of Capital Calculation For
 Pennsylvania Power & Light Company

	Balance Dec. 31, 1996	(1) Ratio	(2) Cost of Capital	(1) x (2) Weighted Cost of Capital	After Tax Rate
Long-term debt	\$2,744,256	47.0%	7.89%	3.71%	2.17%
Preferred stock	454,911	7.8%	7.10%	0.55%	0.55%
Common equity	2,637,839	45.2%	6.60% *	2.98%	2.98%
	<u>\$5,837,006</u>	<u>100.0%</u>		<u>7.25%</u>	<u>5.71%</u>

Stranded Cost Summary
Office of Trial Staff

<u>NPV (thousands of \$)</u>	<u>1/1/99</u>
NUCLEAR	(2,288,164)
FOSSIL	(342,555)
NUG's	(656,870)
REGULATORY ASSETS	<u>(383,911)</u>
NPV TOTAL	<u>(3,671,499)</u>

Market Rate Study

Year	Met Ed \$/KWH	Penelec \$/KWH	Peco1 \$/KWH	Peco2 \$/KWH	Peco3 \$/KWH	PP&L \$/KWH	Average \$/KWH
1999	2.61	2.50	2.84	2.45	2.81	2.63	2.64
2000	3.02	2.85	3.15	2.78	3.13	2.85	2.96
2001	3.19	3.00	3.66	3.22	3.50	3.14	3.29
2002	3.34	3.14	3.82	3.39	3.64	3.39	3.45
2003	3.54	3.28	3.99	3.57	3.75	3.42	3.59
2004	3.68	3.41	4.17	3.76	3.89	3.51	3.74
2005	3.53	3.54	4.34	3.93	4.14	3.47	3.83
2006	3.61	3.63	4.48	4.11	4.33	3.55	3.95
2007	3.69	3.72	4.66	4.30	4.50	3.78	4.11
2008	3.75	3.78	4.82	4.49	4.70	3.90	4.24
2009	3.82	3.84	5.01	4.70	4.87	4.01	4.37
2010	3.93	3.97	5.21	4.90	5.06	4.01	4.51
2011	4.05	4.06	5.41	5.11	5.11	4.00	4.62
2012	4.23	4.18	5.54	5.33	5.30	4.10	4.78
2013	4.50	4.51	5.73	5.56	5.50	4.24	5.01
2014	5.14	4.75	6.04	5.83	5.75	4.29	5.30
2015	24.50	4.97	6.22	5.97	5.84	4.42	8.65
2016	24.92	5.13				4.51	11.52
2017						4.63	4.63
2018						4.77	4.77
2019						4.89	4.89
2020						5.01	5.01
2021						5.14	5.14
2022						5.30	5.30
2023						5.49	5.49
2024						5.81	5.81
2025						7.69	7.69
2026						7.86	7.86
2027						8.04	8.04
2028						8.23	8.23
2029						8.42	8.42
2030						8.61	8.61
2031						8.81	8.81
2032						9.01	9.01
2033						9.22	9.22
2034						9.33	9.33
2035						9.42	9.42
2036						9.64	9.64
2037						9.86	9.86
2038						10.09	10.09
2039						10.32	10.32
2040						10.56	10.56
2041						10.8	10.8
2042						11.05	11.05
2043						11.31	11.31
2044						11.57	11.57

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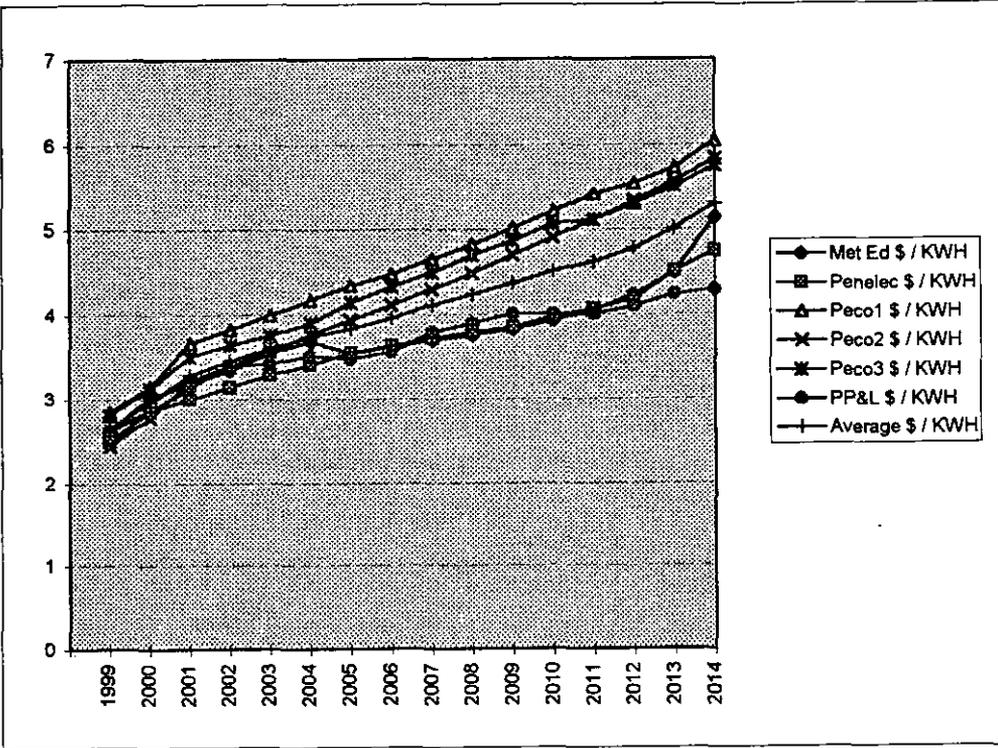
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GPU - Source:Vol. II, Statement No. 4, Exhibit DJR-9, pages 13-14

PECO - Exhibit TPH-6

PP&L - Source:Exhibit JRS 1



OTS 90%/10% Sharing
for Generation Plant

OTS Recommended Generation Stranded Cost

Nuclear	\$2,067,753 *
Fossil	<u>\$277,693 *</u>
Total	\$2,345,446
	<u>10%</u>
Adjustment for Sharing	\$234,545

* See OTS Exhibit No. 1 Schedule 5

Stranded Cost Summary
Office of Trial Staff

<u>NPV (thousands of \$)</u>	<u>1/1/99</u>
NUCLEAR	(2,067,753)
FOSSIL	(277,693)
NUG's	(668,718)
REGULATORY ASSETS	<u>(389,062)</u>
NPV TOTAL	(3,403,226)
10% SHARING ADJUSTMENT	<u>234,545</u>
OTS RECOMMENDED STRANDED COST ALLOWENCE FOR THE CTC	<u>(3,168,681)</u>

OTS Statement No. SR-1

Dated: August 15, 1997

9V
8-28-97
H08
R-873954

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PENNSYLVANIA POWER AND LIGHT COMPANY

Docket No. R-00973954

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Surrebuttal Testimony

of

Michael J. Gruber

DOCKETED

SEP 03 1997

Concerning:

Stranded Cost Issues

DOCUMENT

1 **Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS**
2 **ADDRESS?**

3 A. My name is Michael J. Gruber. My business address is PO Box 3265,
4 Harrisburg Pennsylvania 17105-3265.

5
6 **Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS**
7 **PROCEEDING?**

8 A. Yes, I provided written testimony on stranded cost issues on June 27, 1997
9 on behalf of the Office of Trial Staff in OTS Statement No. 1.

10
11 **Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL**
12 **TESTIMONY IN THIS PROCEEDING?**

13 A. The purpose of this testimony is to respond to Pennsylvania Power and
14 Light (PP&L) witness Moul's analysis of the risk involved in collection of
15 the CTC.

16
17 **Q. WHAT ARE WITNESS MOUL'S RISK FACTORS INVOLVED IN**
18 **THE COLLECTION OF THE CTC?**

19 A. On page 24 of Company Statement No. 6-R, Mr. Moul lists five areas of
20 risk faced by the Company in the collection of the CTC. They are: "(i)
21 the rate cap that will limit the overall charges by the Company to its

1 customers during the collection period, (ii) the large number of
2 assumptions that were used in calculating the transition or stranded costs
3 that serve as the basis for the CTC, (iii) the lack of a true-up of actual
4 costs with estimated costs used to calculate the transition or stranded
5 costs, (iv) the Company's use of a cost of capital calculated at
6 December 31, 1996 which may turn out to be unreflective of the actual
7 capital costs which may prevail during the period 1999 to 2005, and (v)
8 the use by the Company of a lower rate of return on common equity than
9 I have determined independently to be required by investors."

10
11 **Q. DO YOU AGREE WITH WITNESS MOUL'S ANALYSIS OF THE**
12 **RISK ASSOCIATED WITH THE COLLECTION OF THE CTC?**

13 A. No. The five factors Mr. Moul uses in his analysis of the risk involved
14 with the collection of the CTC may all be true but they don't have much
15 bearing on the OTS position of the risk involved with the collection of the
16 CTC.

17 The first factor which states that the Company is limited in the
18 overall charges it can collect because of the rate cap is true. However, if
19 you examine the OTS proposal and the Company proposal, you will see
20 that this factor does not really affect the OTS proposal. Under the

1 Company proposal with a stranded cost of \$4.6 billion, the Company
2 claims that it can only collect \$4 billion for an under collection of \$600
3 million. Using the OTS stranded cost of approximately \$3.2; billion the
4 Company has an \$800 million cushion before it would not be able to
5 collect its allowable CTC. In fact, the Company has a proposal to extend
6 the CTC for three years to recover any uncollected stranded costs. This
7 would further remove any risk associated with the under recovery of the
8 CTC.

9 Factors two and three are really the same reason worded
10 differently. They both deal with the possibility of differences in actual
11 costs verses the estimated costs which are the basis for the CTC. I agree
12 the actual costs will probably be different than the estimated costs.
13 However, the estimates I used are the Company's own estimates and if the
14 Company does not have any faith in its own estimates then maybe the
15 Commission should use another party's estimates of future costs. The
16 mechanics of the OTS adjustment would be the same. Any changes in
17 future costs from the estimates will be the result of the very thing this
18 proceeding is supposed to foster, and that is competition.

19 Factor four deals with future changes in the cost of capital. Future
20 changes in the cost of capital do affect the rates a regulated utility can

1 charge. For the purposes of determining stranded costs we are looking at
2 the cost of capital as it affects plant existing at a particular point in time.
3 Future changes in the cost of capital will be due to business decisions
4 made to make the Company more competitive, and hence of no concern to
5 this Commission as regulators.

6 Factor five does not apply. The common equity rate recommended
7 by Company Witness Moul is the rate which would be used in a
8 regulatory proceeding in which the Company may or may not collect its
9 allowed revenue requirement. Under regulation investors are entitled to
10 an opportunity to earn a return commensurate with the risk involved.
11 They are not entitled to an opportunity to earn a return at the level at
12 which they invested in a Company but just a fair return commensurate
13 with risk.

14 My adjustment is to set the common equity return in the calculation
15 of stranded cost commensurate with the risk involved in the collection of
16 the CTC. It is not to offset future risk the Company may incur because of
17 competition or poor estimates of future costs made by the Company now.

18
19 **Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?**

20 **A. Yes.**

OTS Statement No. 2
Dated: June 27, 1997

JV
8-28-97
HJ
R-973954

Pennsylvania Public Utility Commission

v.

Pennsylvania Power and Light Company

Docket No. R-00973954

DOCKETED

SEP 03 1997

Direct Testimony

of

Stephen M. Reed

Office of Trial Staff

Concerning:

Regulatory Assets

Other Transition Costs

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FAIRFAX COUNTY

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1 **Q. STATE YOUR FULL NAME, EMPLOYER AND BUSINESS**
2 **ADDRESS.**

3 A. My name is Stephen M. Reed. I am employed by the Public Utility
4 Commission, P.O. Box 3265, Harrisburg, Pa. 17015-3265.

5

6 **Q. WHAT IS YOUR POSITION WITH THE PENNSYLVANIA**
7 **PUBLIC UTILITY COMMISSION?**

8 A. I am a Fixed Utility Financial Analyst assigned to the Office of Trial
9 Staff.

10

11 **Q. WHAT ARE YOUR DUTIES AS AN ANALYST IN THE OFFICE**
12 **OF TRIAL STAFF?**

13 A. My duties as an analyst include participation in formal base rate and other
14 proceedings as an expert witness, with responsibilities for the preparation
15 and presentation of Office of Trial Staff exhibits, schedules and
16 testimony. My education and professional background are set forth in
17 Appendix A, which is attached.

18

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 A. The purpose of my testimony is to recommend changes to Pennsylvania
3 Power and Light Company's ("PP&L" or "Company") method of
4 recovering and displaying the universal service charge on the Company's
5 bill, propose a revised reconciliation of the competitive transition charge,
6 recommend several changes to the Company's claim for stranded
7 regulatory assets and recommend several adjustments to the Company's
8 claim for stranded cost relating to generation.

9

10 **Universal Service Fund Charge ("USFC")**

11

12 **Q. WHAT IS UNIVERSAL SERVICE?**

13 A. The Electricity Generation Customer Choice and Competition Act ("Act")
14 defines Universal Service and Energy Conservation as:

15 "Policies, protections and services that help low-income customers
16 to maintain electric service. The term includes customer assistance
17 programs: termination of service protection and policies and
18 services that help low-income customers to reduce or manage
19 energy consumption in a cost-effective manner, such as the low-
20 income usage reduction programs, applications of renewable
21 resources and consumer education."

22

23 The Act further provides at 66 Pa. C. S. §2804 (8) and (9) that the

24 Commission shall ensure that universal service and energy consumption

1 policies and activities are appropriately funded and available in each
2 electric distribution territory.

3
4 **Q. HOW WILL THE COST OF UNIVERSAL SERVICE BE FUNDED**
5 **BY THE ELECTRIC COMPANIES?**

6 A. The Act states at 66 Pa. C.S. §2804 (8) and (9) that the policies, activities
7 and services shall be funded in each electric distribution territory by a
8 non-bypassable, competitively neutral cost recovery mechanisms that fully
9 recover the costs of universal service and energy conservation services.

10 The design of an appropriate cost recovery mechanism is at the
11 discretion of the Commission.

12
13 **Q. DID THE COMPANY INCLUDE A CLAIM FOR PROGRAMS**
14 **RELATED TO UNIVERSAL SERVICE IN ITS RESTRUCTURING**
15 **FILING?**

16 A. Yes. The Company included approximately \$6.2 million for programs
17 relating to universal service in its restructuring filing and a proposal to
18 recover this amount from its four (4) customer groups, Residential,
19 General Service, Primary and Subtransmission.

20

1 **Q. HOW WILL THE COMPANY RECOVER ITS UNIVERSAL**
2 **SERVICE COSTS?**

3 A. The distribution charge, as shown in the Company's rate schedules
4 includes an amount that is designed to recover the cost of rendering
5 universal service. The amount included in the distribution charge for
6 each customer group, as shown on original page 13B of the Company's
7 proposed tariff is as follows:

8		Universal Service
9	<u>Customer Group</u>	<u>Fund Charge</u>
10		
11	Residential	.048¢/Kwh
12	General Service	.008¢/Kwh
13	Primary	0¢/Kwh
14	Subtransmission	0¢/Kwh
15		

16

17 **Q. HOW DID THE COMPANY DETERMINE THE AMOUNT OF**
18 **UNIVERSAL SERVICE REVENUES TO BE RECOVERED FROM**
19 **EACH OF ITS FOUR CUSTOMER GROUPS?**

20 A. PP&L allocated its total Universal Service revenue requirement among its
21 *four customer groups on the number of customers in the rate group.*

22

1 **Q. WHAT IS THE EFFECT OF ALLOCATING THE UNIVERSAL**
2 **SERVICE REVENUE REQUIREMENT ON A CUSTOMER BASIS?**

3 **A.** *By allocating the universal service revenues on a customer basis, two of*
4 *the four customer groups, Primary and Subtransmission, will contribute*
5 *less than \$5,000 toward PP&L's \$6.2 million Universal Service revenue*
6 *requirement. These two customer groups sales account for more than a*
7 *third of the PP&L's total Kwh sales.*

8

9 **Q. DO YOU AGREE WITH THE UNIVERSAL SERVICE FUND**
10 **CHARGE AS IT IS PROPOSED BY THE COMPANY?**

11 **A.** *No, I do not. The purpose of a non-bypassable charge is to ensure that all*
12 *customers, regardless of rate group, contribute to the recovery of a cost*
13 *or service. PP&L's proposal admittedly includes all customer groups in*
14 *the calculation, however, the allocation of the universal service charge to*
15 *the Primary and Subtransmission customer groups is essentially*
16 *nonexistent. This is tantamount to bypassing the universal service charge*
17 *by placing a significant burden on the Residential and General Service*
18 *customer groups.*

19

1 **Q. WHAT IS YOUR RECOMMENDATION?**

2 A. I recommend that the USFC revenue requirement be allocated to all rate
3 groups on a per Kwh basis.

4
5 **Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION?**

6 A. In my opinion a per Kwh charge for all customer groups reflects the intent
7 of the Act in that all customer groups will contribute to the cost of
8 providing the legislatively mandated universal service. Non-bypassable
9 implies that all customers are responsible for the USFC. These are costs
10 that should be borne by all ratepayers.

11

12 **Q. WHAT IS THE RESULT OF YOUR RECOMMENDATION?**

13 A. The result of my recommendation is a USFC for all customer groups of
14 .019¢ per Kwh as opposed to the universal service fund charge
15 recommended by the Company.

16

17 **Q. HOW DID YOU CALCULATE YOUR UNIVERSAL SERVICE
18 CHARGE?**

19 A. The .019¢ was calculated by dividing the total Universal Service Revenue
20 Requirement (\$6,162,955) by the total Kwh sales level (31,394,488,000)

1 for all customer groups. The total revenue requirement and Kwh sales
2 levels were provided in discovery (Reference OTS Exhibit No. 2,
3 Schedule 1.)

4 **Q. DO YOU HAVE ANY OTHER RECOMMENDATIONS**
5 **REGARDING THE UNIVERSAL SERVICE FUND CHARGE?**

6 A. Yes, I recommend that the USFC be identified on the customer's bill as
7 opposed to the Company's proposal to include it as a component of the
8 distribution charge.

