PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. R-850152

Testimony of

PHILIP R. WINTER, CFA

Cost of Capital

on Behalf of the Federal Executive Agencies
General Services Administration

General Services Administration (PUR)
Room 6317
18th & F Streets, N.W.
Washington, DC 20405
(202) 566-1034

January 2, 1986

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

2

3 A: My name is Philip R. Winter. My business address is Office

4   of Public Utilities, Rate Case Division, General Services

5   Administration, 18th and F Streets, N.W., Washington, DC

6   20405.

7

8 Q: WHAT IS YOUR POSITION WITH THE GENERAL SERVICES

9   ADMINISTRATION?

10

11 A: I am an Operations Research Analyst in the Office of Public

12   Utilities, and am responsible for cost of capital and cost

13   of service testimony in public utility rate cases. A

14   statement of my educational background and professional

15   experience is contained in Appendix A of this testimony.

16

17 Q: IN WHAT CAPACITY ARE YOU APPEARING BEFORE THIS COMMISSION?

18

19 A: I am appearing as a witness on behalf of the General

20   Services Administration, representing the consumer interests

21   of all the Federal Executive Agencies.

22

23

1   Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY HEREIN?

2

3   A: I address cost of capital issues, including Philadelphia

4   Electric Company's (PECO or Company) cost of debt, cost of

5   preferred and common equity, and appropriate capital

6   structure.

7

8   Q: WHAT OVERALL COST OF CAPITAL IS APPLICABLE TO THE COMPANY IN

9   THIS CASE?

10

11 A: The Company's overall cost of capital applicable in this

12   case should reflect the effect of recent debt issuances and

13   debt redemptions by the Company. Although data necessary

14   for determination of the overall effect of these issuances

15   and redemptions have been requested, such data are not, as

16   yet, available. When data are available, I will file an

17   update to Schedule 1 contained in this testimony, which will

18   show the Company's cost of debt and overall cost of capital

19   for the test year ending June 30, 1986.

20

21 Q: WHAT COST IS APPLICABLE TO THE LONG-TERM DEBT COMPONENT OF

22   THE COMPANY'S CAPITAL STRUCTURE?

23

24 A: The company's filing shows a 10.74% estimated embedded cost

25   of debt for the test year ending 6/30/86. This estimate is

26   excessive, however, since (1) new debt has been sold at an

1 effective cost below the 12.5% estimate included in Company

2 witness Brennan's testimony; (2) a portion of the Company's

3 high coupon debt has been redeemed, thereby lowering the

4 overall embedded debt costs; and (3) Mr. Brennan's estimate

5 of yields on floating rate bonds is incorrectly based on

6 Treasury bill futures contract yields.

7

8 Based on data from EBASCO, a business consulting firm,

9 approximate costs to PECO for $250 million and $150 million

10 of mortgage bonds sold on November 20, 1985 were 11.91% and

11 11.04%, respectively. The exact costs of these issues have

12 not, as yet, been provided by Mr. Brennan, and the end

13 result of the redemption of high coupon issues is unknown.

14 The impact of the new issuances and redemptions on test year

15 debt costs should be determined and then used in

16 establishing PECO's overall cost of debt in this case.

17

18 With regard to the floating rate pollution control notes, my

19 estimates of their effective costs are based on current

20 consensus forecasts of T-bill yields as opposed to the T-

21 bill futures contract yields on which Mr. Brennan relies

22 (see his Schedule 4, p. 7). I utilize the consensus

23 forecast of yields because they are known to represent

24 current expectations for T-bill yields in 1986 while current

25 T-bill futures contract yields do not. Supportive of my

26 position on this issue is a statement by

1   Dr. Robert W. Kopprasch, vice president in the bond

2   portfolio analysis group of Salomon Brothers. In a recent

3   article entitled, "Options and Futures: Strategic Tools for

4   Portfolio Management (Part I)," in Options and Futures: New

5   Route to Risk/Return Management, 1984, pp. 8-17, Dr.

6   Kopprasch states:

7   "... One of the major aspects of futures pricing is that you

8   don't price the futures contract on expectations. The

9   three-month contract is not priced based on where people

10   think three-month rates will be ..."

11

12   Q: WHAT T-BILL FORECASTS ARE THE BASIS FOR YOUR ESTIMATE OF

13   YIELDS ON PECO'S FLOATING RATE ISSUES?

14

15   A: I rely on the consensus forecasts for 1986 T-bill yields

16   contained in the January 1, 1985 Blue Chip Financial

17   Forecasts. These forecasts range from 7.0% to 7.3% for the

18   four quarters of 1986. As a point estimate for use in this

19   case, I have choosen 7.15%, and use this value in place of

20   the 8.13% futures contract yield on which Mr. Brennan's

21   calculations are based. For example, my estimated effective

22   interest rate for the 1982 Series A pollution control note

23   of 5.65% is calculated as follows:

24

25        $(.6)(.0715)=.0429/.9846=.0436 \times \$60,000,000=\$2,614,260 +$

26        $\$777,462=\$3,391,722/\$60,000,000=5.65\%$

1	Effective yields on the remaining floating rate issues are
2	calculated in a comparable manner. Results of these
3	calculations, including the weighted cost rates, are shown
4	in Schedule 2. An apparent error in Mr. Brennan's
5	calculation of the weighted costs for the 5.50% Pollution
6	Control Note of 1997 has also been corrected. The end
7	result of these calculations is a reduction in the estimated
8	costs of PECO's Pollution Control Notes from 9.51% to 9.31%.
9	
10	Q: WHAT COST IS APPLICABLE TO THE PREFERRED STOCK OF THE
11	COMPANY'S CAPITAL STRUCTURE?
12	
13	A: Mr. Brennan's estimate for the cost of PECO's test year
14	preferred stock is 10.54%. This estimate includes a
15	preferred issue of $50 million scheduled for offering in May
16	1986 (TR 6, lines 14-16 and his Schedule 5, p. 2) at an
17	estimated cost of 12.63%. In my opinion, this estimate is
18	excessive just as Mr. Brennan's cost estimates for new debt
19	have proven to be excessive. Recent preferred and
20	preference stock issues by triple-B rated companies have
21	fallen between 9.4% and 9.8% (based on issuances by Georgia
22	Power and Commonwealth Edison on 12/5/85). Given these
23	recent yields and Blue Chip forecasts for no change in 1986
24	interest rates from current levels, I consider a 10.0% cost
25	estimate fully adequate. Replacing Mr. Brennan's 12.63%
26	figure with my 10% estimate, lowers PECO's test year

cost of preferred stock from 10.54% to 10.41%. The 10.41%
should be used in calculation of PECO's overall cost of
capital.

Q: WHAT CONCLUSION HAVE YOU REACHED CONCERNING THE COST OF THE
COMPANY'S COMMON EQUITY?

A: The current cost of the Company's common equity is between
15.1% and 16.1%. In today's capital market, I consider the
midpoint of this range, 15.6%, a reasonable point estimate
of the cost of equity. Documentation of my analysis of the
Company's cost of equity is contained in the following
pages. As is explained in the following, PECO's common
equity is among the more risky publicly traded electric
utility stocks because of its Limerick nuclear plant
investments and associated problems. Without these problems
PECO's stock would be considerable less risky and a
significantly lower return would be required on the
Company's capital.

If the Commission excludes part (or all) of the Limerick
investment from rate base, because of an imprudency or
excess capacity finding, my cost of equity recommendation
shown above should be reduced to reflect this finding.
Unless my cost of equity figures are reduced, the denial of
Limerick rate base treatment would, on one hand, indicate

1 that current ratepayers are not responsible for Limerick

2 costs while, on the otherhand, current ratepayers are

3 responsible for the increment in my cost of equity finding

4 that is, in fact, a cost of Limerick. To avoid this obvious

5 inconsistency, a Commission finding of imprudency, or excess

6 capacity, should be accompanied by a cost of equity finding

7 that excludes any increment for the additional risks

8 associated with the Limerick investment.

9

10 My estimate of the minimum increment due to Limerick in the

11 above 15.1% to 16.1% cost of equity range is 50 to 100 basis

12 points. This estimate is based on the belief that without

13 Limerick PECO's dividend would be more secure, PECO's stock

14 price would be less volatile, and dilution from new stock

15 sales would be less likely. The overall effect of these and

16 concomitant factors would reduce the risks associated with

17 PECO's equity to a level more in line with bonds rated

18 single-B by Moody's and Standard and Poor's Bonds in this

19 risk category currently yield approximately 50 to 100 basis

20 points less than my DCF findings as shown in Schedule 11.

21

22

23

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1 Q: WHAT CRITERIA HAVE YOU UTILIZED TO DETERMINE THE CURRENT

2   INVESTOR-REQUIRED RETURN FOR THE COMPANY?

3

4 A: I have applied the criteria established by the Supreme Court

5   in the Bluefield and Hope decisions. In Bluefield

6   Waterworks & Improvement Co. v. Public Service Commission of

7   West Virginia, 262 U.S. 679, 693 (1923), the Court stated:

8   "The return should be reasonably sufficient to assure
             confidence in the financial soundness of the utility
9   and should be adequate, under efficient and economical
             management, to maintain and support its credit and
10   enable it to raise the money necessary for the proper
             discharge of its public duties."
11

12

13   In addition, as an indication of an upper bound on the

14   return and the potential instability of investor return

15   requirements, the Court stated (262 U.S. at 692-693):

16

17   "...[the company] has no constitutional right
             to profits such as are realized or anticipated
18   in highly profitable enterprises or speculative
             ventures."

19

20   "A rate of return may be reasonable at one time
             and become too high or too low by changes affecting
21   opportunities for investment, the money market and
             business conditions generally."

22

23

24

25

26

1		The <u>Hope</u> decision (<u>FPC v. Hope Natural Gas Co.</u>, 320 U.S.
2		591, 603 (1944)) provided guidelines similar to those that I
3		initially related from the <u>Bluefield</u> opinion, as follows:

4   "...the return to the equity owner should be
5   commensurate with returns on investments in other
                    enterprises having corresponding risks. That
6   return, moreover, should be sufficient to assure
                    confidence in the financial integrity of the
7   enterprise, so as to maintain its credit and to
                    attract capital."

8

9 Q: DO THE CRITERIA STATED IN THESE SUPREME COURT DECISIONS

10   INDICATE UPPER AND LOWER BOUNDS FOR THE COST OF EQUITY?

11

12 A: In a general sense, they do. The lower bound is established

13   as the return sufficient to maintain the Company's credit in

14   the marketplace. Indications of the sufficiency of the

15   return are the Company's success in raising necessary

16   capital and the similarity of the after-tax return to the

17   after-tax return on other investments of corresponding

18   risks. Certainly, investors' capital will be attracted by

19   those firms of corresponding risk that offer the higher

20   after-tax returns. Unless the return offered by the

21   regulated utility is competitive, the capital attraction

22   criterion is unlikely to be met.

23

24

25

26

1   The upper bound on returns is stated to be below that

2   realized or anticipated from highly profitable enterprises

3   or speculative ventures. For high-grade utility firms,

4   without consideration of the company's specific risk level,

5   I believe yields-to-maturity on bonds rated below BBB by

6   Standard & Poor's or Baa by Moody's may be used as an

7   indicator of this upper bound. Such bonds are considered to

8   be "predominantly speculative" or have "speculative

9   elements", according to these rating services, and offer

10   returns in excess of that generally required in the market-

11   place.

12

13   Q: GIVEN THE GENERAL SUPREME COURT GUIDELINES, HOW HAVE YOU

14   DETERMINED SPECIFIC BOUNDARIES FOR THE COST OF THE COMPANY'S

15   EQUITY?

16

17   A: I have first reviewed macroeconomic conditions that define

18   the environment for today's credit market. Included in this

19   review were expectations for, and recent trends in, the

20   inflation rate, current Federal Reserve policy on monetary

21   growth, and loan demand at large commercial banks. These

22   interrelated factors are primary determinants of the cost of

23   money. Secondly, I have performed a current market analysis

24   of utility stocks, in general, and of PECO's common stock,

25   specifically, to determine the Company's current cost of

26   equity. Finally, I have reviewed cost of capital trends to

2   equity for the period during which rates from this case will

3   be in effect.

4

5 Q: WHY DO YOU BEGIN YOUR ANALYSIS OF THE COMPANY'S COST OF

6   EQUITY WITH A REVIEW OF CURRENT MACROECONOMIC CONDITIONS?

7

8 A: As indicated above, macroeconomic conditions including the

9   supply and demand for funds in the U.S. economy and the rate

10   of inflation are primary determinants of the general rates

11   of interest (costs) on borrowed or invested capital. These

12   general costs establish the base from which a specific

13   company's cost of capital is determined.

14

15 Q: HOW ARE THE FEDERAL RESERVE'S MONETARY POLICY, THE INFLATION

16   RATE, LOAN DEMAND, AND THE COST OF MONEY RELATED?

17

18 A: The interrelationships of these factors are multifaceted and

19   complex. In basic terms, however, a tight monetary policy

20   with stable loan demand tends to decrease the rate of

21   inflation and place upward pressure on interest rates in the

22   short-term. Over the long-term, interest rates would be

23   expected to decline as inflationary pressures cool.

24   Similarly, a policy toward increasing monetary growth with

25   stable loan demand has tended to reduce interest rates over

26   the short-term (due to the more plentiful supply of money),

2   long-term, interest rates would be expected to rise with the

3   increasing rate of inflation. Short-term effects of

4   monetary growth on interest rates may be lessened or

5   increased by fluctuating loan demand, level of foreign

6   investment in U.S. securities, and changes in velocity,

7   i.e., the average number of times per year that a dollar is

8   used to purchase components of GNP.