9
10 **Q. WHY DO YOU BELIEVE THE UNIVERSAL SERVICE FUND**
11 **CHARGE SHOULD BE IDENTIFIED ON THE CUSTOMER'S**
12 **BILL?**

13 A. My reason is two-fold. First, I believe that in the spirit of full-disclosure,
14 the customer is entitled to full and complete knowledge of not only the
15 individual components of its energy bill but also the per Kwh charge for
16 each component. The USFC is a non-traditional business expense. All
17 ratepayers, not just PP&L's, should be aware that, by direction of the
18 Legislature of the Commonwealth of Pennsylvania, this charge is included
19 in their electric bills. Second, if the USFC is separately identified on the
20 bill, it is easier to determine that the amount recovered through rates

1 costs based on a variation in annual sales will be reflected as an
2 adjustment to the subsequent years CTC.

3

4 **Q. DOES THE COMPANY'S RESTRUCTURING PROPOSAL**
5 **INCLUDE AN ANNUAL ADJUSTMENT TO ITS CTC?**

6 A. No. PP&L maintains that the rate cap imposed by the Act already
7 prohibits the Company from fully recovering its full level of stranded
8 cost; any annual reconciliation that resulted in an increase to the CTC
9 would be prohibited by the rate cap.

10

11 **Q. DOES THE COMPANY PROPOSE AN ALTERNATIVE TO AN**
12 **ANNUAL ADJUSTMENT TO THE CTC?**

13 A. Yes. As outlined in Company Witness Kleha's Statement No. 3, Pages
14 17-19, PP&L will track the annual collections pursuant to the CTC and
15 compare them to the level authorized by the Commission, however, the
16 actual CTC will not be adjusted to reflect any resulting differences. Near
17 the end of the stranded cost recovery period, the CTC would be adjusted
18 to reflect the net amount of over/undercollections that occurred through
19 out the stranded cost recovery period. Depending on whether the amount

1 is a net over or underrecovery, the CTC will either be terminated early or
2 extended beyond the maximum nine years called for in the Act.

3

4 **Q. DO YOU AGREE WITH THE COMPANY'S PROPOSAL?**

5 A. No.

6

7 **Q. WHY DO YOU DISAGREE WITH THE COMPANY'S PROPOSAL?**

8 A. The Company's proposal assumes that the Commission will agree with the
9 Company's claim for stranded costs. If the Commission disallows a
10 portion of stranded costs, PP&L's CTC will be below the cap and will
11 permit annual adjustment to the CTC.

12 **Q. WHAT DO YOU RECOMMEND IF THE CTC ALLOWANCE**
13 **DOES NOT PERMIT AN UPWARD ADJUSTMENT ON AN**
14 **ANNUAL BASIS?**

15 A. Then I would agree with the Company that underrecoveries that cannot be
16 reflected in subsequent years CTC should be tracked and the CTC
17 extended beyond nine years, if necessary. However, I recommend that
18 any reconciliation of CTC overrecovery revenues that does not violate the
19 rate cap imposed by the Act be made in the subsequent recovery year.

20

1 **Q. WHAT IS THE BASIS FOR THIS RECOMMENDATION?**

2 A. Under the Company's proposal, a miscalculation or change in Kwh
3 demand could result in overrecovered revenues that would be denied the
4 ratepayers without benefit of interest. Immediate adjustment to the CTC
5 would rectify this. Furthermore, recognizing overrecoveries when they
6 occur results in room under the rate cap to adjust the CTC to recoup any
7 future underrecoveries.

8

9 **Regulatory Assets**

10

11 **Q. WHAT IS A REGULATORY ASSET?**

12 A. A regulatory asset is defined in the Statement of Financial Accounting
13 Standard No. 71 (SFAS 71), Page 1, item 3, -as follows:

14 "Regulators sometimes include costs in allowable costs in a period
15 in which the cost would be charged to expense by an unregulated
16 enterprise. That procedure can create assets(future cash inflows
17 that will result from the ratemaking process), or create
18 liabilities(future cash outflows that will result from the ratemaking
19 process) for the regulated enterprise. For general-purpose financial
20 reporting, an incurred cost for which a regulator permits recovery
21 in a future period is accounted for like an incurred cost that is
22 reimbursable under a cost-reimbursement-type contract."
23

1 **Q. BRIEFLY EXPLAIN THE COMPANY'S CLAIM FOR**
2 **REGULATORY ASSETS IN THIS FILING.**

3 **A.** The Company's claim for generation related regulatory assets as of
4 December 31, 1999 is \$383,911,000. This amount consists of the net
5 present value of the annual PaPUC jurisdictional amortization amounts for
6 the various amortization claims for the years 1999 through 2024. The
7 following example for 1999 details the items amortized and their
8 respective cost for 1999:

9	<u>Description</u>	<u>(\$000's)</u>
10	Unrecovered Energy Costs	80,150
11	Post Retirement Benefits	1,032
12	Recoverable Susq. Oper. Costs	1,834
13	Common Plant Adj.	715
14	Retired Miner's Health Care Costs	6,582
15	DOE Assessment	2,411
16	SSES Deferred Refueling Costs	8,343
17	Voluntary Early Retirement Costs	8,680
18	Employee Transition Costs	2,359
19	1994 Rate Case Expense	184
20	Taxes Recoverable	13,408
21	Regulatory Liabilities	<u>3,619</u>
22	Total	\$122,081
23		

24 An explanation of each of the above items can be found in PP&L's
25 Exhibit JRS 1, Exhibits to the Direct testimony of Joseph R. Schadt.

1 **Q. HAVE YOU EXAMINED THE COMPANY'S CLAIMS FOR**
2 **REGULATORY ASSETS?**

3 A. Yes. I have analyzed the Company's claim for regulatory assets and
4 verified the estimated balances as of December 31, 1999. I reviewed the
5 supporting documentation supplied by the company and have not found
6 any material discrepancies.

7
8 **Q. DO YOU AGREE WITH THE INDIVIDUAL ITEMS THE**
9 **COMPANY IS CLAIMING AS REGULATORY ASSETS?**

10 A. No. I disagree with PP&L's recovery of 1994 Rate Case Expense and
11 SSES Deferred Refueling Costs as stranded regulatory assets.

12
13 **Q. WOULD YOU PROVIDE A BRIEF EXPLANATION FOR THESE**
14 **ITEMS BEING CLAIMED AS REGULATORY ASSETS?**

15 A. The Company's claim for Rate Case expense represents the costs incurred
16 relative to generation as a result of the Company's most recent base rate
17 case. The deferred refueling costs represents incremental maintenance
18 costs incurred during refueling and inspection outages which are deferred
19 and subsequently amortized from the end of the outage until the next

1 scheduled refueling and inspection outage is complete(Company Exhibit
2 JRS 1, pp 12-13).

3

4 **Q. WHAT IS THE COMPANY'S BASIS FOR THESE CLAIMS?**

5 A. The basis for the Company's claim is its annual PaPUC jurisdictional
6 amortization for both costs for 1999.

7

8 **Q. WHAT IS YOUR RECOMMENDATION?**

9 A. I recommend that the Company's claim for stranded costs relating to
10 Regulatory Assets exclude the amounts associated with rate case expense
11 and deferred refueling costs.

12

13 **Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION?**

14 A. Rate case expense and deferred refueling costs are not regulatory assets
15 that are recoverable through a traditional amortization. Both costs are
16 typical ongoing expenses that, in a regulatory environment, are
17 recoverable in base rates at a normalized level.

18

1 **Q. WOULD YOU BRIEFLY DISCUSS THE CONCEPTS OF**
2 **AMORTIZATION AND NORMALIZATION?**

3 A. Normalization is a ratemaking concept that describes the transformation of
4 an operating expense that recurs at irregular intervals and in irregular
5 amounts into a “normal” annual test year expense allowance.

6 Amortization is an accounting concept that extinguishes an atypical,
7 nonrecurring expense over a pre-determined number of years by charging
8 to operations a pro rata share based on the selected amortization period.

9 Recovery of normalization expenses do not extend over a period of years
10 and therefore claims for unrecovered normalized expenses in subsequent
11 proceedings cannot exist and must be disallowed. In contrast, an
12 amortization allowance could be claimed in succeeding proceedings as
13 long as there is a remaining unamortized balance.

14

15 **Q. DID THE COMMISSION ALLOW PP&L TO AMORTIZE THE**
16 **FULL AMOUNT OF RATE CASE EXPENSE AND DEFERRED**
17 **REFUELING COSTS IN THE LAST BASE RATE PROCEEDING?**

18 A. No. The Commission allowed the Company to reflect a claim for both
19 expenses in annual O&M at a normalized level.

20

1 **Q. WHAT IS THE EFFECT OF YOUR DISALLOWANCE OF**
2 **DEFERRED FUEL AND RATE CASE EXPENSE CLAIMS?**

3 A. The effect of my proposed disallowance is to reduce the net present value
4 relative to regulatory assets from \$383,911,000 to \$375,384,000 or by
5 \$8,527,000.

6

7 **Taxes Other than Income**

8 **Q. WHAT TAXES ARE INCLUDED IN TAXES OTHER THAN**
9 **INCOME?**

10 A. For the purposes of the restructuring filing, PP&L includes as taxes other
11 than income the Pennsylvania Capital Stock Tax and the Pennsylvania
12 Public Utility Reality Tax("PURTA").

13

14 **Q. WOULD YOU BRIEFLY DESCRIBE THE PENNSYLVANIA**
15 **CAPITAL STOCK TAX AND HOW IT IS CALCULATED?**

16 A. Capital stock represents the property and assets of a corporation, the
17 Capital Stock Tax is levied against the capital stock of a corporation, i.e.
18 the underlying corporate property and assets¹. The tax is calculated as

¹ Francis J. Grey, C.P.A., Edward F. Habermehl, C.P.A., Raymond E. Graichen, C.P.A., Coopers & Lybrand Pennsylvania Taxation of corporations. Twelfth Edition, The Legal Intelligencer, Philadelphia, 1973, Page 16.

1 12.75 mills times the taxable portion of the capital stock value at the end
2 of the current year.

3
4 **Q. HOW IS THE CAPITAL STOCK VALUE DETERMINED?**

5 **A** The capital stock value for taxation purposes is based on a formula. First,
6 the previous five years book incomes are averaged and capitalized at
7 9.5%. Second, current net worth is multiplied by 75%. The result of
8 these two calculations is then averaged and that average is reduced by
9 \$125,000. The net result is the capital stock value for taxation purposes.

10
11 **Q. WOULD YOU BRIEFLY DESCRIBE THE PENNSYLVANIA
12 PUBLIC UTILITY REALTY TAX?**

13 **A.** The Public Utility Realty Tax is collected by the Commonwealth in lieu of
14 local real estate taxes and is distributed to local taxing authorities in
15 accordance with a formula contained in the Public Utility Realty Tax Act.
16 The tax is imposed on any person, partnership, association, corporation or
17 other entity furnishing public utility service under the jurisdiction of the
18 Pennsylvania Public Utility Commission or the corresponding regulatory
19 agency of any other state or the United States. Taxable property consists
20 of the realty located within the Commonwealth and owned by the utility

1 directly or indirectly through a subsidiary, which is used in rendering a
2 public utility service.²

3
4 **Q. HOW IS THE TAX CALCULATED?**

5 A. The tax is calculated at the rate of 42 mills on the cost of taxable
6 property, less depreciation or depletion, at the end of the preceding
7 calendar year.³

8 **Q. DID THE COMPANY INCLUDE A CLAIM FOR TAXES OTHER**
9 **THAN INCOME IN THE REVENUE REQUIREMENT USED TO**
10 **ESTABLISH STRANDED GENERATION COSTS?**

11 A. Yes. As part of the revenue requirement for determining stranded costs,
12 the Company included an annual revenue requirement applicable to taxes
13 other than income for both nuclear and fossil generation.

14
15 **Q. HOW WAS THIS CLAIM CALCULATED?**

16 A. The Company escalated the 1996 Capital Stock and Public Utility Realty
17 taxes related to nuclear and fossil plants by 2.5% annually, over the life
18 of the individual plants. This calculation is outlined in Company Exhibit
19 JRS 1, p.p. 4-5.

² Ibid., p. 211.

³ Ibid., p. 211.

1

2 **Q. DO YOU AGREE WITH THE METHODOLOGY EMPLOYED BY**
3 **THE COMPANY IN CALCULATING ITS CLAIM FOR TAXES**
4 **OTHER THAN INCOME IN THIS PROCEEDING?**

5 A. No.

6

7 **Q. WHAT DO YOU RECOMMEND?**

8 A. I recommend that taxes other than income I calculated on OTS Exhibit 2,
9 Schedule 2, pp. 1-3, be substituted for the Company's claim as part of the
10 revenue requirement used to establish stranded investment in plant.

11

12 **Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION?**

13 A. I believe the Company erred in its calculation of taxes other than income
14 by assuming that the taxes will increase at the rate of inflation and
15 ignoring the elements that comprise both taxes, that is, net income and
16 rate base. The major elements used to determine both taxes do not have a
17 direct correlation with inflation and for stranded cost purposes increase
18 slowly or actually decrease over the life of the respective plants.

19

1 **Q. WOULD YOU PLEASE EXPLAIN THE ABOVE?**

2 A. The Capital Stock Tax is the average of two components, book income
3 and net worth. While net worth does increase with book income, the
4 other half of the calculation, average book income, decreases each year as
5 a lower income year is added and a greater income year is dropped from
6 the calculation. PURTA is based on net book value of realty assets. This
7 value is reduced each year with depreciation.

8

9 **Q. HOW DID YOU DETERMINE THE INDIVIDUAL COMPONENTS**
10 **OF TAXES OTHER THAN INCOME?**

11 A. The individual components of taxes other than income-nuclear generation
12 are shown on PP&L's response to discovery included as OTS Exhibit 2,
13 Schedule 3, pp. 1-3. The ratio of Capital Stock Tax and PURTA Tax to
14 total tax for nuclear generation, as shown therein, was applied to the total
15 taxes other than income (\$20.6 million) for fossil generation. The ratios
16 and the resulting individual components of taxes other than income are as
17 shown below:

18

19

20

21

22

23

	Nuclear		Fossil
	(\$000)		(\$000)
PURTA	31,698	74.34%	15,291
Capital Stock	10,942	25.46%	5,279
Total	42,640	100.0%	20,570

1

2 **Q. HOW DID YOU DETERMINE THE ANNUAL REVENUE**
3 **REQUIREMENT FOR THE CAPITAL STOCK TAX COMPONENT**
4 **OF STRANDED REVENUE REQUIREMENT?**

5 A. I used the 1996 Capital Stock Tax for nuclear generation (\$10.9 million)
6 as shown above for each year without an adjustment for inflation.

7

8 **Q. DID YOU FOLLOW THE SAME PROCEDURE FOR FOSSIL**
9 **GENERATION?**

10 A. Yes, but with one exception. For fossil generation I allocated the 1996
11 Capital Stock Tax for fossil generation (\$5.3 million) among the
12 individual generation units by applying the Company's production
13 percentages as shown on page 32 of 117 of Company Exhibit JRS 1. The
14 result of allocating the 1996 amount to the individual plants is to gradually
15 reduce the capital stock tax relative to fossil generation as the individual
16 plants are retired.

17

1 **Q. WHY DID YOU USE THIS METHODOLOGY AS OPPOSED TO**
2 **THAT OF THE COMPANY?**

3 A. My adjusted capital stock tax is essentially the same as the Company's,
4 but for the consideration for inflation. In my opinion this more accurately
5 reflects the fact that the level of Capital Stock tax tracks income and net
6 worth and not inflation.

7

8 **Q. HOW DID YOU SHOW PURTA FOR STRANDED COST**
9 **PURPOSES?**

10 A. In both nuclear and fossil generation I reduced the 1996 taxes other than
11 income relative to the PURTA tax, as shown above, to a factor of net rate
12 base. The resulting factor was then applied to the net rate base figures for
13 the remaining plant lives of both nuclear and fossil generation facilities.
14 This process properly reflects the fact that the PURTA tax will decrease
15 as a function of net plant as opposed to increasing as a result of inflation.

16

17 **Q. WHAT IS THE EFFECT OF YOUR ADJUSTMENT?**

18 A. The effect of my adjustment reduces the stranded costs relative to nuclear
19 plant by \$280.7 million and stranded costs relative to fossil by \$66.1

1 million. The adjustments are reflected on Exhibit 1, Schedule 5 to Direct
2 Testimony of OTS witness Michael J. Gruber.

3

4 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

5 **A. Yes, it does.**

6

OTS Exhibit No. 2
Dated: June 27, 1997

Pennsylvania Public Utility Commission

v.

Pennsylvania Power and Light Company

Docket No. R-00973954

Exhibits to Accompany

Direct Testimony

of

Stephen M. Reed

Office of Trial Staff

Concerning:

Regulatory Assets

Other Transition Costs

Pennsylvania Power & Light Company
Response to Interrogatories
of the Office of Trial Staff
Dated May 20, 1997

Docket No. R-00973954

Q.OTS-RB-39. Please provide the calculation that supports the Universal Service Charge.

A.OTS-RB-39.

Customer Group (1)	Universal Service Revenue Requirements (2) (\$)	Sales Level KWH Sales (3) (KWH)	Universal Service Fund Charge [col(2) + col(3)] x 100 (4) (¢/KWH)
Residential	5,426,202	11,393,588,000	0.048
General Service	731,914	8,973,654,000	0.008
Primary	4,231	4,608,804,000	≅ 0*
Subtransmission	608	6,418,442,000	≅ 0*

* The value is too small to show as a line item per KWH, within Tariff 201, under Rule 9.

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Pennsylvania Power Light Company
R-00973954

OTS Exhibit 2
Schedule 2

Nuclear Taxes Other than Income											
\$000's	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Net Rate Base	\$ 2,345,605	2,253,147	1,945,184	1,891,878	1,837,252	1,780,734	1,724,947	1,670,390	1,615,179	1,559,091	
Cap Stock Tax	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	
PURTA(Net Rate Base x .01351)	\$ 31,698	30,449	26,287	25,566	24,828	24,064	23,311	22,573	21,827	21,069	
	\$ 42,640	\$ 41,391	\$ 37,229	\$ 36,508	\$ 35,770	\$ 35,006	\$ 34,253	\$ 33,515	\$ 32,769	\$ 32,011	
PURTA	\$ 31,698										
Net Rate Base	\$ 2,345,605										
PURTA/Net Rate Base	0.01351										
Fossil Taxes Other than Income											
\$000's	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Net Rate Base	\$ 1,350,172	1,317,816	1,305,760	1,257,496	1,226,816	1,191,065	1,164,431	1,172,711	1,278,824	1,246,522	
Cap Stock Tax	\$ 5,279	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	
PURTA(Net Rate Base x 0.1133)	\$ 15,291	\$ 14,925	\$ 14,788	\$ 14,241	\$ 13,894	\$ 13,489	\$ 13,187	\$ 13,281	\$ 14,483	\$ 14,117	
	\$ 20,570	\$ 20,205	\$ 20,068	\$ 19,521	\$ 19,174	\$ 18,769	\$ 18,467	\$ 18,561	\$ 19,763	\$ 19,397	
PURTA	\$ 15,291										
Net Rate Base	\$ 1,350,172										
PURTA/Net Rate Base	0.01133										
Fossil Capitol Stock											
Steam Production	%	1996*	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sunbury SES	0.1088	\$ 574	\$ 574	\$ 574	\$ 574	\$ 574	\$ 574	\$ 574	\$ 574	\$ 574	\$ 574
Martins Creek #1 & #2 SES	0.0910	480	480	480	480	480	480	480	480	480	480
Martins Creek #3 & #4 SES	0.1724	910	910	910	910	910	910	910	910	910	910
Brunner Island SES	0.2547	1,345	1,345	1,345	1,345	1,345	1,345	1,345	1,345	1,345	1,345
Conemaugh SES	0.0503	266	266	266	266	266	266	266	266	266	266
Keystone SES	0.0238	126	126	126	126	126	126	126	126	126	126
Montour SES	0.2171	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146
Holtwood SES	0.0171	90	90	90	90	90	90	90	90	90	90
Wallenpaupack HES	0.0070	37	37	37	37	37	37	37	37	37	37
Holtwood HES	0.0524	277	277	277	277	277	277	277	277	277	277
CT's	0.0048	29	29	29	29	29	29	29	29	29	29
		\$ 5,279	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280	\$ 5,280
Capital Stock Tax	\$ 5,279										

* Plant percentage times \$5,279

Pennsylvania Power Light Company
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OTS Exhibit 2
Schedule 2

Nuclear Taxes Other than Income												
\$000's	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Net Rate Base	1,501,903	1,443,578	1,383,995	1,323,149	1,260,963	1,196,736	1,129,910	1,060,277	987,329	910,423	828,723	
Cap Stock Tax	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	
PURTA(Net Rate Base x .01351)	20,296	19,508	18,703	17,881	17,040	16,172	15,269	14,328	13,343	12,303	11,199	
	\$ 31,238	\$ 30,450	\$ 29,645	\$ 28,823	\$ 27,982	\$ 27,114	\$ 26,211	\$ 25,270	\$ 24,285	\$ 23,245	\$ 22,141	
PURTA	\$ 31,698											
Net Rate Base	\$ 2,345,605											
PURTA/Net Rate Base	0.01351											
Fossil Taxes Other than Income												
\$000's	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Net Rate Base	1,152,152	1,058,793	951,329	833,304	690,859	611,424	524,664	430,634	304,736	235,158	185,409	
Cap Stock Tax	\$ 5,280	\$ 5,280	\$ 5,154	\$ 5,154	\$ 5,064	\$ 3,314	\$ 3,314	\$ 3,314	\$ 3,314	\$ 1,969	\$ 1,460	
PURTA(Net Rate Base x 0.1133)	\$ 13,048	\$ 11,991	\$ 10,774	\$ 9,437	\$ 7,824	\$ 6,925	\$ 5,942	\$ 4,877	\$ 3,451	\$ 2,663	\$ 2,100	
	\$ 18,328	\$ 17,271	\$ 15,928	\$ 14,591	\$ 12,888	\$ 10,239	\$ 9,256	\$ 8,191	\$ 6,765	\$ 4,632	\$ 3,560	
PURTA	\$ 15,291											
Net Rate Base	\$ 1,350,172											
PURTA/Net Rate Base	0.01133											
Fossil Capitol Stock												
Steam Production	%	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sunbury SES	0.1088	\$ 574	\$ 574	\$ 574	\$ 574	\$ 574						
Martins Creek #1 & #2 SES	0.0910	480	480	480	480	480	480	480	480	480	480	
Martins Creek #3 & #4 SES	0.1724	910	910	910	910	910						
Brunner Island SES	0.2547	1,345	1,345	1,345	1,345	1,345	1,345	1,345	1,345	1,345		
Conemaugh SES	0.0503	266	266	266	266	266						
Keystone SES	0.0238	126	126									
Montour SES	0.2171	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146
Holtwood SES	0.0171	90	90	90	90							
Wallenpaupack HES	0.0070	37	37	37	37	37	37	37	37	37	37	37
Holtwood HES	0.0524	277	277	277	277	277	277	277	277	277	277	277
CT's	0.0048	29	29	29	29	29	29	29	29	29	29	
		\$ 5,280	\$ 5,280	\$ 5,154	\$ 5,154	\$ 5,064	\$ 3,314	\$ 3,314	\$ 3,314	\$ 3,314	\$ 1,969	\$ 1,460
Capital Stock Tax	\$ 5,279											
* Plant percentage times \$5,279												

Pennsylvania Power Light Company
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OTS Exhibit 2
Schedule 2

		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Nuclear Taxes Other than Income														
	\$000's													
Net Rate Base		741,097	645,801	528,763	346,191	122,953	91,787	(61,467)	35,912					
Cap Stock Tax		\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942	\$ 10,942					
PURTA(Net Rate Base x .01351)		10,015	8,727	7,146	4,678	1,662	1,240	(831)	485					
		\$ 20,957	\$ 19,669	\$ 18,088	\$ 15,620	\$ 12,604	\$ 12,182	\$ 10,111	\$ 11,427					
PURTA	\$ 31,698													
Net Rate Base	\$ 2,345,605													
PURTA/Net Rate Base	0.01351													
Fossil Taxes Other than Income														
	\$000's													
Net Rate Base		109,761	107,962	106,116	104,220	102,271	100,265	98,198	96,067	93,865	91,588	89,229	86,778	84,225
Cap Stock Tax		\$ 1,460	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314
PURTA(Net Rate Base x 0.1133)		\$ 1,243	\$ 1,223	\$ 1,202	\$ 1,180	\$ 1,158	\$ 1,136	\$ 1,112	\$ 1,088	\$ 1,063	\$ 1,037	\$ 1,011	\$ 983	\$ 954
		\$ 2,703	\$ 1,537	\$ 1,516	\$ 1,494	\$ 1,472	\$ 1,450	\$ 1,426	\$ 1,402	\$ 1,377	\$ 1,351	\$ 1,325	\$ 1,297	\$ 1,268
PURTA	\$ 15,291													
Net Rate Base	\$ 1,350,172													
PURTA/Net Rate Base	0.01133													
Fossil Capitol Stock														
Steam Production	%	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Sunbury SES	0.1088													
Martins Creek #1 & #2 SES	0.0910													
Martins Creek #3 & #4 SES	0.1724													
Brunner Island SES	0.2547													
Conemaugh SES	0.0503													
Keystone SES	0.0238													
Montour SES	0.2171	1,146												
Holtwood SES	0.0171													
Wallenpaupack HES	0.0070	37	37	37	37	37	37	37	37	37	37	37	37	37
Holtwood HES	0.0524	277	277	277	277	277	277	277	277	277	277	277	277	277
CT's	0.0048													
		\$ 1,460	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 314
Capital Stock Tax	\$ 5,279													
* Plant percentage times \$5,279														

Pennsylvania Power Light Company
R-00973954

OTS Exhibit 2
Schedule 2

Nuclear Taxes Other than Income														
\$000's														
Net Rate Base														
Cap Stock Tax														
PURTA(Net Rate Base x .01351)														
PURTA	\$ 31,698													
Net Rate Base	\$ 2,345,605													
PURTA/Net Rate Base	0.01351													
Fossil Taxes Other than Income														
\$000's														
		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Net Rate Base		81,556	78,750	75,609	72,367	64,216	61,346	58,335	55,165	51,809	48,231	44,380	40,173	34,433
Cap Stock Tax		\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277
PURTA(Net Rate Base x 0.1133)		\$ 924	\$ 892	\$ 856	\$ 820	\$ 727	\$ 695	\$ 661	\$ 625	\$ 587	\$ 546	\$ 503	\$ 455	\$ 390
		\$ 1,238	\$ 1,206	\$ 1,170	\$ 1,134	\$ 1,041	\$ 972	\$ 938	\$ 902	\$ 864	\$ 823	\$ 780	\$ 732	\$ 667
PURTA	\$ 15,291													
Net Rate Base	\$ 1,350,172													
PURTA/Net Rate Base	0.01133													
Fossil Capital Stock														
Steam Production	%	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Sunbury SES	0.1088													
Martins Creek #1 & #2 SES	0.0910													
Martins Creek #3 & #4 SES	0.1724													
Brunner Island SES	0.2547													
Conemaugh SES	0.0503													
Keystone SES	0.0238													
Montour SES	0.2171													
Hollywood SES	0.0171													
Wallenpaupack HES	0.0070	37	37	37	37	37								
Hollywood HES	0.0524	277	277	277	277	277	277	277	277	277	277	277	277	277
CT's	0.0048													
		\$ 314	\$ 314	\$ 314	\$ 314	\$ 314	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277	\$ 277
Capital Stock Tax	\$ 5,279													
* Plant percentage times \$5,279														

Pennsylvania Power Light Company
R-00973954

OTS Exhibit 2
Schedule 2

Nuclear Taxes Other than Income			
\$000's			
Net Rate Base			
Cap Stock Tax			
PURTA(Net Rate Base x .01351)			
PURTA	\$ 31,698		
Net Rate Base	\$ 2,345,605		
PURTA/Net Rate Base	0.01351		
Fossil Taxes Other than Income			
\$000's			
		2043	2044
Net Rate Base		28,707	-
Cap Stock Tax		\$ 277	\$ 277
PURTA(Net Rate Base x 0.1133)		\$ 325	\$ -
		\$ 602	\$ 277
PURTA	\$ 15,291		
Net Rate Base	\$ 1,350,172		
PURTA/Net Rate Base	0.01133		
Fossil Capitol Stock			
<u>Steam Production</u>	<u>%</u>	<u>2043</u>	<u>2044</u>
Sunbury SES	0.1088		
Martins Creek #1 & #2 SES	0.0910		
Martins Creek #3 & #4 SES	0.1724		
Brunner Island SES	0.2547		
Conemaugh SES	0.0503		
Keystone SES	0.0238		
Montour SES	0.2171		
Holtwood SES	0.0171		
Wallenpaupack HES	0.0070		
Holtwood HES	0.0524	277	277
CT's	0.0048		
		\$ 277	\$ 277
Capital Stock Tax	\$ 5,279		
* Plant percentage times \$5,279			

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J. R. Schadt
Page 1 of 3

SEP 03 1997

Pennsylvania Power & Light Company
Response to Interrogatories
of PP&L Industrial Customer Alliance, Set II
Dated April 30, 1997

Docket No. R-00973954

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- Q. 2.**
- a. Refer to page 16 of 117 in Exhibit JRS1. The Company has utilized an annual escalation rate of 2.5% for taxes other than income taxes. Please provide all documentation relied upon by the Company to conclude that is a reasonable assumption.
 - b. Segregate the base year (1996) taxes other than income taxes into the component taxes and the associated dollar amounts.
 - c. For each tax other than income separately identified in response to part (b) of this question, please provide an illustration of its actual computation. Define all terms such as fair value or book value within the context of the actual computations.
 - d. For each tax other than income separately identified in response to part (b) of this question, please describe how the Company expects that tax to change in future years assuming that tax rates remain the same as current rates.
 - e. Provide a quantification of the changes in each other tax separately identified in response to part (b) of this question for each future year consistent with the Company's response to part (d) of this question. Provide all assumptions, data, computations, workpapers, and spreadsheets with all cell formulas left intact.
 - f. Does the Company expect its PURTA tax to decline as the net book value of Susquehanna declines in future years? Please explain your response.
 - g. Does the Company expect the Pennsylvania capital stock tax to decline as the net book value of Susquehanna presumably, the associated capitalization, declines in future years? Please explain your response.
 - h. Does the Company expect the employee payroll taxes to decline as the number of employees is reduced? Please explain your response.
- A. 2.**
- a. The Company concluded that taxes other than income, specifically Pennsylvania Public Utility Realty Tax and Capital Stock Tax would remain at

J. R. Schadt
Page 2 of 3

current levels including inflation. These taxes are based on different criteria and the Company projected that the taxing authorities would require revenue at current levels including inflation to remain revenue neutral.

- b. Taxes other than income for the base year (1996) are made up of the following taxes:

	<u>(\$000s)</u>
PURTA	\$ 31,698
Capital Stock	<u>10,942</u>
Total	<u>\$ 42,640</u>

- c. As described in the response to item (b), the taxes other than income are comprised of PURTA and capital stock tax. Refer to Attachments 2 and 3 of the response to RP - D.4. of the Commission's filing guidelines for the supporting computations of these taxes for the base year. The apportionment of the taxes to the nuclear function is as follows:

	<u>(\$000s)</u>
PURTA	
Direct assignment Nuclear PURTA Base	\$29,749
Allocated General Plant PURTA Base	<u>1,949</u>
Total	\$31,698
Capital Stock	
Allocated Total Tax	\$10,942

- d-g. The Company expects PURTA and Capital Stock taxes to escalate in the future at an estimated annual rate of 2.5% over the remaining life of existing generation facilities. When generation facilities are retired, the associated taxes are reduced accordingly.

Under Title 72 P.S. paragraph 8104-A(b) of the Pennsylvania Code, the Department of Revenue is required to assess public utilities an additional tax in the event the amount of PURTA tax collected does not meet the amount required for the Department to distribute to the local taxing authorities their share of the total annual realty tax equivalent. Accordingly, this additional annual assessment is expected to offset any reduction in the base PURTA tax in the future resulting from the decline in net book value of the Company's generation facilities, including Susquehanna SES.

Capital stock tax is computed on a base of book income and net worth. As the net plant investment associated with nuclear generation facilities declines over their remaining life, the associated capital stock tax also will decline

J. R. Schadt
Page 3 of 3

under the current tax computation formula. However, the Customer Choice/Restructuring Act provides for the tax revenues currently collected from the electric utilities in the Commonwealth to remain neutral under Section 2810. This is expected to result in tax changes to maintain the tax revenues required by the Commonwealth. Accordingly, the Company is estimating the capital stock tax to escalate at an annual rate of 2.5% over the forecast period.

- h. The Company expects payroll taxes to decrease as the number of employees is projected to decrease. Payroll taxes are included in the O&M section of Exhibit JRS1.

OTS Statement No. SR-2

Dated: August 15, 1997

gV
8-28-97
Hof
R-973954

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PENNSYLVANIA POWER AND LIGHT COMPANY

Docket No. R-00973954

DOCKETED

SEP 03 1997

Surrebuttal Testimony

of

Stephen M. Reed

Office of Trial Staff

SEP 03 2 AM 9:42
PROTHONOTARY'S OFFICE

Concerning:

Regulatory Assets

Other Transition Costs

**DOCUMENT
FOLDER**

1 **Q. STATE YOUR FULL NAME, EMPLOYER AND BUSINESS**
2 **ADDRESS.**

3 A. My name is Stephen M. Reed. I am employed by the Public Utility
4 Commission, P:O. Box 3265, Harrisburg, Pa. 17015-3265.

5
6 **Q. ARE YOU THE SAME STEPHEN M. REED WHO FILED DIRECT**
7 **TESTIMONY IN THIS PROCEEDING?**

8 A. Yes. I have previously submitted OTS Statement and Exhibit No. 2.

9
10 **Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL?**

11 A. The purpose of my Surrebuttal testimony is to address the rebuttal
12 testimony of Messrs. Kleha and Schadt of PP&L, Knecht of the Office of
13 the Small Business Advocate and Baron of the PP&L Industrial Customer
14 Alliance regarding stranded costs and the computation of the Universal
15 Service Charge.

1 Q. HAVE YOU REVIEWED THE REBUTTAL TESTIMONY OF
2 MESSRS. KLEHA , BARON AND KNECHT REGARDING YOUR
3 PROPOSAL TO ALLOCATE THE COST OF UNIVERSAL
4 SERVICE ON A STRAIGHT Kwh BASIS TO ALL CUSTOMER
5 CLASSES?

6 A. Yes, I have.

7
8 Q. DO YOU AGREE WITH THE CONCLUSIONS DRAWN BY
9 THOSE INDIVIDUALS WITH REGARD TO THE ALLOCATION
10 OF UNIVERSAL SERVICE FUND COSTS?

11 A. I agree that historically the individual social programs that will comprise
12 PP&L's Universal Service Fund have been afforded the rate treatment
13 outlined by the various parties in their rebuttal testimony. However, it is
14 still my opinion that Universal Service is a new concept, established by
15 the Legislature in the Customer Choice Act, for addressing the problem of
16 serving those having difficulty paying for electric service. Moreover, I
17 believe that the intent of the legislation is for the costs of Universal
18 Service to be shared by all parties regardless of the rate design employed
19 in any previous rate proceeding.

1 **Q. SUBSEQUENT TO THE FILING OF MY DIRECT TESTIMONY IN**
2 **THIS PROCEEDING HAS THE COMMISSION ADDRESSED THE**
3 **CONCEPT OF ALLOCATING UNIVERSAL SERVICE FUND**
4 **COSTS AMONG THE RATE CLASSES?**

5 A. Yes. By Order issued July 10, 1997, at Docket M-0096890F010,
6 "Guidelines for Universal Service and Energy Conservation Programs
7 Made Pursuant to 66 Pa. C.S. §2803, §2802(17,2804(8) and 2804(9)",
8 the Commission has stated that a per Kwh assessment of costs on all
9 customer classes was unacceptable because of the disproportionate
10 responsibility for the costs that are placed on high volume energy users.
11 For that reason, I will withdraw my recommendation that the cost of
12 universal service be allocated on a per Kwh basis.