9

10   For example, heavy demand for business loans during the

11   first quarter of 1985 (loan growth at a 9% annual compound

12   rate) placed upward pressure on interest rates even with

13   relatively rapid growth in the money supply (9% growth in

14   M1). Relatively flat or declining demand for business loans

15   coupled with continued rapid growth in the money supply has

16   more recently contributed to interest rate declines from the

17   March, 1985, level.

18

19   Q: WHAT HAS BEEN THE RECENT MONETARY POLICY OF THE FEDERAL

20   RESERVE?

21

22   A: Recently stated goals of the Federal Reserve are "to foster

23   monetary and financial conditions that will help to reduce

24   inflation further, promote growth in output on a sustainable

25   basis, and contribute to an improved pattern of inter-

26   national transactions" (see Record of Policy Actions of the

Federal Open Market Committee, Meeting of October 1, 1985).
To achieve these goals, the Federal Reserve has allowed
monetary growth somewhat above its 1985 target growth range
of 3% to 8% (for M1). Primary concerns of the Federal
Reserve's policy committee include the large Federal
deficit, the strength of the dollar and its affect on
American exports, and the potential for renewed inflation.
The first two concerns (the deficit and strength of the
dollar) may be alleviated over the short-term by more rapid
monetary growth, i.e., higher monetary growth would likely
reduce interest rates thereby easing the pressures of
Federal borrowing and reducing the attractiveness of the
dollar. Higher monetary growth, however, may reignite
inflation.

Even with the recent rapid growth in M-1, the Committee has
not found signs of higher inflation rates. Instead, prices
and wages have risen at rates similar to, or below, those
recorded earlier in the year. Notwithstanding the favorable
reports on inflation, some slowing of monetary growth is
believed desirable and action has been taken to effect such
a slowdown.

1	Q:	WHAT HAS BEEN THE RECENT PATTERN IN INFLATION RATES?
2		
3	A:	Inflation rates have dropped significantly since the early
4		1980's and have continued to decline in 1985 (see Schedule
5		3, Part 1). Recent quarterly data (for July, August and
6		September 1985) show inflation rates that are among the
7		lowest recorded in the past twenty years. The third quarter
8		rate on an annualized basis is 2.3%, which is approximately
9		55% of the first quarter value.
10		
11		Numerous factors including declining oil prices, strength of
12		the dollar against foreign currencies, and Federal Reserve
13		policy have contributed to favorable inflation rate trends.
14		The trends are expected to continue due to strong
15		competition from foreign producers and likely further
16		declines in oil prices associated with dissension within
17		OPEC.
18		
19	Q:	WHAT IS THE CURRENT OUTLOOK FOR INFLATION?
20		
21	A:	Expectations for future inflation are commonly believed to
22		be based on historical rates, with the more recently
23		experienced rates of increase carrying the greatest weight.
24		The pattern of inflation has stabilized since early 1984,
25		and current low levels of inflation are generally expected
26		in the coming months. According to the December 10, 1985

1 issue of _Blue Chip Economic Indicators_, price inflation

2 during 1985 will be near 3.5%. Forecasts for 1986 indicate

3 expectations for consumer prices to rise at a 3.7% annual

4 rate. Recent inflation forecasts by major forecasting firms

5 are shown in Schedule 3, Part II. Inflation rate

6 expectations of these forecasters range between 3.1% and

7 4.4% for the period 1985-86.

8

9 Q: WHAT HAS BEEN THE IMPACT OF INFLATION, LOAN DEMAND, RECENT

10 FEDERAL RESERVE POLICY, AND OTHER SIGNIFICANT FACTORS ON THE

11 CREDIT MARKETS?

12

13 A: Recent interest rates on bonds and other fixed yield

14 investments are shown in Schedule 4. Average yields on

15 fixed income securities trended downward from the summer of

16 1984 through January 1985. Fixed income security yields

17 dropped 150 to 350 basis points during this period. The

18 Federal Reserve's restraint on monetary growth and increased

19 loan demand in early 1985 subsequently led to a plateau in

20 yield trends followed by increases of 50 to 100 basis

21 points. Subsequent to mid-March, 1985, interest rates in

22 general have dropped significantly. Declines of 100 to 150

23 basis points have led to the lowest yields experienced since

24 the late 1970's. Contributing to the general declining

25 trend in fixed income yields has been heavy foreign

26 investment in U.S. securities, adequate money supply

1	relative to demand, moderate levels of unemployment, and
2	noninflationary levels of U.S. capacity utilization.
3	
4	Q: WITHIN THE SCENARIO DESCRIBED ABOVE OF M1 GROWTH NEAR THE
5	UPPER END OF THE FEDERAL RESERVE TARGET RANGE OF 3% TO 8%
6	AND A PLATEAU IN INFLATION RATE TRENDS, WHAT IS THE OUTLOOK
7	FOR THE COST OF CAPITAL?
8	
9	A: If inflation continues to fall near 3% and credit demands
10	are consistent with allowed monetary growth without oil, or
11	other price shocks, interest rates should decline.
12	Alternatively, more restrictive monetary, growth coupled
13	with strong demands for credit, will exert upward pressure
14	on current rates. As reflected in the January 1, 1985 issue
15	of Blue Chip Financial Forecasts, the consensus opinion is
16	for no change in capital costs during 1986 and early 1987
17	with seasoned A-rated utility bond rates of 11.0%.
18	
19	Q: WITH THE CURRENT ECONOMIC ENVIRONMENT CHARACTERIZED BY
20	INFLATION EXPECTATIONS OF 3.5% to 4.5% AND A MODERATE
21	FEDERAL RESERVE MONETARY POLICY, WHAT HAS BEEN THE
22	PERFORMANCE OF ELECTRIC UTILITY STOCKS IN GENERAL?
23	
24	A: Utility stock price trends, as indicated by the Dow Jones
25	and Standard and Poor's utility indices, are shown
26	

16

1   graphically in Schedule 5 for the period August 30, 1985 to

2   December 13, 1985. Both indices reflect downward price

3   movements of approximately 6% during the first five weeks of

4   this period. During the remaining eleven weeks, these price

5   declines were erased as price increases totaling 12% - 16%

6   were recorded. The recent price improvement has been

7   attributed to interest rate declines, continuing low levels

8   of inflation, and improvement in quality of earnings.

9

10 Q: HAS THE COMPANY'S PERFORMANCE BEEN SIMILAR TO THAT OF OTHER

11   ELECTRICS?

12

13 A: Schedule 6 shows PECO's stock price trend to be similar to

14   that of the indices. Price declines for the stock during

15   the initial six weeks of the period, totaled almost 5.8%,

16   somewhat less than that of the utility indices, while

17   subsequent increases were approximately 19%. In addition to

18   the favorable interest rate trends and other contributing

19   factors described above, recent appreciation in PECO's stock

20   is attributable to indication from the Pennsylvania Public

21   Utility Commission that Limerick #2 construction could

22   continue if certain requirements were satisfied.

23

24

25

26

1 Q: OF WHAT IMPORTANCE IS PECO'S RECENT STOCK PRICE TREND TO

2   YOUR DETERMINATION OF THE COMPANY'S RETURN REQUIREMENTS?

3

4 A: Stock prices carry information concerning investor return

5   expectations and requirements. Prices recorded for PECO'S

6   stock represent the consensus opinion of the marketplace on

7   the stock's value, given the current and prospective

8   growth expectations and discount rates.

9

10   Theoretically, a stock's value is equal to the present value

11   of expected future returns from investing in the stock. The

12   future returns are in the form of dividends and price

13   appreciation. From a knowledge of investors' expectations

14   for dividend growth and price appreciation, investor return

15   requirements may be estimated. By adjusting investor return

16   requirements for the effects of flotation cost and market

17   pressure (if any), PECO's return requirements on equity may

18   be estimated.

19

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1   Q: IN GENERAL, WHAT IS THE RELATIONSHIP BETWEEN A COMPANY'S

2   STOCK PRICE TREND AND INVESTOR RETURN REQUIREMENTS?

3

4   A: In general, increasing stock price trends in the short-term

5   are a result of an increase in expected returns from the

6   stock or a decline in investor return requirements.

7   Similarly, decreasing stock price trends imply decreasing

8   expected returns or rising required returns. For example,

9   recent price appreciation in PECO's stock is a sign of

10   declining costs of equity to PECO.

11

12   Q: PECO'S STOCK PRICE PERFORMANCE SHOULD BE SUPPORTED BY THE

13   COMPANY'S UNDERLYING FUNDAMENTALS. WHAT IS THE RECENT TREND

14   IN THESE FUNDAMENTALS, AND HOW DO THEY COMPARE WITH MOODY'S

15   ELECTRICS AND WITH LARGE CORPORATIONS IN GENERAL?

16

17   A: A review of fundamental ratios indicative of PECO's recent

18   performance (see Schedule 7), reveals the following: PECO's

19   after-tax profit margins increased steadily and

20   significantly between 1981 and 1984. During this three year

21   period, profit margins increased 45%, reflecting an annual

22   compound growth rate of 13.1%. The Company's profit margins

23   are consistently above those recorded by Moody's Electrics,

24   and differences in margins became wider, as opposed to

25   narrowing, during this period. At the end of 1984, PECO's

26

1   margins were more than 1.3 times those recorded by the

2   Moody's index of electric utilities. PECO's margins compare

3   even more favorably with those recorded for large

4   corporations. The large corporations recorded a drop in

5   margins during 1982, and as of 1984 had not exceeded 1981

6   levels. PECO's margins were 2.3 times the large corporate

7   margin at the beginning of this period (1981) and more than

8   3.3 times the corporate average in 1984.

9

10   On the other hand, PECO's returns on equity (ROE) for the

11   years 1981 through 1984 consistently fell below those

12   recorded by Moody's Electrics. Some relative improvement in

13   PECO's ROE was, however, recorded during this period with a

14   1984 shortfall from the Moody's average of 2.8%, compared

15   with a shortfall in 1981 of 4.2%. Relative to the large

16   corporation averages, PECO's ROE improved consistently

17   during the period. While PECO's ROE was below the corporate

18   average in 1981, its ROE exceeded the corporate figure by

19   almost 7% in 1984.

20

21 Q: WHAT FACTORS EXPLAIN THE DIFFERENCE BETWEEN PECO'S RECENT

22   ROE AND THE COMPARABLE ROE FOR MOODY'S ELECTRICS?

23

24 A: Part II of Schedule 7 offers insight on the factors

25   contributing to the shortfall of PECO's ROE from the Moody's

26   average. This exhibit shows that PECO's ROE was 2.8% below

1   the Moody's average in 1984. This shortfall was due to a
2   lower turnover rate (Revenues/Total Capital), and lower pre-
3   tax profit margin (Pre-tax Profits/Revenues) than that
4   recorded for Moody's Electrics. PECO's turnover ratio is
5   21.7% below the Moody's figure. This low turnover ratio
6   shows that PECO has been unable to generate revenues from
7   invested capital at the same level attained by the average
8   utility. An apparent cause of the relatively low turnover
9   ratio is PECO's investment in the Limerick plants and the
10   lack of revenues from these plants.
11
12   PECO's pre-tax profit margin, which is 8.49% below the
13   Moody's average, indicates management's ability to capture
14   profits from revenues. The below average profit margin for
15   1984 may be attibutable to the need for greater utilization
16   of generating capacity and improved control of operating
17   costs.
18
19   Q: WHAT METHODS HAVE YOU USED TO DETERMINE THE COST OF EQUITY
20   TO PECO?
21
22   A: To estimate return requirements, I rely most heavily on the
23   discounted cash flow (DCF) approach, an approach that uses a
24   company's stock price along with expectations for dividend
25   growth and price appreciation, to estimate investor
26

1 return requirements. I also use an historical risk premium

2 approach, and review current return requirements on

3 alternative investments of varying risks to check the

4 reasonableness of results from the DCF method.

5

6 Q: WHAT ASSUMPTIONS OR JUDGMENTS MUST THE ANALYST MAKE WHEN

7   APPLYING THE DCF METHOD?

8

9 A: Primary assumptions in application of the DCF method are

10   that the price paid for a security is an "equilibrium" price

11   and is equal to the discounted stream of investor-"expected"

12   dividends and price appreciation over the investor-holding

13   period. The discount rate that equates a company's stock

14   price to these expected returns is an indication of the

15   investor-"required" rate of return. Algebraically, these

16   assumptions may be expressed as shown in Schedule 8.

17

18 Q: WHAT JUDGMENTS MUST THE ANALYST MAKE BEFORE APPLYING THE DCF

19   MODEL?

20

21 A: To apply the DCF model, the rate of return analyst must make

22   decisions about the following items:

23

24

25

26

1.   What is the investor-expected growth in dividends
     during the investment horizon, and does the expected
     growth rate change over time?

2.   What stock price is representative of current investor
     return requirements, e.g., the price of the stock on a
     specific date; the average price over the most recent
     12 weeks, 16 weeks, or other period?

3.   What is the investor's expected holding period or
     investment horizon, i.e., the future period over which
     the investor makes assumptions about potential returns?

4.   What is the expected change in the stock's price during
     the investment horizon?

Q: WHAT FORM OR VERSION OF THE DCF MODEL HAVE YOU USED IN THIS
    CASE?