13
14 **Q. HAVE YOU REVIEWED THE REBUTTAL TESTIMONY OF**
15 **PP&L'S WITNESS MR. JOSEPH SCHADT REGARDING YOUR**
16 **ADJUSTMENT TO TAXES OTHER THAN INCOME?**

17 A. Yes, I have. Mr. Schadt states that the Act requires that the revenues
18 expected to be collected by the Commonwealth remain "neutral" and that
19 PP&L interprets this to mean that some increase for inflation is included
20 in this revenue neutral figure.

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Q. DO YOU AGREE WITH MR. SCHADT'S INTERPRETATION?

A. No, I do not. Mr. Schadt correctly states that §2810 is designed so as to maintain a certain level of total revenues from five named taxes, Corporate Net Income, Capital Stock Franchise, Sales and Use, Public Utility Realty and Utilities Gross Receipts. However, Mr. Schadt's interpretation that revenue neutrality include an increase for inflation, (PP&L Statement No. 8-R, Page 36, line 3) cannot be supported by the language of §2810 (A) "General Intent of Revenue Neutrality Reconciliation". Section 2810 clearly states:

"It is the intention of the General Assembly to establish this revenue replacement at a level necessary to recoup losses that may result from the restructuring of the electric industry and the transition thereof."

To that end, the Act specifies a base year amount that the Department of Revenue should realize and defines a calculation that will either increase or decrease the tax rate of the effected tax calculations to achieve that amount. Nowhere in the language of §2810, that defines the tax rate calculation, is a factor for inflation incorporated.

Q. WHAT IS THE EFFECT OF MR. SCHADT'S CALCULATION OF TAXES OTHER THAN INCOME IN THIS PROCEEDING?

1 A. The concept of “revenue neutrality” applies to the tax revenue realized by
2 the Commonwealth of Pennsylvania’s Department of Revenue; Mr.
3 Schadt’s calculation of Taxes-Other than Income serves no other purpose
4 than to increase the Company’s stranded cost claim.

5

6 **Q. MR. SCHADT FURTHER STATES THAT THE**
7 **COMMONWEALTH HAS USED TAX INCREASES TO FUND**
8 **REVENUE SHORTFALLS IN THE PAST AND THAT TAX**
9 **REVENUES MUST KEEP PACE; DO YOU AGREE WITH THIS**
10 **STATEMENT?**

11 A. I agree with Mr. Schadt’s conclusions regarding the ability of the
12 Commonwealth to raise taxes, however, Mr. Schadt again overlooks the
13 fact that the Company’s Capital Stock Tax is calculated as a function of
14 income and net worth and that the Company’s PURTA liability is
15 calculated as a function of net plant. Net worth continues to grow under
16 the Company’s stranded costs scenario, albeit slowly, because of the
17 annual decline of net income, while net plant decreases as it is
18 depreciated. Neither tax is subject to increase based solely upon annual
19 inflation.

20

1 **Q. DID YOU REVIEW MR. SCHADT'S REBUTTAL TESTIMONY**
2 **REGARDING THE RECOVERY OF RATE CASE EXPENSE?**

3 A. Yes, I have. Mr. Schadt states in his rebuttal testimony that PP&L, for
4 accounting purposes, properly established a regulatory asset in accordance
5 with SFAS 71 and that it is this regulatory asset which the Company is
6 recognizing as a stranded cost in this proceeding.

7
8 **Q. DO YOU AGREE WITH MR. SCHADT'S POSITION?**

9 A. No, I do not. For accounting purpose, Mr. Schadt may be correct, but
10 for ratemaking purposes, which is why certain expenses are normalized,
11 the Company is only entitled to include in rates an amount that represents
12 what would normally be incurred in a year for litigating a base rate case.
13 For ratemaking purposes, the total rate case expense has no significance
14 beyond the determination of a normal year's expense. The Act at §2803,
15 in pertinent part, defines stranded costs as that:

16 "which traditionally would be recoverable under a regulated
17 environment but which may not be recoverable in a competitive
18 electric generation market".

19
20 PP&L is no more entitled to recovery of its unamortized rate case expense
21 in this proceeding than it would be in a base rate proceeding in a
22 regulated environment.

1 **Q. DID YOU REVIEW MR. SCHADT'S REBUTTAL TESTIMONY**
2 **REGARDING THE RECOVERY OF SUSQUEHANNA REFUELING**
3 **COSTS AS A REGULATORY ASSET FOR STRANDED COST**
4 **PURPOSES?**

5 A. Yes, I have. Mr. Schadt claims that the Company has maintained
6 deferred refueling costs on its books of account since the Commission
7 granted approval of deferral and amortization for book purposes in 1983
8 at Docket R-822169 (55 PUR4th 185, 228-229 (1983)). Additionally,
9 Mr. Schadt states that the Company has always been one-cycle behind in
10 recovering outage costs since that time.

11
12 **Q. DO YOU AGREE WITH MR. SCHADT'S CONCLUSIONS**
13 **REGARDING THE SUSQUEHANNA REFUELING COSTS?**

14 A. The Commission, in the Order cited by Mr. Schadt, did approve PP&L's
15 request to accrue and defer first refueling outage costs of Unit 1.
16 However, that approval was specifically addressed to the costs of the first
17 Unit 1 outage in 1984 and was for book purposes (Generally Accepted
18 Accounting Principles) only; no allowance was made for their recovery in
19 rates. The Commission simply preserved the Company's right to claim
20 those particular costs in a future rate proceeding. Mr. Schadt's argument

1 supporting the recovery of Susquehanna deferred refueling costs does not
2 apply in this proceeding. The Commission Order at Docket R-00943271
3 did not institute an annual amortization for which the Company would be
4 entitled to full recovery, but established a normalized annual level of
5 expense applicable to the deferred refueling costs that would be included
6 in rates. The concept is no different than that of rate case expense
7 discussed previously and for the same reason should be rejected.

8

9 **Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?**

10 A. Yes, it does.

OTS Statement No. 3
Witness: K. L. Deardorff
Date: June 27, 1997

DJ
8-28-97
HMS
R-973954

PENNSYLVANIA POWER & LIGHT COMPANY

Docket No. R-00973954

DOCKETED

SEP 03 1997

Direct Testimony

of

Kevan L. Deardorff

Office of Trial Staff

Concerning:

Rate of Return/Discount Rate

**DOCUMENT
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DOCKETED

Pennsylvania Power & Light Company
Docket No. P-00973954

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Kevan L. Deardorff. My business address is P.O. Box 3265, Harrisburg, Pa. 17105-3265.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am currently employed by the Pennsylvania Public Utility Commission as a Fixed Utility Financial Analyst. I am assigned to the Office of Trial Staff as an expert witness.

Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I have prepared this information in Appendix A supplementing my direct testimony.

Q. PLEASE IDENTIFY THE ISSUES THAT ARE ADDRESSED IN YOUR TESTIMONY.

A. The issues addressed in my direct testimony are the discount rate, the reasonable rate of return for Pennsylvania Power & Light Company (PP&L) and each of the individual components of that rate of return.

These components include capital structure, cost rates of long-term debt and preferred stock, and the cost of common equity.

I. Discount Rate (Rate of Return)

Q. DOES YOUR DIRECT TESTIMONY INCLUDE AN EXHIBIT THAT SUPPORTS YOUR RECOMMENDATIONS WITH RESPECT TO A FAIR RATE OF RETURN AND DISCOUNT RATE?

A. Yes. OTS Exhibit No. 3 presents the analyses that I have conducted regarding rate of return/discount rate.

II. Company Position

A. Summary

Q. WHAT IS PP&L'S CLAIMED DISCOUNT RATE IN THIS PROCEEDING?

A. Mr. Joseph R. Schadt, the Company's witness sponsoring the stranded cost model, recommends a discount rate of 7.92 percent. This discount rate is based upon the Company's after-tax cost of capital at December 31, 1996. The discount rate calculation is as follows:

	<u>Weighted Cost of Capital</u> (%)	<u>Tax Savings on Debt @ 41.493%</u> (%)	<u>After Tax Cost Rate</u> (%)
Long-Term Debt	3.71 %	1.54 %	2.17
Preferred Stock	0.55 %		0.55
Common Equity	<u>5.20%</u>		<u>5.20</u>
Total	<u>9.46%</u>		<u>7.92</u>

Source: PP&L Exhibit JRS 1, TAB A, Attachment 1.

**Q. HOW IS PP&L'S 9.46 PERCENT COST OF CAPITAL
CALCULATED?**

A. PP&L's 9.46 percent cost of capital is based upon the Commission allowed rate of return from the 1994 PP&L general rate case (R-00943271). The cost of capital calculation is as follows:

	<u>Capital Structure</u> (%)	<u>Cost Rate</u> (%)	<u>Weighted Cost Rate</u> (%)
Long-Term Debt	47.01	7.89	3.71
Preferred Stock	7.79	7.10	0.55
Common Equity	<u>45.20</u>	11.50	<u>5.20</u>
Total	<u>100.00</u>		<u>9.46</u>

Source: PP&L Exhibit PRM 2, Schedule 1.

B. Basis

Q. WHAT IS THE BASIS FOR THE COMPANY'S CLAIM?

A. In Attachment 1 of Exhibit JRS1, TAB A, Mr. Joseph R. Schadt provides the capitalization ratios of 47.0 percent long-term debt, 7.8 percent preferred stock, and 45.2 percent common equity are at December 31, 1996. The components of this capital structure are provided in PP&L's Filing Guidelines, RP-A.3, Schedule 3. Also, Schedule 3 provides the calculations of the actual embedded cost rates of debt and preferred stock.

Mr. Paul R. Moul, the Company's rate of return witness, stated on page 6 of Statement No. 6, that PP&L's use of an 11.5 percent cost of

equity in its analysis is conservative. On page 2 of his testimony, Mr. Moul states that the rate of return on common equity, which should be used for the base year, is at least 12.75 percent. Mr. Moul relied on four methods in making this recommendation: the Discounted Cash Flow (DCF) model, The Risk Premium analysis, the Capital Asset Pricing Model (CAPM), and the Comparable Earnings approach.

III. OTS Position

A. Summary

Q. WILL YOU PLEASE SUMMARIZE YOUR RECOMMENDATION?

A. The following is a summary of my rate of return/discount rate recommendation:

	<u>Capital Structure</u> (%)	<u>Cost Rate</u> (%)	<u>Weighted Cost Rate</u> (%)	<u>Tax Savings on Debt</u> (%)	<u>After-tax Cost of Capital</u> (%)
Long-Term Debt	47.10	7.89	3.71	1.54	2.17
Preferred Stock	7.79	7.10	0.55		0.55
Common Equity	<u>45.20</u>	<i>10.50</i>	<u>4.75</u>		<u>4.75</u>
Total	<u>100.00</u>		<u>9.01</u>		<u>7.47</u>

Source: OTS Exhibit No. 3, Schedule No. 1.

B. Elements Adopted

Q. HAVE YOU ADOPTED ANY ELEMENTS OF THE COMPANY'S RECOMMENDATION IN ARRIVING AT YOUR POSITION?

A. Yes. I have adopted the Company's recommended capital structure and cost rates of debt and preferred stock.

C. Elements Disputed

Q. HOW DOES YOUR RECOMMENDATION DIFFER FROM THE COMPANY'S CLAIM?

A. In the table above, I have italicized the numbers where my recommendation differs from the Company's rate of return claim. My recommendation differs in three areas; the appropriate cost rate of common equity, the overall rate of return and the discount rate. I recommend a 10.5 percent cost rate of common equity in lieu of Mr. Moul's 12.75 percent recommendation and the Company's actual claim of 11.5 percent. My overall rate of return is 9.01 percent in lieu of the Company's 9.46 percent and my discount rate is 7.47 percent in lieu of the Company's 7.92 percent claim^{1/}. The only reason that my overall return and discount rate differ from the Company's claim is that my cost of equity recommendation is different. Therefore, the sole issue in this case concerning rate of return is the cost of common equity.

^{1/} The Company's discount rate is not based on Mr. Moul's cost of equity recommendation but the rate of return granted by the Commission at Docket No. R-00943271.

IV. Cost of Common Equity

A. Summary

Q. WOULD YOU PLEASE SUMMARIZE THE RESULTS OF YOUR COST OF EQUITY ANALYSIS?

A. I have determined that investors require a 10.50 percent cost rate of common equity for PP&L.

B. Basis for Determining the Cost of Common Equity

Q. WHAT IS THE BASIS FOR YOUR 10.50 PERCENT COST OF EQUITY RECOMMENDATION?

A. My determination was based on giving equal weighting to the DCF results of PP&L and a barometer group of electric companies.

C. Methodology Used

Q. WHAT METHOD HAVE YOU UTILIZED IN THE DETERMINATION OF THE EXPECTED COST RATE OF COMMON EQUITY INVESTMENT?

A. I used the Discounted Cash Flow (DCF) method to determine the cost rate of common equity. To compute the various components of the DCF method, I relied upon current, historical, and forecasted market data for a barometer group of electric companies and PP&L.

Q. WHAT FACTORS INFLUENCED YOU TO GIVE WEIGHT TO THE DCF RESULTS FOR PP&L?

A. PP&L is primarily a vertically integrated electric company engaged in the production, transmission, and distribution of electricity. PP&L has adequate financial and market data available to use in a DCF analysis.

Q. WHY HAVE YOU ALSO GIVEN WEIGHT TO THE BAROMETER GROUP'S DCF RESULTS?

A. I have chosen to use a barometer group as an additional source of information for two reasons. The use of data for one company may be less reliable than using a barometer group because the data for one company may be subject to events which can cause short-term aberrations in the marketplace. The rate of return on common equity for a single company could become distorted in these particular circumstances. The use

of a barometer group has the effect of smoothing out any aberrations associated with a single company.

A barometer group of companies is also used as a benchmark to satisfy the long established guideline of providing a utility the opportunity to earn a return equal to that of similar risk enterprises.

D. Barometer Group Selection

Q. WHAT BAROMETER GROUP DID YOU USE FOR YOUR ANALYSIS?

A. In selecting a barometer group, it is important that the proxy companies provide similar services and products. The companies within an industry will certainly differ from one another. That is why it is important to focus upon similarities. This can be accomplished by analyzing some key market information and risk indicators.

OTS Exhibit No. 3, Schedule No. 3 lists thirteen electric companies that satisfy the following selection criteria: located in the eastern and central United States, similar financial risk to PP&L, and nuclear generating in excess of 30 percent of total generation.

E. Risk Comparison

Q. WHAT ANALYSIS OF MARKET DATA AND RISK INDICATORS DID YOU PERFORM THAT SUPPORTS THE USE OF THIS BAROMETER GROUP AS A PRIMARY SOURCE TO DETERMINE PP&L'S EXPECTED ROE?

A. I first examined the percent of nuclear generating capacity to total generating capacity for the barometer group. I have provided this comparison on Schedule No. 3 of OTS Exhibit No. 3. I believe that the barometer group should be similar to PP&L with respect to this variable due to the expected large stranded costs associated with nuclear plant. The percent of nuclear generation to total generation capacity for the barometer group ranges between 31.1 and 74.0 percent. PP&L's nuclear generation is 31.0 percent. It is readily apparent that all the electric utilities in Schedule No. 3 have a large exposure to nuclear generation. PP&L's percentage of nuclear generation is at the low end of the range, which indicates a lower risk associated with nuclear generation than the average.

Q. PLEASE DESCRIBE PP&L'S FINANCIAL RISK PROFILE IN COMPARISON TO THE BAROMETER GROUP?

A. Financial risk is defined as the percent of debt in the capital structure employed to finance the fixed capital. Common equity ratios for electric utilities are essentially the inverse of the debt ratio, therefore, I used common equity ratios from Schedule 3 to measure financial risk. PP&L's equity ratio of 45.5 percent is slightly lower than the barometer group's average of 47.7 percent indicating slightly higher financial risk.

Q. PLEASE DESCRIBE PP&L'S INVESTMENT RISK PROFILE IN COMPARISON TO THE BAROMETER GROUP?

A. Schedule No. 3 of OTS Exhibit No. 3 also presents three measures of overall investment risk: Beta, Safety Rank, and Financial Strength. PP&L's beta of .75 indicates slightly lower investment risk when compared to the barometer group's average beta of .76. PP&L's safety rank of 2.0 also indicates lower investment risk in comparison to the barometer group's average safety rank of 2.4. PP&L's financial strength is identical to that of the barometer group's financial strength of B++.

Overall these three indicators of investment risk indicate that PP&L has slightly lower investment risk in comparison to the barometer group.

Q. WHAT DO YOU CONCLUDE FROM YOUR COMPARISON OF THE RISK INDICATORS FOR PP&L AND THE BAROMETER GROUP?

A. Based upon my analysis of the risk indicators for PP&L and the barometer group, I believe the barometer group is a very close representation of an electric utility with PP&L's characteristics, and is a reasonable proxy to use in the determination of a market based expected cost rate of common equity for PP&L.

F. Economic Factors

Q. DOES YOUR COST OF EQUITY ANALYSIS TAKE CHANGING BUSINESS AND ECONOMIC CONDITIONS INTO ACCOUNT?

A. Yes. The financial markets take all factors into account when assessing investments. The aggregate risks of an investment are reflected in the stock price per share. The data for the barometer group and PP&L that I have utilized is market based; therefore, my results have accounted for all these factors.

Q. WHAT ECONOMIC FACTORS DO YOU CONSIDER IMPORTANT IN YOUR ANALYSIS OF COST OF CAPITAL?

A. I have made comparisons of important economic variables and have examined their impact on electric utilities over the past twenty years. Schedule No. 4 of my exhibit presents a historical perspective of the Moody's "A" Utility Bond Yield, the U.S. T-Bills rate, the prime rate, and the percent change in the CPI compared to the average dividend yield of my barometer group and PP&L for the same period. This schedule also presents a sampling of economic experts' quarterly forecasts for 1997 and 1998 and yearly forecasts for the period 1997 to 2006.

Q. IS THERE A RELATIONSHIP BETWEEN DIVIDEND YIELDS OF ELECTRIC COMPANIES AND BOND YIELDS?

A. Yes. A comparison of the bond yields and dividend yields in Schedule No. 4 of OTS Exhibit No. 3 reveals a direct relationship between these two variables. I believe it's important in determining an appropriate cost rate of common equity to recognize this relationship. Any potential impact related to projected change in bond yields should be considered in recommending a representative dividend yield for the prospective period.

Q. WHAT HAS BEEN THE HISTORICAL TREND OF PUBLIC UTILITY BOND YIELDS AND ELECTRIC UTILITY DIVIDEND YIELDS?

A. On Schedule 4, it can readily be seen that A rated bond yields and electric utility dividend yields have experienced a declining trend since 1981. Since 1981, A rated utility bond yields have decreased from 15.95 percent to 7.75 percent, or 820 basis points. The barometer group's dividend yield declined from an average of 12.67 percent to 6.36 percent. PP&L's dividend yield decreased from 13.34 percent to 7.01 percent. The barometer group and PP&L's average dividend yields declined 631 and 633 basis points, respectively.

Q. WHAT IS THE OUTLOOK FOR INTEREST RATES IN RELATION TO THE INFLATION RATE?

A. Schedule No. 4 of OTS Exhibit No. 3 presents short-term and long-term forecasts published by Blue Chip Financial Forecasts. Over the next year, forecasting professional are expecting Treasury Bill (T-Bill) yields to be between 5.5 and 5.7 percent (Blue Chip Financial Forecasts - Quarterly forecasts) and forecasted inflation to be between 3.4 and 3.5 percent. As a

result the real rate of interest is expected to be in the two to three percent range for this period.

The longer-term trend for the T-Bill and inflation forecasts is down. Forecasting professionals are expecting T-Bills to be in the range of 4.8 to 5.2 percent over the next ten years. Similarly, inflation is expected to be in a very narrow range of 2.8 to 3.1 percent over the same ten-year period. As a result, the real rate of interest is expected to remain within the equilibrium range of two to three percent.

Forecasting professionals are also expecting interest rates on long-term "A" rated utility bonds to decline from 8.1 percent in the second quarter of 1997 to 7.7 percent in the third quarter of 1998. These forecasts are dependent upon forecasters' belief that investors can expect a slow down in the economy with real GDP growth declining from 2.7 percent in the second quarter of 1997 to 2.0 percent in the third quarter of 1998.

Investors' expectations are, however, continually changing and influenced by Federal Reserve policy. The Federal Reserve's tight monetary policy of recent years has done much to alleviate inflationary fear. If the Federal Reserve continues to maintain their current anti-inflationary bias in monetary policy and manages to attain their interest

rate and monetary targets, investors' inflationary expectations will continue to decrease resulting in lower and more stable interest rates.

Q. WHAT EVIDENCE EXISTS THAT INTEREST RATES WILL CONTINUE TO DECLINE IN THE LONGER-TERM FUTURE?

A. Schedule No 4 of OTS Exhibit No. 3 also presents extended forecasts for the various interest rates presented. Forecasters are expecting a steady decline in all the forecasted variables presented in that schedule out to the year 2006.

G. Discounted Cash Flow Analysis (DCF)

Q. WHAT METHOD HAVE YOU UTILIZED IN THE DETERMINATION OF THE EXPECTED COST RATE OF COMMON EQUITY INVESTMENT?

A. I used the Discounted Cash Flow (DCF) method to determine the cost rate of common equity. To compute the various components of the DCF method, I relied upon current, historical, and forecasted market data for the barometer group and PP&L.

Q. WILL YOU PLEASE EXPLAIN YOUR DCF METHOD OF ANALYSIS?

A. My analysis employs the standard discrete DCF model, $k = D_1/P_0 + g$, where D_1 is the dividend expected during the year, P_0 is the current price of the stock, and g is the expected growth rate of dividends. For purposes of calculating a dividend yield applicable to the formula, D_0/P_0 (the current dividend divided by the current price) must be adjusted by $1/2$ the expected growth rate^{2/} in order to account for changes in the dividend rate in period 1.

Q. PLEASE STATE THE RESULTS OF YOUR DISCOUNTED CASH FLOW (DCF) ANALYSIS AND AN EXPLANATION OF HOW YOU ARRIVED AT THOSE RESULTS.

A. The following table summarizes the results of my DCF analysis:

^{2/} The adjustment of $1/2$ the growth rate is used when the timing of the dividend increase is not known for certain. It could occur next month or the twelfth month. On average it is safe to assume that the increase will occur half way through the prospective year. Therefore, an adjustment by $1/2$ the expected growth rate is appropriate.

	<u>Range</u>	<u>Average</u>
PP&L	10.43 - 11.10%	10.76%
Barometer Group	10.36 - 10.62%	10.49%

Source: OTS Exhibit No. 3, Schedule No. 5, Pages 1 and 2.

The 10.43 to 11.10 percent range for PP&L was developed by using dividend yields calculated on a 8.35 percent spot and 7.68 percent 52-week average basis and a growth rate of 2.75 percent. The 10.36 to 10.62 percent range for the barometer group was developed by using dividend yields calculated on a 7.12 percent spot and 6.86 percent 52-week average basis and a growth rate of 3.50 percent. The calculation of the dividend yields and growth rate are described in detail in a subsequent part of my testimony.

H. Dividend Yield

Q. PLEASE EXPLAIN FURTHER HOW YOU DEVELOPED YOUR DIVIDEND YIELDS THAT YOU USED IN YOUR DCF ANALYSIS?

A. A representative dividend yield must be calculated over a time frame that avoids the problems of short-term aberrations and "stale" data series. For

purposes of my barometer group DCF analysis, I have placed equal emphasis on the most recent spot and 52 week average dividend yields. For my PP&L DCF analysis, I relied more heavily on the 52 week average because the spot yield is being overly influenced by the uncertainty surrounding the current filings. Moreover, it is obvious that the 8.35 percent spot dividend yield is so extraordinarily high that indications are that either growth forecasts are overstated or PP&L's current stock price is undervalued. The following table summarizes my dividend yield computations for PP&L and the barometer group:

	Dividend Yields (Adjusted)		
	Spot 5/30/97 <u>(%)</u>	52-week Average <u>(%)</u>	Average <u>(%)</u>
PP&L	8.35	7.68	8.01
Barometer Group	7.12	6.86	6.99

Source: OTS Exhibit No. 3, Schedule 5, pp. 1 and 2.

Q. PLEASE EXPLAIN WHY YOU DID NOT PRESENT A SEPARATE CALCULATION FOR A GROWTH ADJUSTMENT TO YOUR DIVIDEND YIELD.

A. In this case, the dividends used in the dividend yield calculations are Value Line's projected dividends (D_1) which reflect a full years growth. Therefore, the standard adjustment by $\frac{1}{2}$ the growth rate that I discussed on page 18 has already been accounted for in this analysis.

I. Growth Rate

Q. WHAT INFORMATION DID YOU RELY UPON TO DETERMINE YOUR EXPECTED GROWTH RATE?

A. To arrive at a representative dividend growth rate, I surveyed several series of both projected growth rates and historical growth rates. These growth rates are presented in OTS Exhibit No. 3, Schedule No. 5, Page 3. My growth rate estimates are based on a survey of Value Line estimates, S&P's consensus estimates, and five-year historical growth rates.

Q. WHAT FACTORS DETERMINE THE IMPORTANCE OF ANALYSTS' GROWTH RATE FORECASTS IN YOUR DETERMINATION OF AN OVERALL GROWTH RATE?

A. The availability of data is an important consideration in any analysis of investors' expectations. As a source of growth rates, Value Line provides an abundance of information including projected and historical growth rates. In addition, Value Line has a very wide circulation and is easily available to individual investors. Individual investors comprise the bulk of electric utility ownership.

Standard & Poor's (S&P), on the other hand, has more limited data availability. S&P reports a consensus of projected earnings growth rates, but not projections of dividend growth rates. However, S&P does have the advantage of surveying more than one analyst for each company.

Q. WHICH GROWTH ELEMENTS IN OTS EXHIBIT NO. 3, SCHEDULE NO. 5, PAGE 3 ARE THE MOST RELEVANT IN YOUR DETERMINATION OF THE PROSPECTIVE GROWTH RATE?

A. I have arranged the columns in OTS Exhibit No. 3, Schedule No. 5, page 3 in order of the importance in determining a representative growth

rate. I have given primary weight to expected growth rates, shown in columns 1-3, in comparison to historical growth rates, shown in columns 4-5, simply because more information is implicitly contained in these estimates. The bulk of the research evidence has indicated analysts' growth forecasts to be superior to historically-oriented growth measures in forecasting growth. Forecasting professionals have already accounted for historical data in their estimates along with expectations of a wide array of economic variables. To give significant weight to historical growth rates would result in a double count.

Q. WHAT DO YOU CONCLUDE TO BE A REASONABLE GROWTH RATE FOR PP&L?

A. Based upon the results on line 15 of OTS Exhibit No. 3, Schedule No. 5, page 3, I conclude that investors could reasonably expect to achieve a growth rate of 2.5 to 3.0 percent for PP&L.

Q. WHAT LEADS YOU TO BELIEVE THAT INVESTORS SHOULD EXPECT TO ACHIEVE A GROWTH RATE OF 2.5 TO 3.0 PERCENT FOR PP&L?

A. The forecasted growth rates for PP&L are 0.0 percent for dividends, 3.0 percent for S & P earnings growth, and 2.5 percent for Value Line five-year earnings growth. The average growth from these three variables is 1.8 percent. Normally I would give significant and equal weight to these three variables; however, at this point in time I have chosen to give no weight to PP&L's forecasted dividend growth rate. In response to a perceived increase in business risk resulting from the transition to a competitive environment, dividend growth is being restrained in order to strengthen equity ratios^{3/}. Until the transition is complete I believe that dividend growth rates will be biased and should be given less weight in a DCF analysis. Thus by giving the forecast of dividend growth no weight, I conclude that investors could reasonably expect to achieve a growth rate in the range of 2.5 to 3.0 percent for PP&L using earnings growth rates as a proxy for dividend growth rates.

^{3/}For PP&L, the equity ratio increased from 40.5 percent in 1990 to 43.1 percent in 1995 and is expected to increase further to 54.5 percent in 2000. Value Line Investment Survey, March 14, 1997.

Q. WHAT DO YOU CONCLUDE TO BE A REASONABLE GROWTH RATE FOR THE BAROMETER GROUP?

A. Based upon the results on line 14 of OTS Exhibit No. 3, Schedule No. 5, page 3, I conclude that investors could reasonably expect to achieve a growth rate of 3.25 to 3.75 percent for the barometer group.

Q. WHAT LEADS YOU TO BELIEVE THAT INVESTORS SHOULD EXPECT TO ACHIEVE A GROWTH RATE OF 3.25 to 3.75 PERCENT FOR THE BAROMETER GROUP?

A. The forecasted growth rates for the barometer group are 2.3 percent for dividends, 3.3 percent for S & P earnings growth, and 3.8 percent for Value Line five-year earnings growth. The average growth from these three variables is 3.1 percent. Normally I would give significant and equal weight to these three variables; however, at this point in time I have chosen to give no weight to forecasted dividend growth rates for the same reason I gave less weight to PP&L's dividend growth rate^{4/}. Until the transition is complete I believe that dividend growth rates will be biased

^{4/}For the barometer group, the average equity ratio increased from 43.2 percent in 1990 to 46.7 percent in 1995 and is expected to increase further to 52.9 percent in 2000. Value Line Investment Survey, March 14 and April 11, 1997.

and should be given less weight in a DCF analysis. Thus by giving the forecasts of dividend growth no weight, I conclude that investors could reasonably expect to achieve a growth rate in the range of 3.25 to 3.75 percent for the barometer group using earnings growth rates as a proxy for dividend growth rates.

Q. WHAT COST RATE OF COMMON EQUITY IS INDICATED FROM THE RESULTS OF YOUR DCF ANALYSIS?

A. Given these representative dividend yields and using the midpoint of the growth rate range, I applied the DCF formula with the results presented on Schedule No. 5, Pages 1 and 2, and summarized on pages 18 and 19 of this testimony. Based upon these DCF results, I believe that 10.50 percent represents a reasonable expected rate of return on common equity for PP&L. As previously discussed, my recommendation reflects very little weight given to PP&L's DCF results based on a spot yield since it is obviously an aberration.

Q. ARE THE DCF RESULTS RELIABLE GIVEN THE CURRENT GENERAL MARKET CONDITIONS?

A. Yes. The DCF results are grounded on two assumptions concerning general market conditions. These assumptions are that (1) the payout ratio will remain constant and (2) price/earnings ratios will remain constant. Both assumptions are required in a constant growth DCF model so that both the dividend yield and growth rate can be assigned specific values.

Q. PLEASE DISCUSS THE FIRST ASSUMPTION WITH RESPECT TO THE RELIABILITY OF THE DCF RESULTS.

A. The first assumption is that the payout ratio will remain reasonably constant so that the rate of dividend growth will closely follow the growth rate of earnings per share. OTS Exhibit No. 3, Schedule No. 5, Page 4 presents the historical and forecasted payout ratios for PP&L and the barometer group. While the historical payout ratios have remained around the ten year averages of 80.3 and 79.9 percent, Value Line expects this stable situation to change significantly in the future. This divergence is a signal that earnings and dividends are expected to grow at different rates. It is also an indication that central tendencies among growth forecasts exhibits less confidence.

The following summarizes investors' expectations with respect to payout ratios for PP&L and the barometer group:

	<u>Range</u>	<u>Mean</u>	<u>1996</u>	<u>Forecast</u>
PP&L	70.4 - 100.0	80.3	81.5	74.2
Barometer Group	73.2 - 85.1	79.9	81.3	70.0

Source: OTS Exhibit No. 3, Schedule No. 5, Page 4.

Q. PLEASE DISCUSS THE SECOND ASSUMPTION WITH RESPECT TO THE RELIABILITY OF THE DCF RESULTS.

- A. The second assumption is that the price/earnings ratio will remain the same from time of purchase to time of sale. I am not contending the P/E ratio will be the same for the prospective period. However, for cost of capital purposes in a rate-making context, I must make this strict assumption. Otherwise a specific estimate of a rate of return for the prospective period would be much more complex.

Evidence of investor expectations of stable P/E ratios is presented in OTS Exhibit No. 3, Schedule 5, Page 5. For the barometer group, the P/E ratios on average are expected to decrease slightly over the next five

years from 11.3 to 10.7. Again, this is an indication that earnings are expected to increase faster over the next five years in comparison to most other variables and that extreme care must be given in the growth rate selection process. The P/E ratio for PP&L is expected to remain relatively stable over the next five years.

J. Market Pressure, Selling and Issuance Expense

Q. HAVE YOU TAKEN INTO CONSIDERATION MARKET PRESSURE, SELLING AND ISSUANCE EXPENSES IN MAKING YOUR RECOMMENDATION?

A. Yes. I have considered these items but have not made any adjustments to account for them. I believe that market pressure, selling and issuance expenses are an additional cost of capital that are incurred at the time of issuance. However, the current market price of common stock already reflects these items, as investors have already capitalized market pressure and issuance expenses in determining the value of the stock at the time of purchase. Since my analyses are market based, these items have been taken into consideration. As a result I have made no additional adjustments to account for market pressure and issuance expenses.

V. Pre-tax Interest Coverage

Q. HAVE YOU TESTED THE INTEREST COVERAGE OF YOUR 9.01 PERCENT OVERALL RATE OF RETURN RECOMMENDATION?

A. Yes. I have presented interest coverage calculations in OTS Exhibit No. 3, Schedule No. 6. My recommendation will provide PP&L a pre-tax interest coverage of 3.44 times. On Schedule 7 of Exhibit No. 3, I have presented results of an analysis of experienced interest coverages for the period of 1987 to 1996 for PP&L and the barometer group. The following is a summary of those experienced coverages:

	<u>Range</u>	<u>Mean</u>	<u>1996</u>
PP&L	2.68 - 3.77	3.10	3.77
Barometer Group	2.38 - 3.43	2.86	3.43

Source: OTS Exhibit No. 3, Schedule No. 7.

The Company's pre-tax interest coverage of 3.44 times is very near the upper end of both ranges and exceeds the mean coverages for both PP&L and the barometer group.

Q. HOW DOES 3.44 TIMES INTEREST COVERAGE COMPARE TO RECENT S&P'S BENCHMARKS FOR ELECTRIC UTILITIES?

A. The 3.44 times interest coverage is fairly consistent with the S&P's standard of 3.50 times required for an electric utility with a bond rating of A. PP&L's long-term debt is rated A-.

VI. Discount Rate

Q. WHAT DISCOUNT RATE DO YOU RECOMMEND AS A RESULT OF YOUR RATE OF RETURN ANALYSIS?

A. OTS Exhibit No. 3, Schedule No. 1 presents the calculation of the discount rate appropriate for PP&L. I recommend a discount rate of 7.47 percent. This is a result of reducing my 9.01 percent overall cost of capital by the tax savings of 1.54 percent.

Q. WHAT IMPACT ON STRANDED COSTS RESULTS FROM A DECREASE IN THE DISCOUNT RATE FROM 7.92 PERCENT TO 7.47 PERCENT?

A. Decreasing the discount rate to 7.47 percent in the stranded cost model results in an increase in stranded costs of approximately \$87 million.

VII. Risk Free Rate of Return

Q. MR. GRUBER HAS REQUESTED YOU TO PROVIDE AN ESTIMATE OF A RISK FREE RATE OF RETURN AS AN INPUT TO THE "STRANDED MODEL". WHAT RISK FREE RATE OF RETURN DO YOU RECOMMEND FOR THE NINE YEAR PERIOD?

A. The closest proxy for a risk free rate of return, having a maturity of nine years, would be the expected yield for a ten year treasury note. Blue Chip Financial Forecasts for the ten year treasury notes range between 6.4 and 6.8 percent with an average of 6.6 percent^{5/}. Therefore, I recommend using 6.6 percent as the risk free rate of return input to the "Stranded Model".