A: I rely on a "two-stage" model that allows explicit
    consideration of varying price and dividend growth rates
    over time.

| 1 | Q: | DOESN'T THE COMMONLY USED "YIELD PLUS GROWTH," i.e. D/P + g |

1 Q: DOESN'T THE COMMONLY USED "YIELD PLUS GROWTH," i.e. D/P + g

2   FORM OF THE DCF MODEL ALLOW CONSIDERATION OF GROWTH RATES

3   THAT VARY OVER TIME?

4

5 A: No, it does not. The "yield plus growth" form of the DCF

6   model is obtained from the longer version shown in Schedule

7   8 only if the assumption is made that price and dividends

8   grow each year at a constant rate. In fact, if the D/P + g

9   version is properly used, the analyst will concentrate on

10   determination of an expected long-term growth rate as

11   opposed to relying solely on near-term estimates. Strictly

12   speaking, the growth rate used in this simple form of the

13   model is assumed to continue through infinity without

14   change.

15

16 Q: IN ESTIMATING RETURN REQUIREMENTS FOR PECO, WHAT OTHER

17   ASSUMPTIONS ARE IMPLICIT IN THE CONSTANT GROWTH MODEL?

18

19 A: The constant growth DCF model also implicitly assumes that

20   the market price, earnings and book value of the company's

21   common stock each grow at the same constant rate as

22   dividends. Since a review of individual utility companies'

23   short- or long-term performance (see Schedule 10) will show

24   that these constant growth conditions are seldom

25   experienced, constant growth assumptions are unlikely to be

26   representative of investor expectations. If inaccuracies

24

2   are to be minimized, the growth rate used must reflect the

3   composite long-term growth expectations for all these

4   elements i.e., price, dividends, earnings, and book value.

5   Failure to consider composite growth rate expectations,

6   especially for determination of long-term growth prospects,

7   may lead to significant errors in DCF findings.

8

9   Q: WHY IS THE TWO-STAGE MODEL THAT CONSIDERS DIFFERING RATES OF

10   GROWTH MORE APPROPRIATE THAN THE SINGLE-STAGE, OR CONSTANT

11   GROWTH MODEL?

12

13   A: The two-stage model is most applicable to this case because

14   little growth in PECO's dividend, or possibly a cut, is

15   expected in the near term. Although the dividend appears

16   secure at present, PECO's Board of Directors has frequently

17   mentioned the likelihood of a dividend reduction if a

18   Limerick plant is cancelled. Once the financial strain

19   associated with Limerick construction has been alleviated,

20   however, growth in PECO's dividends should return to more

21   typical levels. Since the two-stage model allows explicit

22   modeling of an initial low growth period, followed by a

23   return to normal growth levels, it allows a closer match of

24   reality than the single-stage model with its constant growth

25   assumptions.

26

Q: IS THE TWO-STAGE, OR MULTISTAGE, DCF MODEL ACCEPTED BY THE

2 INVESTMENT AND ACADEMIC COMMUNITIES?

3

4 A: Yes, it is. Kidder, Peabody; Prudential-Bache; Salomon

5 Brothers; Drexel, Burnham and Lambert; Goldman, Sachs & Co.;

6 and others currently use multistage DCF models to estimate

7 investor return expectations on common stock. Also

8 academicians, such as David Hawkins of Harvard University,

9 Eugene Brigham of the University of Florida, and Fred Weston

10 of the University of California (Los Angeles), recognize the

11 need for multistage models in texts they have authored.

12

13 Q: WHAT ARE THE BOUNDARIES OF THE TWO GROWTH PERIODS YOU EMPLOY

14 IN THE DCF MODEL AND WHAT IS THE LOGIC FOR YOUR SELECTION OF

15 THESE BOUNDARIES?

16

17 A: I recommend a DCF model of the following form:

18

19 $$P = \sum_{i=1}^{5} D(1+g_1)^i/(1+k)^i + \sum_{i=6}^{\infty} D(1+g_1)^5(1+g_2)^{i-5}/(1+k)^i$$

20

21 where "P" and "D" are the current price and dividend,

22 respectively, "g_1" is the average annual growth rate

23 expected within the next five years, "g_2" the average annual

24 growth expected over the long term, and "k" is the investor-

25 required return.

26

26

1   The near-term boundary defines a five-year forecast period.

2   Forecasts covering a period of this length are frequently

3   published by investment services and are generally available

4   to investors. Value Line, Dean Witter, Merrill Lynch, and

5   Salomon Brothers are among the better known firms providing

6   forecasts for this period.

7

8   Because of the broad circulation of such forecasts and the

9   relative accuracy with which five-year forecasts may be

10 made, I believe this period receives particular attention by

11 investors. Forecasts and expectations beyond the four to

12 five year period become less certain and may vary widely.

13 Using the above rationale, I have selected a five-year

14 period for the initial stage of the DCF model.

15

16 Q: ON WHAT DATA HAVE YOU RELIED TO ESTIMATE GROWTH RATES

17   APPROPRIATE FOR USE IN THIS MODEL?

18

19 A: I rely on investment firm growth forecasts for PECO for both

20   the near- and long-term growth rates. In addition, I have

21   reviewed long-term growth histories for both regulated and

22   unregulated firms.

23

24

25

26

1	Q:	WHAT ARE INVESTMENT FIRM FORECASTS FOR PECO GROWTH DURING
2		THE FIRST STAGE OF THIS MODEL?
3		
4	A:	Relying on the most recent reports available from various
5		investment firms, I have found the following. Value Lines's
6		forecasts, dated September 27, 1985, indicate expectations
7		for annual dividend, earnings, and book value growth from
8		the end of 1985 to the end of 1989 to average 2.2%, 1.4%,
9		and 2.2%, respectively. Prudential-Bache, in its October
10		1985 Quantum report, expects no growth in dividends or
11		earnings during the next five years. Merrill Lynch, in its
12		November/December 1985 Quantitative Analysis report,
13		projects five-year growth rates for dividends and earnings
14		of 1.8% and -2.3%, respectively. Salomon Brothers' November
15		15, 1985, Monthly Stock Review indicates expectations for
16		five-year dividend and earnings growth rates of 1.0% and
17		2.0%, respectively. Duff and Phelps' May 17, 1985 Common
18		Stock Summary reports expectations for no change in
19		dividends over the near term. E.F. Hutton, in its September
20		1985 Equity Research report, foresees no near-term growth in
21		dividends nor earnings.
22		
23		
24		
25		
26		

1		Finally, Dean Witter's October 21, 1985 Equity Research
2		publication contains five-year dividend and earnings growth
3		forecasts for PECO of 2.0% and 2.5%, respectively. Near-
4		term dividend growth rates estimated by these investment
5		firms range between 0.0% and 2.2%, and are summarized in
6		Schedule 12.
7		
8	Q:	WHAT ARE YOUR FINDINGS FROM REVIEW OF SHORT-TERM HISTORICAL
9		GROWTH RATES FOR PECO?
10		
11	A:	Historical, five-year holding period, price, and dividend
12		growth rates are shown in Schedule 9. For the ten most
13		recent five-year holding periods with December 1 boundaries,
14		e.g., Dec. 1, 1979 to Dec. 1, 1984; Dec. 1, 1978 to Dec 1,
15		1983, dividend growth rates have averaged 2.6%. Price
16		growth rates during these same ten, five-year holding
17		periods have not kept pace with dividend growth, and price
18		declines have frequently been recorded. The average price
19		growth for the ten most recent five-year growth periods is
20		-1.1%.
21		
22		
23		
24		
25		
26		

1 Q: WHAT IS YOUR CONCLUSION CONCERNING PECO'S NEAR-TERM GROWTH

2   RATE?

3

4 A: Based on review of forecasts from investment services and

5   the historical short-term growth history, most investor

6   short-term growth expectations fall between 0.0% and 2.0%.

7   The possibility of a dividend reduction due to the Limerick

8   investment and a preponderance of forecasted growth rates

9   near 0.0%, make the lower end of the above range the more

10   appropriate for use in the DCF model. Also, PECO's history

11   of negative short-term price growth, the absence of further

12   interest rate declines (that contributed to price growth in

13   the recent past), and the Commission's decision in Docket

14   No. R-842651 that denied a return on the common equity

15   portion of PP&L's Sesquehanna plant #2, are all factors that

16   tend to support the lower end of this growth rate range. In

17   light of the above, I consider growth rates between 0.0% and

18   1.0% representative of most investors' expectations for

19   PECO. I employ this range in the two-stage DCF model, along

20   with long-term growth expectations, to estimate current

21   investor return requirements.

22

23

24

25

26

1 Q: WHAT FACTORS AFFECT INVESTORS' EXPECTATIONS FOR GROWTH

2   DURING THE SECOND STAGE OF THIS MODEL?

3

4 A: Considerable uncertainty surrounds the timing of PECO's

5   return to growth rates more typical of the electric

6   industry. Most of this uncertainty is due to construction

7   of Limerick Unit #2. If this unit is completed, associated

8   needs for new financing will have a weakening influence on

9   the Company's balance sheet and potential rate base

10   treatment of the unit will be a source of concern to

11   investors. If Unit #2 is cancelled, a dividend cut is

12   likely as has frequently been brought to the attention of

13   PECO shareholders during meetings with PECO management.

14   While the investment community currently appears to believe

15   Unit #2 will be completed, this outcome is far from certain,

16   and a dividend cut remains a possiblity.

17

18   Uncertainty related to the Limerick project will likely

19   continue until the early 1990s, given the current

20   construction schedule. Delays and other difficulties that

21   have plagued most nuclear projects may prolong these

22   uncertainties into the mid-1990s. Even after construction

23   is completed, associated requirements such as the need for a

24   water supply for cooling (that may affect the Unit #1 in-

25   service date) could delay the return of PECO to a more

26   typical period of growth.

| 1 | Q: | IN LIGHT OF THESE FACTORS UPON WHICH PECO'S RETURN TO |

1 Q: IN LIGHT OF THESE FACTORS UPON WHICH PECO'S RETURN TO

2   TYPICAL GROWTH IS DEPENDENT, WHAT GROWTH RATE RANGE HAVE YOU

3   FOUND REASONABLE FOR THE SECOND STAGE OF YOUR DCF MODEL?

4

5 A: I consider a growth rate range of 1.0% to 2.0%

6   representative of investor expectations for long-term PECO

7   growth. Although this range falls below the current steady-

8   state (long-term) earnings growth forecast of 2.9% by

9   Merrill Lynch, it is above the rate of growth experienced by

10   PECO investors during any recent long-term period. For

11   example, PECO's dividend growth during the last 20 to 25

12   years has averaged between 2% and 3%, but such growth has

13   been more than offset by declines in PECO's stock price.

14   Price declines have averaged near -3.5% during this period.

15   Since PECO's stock has not demonstrated an ability to

16   provide positive growth to investors, it appears investors

17   are demanding their return up front, in the form of dividend

18   yield, and are expecting little return in the form of

19   growth. Supportive of this position is PECO's recent

20   dividend yield of 14.5%, which is among the highest (if not

21   the highest) of yields available on electric utility stocks

22   today. PECO's yield is almost 600 basis points above the

23   8.8% current average yield for the industry.

24

25

26

1   Also, in the case of a dividend cut, the eventual return to

2   a 3% or 4% long-term growth rate (which is the typical

3   actual long-term growth rate for the industry) would not

4   represent a 3%-4% average growth rate from current dividend

5   levels. For example, if PECO's dividend is halved

6   (comparable to Kansas Gas and Electrics' dividend cut after

7   Commission disallowance of a portion of the Wolf Creek

8   nuclear plant), then followed by 3% annual growth over the

9   next 30 years, the annual growth rate from PECO's current

10   dividend is only 0.6%. The 0.6% figure is obtained by

11   noting that PECO's current dividend of $2.20, if halved,

12   would be $1.10, and would increase to $2.67

13   ($1.10*(1.03^30=$2.67) after 30 years of 3% annual growth.

14   But the $2.67 dividend represents only a 0.647% annual

15   growth rate over the $2.20 current dividend since

16   (1.00647^30)*$2.20=$2.67. Therefore, in the event of a

17   dividend cut, even the 1.0% to 2.0% long-term growth rate

18   range that I have found reasonable may be excessive.

19

20   Q: WHAT IS THE CURRENT DIVIDEND YIELD TERM OF YOUR DCF EQUATION

21   AND HOW WAS IT DERIVED?

22

23   A: The current dividend yield (D_0/P_0) is 14.5%. This yield is

24   computed as the average of the quotients of end-of-week

25   stock prices and effective annual dividend rates from the

26   most recent 16-week period (8/30/85-12/13/85). A period of

1	this duration is necessary to level the effects of temporary
2	price fluctuations. Also the 16-week period, as opposed to
3	a shorter period, is less likely to be fully contained
4	within a peak or valley in the price pattern.
5	
6	If significant trends in price movement are observed during
7	the period, information conveyed by these trends should be
8	incorporated in the final decision concerning the cost of
9	equity. PECO's stock price varied from $14.125 to $16.75
10	during this period, based on end-of-week prices, and the
11	indicated annual dividend was $2.20 per share. The most
12	recently recorded prices are at the upper end of this range.
13	
14	Q: WHAT ARE YOUR CONCLUSIONS FROM THE TWO-STAGE DCF MODEL
15	CONCERNING INVESTOR RETURN REQUIREMENTS ON PECO's STOCK?
16	
17	A: A current dividend yield of 14.5%, coupled with near- and
18	long-term expected growth rates of 0.0% to 1.0% and 1.0% to
19	2.0%, respectively, indicate investor requirements of
20	between 15.09% and 16.09%. In terms of the "yield plus
21	growth" or "constant growth" model, my analysis indicates
22	investors expect constant annual dividend and price growth
23	rates between 0.5% and 1.4%, i.e., 15.09 = (1.005) 14.5 +
24	0.5 and 16.09 = (1.014) 14.5 + 1.4.
25	
26	

| 1 | Q: | WHAT ARE THE POINTS OF DISAGREEMENT BETWEEN YOUR DCF RESULTS |

1 Q: WHAT ARE THE POINTS OF DISAGREEMENT BETWEEN YOUR DCF RESULTS

2 FOR PECO'S AND THOSE OF COMPANY WITNESS BRENNAN?

3

4 A: Mr. Brennan's DCF finding of a 16.7% cost of equity (before

5 a flotation cost adjustment), (Brennan Testimony, p. 40

6 lines 1-3), is based on a company specific dividend yield of

7 15.0% and a growth rate of 1.7%. The most significant

8 shortcomings in these findings are described below.