^{5/} Blue Chip Financial Forecasts, June 1, 1997.

VIII. Critique of PP&L's Cost of Capital Testimony

Q. PLEASE SUMMARIZE YOUR CRITIQUE OF PP&L'S COST OF CAPITAL TESTIMONY?

A. I have three primary areas of disagreement concerning Mr. Moul's cost of capital testimony.

- First, Mr. Moul's barometer group is not appropriate.
- Second, Mr. Moul's has made several serious errors in his DCF analysis.
- Third, Mr. Moul has incorrectly given weight to the Comparable Earnings, Risk Premium, and CAPM methods.
- Fourth, Mr. Moul's overall recommendation is suspect because the total reliance on PP&L data is inappropriate at this time.

Q. WHAT SPECIFICALLY DO YOU FIND INAPPROPRIATE ABOUT MR. MOUL'S BAROMETER GROUP?

A. I find Mr. Moul's selection criteria to be flawed because Mr. Moul failed to consider generation mix as a selection criteria even though he acknowledged on page 2 of Company Exhibit PRM 1 that generation mix is an element of risk. Considering this criteria, Mr. Moul's barometer

group is quite dissimilar to PP&L. PP&L's generation mix has 31 percent nuclear compared to 15 percent nuclear for Mr. Moul's barometer group. Even more disturbing is the fact that three of the companies in his barometer group have absolutely no nuclear generation.

Q. PLEASE EXPLAIN THE SPECIFIC ERRORS MR. MOUL MADE IN HIS DCF ANALYSIS.

A. Mr. Moul was able to inflate his DCF results by making an unwarranted ex-dividend adjustment to his dividend yields and an unwarranted 0.5 percent upward adjustment to his growth rates to reflect "market factors".

Q. WHY SHOULD THE EX-DIVIDEND ADJUSTMENT BE REJECTED AS APPROPRIATE ADJUSTMENT TO THE DCF RETURNS?

A. I find this to be an inappropriate adjustment for two reasons. First, I am not aware of any academic evidence that supports an ex-dividend adjustment to dividend yields in the context of the DCF model.

Secondly, there are no financial publications that provide ex-dividend adjusted dividend yields to investors for their investment decision making purposes. I believe that if this adjustment was a significant input

into investors' decision making process, the main stream financial publications would be providing it either on a daily or weekly basis.

Q. WHY SHOULD MR. MOUL'S 0.5 PERCENT INCREMENT TO HIS GROWTH RATE BE REJECTED?

A. The 0.5 percent increment to account for market factors should be rejected for two reasons. First, it is my opinion that Mr. Moul's growth estimate of 3.5 percent already accounts for this information. In making his unadjusted 3.0 percent estimate, Mr. Moul has relied upon analysts projections as they appear on Schedule 7 of Company Exhibit PRM 2. Analysts projections are based upon not only company specific information but market factors such as those listed on page 3 of Company Exhibit PRM 1. The addition of the 0.5 percent to his 3.0 percent growth rate is therefore a double count.

Q. WHAT IS THE SECOND REASON THE 0.5 PERCENT INCREMENT SHOULD BE REJECTED?

A. Mr. Moul has not presented any quantitative evidence to support the claim that the market factors result in a positive impact on the growth rate for the electric companies. Market factors could possibly result in a negative

adjustment. Without sufficient quantitative evidence to support a specific number the 0.5 increment should be rejected.

Q. MR. MOUL BELIEVES THAT THE RISK PREMIUM AND CAPM RESULTS SHOULD BE GIVEN SIGNIFICANT WEIGHT ALONG WITH THE DCF RESULTS. WHY SHOULD THESE METHODS BE REJECTED FOR THE DETERMINATION OF THE COST OF CAPITAL?

A. To understand why these methods should be rejected for cost of capital purposes, it must first be understood how investors use these methods in their decision making process. The CAPM and risk premium (RP) methods give results that indicate to an investor what the equity cost rate should be if current economic and regulatory conditions are the same as those present during the historical period the risk premiums were determined. By comparing CAPM and RP results with current expected equity returns (DCF results), an investor can make rational buy and sell decisions. When expected DCF returns are higher than those indicated by the CAPM and RP historical norms, an investor would have an incentive to buy, and vice versa.

The relevancy of these methods does not carry over from the investment decision making process to the regulatory process because we can never be certain that economic and regulatory conditions underlying the historical period during which the risk premiums were calculated are the same today or in the future. This problem is even more pronounced as the electric industry moves through the restructuring process.

Q. GIVEN THE FACT THAT ECONOMIC AND REGULATORY CONDITIONS TODAY ARE DIFFERENT FROM THE HISTORICAL PERIOD, HOW DOES THIS AFFECT THE RISK PREMIUMS USED IN MR. MOUL'S RP AND CAPM MODELS?

A. The CAPM and RP models do not measure the current rate of return on common equity directly as does the DCF model. These methods determine the rate of return on common equity by indirectly observing the current cost of debt. An implicit assumption when using these methods is that the variables determining the equity cost rate and debt cost rate are the same, which allows the analyst to apply a constant risk premium. Actually, the variables determining the cost rates in the two markets are different. Changing economic conditions cause these variables in the two markets to change resulting in changing risk premiums over time.

Therefore, the use of a constant risk premium fails to capture the effect of changing economic conditions over time.

Q. IS THERE ANY CURRENT ACADEMIC EVIDENCE THAT EXAMINES THE CREDIBILITY OF THE CAPM MODEL?

A. Yes. An article which appeared in the New York Times on February 18, 1992, summarizes a CAPM study conducted by professors Eugene F. Fama and Kenneth R. French (OTS Exhibit No. 3, Schedule No. 8). Their study examined the importance of beta (CAPM's risk factor) in explaining returns on common stock. In CAPM theory, the higher a stock's beta the higher the expected return on that stock. They found that the model did not do well in predicting actual returns. A result of this new information, I believe that rational investors will give less credibility to expected equity returns that are calculated using the simple CAPM model.

Q. WHAT EVIDENCE IS THERE THAT THE DCF METHOD IS SUPERIOR TO OTHER MARKET BASED METHODS FOR DETERMINING THE COST OF EQUITY?

A. Risk premium methods, including Mr. Moul's CAPM, all rely upon some form of DCF calculation to determine common stock returns from which bond returns are subtracted to determine the equity risk premium. Therefore, it follows that the DCF method is clearly superior and is sufficient to stand alone provided good judgement is used in the determination of its components.

Q. WHY DO YOU BELIEVE THAT THE TOTAL RELIANCE ON PP&L DATA AT THIS TIME IS INAPPROPRIATE?

A. As I previously testified on page 10 of my testimony, short-term aberrations in the stock price of one company can cause the data to be less reliable than using barometer group data in an analysis. On page 20, I noted that the uncertainty created by PP&L's current filings has caused a temporary increase in investment risk to the equity shareholder resulting in aberrations in its stock price. The increase in risk is only a short-term phenomenon. The aberrant data should not be considered in any analysis of

long-term capital cost rates. As the current filings progress, many of the uncertainties will be eliminated with a subsequent decrease in investment risk.

Q. WHAT EVIDENCE CAN YOU PRESENT THAT INDICATES THE SHORT-TERM INVESTMENT RISK HAS INCREASED FOR PP&L?

A. The volatility of the stock price of PP&L has increased in comparison to the barometer group. Since the beginning of the year the stock price of PP&L has declined 13 percent compared to a decline in the price of only 6 percent for the barometer group^{6/}.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes.

^{6/}Value Line Investment Survey, Summary & Index, January 3, 1997 and May 30, 1997.

Kevan L. Deardorff
Educational and Professional Background

I am a graduate of the Pennsylvania State University, where I received a Bachelor of Science Degree in Business Economics and Finance and a Master of Arts Degree in Economics. Before coming to the Pennsylvania PUC in 1983, I worked as a consultant for the United States Environmental Protection Agency between 1980 and 1981, and as a Research Economist for the Pennsylvania Department of Commerce during 1982.

I am currently employed as a Fixed Utility Financial Analyst III. I have completed rate of return analyses in a large number of rate cases and assisted in the analyses of many electric, gas, water and telephone rate cases. I have prepared rate of return and price cap testimony in the following rate cases:

Keystone Water Company	R-822211-12 R-822215-19 R-822221
Western Pennsylvania Water Company	R-832381
Philadelphia Suburban Water Company	R-842592
Duquesne Light Company	R-842583
Western Pennsylvania Water Company	R-842621-25
Riverton Consolidated Water Company	R-842675
Keystone Water Company	R-842755-56 R-842759
Equitable Gas Company	R-842769
Western Pennsylvania Water Company	R-850096-97
West Penn Power Company	R-850220
Dauphin Consolidated Water Supply Co.	R-860350
Western Pennsylvania Water Company	R-860397

Philadelphia Electric Company (Gas Division)	R-870629
National Fuel Gas Distribution Corp.	R-870719
Western Pennsylvania Water Company	R-870825
Philadelphia Suburban Water Company	R-870840
Equitable Gas Company	R-880971
Chartiers Natural Gas Company	R-891283
Columbia Gas of Pennsylvania, Inc.	R-891468
Arrowhead Public Service Corp.	R-891557
Pennsylvania-American Water Co.	R-901652
Citizens Utilities Water Company of Pennsylvania	R-901663
Citizens Utilities Home Water Company	R-901664
National Fuel Gas Distribution	R-901670
York Water Company	R-901813
Columbia Gas of Pennsylvania, Inc.	R-901873
National Fuel Gas Distribution Corp.	R-911912
The Peoples Natural Gas Company	R-00922180
York Water Company	R-00922168
Pennsylvania & Southern Gas Company	R-00922312
North Penn Gas Company	R-00922276
North East Heat and Light Company	R-00922309

Shenango Valley Water Company	R-00922420
Mechanicsburg Water Company	R-00922502
National Fuel Gas Distribution Corp.	R-00932548
Roaring Creek Water Company	R-00932665
Shenango Valley Water Company	R-00932798
The Peoples Natural Gas Company	R-00932866
Blue Mountain Consolidated Water Co.	R-00932873
Allied Gas Company, et. al.	R-00932952
National Fuel Gas Distribution Corp.	R-00942991
Borough of Media Water Works	R-00943098
Newtown Artesian Water Company	R-00943157
Roaring Creek Water Company	R-00943177
Borough of Schuylkill Haven	R-00943156
Pennsylvania Power & Light Company	R-00943271
National Fuel Gas Distribution Corp.	R-00953299
Frontier Companies	P-00951005
PFG Gas, Inc. and North Penn Gas Company	R-00953524
Commonwealth Telephone Company	P-00961024
PECO Energy Company	R-00973877
PECO Energy Company	R-00973953

OTS Statement No. SR-3
Witness: K. L. Deardorff
Date: August 15, 1997

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PENNSYLVANIA POWER & LIGHT COMPANY

Docket No. R-00973954

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Surrebuttal Testimony

of

Kevan L. Deardorff

Office of Trial Staff

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**DOCUMENT
FOLDER**

Concerning:

Rate of Return/Discount Rate

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is Kevan L. Deardorff. My business address is P.O. Box 3265,
3 Harrisburg, Pa. 17105-3265.

4 **Q. HAVE YOU TESTIFIED PREVIOUSLY IN THIS PROCEEDING?**

5 A. Yes. I previously presented testimony regarding rate of return/discount
6 rate at OTS Statement No. 3 and OTS Exhibit No. 3.

7 **Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL**
8 **TESTIMONY?**

9 A. I have two reasons for presenting surrebuttal testimony. First, I want to
10 revise my recommended discount rate to account for changes that have
11 occurred since I prepared my direct testimony. Second, I want to briefly
12 address the criticisms of my analysis and recommendations made by
13 Mr. Moul.

1 **Q. YOU STATED THAT YOU REVISED YOUR DISCOUNT RATE.**
2 **WHAT IS YOUR REVISED DISCOUNT RATE AND HOW DID**
3 **YOU CALCULATE IT?**

4 A. My revised discount rate recommendation is 7.36 percent. OTS Exhibit
5 No. SR-3, Schedule No. 1 (Updated) presents this calculation. The
6 decrease in the discount rate is the result of my recommended cost of
7 equity decreasing from 10.50 percent to 10.25 percent. This revision was
8 necessary to account for changes that have occurred in both analysts'
9 growth forecasts and market data and to correct a computer programming
10 error.

11 **Q. PLEASE DESCRIBE THE UPDATES TO YOUR DCF RESULTS?**

12 A. The updates and DCF calculations are presented in OTS Exhibit No.
13 SR-3, Schedule No. 5, pages 1 and 2. The DCF results for PP&L are in
14 the range of 10.18 to 10.65 percent with an average of 10.41 percent.
15 The DCF results for the barometer group are in the range of 9.92 to 10.07
16 percent with an average of 10.00 percent.

1 **Q. ON PAGE 1 OF YOUR SUPPLEMENTAL TESTIMONY YOU**
2 **INDICATED THAT YOUR DISCOUNT RATE ADJUSTMENT**
3 **FROM THE COMPANY'S 7.92 PERCENT TO 7.47 PERCENT**
4 **RESULTED IN AN ADJUSTMENT TO STRANDED PLANT OF \$87**
5 **MILLION. HOW DOES YOUR REVISED DISCOUNT RATE**
6 **AFFECT THE ADJUSTMENT TO STRANDED PLANT?**

7 **A.** The impact on stranded plant is now \$ 109 million rather than the \$87
8 million that was presented in my original testimony.

9 **Q. MR. MOUL STATES THAT THE PRE-TAX INTEREST**
10 **COVERAGE MUST BE ABOVE THE 3.5 TIMES THRESHOLD**
11 **FOR AN "A" RATED ELECTRIC UTILITY WITH AN AVERAGE**
12 **BUSINESS POSITION. IS MR. MOUL'S ANALYSIS CORRECT?**

13 **A.** No. Mr. Moul first erred by choosing the A rating as the threshold point
14 when in fact PP&L's rating is A-.

15 Second, he erroneously chose the midpoint as the relevant
16 comparison point rather than the range around the midpoint. Since there
17 are two increments between the BBB and the A rating, the range between
18 the two points must be trisected in order to arrive at an appropriate

1 comparison for PP&L's A- rating. The following pre-tax interest coverage
2 ratios for an electric utility with an average business position are
3 extrapolated from Standard & Poor's Corporate Rating Criteria:

4	Rating	Midpoint	Range
5	A	3.50	3.34 - 3.66
6	A-	3.17	3.01 - 3.33
7	BBB+	2.83	2.67 - 3.00
8	BBB	2.50	2.34 - 2.66

9 Clearly, my recommended return on equity of 10.25 percent results in an
10 overall pre-tax return that affords an opportunity to achieve a pre-tax
11 interest coverage ratio of 3.39 times, which is consistent with an A rating
12 and exceeds the range for an A- rating.

1 Q. MR. MOUL ARGUES IN REBUTTAL TESTIMONY THAT THE
2 COMPANY'S COST OF CAPITAL HAS NOT DECLINED SINCE
3 THE COMMISSION'S DETERMINATION IN THE LAST BASE
4 RATE CASE. DOES HIS DIRECT TESTIMONY SUPPORT THIS
5 NEW CLAIM?

6 A. No. Mr. Moul's recommendation in his direct testimony was 12.75
7 percent. In the last base rate case, Mr. Moul testified that PP&L's cost of
8 equity was 13.00 percent. By his own testimony, he believes that the cost
9 of equity for PP&L has declined 25 basis points.

10 Q. IN FURTHERING HIS ARGUMENT THAT THE COMPANY'S
11 COST OF EQUITY HAS NOT DECLINED SINCE THE LAST BASE
12 RATE CASE, MR. MOUL COMPARES GROWTH RATES IN THE
13 LAST BASE RATE CASE WITH GROWTH RATES IN THIS
14 RESTRUCTURING CASE. ARE HIS CONCLUSIONS, BASED ON
15 SUCH A NARROW ANALYSIS, MEANINGFUL?

16 A. No. First, Mr. Moul's testimony is conflicting. On page 11 of his
17 rebuttal testimony, Mr. Moul would have us believe that PP&L's expected
18 growth rate has increased by 1.0 to 1.5 percentage points. However, Mr.
19 Moul's recommended growth rate for PP&L in his direct testimony of 3.5

1 percent (Exhibit PRM-1, page 2) is 0.5 percentage point less than his
2 recommended growth rate of 4.0 percent in the last base rate case.

3 Second, the barometer group comparison is flawed due to the
4 differences in the barometer groups' composition. The barometer group
5 used in the last base rate case had only eight companies and shared only
6 three companies with my barometer group in this case: Atlantic Energy,
7 Baltimore Gas & Electric, and Public Service Enterprise. Therefore, any
8 comparison of growth rates between the two groups is meaningless.

9 **Q. MR. MOUL FURTHER ARGUES THAT THERE IS NO**
10 **OFFSETTING DECLINE IN THE GROWTH COMPONENT OF**
11 **THE DCF MODEL WHICH WOULD COUNTER-BALANCE THE**
12 **RISE IN THE DIVIDEND YIELD IN 1997. WHAT IS WRONG**
13 **WITH THIS STATEMENT?**

14 A. Mr. Moul is obviously comparing two different time periods. While there
15 appears to be an aberrant dividend yield increase in the early part of 1997,
16 the dividend yield remained flat since the last base rate case. The
17 following table demonstrates this phenomenon:

1	PP&L's dividend yields	<u>February, 1995^{1/}</u>	<u>August, 1997^{2/}</u>
2	52 week dividend yield	7.68%	7.68%
3	Spot yield	8.15%	8.15%

4 **Q. MR. MOUL CRITICIZES YOUR BAROMETER GROUP BECAUSE**
5 **IT INCLUDES SIX COMPANIES THAT HAVE CUT THEIR**
6 **DIVIDENDS. IS THIS CRITERIA APPROPRIATE FOR THE**
7 **SELECTION OF A BAROMETER GROUP THAT IS**
8 **REPRESENTATIVE OF PP&L?**

9 **A.** No. This selection criteria is only appropriate if investors are certain that
10 PP&L will not cut its dividend. The risk perceived by investors of a
11 dividend cut has increased in recent months. Value Line states in their
12 latest report on PP&L "The stock's high yield reflects worries about a
13 dividend cut."^{3/} It therefore makes no sense to exclude companies from
14 the barometer group that have had historic dividend cuts.

15 ^{1/} OTS Exhibit No. 1, Schedule No. 4, Page 2, Docket No. R-00943271.

16 ^{2/} OTS Exhibit No. SR-3, Schedule No. 5, Page 1.

17 ^{3/} Value Line Investment Survey, June 13, 1997.

1 **Q. FINALLY, MR. MOUL RECOMMENDS ADDING 0.11 PERCENT**
2 **TO YOUR DCF DIVIDEND YIELDS BECAUSE YOU DID NOT**
3 **MAKE THE ADJUSTMENT TO THE DIVIDEND OF ONE-HALF**
4 **THE GROWTH RATE. PLEASE EXPLAIN WHY THE 0.11**
5 **PERCENT SHOULD NOT BE ADDED TO THE DIVIDEND YIELD.**

6 **A.** I have already explained on page 21 of my direct testimony why it is not
7 necessary to make this adjustment. The dividends I employed in my DCF
8 analysis already reflect a full year's growth. Adding the 0.11 percent to
9 my dividend yield would thus double count the next period's growth in
10 dividends and bias the dividend yield upward.

11 **Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?**

12 **A.** Yes.

**OTS Exhibit No. SR-3
Witness: K. L. Deardorff
Date: August 15, 1997**

**DOCKETED
SEP 03 1997**

PENNSYLVANIA POWER & LIGHT COMPANY

Docket No. R-00973954

Exhibit to Accompany the

Surrebuttal Testimony

of

Kevan L. Deardorff

Office of Trial Staff

**DOCUMENT
FOLDER**

Concerning:

Rate of Return/Discount Rate

Pennsylvania Power & Light Company
 After-Tax Cost of Capital Conclusion
 Discount Rate
 at December 31, 1996

	[1]	[2]	[3]	[4]	[5]
	<u>Capital Structure</u>	<u>Cost Rates</u>	<u>Weighted Cost of Capital</u>	<u>Tax Savings on Debt @ 41.493%</u>	<u>After-Tax Cost of Capital</u>
[1] Long-Term Debt	47.01%	7.89%	3.71%	1.54%	2.17%
[2] Preferred Stock	7.79%	7.10%	0.55%		0.55%
[3] Common Equity	<u>45.20%</u>	<u>10.25%</u>	<u>4.63%</u>		<u>4.63%</u>
[4] Total	100.00%		8.90%		7.36%

Summary of Risk Indicators for PP&L Resources Company
 and the Barometer Group of Electric Companies at July 11, 1997

	[1]	[2]	[3]	[4]	[5]	[6]
<u>Company</u>	<u>Generating Percent Nuclear</u>	<u>Total Capital (\$Million)</u>	<u>Equity Ratio</u>	<u>Beta</u>	<u>Safety Rank</u>	<u>Financial Strength</u>
[1] Atlantic Energy Inc	38.3	1933.8	42.0	0.70	3.0	B +
[2] Baltimore Gas & Electric	42.4	6322.4	47.9	0.80	2.0	B + +
[3] Boston Edison	42.6	2591.8	45.1	0.70	3.0	B
[4] Carolina Power & Light	45.8	5508.4	50.0	0.80	2.0	A
[5] DQE	31.3	2941.7	45.5	0.75	2.0	A
[6] Dominion Resources	43.0	10835.3	46.5	0.70	2.0	B + +
[7] Duke Power	55.0	9348.0	53.5	0.70	1.0	A +
[8] GPU Inc	38.4	6521.0	49.5	0.85	3.0	B + +
[9] IES Industries Inc	31.1	1385.8	46.6	0.65	3.0	B + +
[10] PECO Energy	69.9	9905.4	49.9	0.90	2.0	B + +
[11] Public Service Enterprise	55.9	12383.0	47.5	0.80	2.0	A
[12] Rochester Gas & Electric	74.0	1643.7	50.9	0.65	3.0	B +
[13] Unicom Corp	72.7	14336.0	46.6	0.90	3.0	B +
[14] Average	49.3	6588.9	47.8	0.76	2.4	B + +
[15] PP&L Resources	31.0	6231.0	45.5	0.70	3.0	B + +

Sources: CompuStat Database, yearend 1995 (Columns 1 and 2).
 Value Line Investment Survey - Ratings and Reports, June 13 and July 11, 1997

Comparison of Key Economic Variables to the Dividend Yields for the
Barometer Group of Electric Companies
and PP&L Resources Company
for 1977 to 1996 and Estimates for 1997 to 2007

	(1) Moody's 'A' Utility Bond Yield	(2) U.S. Treasury Bills	(3) Prime Rate	(4) CPI Percent Change	(5) Barometer Group	(6) Dividend Yield PP&L
[1] 1977	8.61	5.27	6.83	6.80	8.08	8.11
[2] 1978	9.29	7.22	9.06	9.00	9.07	8.88
[3] 1979	10.49	10.04	12.67	13.30	10.39	10.44
[4] 1980	13.34	11.51	15.27	12.50	12.26	12.00
[5] 1981	15.95	14.03	18.87	8.90	12.67	13.34
[6] 1982	15.86	10.69	14.86	3.80	11.94	11.99
[7] 1983	13.66	8.63	10.79	3.80	10.90	10.70
[8] 1984	14.03	9.58	12.04	4.00	11.69	10.90
[9] 1985	12.46	7.48	9.93	3.80	9.78	9.68
[10] 1986	9.58	5.98	8.33	1.10	7.86	7.24
[11] 1987	10.09	5.82	8.21	4.40	8.15	7.60
[12] 1988	10.49	6.69	9.32	4.40	8.28	7.72
[13] 1989	9.77	8.12	10.87	4.60	7.49	7.35
[14] 1990	9.86	7.51	10.01	6.10	7.40	7.08
[15] 1991	9.36	5.42	8.46	3.10	6.83	6.51
[16] 1992	8.69	3.45	6.25	2.90	6.50	6.09
[17] 1993	7.59	3.02	6.00	2.70	5.72	5.73
[18] 1994	8.30	4.29	7.15	2.70	6.65	7.26
[19] 1995	7.89	5.51	8.83	2.50	6.56	7.53
[20] 1996	7.75	5.02	8.27	3.30	6.36	7.01
Recent Forecasts:						
[21] 1997-3rd Qtr	7.80	5.30	8.60	2.30		
[22] 1997-4th Qtr	7.80	5.40	8.70	2.40		
[23] 1998-1st Qtr	7.70	5.40	8.70	2.50		
[24] 1998-2nd Qtr	7.60	5.40	8.60	2.40		
[25] 1998-3rd Qtr	7.60	5.30	8.60	2.40		
[26] 1998-4th Qtr	7.60	5.30	8.50	2.40		
Extended Forecasts:						
[27] 1998	7.70	5.40	8.50	2.90		
[28] 1999	7.30	5.00	8.00	2.90		
[29] 2000	7.20	4.80	7.80	2.70		
[30] 2001	7.20	4.80	7.80	2.70		
[31] 2002	7.20	4.80	7.80	2.60		
[32] 2003-07	7.10	4.70	7.60	2.60		

Sources: Economic Indicators, March, 1997
Blue Chip Financial Forecasts, June 1, 1997 and July 1,, 1997
Moody's Bond Record, Various Issues
Standard & Poor's Compustat Data base

Expected Market Cost Rate of Equity
 Using Data for PP&L Resources, Inc.

	(1)	(2)	(3)
<u>Time Period</u>	<u>Adjusted Dividend Yield(1)</u> (%)	<u>Growth Rate</u> (%)	<u>Expected Rate of Return</u> (%)
(1) 52 Week Average (ending 8/1/97)	7.68	2.50	10.18
(2) Spot Price(2) (ending 8/1/97)	<u>8.15</u>	<u>2.50</u>	<u>10.65</u>
(3) Average:	7.91	2.50	10.41

Notes: (1) Value Line's reported dividends are projected for the year ahead.

Sources: Value Line, Ratings and Reports, June 13 and July 11, 1997
 Barron's, August 4, 1997

Expected Market Cost Rate of Equity
 Using Data for PP&L Resources, Inc.

	(1)	(2)	(3)
<u>Time Period</u>	<u>Adjusted Dividend Yield(1)</u> <u>(%)</u>	<u>Growth Rate</u> <u>(%)</u>	<u>Expected Rate of Return</u> <u>(%)</u>
(1) 52 Week Average (ending 8/1/97)	7.68	2.50	10.18
(2) Spot Price(2) (ending 8/1/97)	<u>8.15</u>	<u>2.50</u>	<u>10.65</u>
(3) Average:	7.91	2.50	10.41

Notes: (1) Value Line's reported dividends are projected for the year ahead.

Sources: Value Line, Ratings and Reports, June 13 and July 11, 1997
 Barron's, August 4, 1997

Expected Market Cost Rate of Equity
 Using Data for the Barometer Group Electric Companies

	(1)	(2)	(3)
<u>Time Period</u>	<u>Adjusted Dividend Yield(1)</u> <u>(%)</u>	<u>Growth Rate</u> <u>(%)</u>	<u>Expected Rate of Return</u> <u>(%)</u>
[1] 52 Week Average (ending 8/1/97)	6.82	3.25	10.07
[2] Spot Price(2) (ending 8/1/97)	<u>6.67</u>	<u>3.25</u>	<u>9.92</u>
[3] Average:	6.75	3.25	10.00

Notes: (1) Value Line's reported dividends are projected for the year ahead.

Sources: Value Line, Ratings and Reports, June 13 and July 11, 1997
 Barron's, August 4, 1997

Actual and Estimated Growth Rates
for PP&L Resources and the Barometer Groups of Electric Companies

	<u>Expected Growth</u>			<u>Historical Growth</u>	
	⁽¹⁾ Value Line Five Year Dividend <u>Growth</u>	⁽²⁾ S & P Earnings <u>Growth</u>	⁽³⁾ Value Line Five Year Earnings <u>Growth</u>	⁽⁴⁾ Value Line Five Year Dividend <u>Growth</u>	⁽⁵⁾ Value Line Five Year Earnings <u>Growth</u>
<u>Company</u>					
⁽¹⁾ Atlantic Energy Inc	-7.0	1.0	3.5	1.0	-4.5
⁽²⁾ Baltimore Gas & Electric	2.5	3.0	7.0	2.0	3.0
⁽³⁾ Boston Edison	0.5	2.0	1.0	2.5	5.5
⁽⁴⁾ Caroline Power & Light	3.0	4.0	4.5	3.5	2.0
⁽⁵⁾ DQE	5.0	5.0	3.0	6.0	7.5
⁽⁶⁾ Dominion Resources	0.0	4.0	5.0	3.0	-0.5
⁽⁷⁾ Duke Power	4.5	5.0	4.0	4.5	4.5
⁽⁸⁾ GPU Inc	2.5	4.0	6.5	6.5	0.5
⁽⁹⁾ IES Industries Inc	0.0	2.0	1.5	0.5	2.0
⁽¹⁰⁾ PECO Energy	2.0	2.0	2.5	0.5	-1.0
⁽¹¹⁾ Public Service Enterprise	0.5	2.0	1.5	0.5	1.0
⁽¹²⁾ Rochester Gas & Electric	0.0	2.0	2.5	2.5	0.5
⁽¹³⁾ Unicom Corp	1.5	3.0	1.5	0.0	-0.5
⁽¹⁴⁾ Group Average	1.2	3.0	3.4	2.5	1.5
⁽¹⁵⁾ PP&L Resources	0.0	3.0	2.0	2.5	-1.0

Sources: Value Line Investment Survey, June 13, and July 11, 1997
Standard and Poor's Earnings Guide, July, 1997

Current and Expected Price/Earnings Ratios
 for the Barometer Group of Electric Companies
 and PP&L Resources, Inc.

		^[1] Current <u>P/E</u>	^[2] Five Year Forecasted <u>P/E</u>
	<u>Company</u>		
[1]	Atlantic Energy Inc	10.0	10.3
[2]	Baltimore Gas & Electric	11.8	10.5
[3]	Boston Edison	9.8	10.0
[4]	Carolina Power & Light	13.0	11.3
[5]	DOE	11.7	11.5
[6]	Dominion Resources	11.1	11.4
[7]	Duke Power	12.9	13.8
[8]	GPU Inc	10.3	10.0
[9]	IES Industries Inc	13.6	12.5
[10]	PECO Energy	9.1	9.8
[11]	Public Service Enterprise	10.0	8.6
[12]	Rochester Gas & Electric	8.7	10.7
[13]	Unicom Corp	8.8	7.7
[14]	Average	10.8	10.6
[15]	PP&L Resources	9.8	11.9

Sources: Value Line, Ratings and Reports, June 13 and July 11, 1997

Pennsylvania Power & Light Company
 Interest Coverage

	[1]	[2]	[3]	[4]	[5]
	<u>Capital Structure</u>	<u>Cost Rates</u>	<u>Weighted Cost of Capital</u>	<u>Effective Tax Rate Complement(1)</u>	<u>Pre-Tax Cost of Capital</u>
[1] Long-Term Debt	47.01%	7.89%	3.71%		3.71%
[2] Preferred Stock	7.79%	7.10%	0.55%	0.5851	0.95%
[3] Common Equity	<u>45.20%</u>	<u>10.25%</u>	<u>4.63%</u>	0.5851	<u>7.92%</u>
[4] Total	100.00%		8.90%		12.57%

[5] Pre-Tax Coverage: $12.57/3.71 = 3.39$

[6] Pre-Tax Coverage: $8.90/3.71 = 2.40$

Notes: (1) Effective income tax rate assumed to be 41.493%.
 [35% Fed. Inc. Tax + (9.99% State Inc. Tax x (1-.35))].

OTS Exhibit No. 3
Witness: K. L. Deardorff
Date: June 27, 1997

QV
8-28-97
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R-973954

PENNSYLVANIA POWER & LIGHT COMPANY

Docket No. R-00973954

DOCKETED

SEP 03 1997

Exhibit to Accompany the

Direct Testimony

of

Kevan L. Deardorff

Office of Trial Staff

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Concerning:

Rate of Return/Discount Rate

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SEP 03 1997

Pennsylvania Power & Light Company
After-Tax Cost of Capital Conclusion
Discount Rate
at December 31, 1996

DOCUMENT
FOLDER

	[1]	[2]	[3]	[4]	[5]
	<u>Capital Structure</u>	<u>Cost Rates</u>	<u>Weighted Cost of Capital</u>	<u>Tax Savings on Debt @ 41.493%</u>	<u>After-Tax Cost of Capital</u>
[1] Long-Term Debt	47.01%	7.89%	3.71%	1.54%	2.17%
[2] Preferred Stock	7.79%	7.10%	0.55%		0.55%
[3] Common Equity	<u>45.20%</u>	<u>10.50%</u>	<u>4.75%</u>		<u>4.75%</u>
[4] Total	100.00%		9.01%		7.47%

Capitalization Ratios for Pennsylvania Power & Light Company
at December 31, 1996

		(1) <u>Amount</u>	(2) <u>Percentage Of Total Capitalization</u>
(1)	Long-Term Debt	\$2,744,256,000	47.02%
(2)	Preferred Stock	454,911,000	7.79%
(3)	Common Equity	2,637,839,000	<u>45.19%</u>
(4)	Total	\$5,837,006,000	100.00%

Source: PP&L RP-A.3, Schedule E.

Summary of Risk Indicators for PP&L Resources Company
and the Barometer Group of Electric Companies at April 11, 1997

	(1)	(2)	(3)	(4)	(5)	(6)
<u>Company</u>	<u>Generating Percent Nuclear</u>	<u>Total Capital (\$Million)</u>	<u>Equity Ratio</u>	<u>Beta</u>	<u>Safety Rank</u>	<u>Financial Strength</u>
(1) Atlantic Energy Inc	38.3	1933.8	42.0	0.70	3.0	B+
(2) Baltimore Gas & Electric	42.4	6322.4	47.9	0.85	2.0	B++
(3) Boston Edison	42.6	2591.8	45.1	0.70	3.0	B
(4) Carolina Power & Light	45.8	5508.4	50.0	0.85	2.0	A
(5) DQE	31.3	2941.7	45.5	0.75	2.0	A
(6) Dominion Resources	43.0	10835.3	46.5	0.75	2.0	B++
(7) Duke Power	55.0	9348.0	53.5	0.70	1.0	A+
(8) GPU Inc	38.4	6521.0	49.5	0.85	3.0	B++
(9) IES Industries Inc	31.1	1385.8	46.6	0.65	3.0	B++
(10) PECO Energy	69.9	9905.4	49.9	0.85	2.0	B++
(11) Public Service Enterprise	55.9	12383.0	47.5	0.80	2.0	A
(12) Rochester Gas & Electric	74.0	1643.7	50.9	0.65	3.0	B+
(13) Unicom Corp	72.7	14336.0	46.6	0.80	3.0	B+
(14) Average	49.3	6588.9	47.8	0.76	2.4	B++
(15) PP&L Resources	31.0	6231.0	45.5	0.75	2.0	B++

Sources: Compustat Database, yearend 1995 (Columns 1 and 2).
Value Line Investment Survey - Ratings and Reports, March 14 and April 11, 1997

Comparison of Key Economic Variables to the Dividend Yields for the
Barometer Group of Electric Companies
and PP&L Resources Company
for 1977 to 1996 and Estimates for 1997 to 2006

	(1) Moody's 'A' Utility Bond Yield	(2) U.S. Treasury Bills	(3) Prime Rate	(4) CPI Percent Change	(5) Barometer Group	(6) PP&L
(1) 1977	8.61	5.27	6.83	6.80	8.08	8.11
(2) 1978	9.29	7.22	9.06	9.00	9.07	8.88
(3) 1979	10.49	10.04	12.67	13.30	10.39	10.44
(4) 1980	13.34	11.51	15.27	12.50	12.26	12.00
(5) 1981	15.95	14.03	18.87	8.90	12.67	13.34
(6) 1982	15.86	10.69	14.86	3.80	11.94	11.99
(7) 1983	13.66	8.63	10.79	3.80	10.90	10.70
(8) 1984	14.03	9.58	12.04	4.00	11.69	10.90
(9) 1985	12.46	7.48	9.93	3.80	9.78	9.68
(10) 1986	9.58	5.98	8.33	1.10	7.86	7.24
(11) 1987	10.09	5.82	8.21	4.40	8.15	7.60
(12) 1988	10.49	6.69	9.32	4.40	8.28	7.72
(13) 1989	9.77	8.12	10.87	4.60	7.49	7.35
(14) 1990	9.86	7.51	10.01	6.10	7.40	7.08
(15) 1991	9.36	5.42	8.46	3.10	6.83	6.51
(16) 1992	8.69	3.45	6.25	2.90	6.50	6.09
(17) 1993	7.59	3.02	6.00	2.70	5.72	5.73
(18) 1994	8.30	4.29	7.15	2.70	6.65	7.26
(19) 1995	7.89	5.51	8.83	2.50	6.56	7.53
(20) 1996	7.75	5.02	8.27	3.30	6.36	7.01
Recent Forecasts:						
(21) 1997-2nd Qtr	8.10	5.50	9.00	3.40		
(22) 1997-3rd Qtr	8.10	5.60	9.00	3.40		
(23) 1997-4th Qtr	8.00	5.70	9.10	3.50		
(24) 1998-1st Qtr	7.90	5.60	9.20	3.50		
(25) 1998-2nd Qtr	7.80	5.60	9.10	3.50		
(26) 1998-3rd Qtr	7.70	5.50	9.10	3.50		
Extended Forecasts:						
(27) 1997	7.60	5.20	8.30	3.00		
(28) 1998	7.50	5.00	8.10	3.10		
(29) 1999	7.40	5.00	8.00	3.00		
(30) 2000	7.40	5.00	8.00	2.90		
(31) 2001	7.30	4.90	8.00	2.90		
(32) 2002-06	7.20	4.80	7.80	2.80		

Sources: Economic Indicators, March, 1997
Blue Chip Financial Forecasts, December 1, 1996 and May 1, 1997
Moody's Bond Record, May, 1995
Standard & Poor's Compustat Data base

Expected Market Cost Rate of Equity
 Using Data for PP&L Resources, Inc.