9

10 Mr. Brennan's yield figure is based on the spot yield for

11 September 9, 1985 and on the recent 12-month average yield

12 for PECO (see his Schedule 14, p. 2). He "inflates" both

13 the spot and 12-month average yield by 2.4% to reflect his

14 findings for next-period dividend growth. As a final step,

15 he averages four yields, the "inflated" and "uninflated"

16 spot yields and the "inflated" and "uninflated" 12-month

17 average yields. While it is unclear why his composite of

18 "spot" and 12-month average yields is, or should be,

19 representative of current investor return requirements, at

20 least two shortcomings in his findings are apparent in this

21 approach. The first is that spot yields are too volatile

22 for use in determining overall market return requirements on

23 PECO's stock. For example, PECO's recent yield has ranged

24 between 13.1% and 14.5%, some 50 to 190 basis points below

25 Mr. Brennan's figures. A second shortcoming is that Mr.

26 Brennan's next period dividend is based on a 2.4% growth

1   rate which is inconsistent with the 1.7% growth figure he

2   has found reasonable for PECO. It is interesting to note

3   that the 2.4% is based on 3.5% short-term historical growth

4   rate (see column 7 of his Schedule 15, p. 1) a growth rate

5   that is well above even the most optimistic investment firm

6   growth rate forecast. If Mr. Brennan were to rely on

7   current market data and investment firms' growth forecasts,

8   his yield finding would be reduced by approximately 50 basis

9   points.

10

11   Mr. Brennan's constant, long-term growth rate of 1.7%, is

12   based completely on analysts' short-term earnings and

13   dividend growth forecasts and on PECO's short-term dividend

14   growth history (see his Schedule 15, p. 1). He ignores the

15   long-term growth forecasts from Merrill Lynch and ignores

16   the long-term composite price and dividend growth rate

17   history for PECO. By ignoring prospects for PECO's price

18   growth, he violates a theoretical basis for the DCF

19   technique that he specifies on page 23, lines 1-7 of his

20   testimony; that is, the investor-expected return includes

21   both dividend yield and stock price appreciation. If Mr.

22   Brennan were to exclude the 3.5% short-term historical

23   dividend growth rate from calculation of the 1.7% average

24   and include, instead, growth rates that are probable over

25   the long-term for both price and dividends, his growth rate

26   findings would be reduced by 50 to 100 basis points.

2 ~~OTHER~~ ANALYSIS HAVE YOU PERFORMED TO REACH CONCLUSIONS

3 ABOUT INVESTOR RETURN REQUIREMENTS ON COMMON EQUITY?

4 A: As a check on the reasonableness of my DCF findings, I have

5 calculated historical risk premiums between a portfolio of

6 utility stocks and long-term Government bonds. I have also

7 considered recent indications from the investment community

8 on the current risk premium between stocks and bonds.

9

10 Q: ARE HISTORICAL RISK PREMIUMS USED BY THE INVESTMENT

11 COMMUNITY TO MAKE INVESTMENT DECISIONS?

12

13 A: Historical risk premiums are widely used by members of the

14 investment community, and background on this methodology is

15 frequently included in required reading material for the

16 training of financial analysts. The Ibbotson and

17 Sinquefield findings have particularly widespread

18 application, and are frequently used by portfolio managers

19 in the development of scenarios of prospective returns

20 available from stock investments.

21

22

23

24

25

26

1 Q: WHAT IS THE RATIONALE FOR USE OF HISTORICAL RISK PREMIUMS?

2

3 A: The rationale underlying use of historical risk premiums is

4   that investors are risk averse, and that incentives in the

5   form of higher expected returns are required to convince

6   investors to purchase more risky securities. Historical

7   data suggest that investors have generally been rewarded for

8   assuming such risks. As shown in Schedule 13, a portfolio of

9   the S&P Index stocks offered the greatest total return since

10   1928, followed by a portfolio of utility stocks, then

11   government bonds. These long-term returns are consistent

12   with general perceptions of the relative risks of these

13   three groups of securities compared with the higher returns

14   associated with the more risky securities.

15

16   By comparison of historical returns from investments of

17   differing risks, risk premiums previously available to

18   investors may be calculated. The statistical distribution

19   of these premiums depicts past investor experience, and is

20   indicative of premiums likely to be available in the future.

21   Premiums falling in the tails of the distribution are

22   improbable and, in most cases, would not be representative

23   of investor expectations. I believe, however, that average

24   historical premiums, for varying holding periods, and over

25   an extended time frame, are a reasonable proxy for investor-

26   expected premiums over the long term.

1 Q: ARE HISTORICAL LONG-TERM RISK PREMIUMS AN ACCURATE

2   INDICATION OF CURRENT INVESTOR REQUIREMENTS?

3

4 A: Long-term historical premiums may, or may not, be

5   representative of current investor requirements. An

6   increase in the riskiness of bonds relative to stocks (such

7   as that occurring since late 1979), may reduce the risk

8   premium between these two types of securities. Similarly,

9   changes in the relative tax treatment of returns on bonds

10   and stocks may change the historical risk/return

11   relationship.

12

13 Q: WHAT HISTORICAL RISK PREMIUMS HAVE YOU FOUND BETWEEN UTILITY

14   STOCKS AND BONDS?

15

16 A: I have found that, based on geometric mean returns, a

17   portfolio of Moody's 24 Utilities, during the period 1929 to

18   1984, returned approximately 182 basis points more than

19   long-term Government bonds. To be consistent with my belief

20   that the risk premium be based on available returns over

21   varying holding periods and an extended time frame, I have

22   computed the average of the premiums that would have been

23

24

25

26

1   realized over all whole-year holding periods of one year to

2   ten years during 1929-1984. Only those holdings periods

3   with end-of-calendar-year boundaries were considered. The

4   average premium from this analysis was 359 basis points for

5   utility stocks over Government bonds.

6

7   Q: WHAT DATA HAVE YOU USED TO CALCULATE THESE RISK PREMIUMS?

8

9   A: For Government bonds, I have used the bond data described by

10   Ibbotson and Sinquefield in their publications of various

11   titles, such as Stocks, Bonds, Bills, and Inflation: The

12   Past (1926 - 1976) and the Future (1977 - 2000) and updates

13   to these publications including Stocks, Bonds, Bills, and

14   Inflation - 1985 Yearbook. For the utility stock data, I

15   have relied on the monthly price and dividend data found in

16   Moody's Public Utility Manual. These utilities include

17   representative privately owned, electric and gas utility

18   companies, that are dispersed geographically across the

19   nation.

20

21   All dividends are assumed to be reinvested at the closing

22   price for the month in which they were received. The long-

23   term historical period chosen for analysis was 1929 to 1984.

24   Data prior to 1929 are not available from the Moody's Manual

25   on the Moody's stock index.

26

1 Q: HAVE SIGNIFICANT CHANGES IN THE RISK PREMIUM BETWEEN UTILITY

2 STOCKS AND BONDS OCCURRED RECENTLY?

3

4 A: Yes, significant changes have occurred. For example, the

5 October 1979 policy change of the Federal Reserve had a

6 significant impact on interest rate volatility and, in turn,

7 on required risk premiums. Although both stocks and bonds

8 are interest rate sensitive, the greatest impact of this

9 change has been felt in the bond market. Articles in the

10 Wall Street Journal and Federal Reserve statistical papers

11 have highlighted this impact. For example, an October 29,

12 1980, article in the Journal noted that "Bond buying these

13 days has become a greater gamble than buying stocks. That

14 once unthinkable notion is now widely accepted by investors

15 ..." Also, the investment firm of Goldman Sachs reported in

16 an April 1981 research paper that the average equity risk

17 premium over bonds was - .5% at that time.

18

19 More recent publications from Merrill Lynch, ("Valuation

20 Perspectives", dated April, 1985) and Salomon Brothers

21 ("Valuation Focus-November 1985," dated November 11, 1985)

22 indicate that the reduced risk premiums between stocks and

23 bonds recorded in 1979-1981 continue to prevail. These

24 reports also clearly point out that bond price volatility

25 continues to exceed that of stocks in general. A logical

26 conclusion from this increased bond volatility is stated in

1   the Salomon Brothers' pubication:

3   " ...[this volatility] confirms what many have argued:

4   Bond markets have become so jumpy that their risk

5   reaches or exceeds that of stocks ..."

7 Q: BASED ON THE RESULTS FROM YOUR RISK PREMIUM STUDY, WHAT

8   CONCLUSIONS HAVE YOU DRAWN CONCERNING THE REASONABLENESS OF

9   YOUR DCF-DETERMINED INVESTOR RETURN REQUIREMENTS ON PECO'S

10   COMMON STOCK?

12 A: I believe that the 182 to 359 basis point premiums

13   calculated for Moody's 24 Utilities over long-term

14   Government bonds should be the starting point for

15   determining the risk premiums for PECO'S stock. These

16   premiums represent an average of long-term historical

17   premiums for medium grade utilities.

19   The increased volatility in the bond market favors the lower

20   end of the historical risk premium range. Since the average

21   yield on long-term Treasury securities during a recent 16-

22   week period (8/30/85 - 12/13/85) has been 10.5%, my DCF

23   findings of 15.1% to 16.1% offer risk premiums of 460 to 560

24   basis points. These premiums fall above the average

25   premiums that have been available to investors in utility

26   stocks over the long-term as would be expected due to

1   greater than average risks currently associated with PECO's

2   stock.

3

4   My DCF findings also indicate a risk premium between PECO

5   common equity and PECO medium to long-term first mortgage

6   bonds of 220 to 590 basis points. This finding is based on

7   recently recorded yields-to-maturity on PECO bonds that

8   mature in 10 to 20 years. Since early September 1985, these

9   bonds have yielded 10.3% to 12.9%, with the longer term

10   bonds requiring the higher yields. Since PECO's common

11   equity is, in a sense, a variable rate issue with allowed

12   returns adjusted every few years to market-based levels, the

13   medium-term PECO bonds are the appropriate point of

14   comparison. This comparison between my DCF and risk premium

15   findings indicates a yield spread, or risk premium, that is

16   fully sufficient to reward investors for investing in PECO's

17   equity.

18

19 Q: HAVE YOU PERFORMED ANY OTHER CHECKS ON THE REASONABLENESS OF

20   YOUR DCF FINDINGS?

21

22 A: Yes. The final check of reasonableness that I have performed

23   is one in which my DCF findings are compared with recent

24   required returns on other competing investments. This

25   approach is totally independent of my company specific DCF

26   approach and therefore offers an acceptable method for

2   investments that I have chosen have associated risks that

3   range from very low to very high levels. If my DCF findings

4   are within reason, they should be similar to required

5   returns on investments in the same risk category as PECO's

6   common stock.

7

8   Q: WHAT IS YOUR SOURCE FOR RECENT REQUIRED RETURNS ON

9   INVESTMENTS OF VARYING RISKS?

10

11   A: I rely on Moody's Bond Record and the S&P Bond Guide. Both

12   contain implicit required returns of investors on numerous

13   bond issues. These returns are based on actual sale prices

14   of the issues and the expected income stream to maturity from

15   the security.

16

17   Q: ARE THE REQUIRED RETURNS SHOWN IN THESE PUBLICATIONS DIRECTLY

18   COMPARABLE TO YOUR DCF FINDINGS?

19

20   A: Yes, they are. The required returns are discounted cash flow

21   (DCF) returns calculated from the current price of the bond

22   and the expected income stream (coupon payments and return of

23   the bond's face amount upon maturity), just as my DCF

24   findings for PECO were determined. There is, however, less

25   uncertainty as to the investor-required (expected) return on

26   these bonds, since the coupon amounts and frequency of

1	payment, as well as the face amount to be returned upon
2	maturity, are contractually specified. The required returns
3	(yields-to-maturity) contained in the Moody's and S&P
4	publications are therefore a more accurate indication of
5	actual investor return requirements than are the DCF returns
6	derived for a common stock.
7	
8	Q: IS THE INVESTMENT RISK ASSOCIATED WITH PECO'S COMMON STOCK
9	CONTAINED IN THE RANGE OF RISKS ASSOCIATED WITH THE BONDS
10	INCLUDED IN THE MOODY'S AND S&P PUBLICATIONS?
11	
12	A: Yes. Risks associated with the referenced bonds range from
13	the very low to the very high. The triple-A rated bonds
14	are, for example, among the lowest risk investments
15	available. Their low risk is apparent from the fact that
16	recent required returns on triple-A bonds are near 10.4%
17	which is only 30 basis points more than the 10.1% return
18	currently required on long-term Treasury securities.
19	
20	On the other hand, bonds rated triple-C (or Caa) are among
21	the most risky of all investments. Moody's describes these
22	bonds as being of "poor standing" and states that such bonds
23	may be in default. S&P similarly states that these bonds
24	are, on balance, "predominantly speculative with respect to
25	capacity to pay interest and repay principal" in accordance
26	with the contractual agreement.