	(1)	(2)	(3)
<u>Time Period</u>	<u>Adjusted Dividend Yield(1)</u> (%)	<u>Growth Rate</u> (%)	<u>Expected Rate of Return</u> (%)
(1) 52 Week Average (ending 5/30/97)	7.68	2.75	10.43
(2) Spot Price(2) (ending 5/30/97)	<u>8.35</u>	<u>2.75</u>	<u>11.10</u>
(3) Average:	8.01	2.75	10.76

Notes: (1) Value Line's reported dividends are projected for the year ahead.

Sources: Value Line, Ratings and Reports, March 14 and April 11, 1997
 Barron's, June 2, 1997

Expected Market Cost Rate of Equity
 Using Data for the Barometer Group Electric Companies

	(1)	(2)	(3)
<u>Time Period</u>	<u>Adjusted Dividend Yield(1)</u> (%)	<u>Growth Rate</u> (%)	<u>Expected Rate of Return</u> (%)
[1] 52 Week Average (ending 5/30/97)	6.86	3.50	10.36
[2] Spot Price(2) (ending 5/30/97)	<u>7.12</u>	<u>3.50</u>	<u>10.62</u>
[3] Average:	6.99	3.50	10.49

Notes: (1) Value Line's reported dividends are projected for the year ahead.

Sources: Value Line, Ratings and Reports, March 14 and April 11, 1997
 Barron's, June 2, 1997

Actual and Estimated Growth Rates
 for PP&L Resources and the Barometer Groups of Electric Companies

	<u>Expected Growth</u>			<u>Historical Growth</u>	
	⁽¹⁾ Value Line Five Year Dividend <u>Growth</u>	⁽²⁾ S & P Earnings <u>Growth</u>	⁽³⁾ Value Line Five Year Earnings <u>Growth</u>	⁽⁴⁾ Value Line Five Year Dividend <u>Growth</u>	⁽⁵⁾ Value Line Five Year Earnings <u>Growth</u>
<u>Company</u>					
⁽¹⁾ Atlantic Energy Inc	-6.0	2.0	0.0	1.5	-2.0
⁽²⁾ Baltimore Gas & Electric	3.0	3.0	6.5	2.0	0.0
⁽³⁾ Boston Edison	1.0	2.0	1.5	1.0	5.0
⁽⁴⁾ Caroline Power & Light	3.0	4.0	4.5	3.5	1.5
⁽⁵⁾ DQE	5.0	5.0	4.0	5.5	8.0
⁽⁶⁾ Dominion Resources	1.0	4.0	5.5	3.5	-0.5
⁽⁷⁾ Duke Power	4.5	4.0	4.5	5.0	4.5
⁽⁸⁾ GPU Inc	3.0	4.0	5.5	10.5	1.0
⁽⁹⁾ IES Industries Inc	0.0	2.0	2.0	0.5	2.0
⁽¹⁰⁾ PECO Energy	2.0	3.0	2.5	-4.5	-0.5
⁽¹¹⁾ Public Service Enterprise	0.5	2.0	1.0	1.0	1.0
⁽¹²⁾ Rochester Gas & Electric	0.0	2.0	0.5	2.5	0.5
⁽¹³⁾ Unicom Corp	1.5	4.0	1.5	0.0	-0.5
⁽¹⁴⁾ Group Average	2.3	3.3	3.8	2.8	2.2
⁽¹⁵⁾ PP&L Resources	0.0	3.0	2.5	3.0	-0.5

Sources: Value Line Investment Survey, March 14, and April 11, 1996
 Standard and Poor's Earnings Guide, May, 1997

Dividend Payout Ratios for PP&L Resources and the Barometer Groups of Electric Companies
for 1988-1996 and Five Year Forecasts (1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<u>Company</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>5-Year Forecast</u>
(1) Atlantic Energy, Inc.	74.5	76.5	97.4	85.7	100.0	85.6	109.2	99.4	137.5	62.5
(2) Baltimore G&E Co.	57.1	68.5	100.0	92.1	87.7	79.5	78.2	76.7	85.9	62.8
(3) Boston Edison Co.	97.8	92.1	96.3	81.6	79.0	75.4	73.9	88.5	72.0	75.2
(4) Carolina P&L Co.	70.6	68.1	67.0	67.8	67.8	74.4	84.7	71.8	69.2	69.0
(5) DQE	65.3	64.4	61.7	58.1	57.9	59.7	56.8	55.5	56.0	62.3
(6) Dominion Res, Inc.	68.8	77.9	81.1	78.6	90.2	79.5	90.7	105.3	97.4	67.5
(7) Duke Power Co.	66.1	59.1	66.7	64.6	79.6	65.7	66.7	61.5	61.7	65.0
(8) GPU, Inc.	28.6	51.0	51.8	60.7	70.5	63.4	77.3	65.3	78.5	58.7
(9) IES Industries	83.5	88.7	117.6	109.7	109.4	85.7	89.7	95.5	102.9	85.7
(10) PECO Energy Co.	94.4	88.4	67.1	57.2	61.3	58.4	88.1	65.5	78.6	72.2
(11) Public Service Enter.	78.2	78.6	81.6	87.7	109.6	79.7	77.7	79.7	87.8	77.2
(12) Rochester Gas & Electri	66.7	70.7	91.9	89.5	91.8	86.0	98.3	106.5	77.6	90.0
(13) Unicom Cooperation	99.7	106.0	125.5	112.4	101.8	85.1	96.4	53.7	51.6	61.8
(14) Average	73.2	76.2	85.0	80.4	85.1	75.2	83.7	78.8	81.3	70.0
						Average 1988-96			79.9	
(15) PP&L Resources Inc.	73.8	70.4	75.3	77.1	78.7	79.7	100.0	86.5	81.5	74.2
						Average 1988-96			80.3	

Note: (1) Payout ratio = Dividend per share/earnings per share.

Sources: Value Line Investment Survey, March 14 and April 11, 1997

Current and Expected Price/Earnings Ratios
for the Barometer Group of Electric Companies
and PP&L Resources, Inc.

	(1)	(2)
<u>Company</u>	Current <u>P/E</u>	Five Year Forecasted <u>P/E</u>
[1] Atlantic Energy Inc	12.5	10.3
[2] Baltimore Gas & Electric	14.1	10.5
[3] Boston Edison	10.0	10.0
[4] Carolina Power & Light	13.2	12.1
[5] DQE	12.1	11.5
[6] Dominion Resources	13.3	10.6
[7] Duke Power	12.5	13.8
[8] GPU Inc	10.4	10.0
[9] IES Industries Inc	12.1	12.2
[10] PECO Energy	9.8	10.8
[11] Public Service Enterprise	10.5	9.5
[12] Rochester Gas & Electric	8.8	10.8
[13] Unicom Corp	7.4	7.5
[14] Average	11.3	10.7
[15] PP&L Resources	11.2	11.1

Sources: Value Line Investment Survey - Ratings and Reports, March 14
and April 11, 1997

Pennsylvania Power & Light Company
Interest Coverage

	[1]	[2]	[3]	[4]	[5]
	<u>Capital Structure</u>	<u>Cost Rates</u>	<u>Weighted Cost of Capital</u>	<u>Effective Tax Rate Compliment(1)</u>	<u>Pre-Tax Cost of Capital</u>
[1] Long-Term Debt	47.01%	7.89%	3.71%		3.71%
[2] Preferred Stock	7.79%	7.10%	0.55%	0.5851	0.95%
[3] Common Equity	<u>45.20%</u>	<u>10.50%</u>	<u>4.75%</u>	0.5851	<u>8.11%</u>
[4] Total	100.00%		9.01%		12.77%

[5] Pre-Tax Coverage: $12.77/3.71 = 3.44$

[6] Pre-Tax Coverage: $9.01/3.71 = 2.43$

Notes: (1) Effective income tax rate assumed to be 41.493%.
[35% Fed. Inc. Tax + (9.99% State Inc. Tax x (1-.35))].

Historic Interest Coverage Ratios for PP&L Resources and the Barometer Groups of Electric Companies
for 1987-1996 (1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<u>Company</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
(1) Atlantic Energy, Inc.	3.57	2.87	3.02	2.80	3.39	3.58	3.51	3.07	3.21	2.56
(2) Baltimore G&E Co.	4.36	3.62	2.75	1.27	2.00	2.46	2.81	2.90	3.04	2.99
(3) Boston Edison Co.	2.43	1.76	0.31	1.81	1.76	1.85	2.24	2.45	2.42	3.08
(4) Carolina P&L Co.	2.78	2.13	3.07	2.19	3.16	3.44	3.33	3.44	3.81	4.31
(5) DOE	1.00	2.23	2.32	2.48	2.79	3.01	3.10	2.61	3.64	3.79
(6) Dominion Res, Inc.	N/A									
(7) Duke Power Co.	4.39	3.38	4.03	3.31	3.69	3.55	4.72	4.63	4.91	5.14
(8) GPU, Inc.	4.05	3.84	3.45	3.30	2.79	3.29	3.43	2.16	4.30	3.29
(9) IES Industries	2.67	2.52	2.38	4.09	2.61	2.54	3.31	3.26	3.05	2.95
(10) PECO Energy Co.	2.05	1.70	1.47	1.19	2.42	2.30	2.97	2.53	3.41	3.23
(11) Public Service Enter.	3.36	3.05	2.79	2.53	2.57	2.45	2.79	2.94	3.01	2.93
(12) Rochester Gas & Electri	1.69	2.46	2.42	2.21	2.14	2.55	2.81	2.91	2.85	3.76
(13) Unicom Cooperation	2.31	2.47	2.60	1.38	1.57	1.99	1.11	1.98	3.02	3.15
(14) Average	2.89	2.67	2.55	2.38	2.57	2.75	3.01	2.91	3.39	3.43
(15) PP&L Resources Inc.	2.75	2.68	2.85	2.94	3.14	3.18	3.33	2.72	3.63	3.77

Note: (1) Pre-tax basis

Sources: Standard and Poor's Compustat Data Base

Market Place

A Study Shakes Confidence In the Volatile-Stock Theory

By ERIC N. BERG

One of the most enduring ideas of modern finance is facing its most serious challenge. Two scholars of finance say they have disproved the theory, common among investors, that stocks more volatile than the market as a whole are the best performers.

Eugene F. Fama and Kenneth R. French, business professors at the University of Chicago, traced the performance of thousands of stocks over 50 years but found no link between relative volatility and long-term returns. The many investors who try to beat the market by buying widely swinging issues are misguided, they say.

The importance of "beta," the investment community's term for a stock's volatility relative to the market, has long been under challenge. But it is still closely watched by ana-

lysts, and business students are still taught that they can earn higher returns by buying stocks whose swings are wider than the market's.

"The fact is," Professor Fama said in a recent telephone interview, "beta as the sole variable explaining returns on stocks is dead."

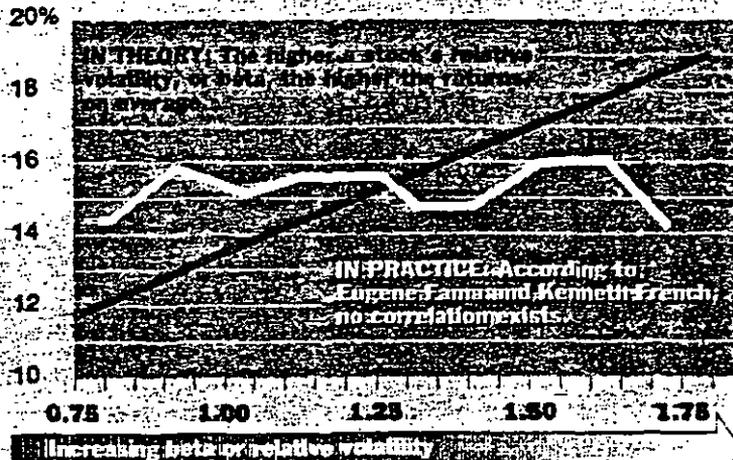
Some still favor relatively volatile stocks, among them William F. Sharpe, a retired Stanford University professor who won the 1990 Nobel Memorial Prize in Economic Science for theories based on beta. "It is a remarkable set of empirical results about what happened in the past," he said of the University of Chicago study. "But I am not willing to make investment decisions based on the theory that there is no relationship between beta, properly measured, and expected returns."

If Professors Fama and French

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Knocking Down a Popular Theory

Annual returns on stock investments, based on relative volatility.



Beta measures the volatility of a stock relative to the market.

*Returns are based on average one-month Treasury bill yields, annualized, and average market returns, July 1963 to December 1990.

Source: Eugene F. Fama and Kenneth R. French, University of Chicago

A Study Shakes Confidence In the Volatile-Stock Theory

Continued From First Business Page

are right, however, the impact could be far reaching. Some highly volatile groups of stocks that have enjoyed wide followings — airlines, for example — could lose a portion of their appeal if beta-believing investors side with the professors.

Additionally, many executives of publicly held companies have taken the view that if their own company's stock is more volatile than the market as a whole, any project they invest in — from a lowly piece of new equipment to a huge joint venture — must generate an extra high return to compensate investors for swings in the stock's price and earnings. The professors' work could force many companies to rethink the way they approach capital spending, finance scholars say.

Finally, many publicly held utilities have used beta to justify rate requests. They figure the returns that investors demand, given their companies' betas, and develop rate structures that allow them to earn these returns. But recognizing that their low betas tend to argue against large rate increases, a growing number of utilities had already turned to other approaches. More will probably do so if the research of Professors Fama and French gains currency.

And if investors decide to quit following betas, other theories of market behavior are likely to gain influence. "What we are really taking about is opening the floodgates to a whole new generation of research into what truly drives stock prices," said Anthony B. Sanders, an Ohio State University professor of finance who is currently a visiting professor at the University of Chicago. "Once you hammer a model like the old one closed, you generate all sorts of additional academic interest."

Professor Fama has already won worldwide recognition for his efficient-markets theory — the notion that because investors all have essentially the same information it is impossible to consistently earn returns greater than those justified by the risks.

Professor Sharpe used Professor Fama's theory as an assumption to develop the capital-asset pricing model, which links returns to risk, as measured by beta.

Professor Sharpe says that a diversified portfolio can reduce the risks peculiar to individual companies — that General Motors stock, for example, will be hurt by a strike. Investors, therefore, earn no rewards for bearing this risk, according to the Sharpe theory.

But investors do earn higher returns for bearing the other type of risk, known as market risk, Professor Sharpe says. This risk, which re-

mains even after an investor diversifies, depends on how much an individual stock is dragged up or down by the market as a whole. Stocks like that of the biotechnology company Genentech, which have betas of more than 1.0, are more volatile than the market, while stocks like that of the power company Consolidated Edison, which have betas of less than 1.0, are calmer than the market.

To calculate market risk, or beta, finance professionals compare changes in the prices of individual stocks with changes in market indicators like the Standard & Poor's 500-stock index. Professor Sharpe and his followers say that in general, the higher a stock's beta, or volatility relative to the market, the greater its long-term returns.

Professors Fama and French disagree. Their paper, just published by the University of Chicago's Center for Research in Security Prices, says that long-term returns depend not on beta, but on company size and price-to-book ratios. Smaller companies, as measured by the market value of their shares, and those with low prices relative to their book values have in fact outperformed the market, they say.

The professors theorize that investors view smaller companies as more vulnerable to economic downturns and therefore demand higher returns. They also say that low price-to-book ratios typically reflect financial problems, another reason for investors to demand higher returns.

Professors Fama and French are by no means the first to fire an intellectual salvo at the capital-asset pricing model. Since Professor Sharpe developed the model in the early 1960's, a broad array of rival theories has emerged to explain stock price movements: the January effect, which says that stocks usually gain at the beginning of the year, to the weekend effect, which says stocks generally perform poorly on Mondays. Most recently, the arbitrage pricing theory says that stocks are driven by powerful economywide forces like unanticipated inflation and spikes in interest rates.

But finance experts say that Professors Fama and French have presented the most conclusive evidence against beta.

"What they have proven fairly rigorously is what other academics have been talking about for some time," said Richard Roll, a finance professor at the University of California at Los Angeles, who with others developed the arbitrage pricing theory.

Equity Issues This Week