1	PECO's common equity is more risky than triple-A rated
2	bonds, because of greater uncertainty concerning the amount
3	and timing of the future income stream. However, this
4	uncertainty is less than that associated with the triple-C
5	bonds of a company that is near bankruptcy. While PECO
6	management and the investment community have mentioned the
7	possibility of a dividend reduction, such a reduction would
8	not lead to losses comparable to these faced by the owner of
9	the typical triple-C rated bond. The dividend cut would
10	reduce the level of income to PECO shareholders, but income
11	would continue to be received and a relatively small drop in
12	PECO's stock price would occur. In the case of default on
13	the bond, however, years may pass before the investor can
14	recover even a portion of his investment.
15	
16	Q: WHAT RISK LEVEL DO YOU ASSOCIATE WITH PECO'S COMMON STOCK?
17	
18	A: An investor in PECO's common stock currently faces risks
19	that are similar to those faced by an investor in bonds
20	rated between B and CCC (Caa). In my judgment, the
21	uncertainties associated with the regulatory treatment of
22	PECO's Limerick investments, and concomitant uncertainty as
23	to the impact of this treatment on PECO's dividend, are
24	risks similar to those faced by investors in the CCC risk
25	class. Without these uncertainties, an investment in PECO's
26	stock would be significantly less risky.

46

1	Other factors considered in my risk classification of PECO
2	include liquidity risks and price volatility. My findings
3	indicate PECO's common equity has lower liquidity risk than
4	most B-rated bonds, i.e., it my be sold at a lower price
5	sacrifice than most B-rated bonds. For example, bonds rated
6	from B to CC currently have a 3% to 5% spread between the
7	bid and ask price. PECO's common equity can, on the
8	otherhand be sold at approximately a 1% price sacrifice.
9	
10	Comparing PECO's stock price volatility with the volatility
11	of high risk bonds, PECO's stock is again shown to be of
12	lower risk. As previously mentioned, bonds in general
13	(independent of their risk class) have shown greater price
14	volatility than common stocks during the past four to five
15	years.
16	
17	Q: WHAT RETURN IS CURRENTLY REQUIRED BY INVESTOR IN SECURITIES
18	THAT FALL IN THIS RISK CLASS?
19	
20	A: Schedule 11 shows graphically the current return
21	requirements associated with various levels of risk.
22	Required returns that correspond to a risk rating of B to
23	CCC range from 14.4% to 16.0%, based on data from Moody's
24	November 1985 Bond Record, and from 14.0% to 15.7% based on
25	S&P's December 1985 Bond Guide.
26	

1   Q: ARE YOUR DCF FINDINGS SUPPORTED BY THIS RISK/RETURN

2   ANALYSIS?

3

4   A: Yes, they are. My DCF findngs of 15.1% to 16.1% fall near

5   the upper end of both Moody's and S&P "required return"

6   range found for PECO's risk class. My findings are

7   therefore fully adequate to compensate PECO investors for

8   the risks they assume.

9

10 Q: YOUR FINDINGS ON PECO's RETURN REQUIREMENTS HAVE VARIED

11   DEPENDING ON THE METHOD USED. WHAT IS YOUR POINT ESTIMATE

12   OF PECO's EQUITY RATE?

13

14 A: My point estimate for PECO's bare equity rate is <u>15.60%</u>

15   the mid-point of my DCF range. The DCF, risk premium, and

16   risk/return analyses that I have performed rely on recently

17   recorded stock prices and recent long-term Treasury security

18   and corporate bond yields. Results are, therefore,

19   indicative of investor return requirements during the

20   period, 8/30/85 - 12/13/85, in which these prices and yields

21   were recorded. Due to the previously referenced consensus

22   forecasts for no change in capital costs through 1986, I do

23   not believe an adjustment to my findings for anticipated

24   trends is appropriate at this time.

25

26

1   Volatility in the capital markets has, however, made even

2   near-term interest rate forecasts susceptible to large

3   errors. In light of such volatility, I consider the mid-

4   point of my DCF range to be the best current estimate of the

5   Company's bare bones cost of equity in this case. The

6   Commission should, however, consider cost of capital trends

7   as they materialize and modify their findings accordingly at

8   the time for decision in this case.

9

10   Q: SHOULD YOUR FINDINGS AS TO PECO's COST OF EQUITY BE ADJUSTED

11   FOR FLOTATION COSTS AND MARKET PRESSURE IN THIS CASE?

12

13   A: No. An adjustment of PECO's bare equity rate for flotation

14   costs and market pressure offers an insurance policy to

15   stockholders against unfavorable markets. Premiums on this

16   policy are paid by the ratepayers, but the stockholders are

17   the beneficiaries. Furthermore, this policy pays benefits

18   in the form of higher returns on equity whether or not the

19   effects of unfavorable markets during stock sales, or,

20   dilution, are experienced.

21

22

23

24

25

26

1		Also, market pressure (positive or negative) will occur at
2		the time of every offering whether or not, an adjustment is
3		allowed. Negative pressure will occur, i.e., market price
4		below that which would otherwise be recorded, without the
5		offering if the supply of PECO shares exceeds demand for
6		these shares. Similarly, the price of PECO shares may
7		exceed that which would otherwise be recorded if demand
8		exceeds supply at the time of offering.
9		
10		Given the above, a flotation or market pressure adjustment
11		in this case in inequitable and should not be allowed.
12		
13	Q:	WHAT CAPITAL STRUCTURE HAVE YOU FOUND REASONABLE FOR PECO?
14		
15	A:	Due to recent new debt issuances and debt redemptions by
16		PECO, the capital structure contained in Mr. Brennan's
17		prefiled exhibits needs updating. The necessary data is not
18		available at this time, however. I intend to file an
19		addendum to this testimony that contains my capital
20		structure recommendations once the required data are
21		available.
22		
23	Q:	DOES THAT CONCLUDE YOUR TESTIMONY?
24		
25	A:	Yes.
26		

Appendix A

Educational and Professional Summary

INTRODUCTION: Mr. Winter is a Chartered Financial Analyst and has prepared testimony on Cost of Capital and other public utility regulatory issues since 1980.

EDUCATION:

University of Oklahoma, 1965
MA in Mathematics

BS, Southwest Missouri State College, 1964
Major: Mathematics

HONORS RECEIVED:

Cum Laude Graduate
Who's Who Among Students in American Universities &
Colleges

EMPLOYMENT:

Operations Research Analyst
Rate Case Division
Office of Public Utilities
General Services Administration
Washington, DC
December 1979 to present.

Program Analysis Branch Chief
Division of Program Planning and Analysis
Department of Health, Education and Welfare
Washington, DC
February 1979 to December 1979.

Operations Research Analyst
Policy and Procedures Division
Public Buildings Service
General Services Administration
October 1976 to February 1979.

Industrial Engineer and Mathematician
Manpower and Cost Control and Research Departments
U.S. Postal Service, Hq.
Washington, DC
June 1968 to October 1976.

PUBLICATIONS: "Single-stage vs. Multi-stage Discounted Cash Flow
Analysis for Cost of Equity Determination;"
Electric Ratemaking, Vol. 1, No. 5, Oct/Nov.
1982, pp. 27-29.
(Co-authored with David E. Kelley)

"The Discounted Cash-flow Estimate of the
Dividend Growth Rate Revisited", (Comment on
prior article), Public Utilities Fortnightly,
Nov. 8, 1984, pp. 56, 57.

PROFESSIONAL AFFILIATIONS:

The Washington Society of Investment Analysts, Financial
Management Association.

PARTICIPATION IN REGULATORY PROCEEDINGS

Mr. Winter has testified on cost of capital issues before the
following state commissions and other regulatory bodies:
California, Colorado, District of Columbia, Federal Energy
Regulatory Commission (FERC), Florida, Illinois, Maryland,
Oklahoma, Pennsylvania, and Texas.

PENNSYLVANIA PUBLIC UTILITY COMMISSION

V.

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. R-850152

Exhibits of

PHILIP R. WINTER, CFA

Cost of Capital

on Behalf of the Federal Executive Agencies
General Services Administration

General Services Administration (PUR)
Room 6317
18th & F Streets, N.W.
Washington, DC 20405
(202) 566-1034

January 2, 1986

COMPUTATION OF PECO's

OVERALL COST OF CAPITAL

|	% of Total Capital	Effective Cost (%)	Weighted Cost (%)
Long-term debt	***	***	***
Preferred stock	***	10.41	***
Common Equity	***	15.60	***
Total	100.0%		***

*** Actual data on the effect of new debt issuances and debt redemptions on the Company's test year capital structure and overall cost of capital are not available at this time. The above schedule will be completed when data are available.

Estimated Test Year Costs
Pollution Control Notes

Pollution Control Notes:	Amt. Outstdg.(000)	% of Total	Effective Costs (%)	Weighted Costs (%)
5.50%, due 1997	$24,485	4.72	5.02	.24
13 %, due 2010	71,500	13.80	13.38	1.85
11.5%, due 2011	18,500	3.57	13.16	0.47
Floating Rate, 1982 Series A	60,000	11.58	5.65	0.65
Floating Rate, 1982 Series B	40,000	7.72	5.26	0.41
Floating Rate, 1983 Series A	50,000	9.65	5.27	0.51
Floating Rate, 1984 Series A(York)	4,500	0.87	5.07	0.04
Floating Rate, 1984 Series A(Salem)	4,200	0.81	5.07	0.04
10.5%, Series due 2015	245,000	47.28	10.79	5.10
Total Pollution Control Notes	$518,185	100.00%		9.31%

# RECENT INFLATION RATE TRENDS
(1981 TO 1985)

CPI(%)   CPI(%)
                            ___

YR.QTR
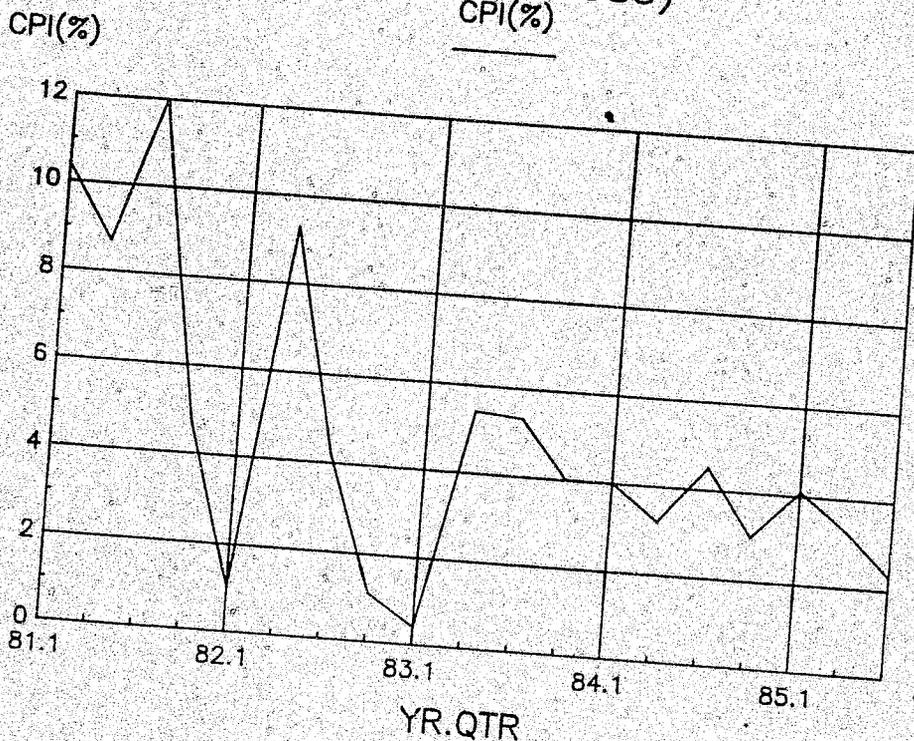
II.   FORECASTS OF INFLATION IN CONSUMER PRICES (1985-1986)

	1985 over 1984(%)	1986 over 1985(%)
-L. Meyer & Associates		
-Evans Economics	3.5	
-Univ. of Michigan M.Q.E.M.	3.5	3.1
-University of California L.A.	3.5	3.8
-Chase Econometric	3.4	4.0
-Value Line	3.5	3.6
-Blue Chip Consensus	3.5	3.9
-Merrill Lynch	3.5	4.2
-Citicorp Information Services	3.4	3.7
-Dr. Walter W. Heller, U.of Minn	3.5	3.4
-Dr. Murray Weidenbaum, Wash. U.,	3.4	4.4
St. L.		4.0
	3.5	
		4.3

Source: Blue Chip Economic Indicators December 10, 1985;
        The Value Line Investment Survey, "Selection and
        Opinion", December 20, 1985.

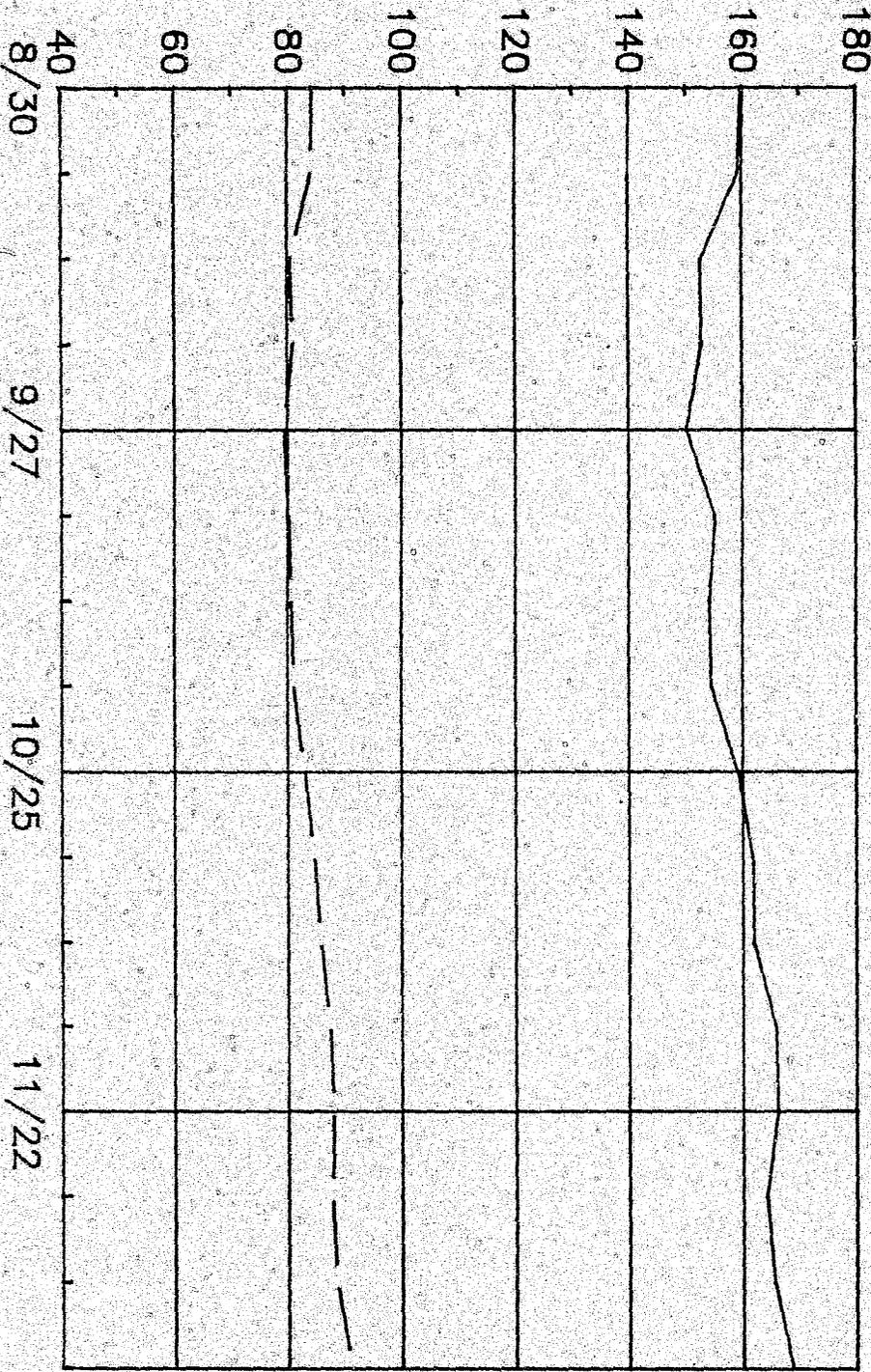# INTEREST RATE TRENDS
(JAN. 1981 TO NOV. 1985)

91 DAY T-BL   A CORP BD   A UTIL BD

(%)

MTH/YR
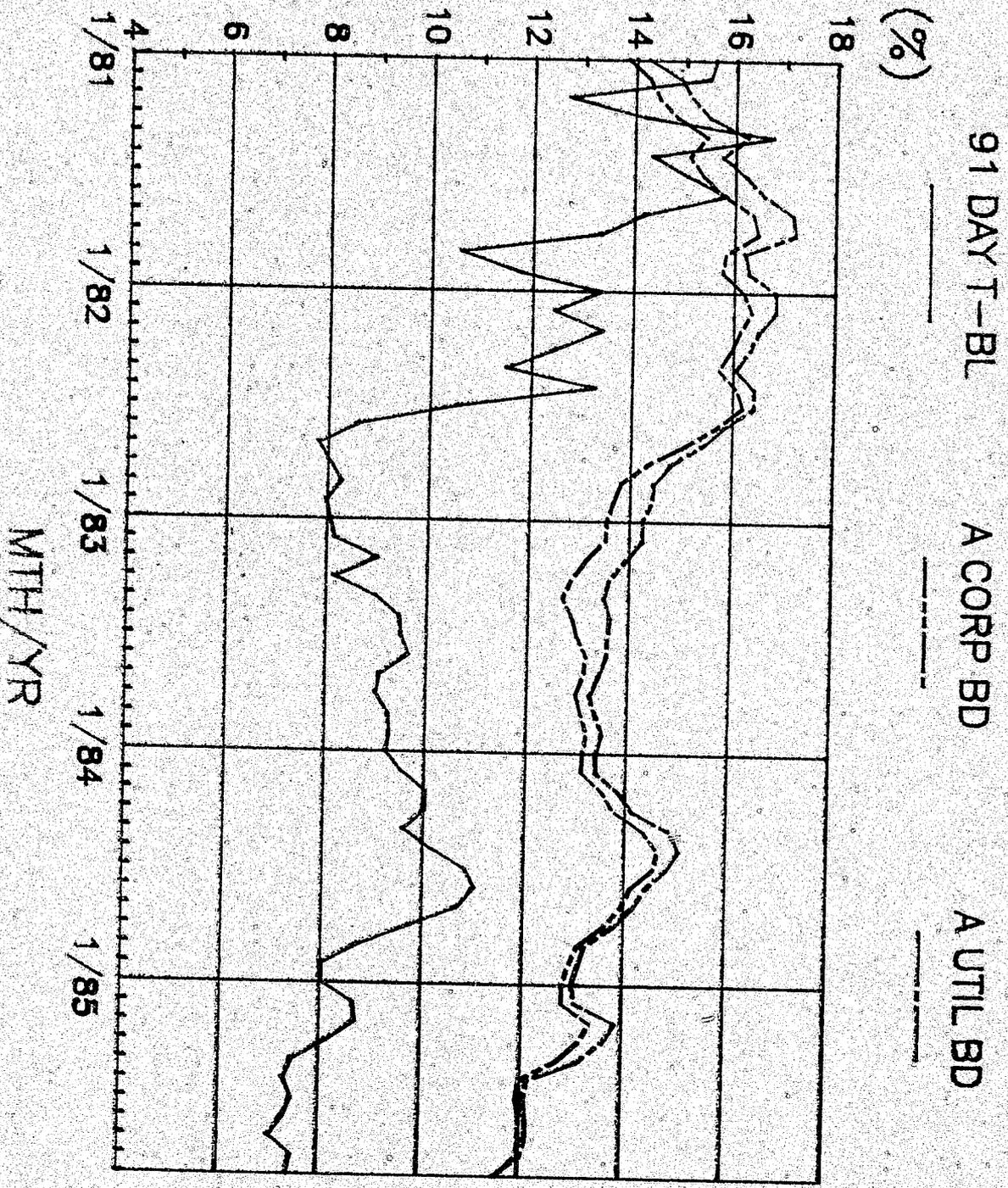
RECENT UTILITY INDEX PRICE TRENDS
AUG. 30 TO DEC. 13, 1985

PRICE ($)

SP 40U ———   DJ 15 ———

MTH/DAY OF 1985

PECO'S RECENT STK PRICE TRENDS
AUG. 30 TO DEC. 13, 1985

PRICE ($/SHR.)

	8/30	9/27	10/25	11/22
18				
17				
16				
15				
14				
13				
12				

MTH/DAY OF 1985
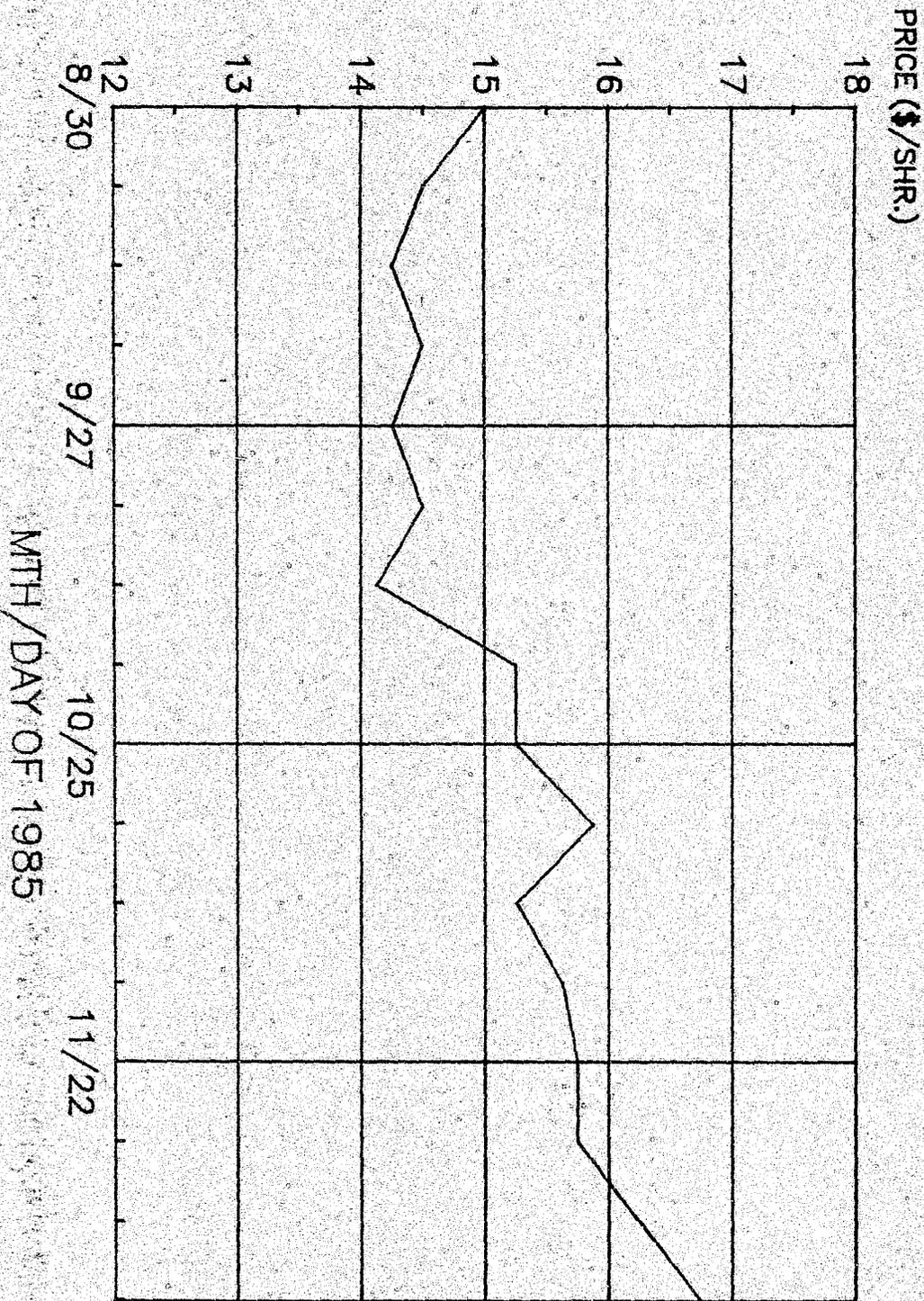
Comparison of Net Profit Margins and
Return on Equity Trends for PECO, Moody's Electric
Utility Index, and Large Corporations
1981-1984

Part I:

	1981	1982	1983	1984
After-Tax Profit Margin (%):				
PECO	11.4	12.7	15.0	16.5
Moody's Electric	11.0	11.9	13.3	12.7
Large Corporations	4.9	4.1	4.5	4.9
Return on Equity (%):				
PECO	11.4	12.3	12.5	14.1
Moody's Electric	11.9	12.6	13.7	14.5
Large Corporations	14.0	11.0	11.5	13.2

Source: Data on PECO and Moody's Electrics are from the Value Line
Investment Survey, dated September 27, 1985 and June 7, 1985,
respectively.   Data on large corporations are from
Business Week, dated March 15, 1982; March 14, 1983;
March 21, 1984; and March 22, 1985.

Part II:

Fundamental Factors Contributing to Returns on Equity
for PECO in 1983 and 1984 and for Moody's Electrics in 1984.

	Tot. Cap. Turnover		Leverage		Pre-Tax Prof. Margin		1-Tax Rate	ROE
PECO (1983)	.3841	x	2.6316	x	.1594	x	.776	= .125
PECO (1984)	.3797	x	2.7174	x	.1728	x	.791	= .141
Moody's Electrics (1984)	.4847	x	2.4390	x	.1887	x	.650	= .145
%Difference (PECO vs Moody)	-21.66		+11.41		-8.43		+21.69	-2.76
%Difference (PECO 1984 vs 1983	-1.15		+3.26		+8.41		+1.93	+12.8

Source: All calculation are based on actual data contained in The
Value Line Investment Survey, "Ratings & Reports", June 7,
1985 and September 27, 1985.

ALGEBRAIC RELATIONSHIP ASSUMED
IN THE DCF MODEL

(1) Infinite Model: $P_O = D_1/(1+K_1)+D_2/(1+K_2)^2+ \ldots +D_n/(1+K_n)^n + \ldots$

Where: P_O is the current price of the security

D_i is the dividend received in year i, i = 1 to ∞.

K_i is the investor discount rate in year i, i=1 to ∞.

Under simplifying assumptions of constant dividend growth and investor discount rate, this method becomes:

(2) $$P_O=D_O(1+G)/(1+K)+D_O(1+G)^2/(1+K)^2+\ldots+D_O(1+G)^n/(1+K)^n+\ldots$$

Where: D_O is the current dividend

G is the assumed constant dividend growth rate.
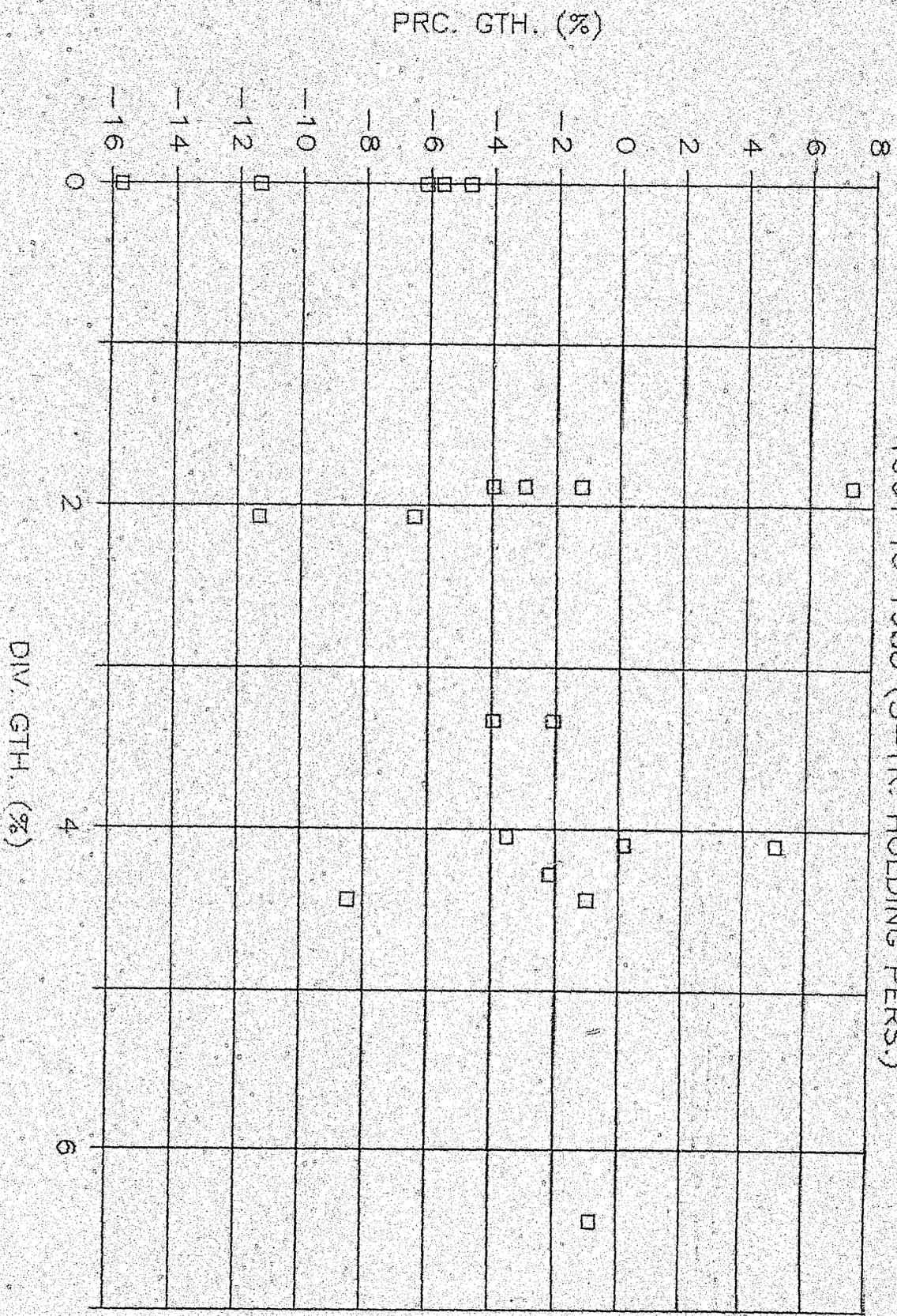
K is the assumed constant investor discount rate.

(3) Finite Model:

$$P_O=D_O(1+G)/(1+K)+D_O(1+G)^2/(1+K)^2+\ldots+D_O(1+G)^n/(1+K)^n+P_n/(1+K)^n.$$

Where: P_n is expected stock price at end of a n-year finite period, and constant dividend growth and investor discount rate are assumed.
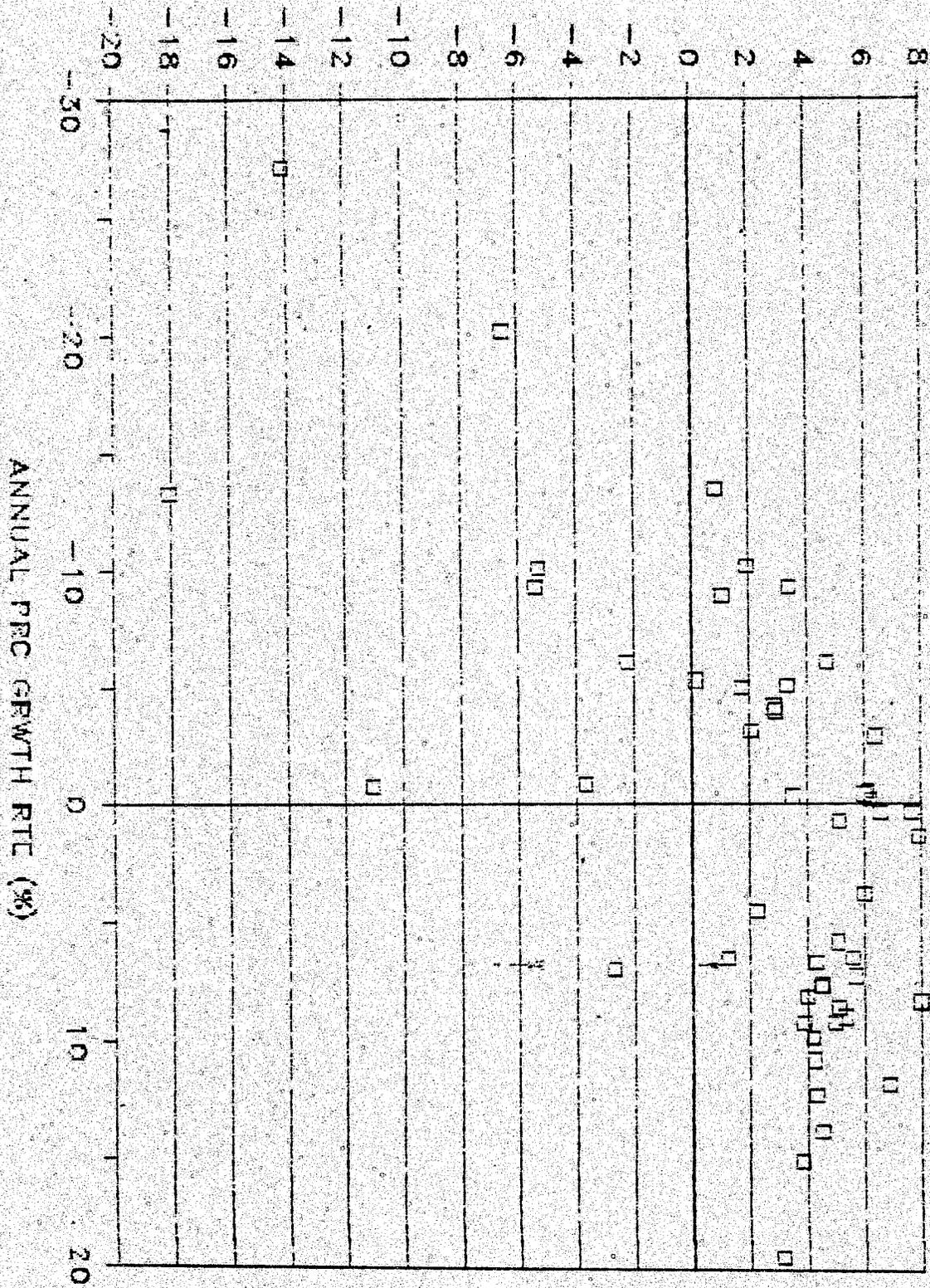
PRC. GTH. (%)

PECO'S PRC. & DIV. GTH. HISTORY
1961 TO 1985 (5-YR. HOLDING PERS.)

8
6
4
2
0
−2
−4
−6
−8
−10
−12
−14
−16

0   2   4   6

DIV. GTH. (%)

MOODY'S UTIL PRC & DIV GRWTH HIST.

FOR 5-YEAR PERIODS 1929-1984

ANNUAL DIV GRWTH RTE (%)

ANNUAL PRC GRWTH RTE (%)

REQ. RETURN VS RISK
(OCTOBER 1985)
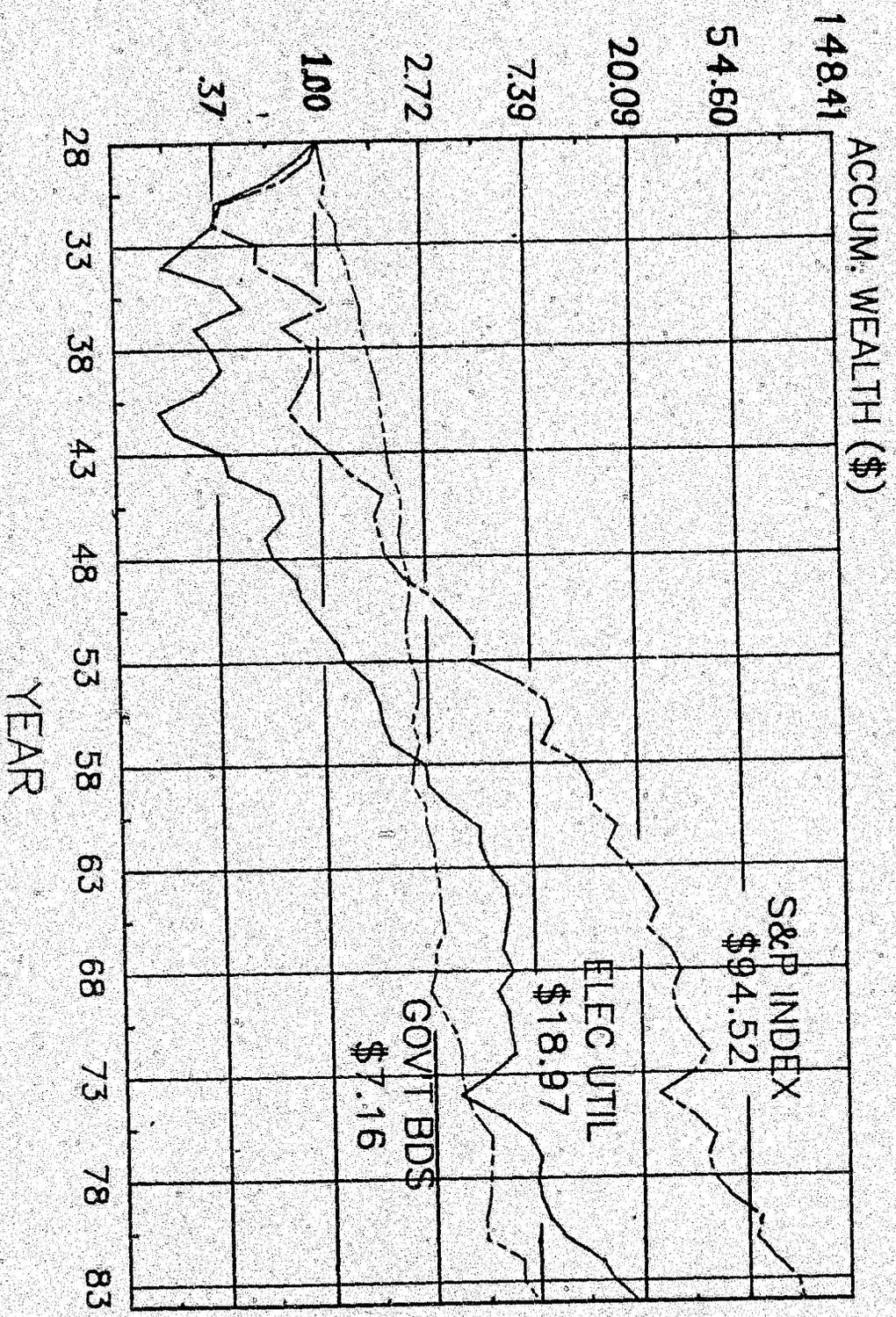
MOODY'S DATA — —

S & P DATA ———

YTM(%)

RISK MEAS.
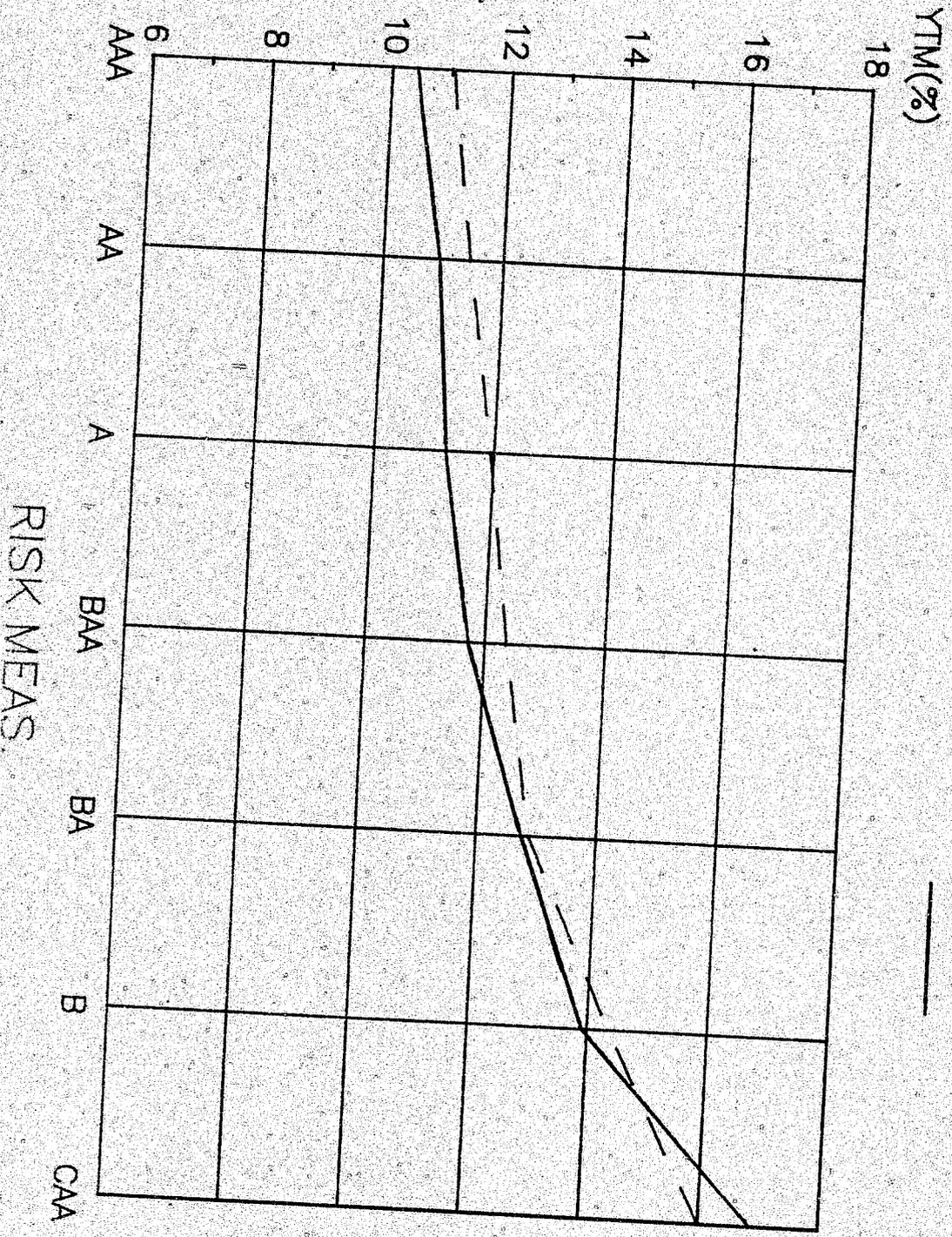
MAJOR INVESTMENT FIRMS' RECENT
SHORT-TERM GROWTH EXPECTIONS FOR PECO
DIVIDENDS AND EARNINGS

	Expected Average Annual Growth Rates (%)	
	Dividends	Earnings
Value Line	2.2	1.4
Prudential-Bache	0.0	0.0
Merrill Lynch	1.8	-2.3
Salomon Brothers	1.0	2.0
Duff and Phelps	0.0	1.9
E.F. Hutton	0.0	0.0
Dean Witter	2.0	2.5
Average	1.0%	0.8%

ACCUMULATED WEALTH FROM $1.00 INVESTED
AT THE BEGINNING OF 1929

ACCUM. WEALTH ($)

14841	
54.60	
20.09	
7.39	
2.72	
1.00	
.37	

YEAR: 28 33 38 43 48 53 58 63 68 73 78 83

S&P INDEX
$94.52

ELEC UTIL
$18.97

GOVT BDS
$7.16

January 16, 1986

Mr. Jerry Rich, Secretary
Pennsylvania Public Utility Commission
Room G-18, North Office Building
North & Commonwealth Avenue
Harrisburg, Pennsylvania 17120

Dear Mr. Rich:

RECEIVED

JAN 2 4 1986
SECRETARY'S OFFICE
Public Utility Commission

Re: Pennsylvania Public Utility Commission, et al.
v.
Philadelphia Electric Company
Docket No. R-850152

Enclosed for filing with the Commission are three (3) copies of the Errata Sheet for
Direct Testimony of Philip R. Winter, Cost of Capital, General Services
Administration on behalf of the Federal Executive Agencies..

Sincerely,

Mildred E. V. Pitts

MILDRED E.V. PITTS
Senior Trial Attorney
Information Resources & Utilities Division

Enclosures

cc: Honorable Joseph P. Matuschak
Administrative Law Judge
Pennsylvania Public Utility Commission

Mr. Joseph Brennan
Associated Utility Services
155 Gaither Drive
Mt. Laurel, New Jersey 08054

All Parties

CERTIFICATE OF SERVICE

Re: Pennsylvania Public Utilities Commission, et al.

v.

Philadelphia Electric Company
Docket No. R-850152

I hereby certify that I am, this 16th day of January, 1986 serving either by special messenger or by first-class mail, the foregoing document, Errata Sheet for Direct Testimony of Philip R. Winter, Cost of Capital, General Services Administration, upon the persons listed below:

Honorable Joseph P. Matuschak
Administrative Law Judge
Pennsylvania Public Utility
  Commission
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Uniontown, Pennsylvania 15401

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David B. MacGregor, Esquire
Robert H. Young, Esquire
Morgan, Lewis & Bockius
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David M. Kleppinger, Esquire
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McNees, Wallace & Nurick
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Harrisburg, Pennsylvania 17105

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Assistant Counsel
Veronica A. Smith, Esquire
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Pennsylvania Public Utility Commission
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Harrisburg, Pennsylvania 17120

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Scott J. Rubin, Esquire
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Office of Consumer Advocate
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Harrisburg, Pennsylvania 17120

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Energy Project
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Duane, Morris & Heckscher
203 Pine Street
P.O. Box 1003
Harrisburg, Pennsylvania 17108-1003

<u>Mildred E. V. Pitts</u>
MILDRED E. V. PITTS

Errata Sheet
for Direct Testimony of Philip R. Winter
in
Philadelphia Electric Company Docket #850152
Before the Philadelphia Public Utility Commission

References	Correction
p. 19, lines 14 and 23	Change "Moody's" to: "Value Line's"
p. 20, line 1	Change "1.3" to: "1.2"
line 2	Change "Moody's" to: "Value Line's"
line 12	Change "Moody's Electrics." to: "Value Line's Electrics until 1984."
lines 12-15	Change "Some relative improvement in PECO's ROE was, however, recorded during this period with a 1984 shortfall from the Moody's average of 2.8%, compared with a shortfall in 1981 of 4.2%." to: "In 1984, PECO's ROE exceeded the Value Line average by 1.4%."
line 22 and 25	Change "Moody's" to: "Value Line's"
line 26	Change "2.8% below" to: "1.4% above"
p. 21, lines 1-4	Change "... Moody's average in 1984. This shortfall was due to a lower turnover rate (Revenues/Total Capital), and lower pre-tax profit margin (Pre-Tax Profits/Revenues) than that recorded for Moody's Electrics" to: "... Value Line average in 1984. This above average ROE was due to higher leverage (Total Capital/Book Equity) and a higher tax flow-through rate (1-tax rate) than that recorded for Value Line's Electrics."
lines 4 and 5	Change "PECO's turnover ratio is 21.7% below the Moody's figure." to: "PECO's ROE would be higher if not for their turnover ratio which is 23% below the Value Line figure."
lines 12 and 13	Change "PECO's pre-tax profit margin, which is 8.49% below the Moody's average, ... " to: "PECO's 1984 pre-tax profit margin, which is 4.74% below the Value Line average, ..."
Schedule 7	Change all references to: "Moody's Electrics" to: "Value Line's Electrics"
	In the column labeled "1984" of Part I, change "12.7" to: "13.5" and "14.5" to "13.9"
	In the row labeled "Moody's Electrics (1984)" of Part II, change ".4847 x 2.4390 x .1887 x .650 = .145" to: ".4932 x 2.4510 x .1814 x .634 = .139"
	In the row labeled "% Difference (PECO vs Moody)" of Part II, change "-21.66 +11.41 -8.43 +21.69 -2.76 " to: "-23.01 +10.87 -4.74 +24.76 +1.44"

PM 1-22-86

ORil P-850152

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

Philadelphia Electric Company (Docket No. R-850152)

Direct Testimony

of

Andrew R. O'Donnell

Concerning

Fair Rate of Return

Philadelphia Electric Company
Staff Statement ARO-1
Table of Contents

----

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

2   A.   My name is Andrew R. O'Donnell. My business address is:

3   Pennsylvania Public Utility Commission, P. O. Box 3265,

4   Harrisburg, Pennsylvania, 17120. I am a Fixed Utility

5   Financial Analyst assigned to the Rate of Return Section,

6   Finance Division, Bureau of Rates.

7   Q.   **BRIEFLY DESCRIBE YOUR EDUCATION, EMPLOYMENT EXPERIENCE,**

8   **AND THE RESPONSIBILITIES OF YOUR CURRENT POSITION.**

9   A.   A brief description of my education, employment experience,

10   and the responsibilities of my current position are set

11   forth in Appendix A of this statement.

12

13   Q.   **WHAT ISSUE IS ADDRESSED IN THIS TESTIMONY?**

14   A.   The issue addressed in this testimony is the required rate

15   of return on common equity for Philadelphia Electric Company,

16   Electric Operations (PECO). PECO's claimed capital structure

17   and effective cost rates of debt and preferred stock are not

18   issues in this case for I have found those claims to be

19   properly calculated. I have provided a summary of PECO's

20   claimed capital structure and effective cost rates of

21   debt and preferred stock, as well as my recommended common

22   equity return rate requirement, on Schedule 1.

23   PECO's rate of return witness, Joseph F. Brennan, has

24   indicated that he will be providing updated schedules

25   regarding newly issued debt used to purchase high-coupon

26   first mortgage bonds (Tr. p. 7-8). There will likely be

1   changes to the company's claimed capital structure and effec-

2   tive cost rate of long-term debt. Therefore, I will, at a

3   later date, be providing an updated Schedule 1 that reflects

4   the company's changes.

5

6   Q. **WOULD YOU PLEASE PROVIDE AN OVERVIEW OF THE ELECTRIC UTILITY**

7   **INDUSTRY THAT FOCUSES ON THE ECONOMIC CHANGES THAT HAVE**

8   **AFFECTED AND ARE EXPECTED TO AFFECT THE REQUIRED RATE OF**

9   **RETURN ON COMMON EQUITY?**

10 A. Yes. Prior to the mid-1960s utilities operated in an

11   economic environment characterized by low inflation and low

12   interest rates. Nominal interest rates on long-term high

13   corporate bonds exceeded five percent in only two years

14   (1920 and 1921) from 1901 through 1965. From 1966 to 1982

15   interest rates on high grade corporates began an upward

16   spiral from 5.5 to 16.2 percent. Since 1982 there has been a

17   retraction to about 11 percent. Interest rates are continu-

18   ing to decline as it is evident that inflation has remained

19   relatively low and stable for the past few years. Interest

20   rates are expected to continue their downward trend.

21   Utilities, especially electric utilities, were hit hard

22   by the rising inflation and interest rates. Already highly

23   leveraged, electric utilities found themselves in the dilemma

24   of participating in record construction programs at a time

25   when operating and financing costs were escalating beyond

26   managerial expectations. To compound matters demand declined

1   as a result of reduced industrial production and consumer

2   conservation. Presently, most electric utilities have

3   completed their nuclear construction programs. The

4   combination of completed construction and falling interest

5   rates has resulted in improved financial condition for the

6   electric utility industry. There is a minority group of

7   electric utilities, however, that have not completed their

8   construction programs. Although that minority group has

9   clearly benefited from declining interest rates, problems

10 associated with cost overruns, phase-ins, excess capacity,

11 etc., have hampered improvements in their financial

12 condition.

13   The news has not been all bad for electric utilities.

14 In Pennsylvania, for example, the automatic fuel adjustment

15 clause permitted escalating energy costs to be passed

16 through, thereby removing such increases from the general

17 rate case proceedings. The result was decreased regulatory

18 lag. Other changes that decreased regulatory lag include

19 a mandatory 7 month suspension and the future test year.

20 The Pa. P.U.C. also improved staffing and processed record

21 rate increases. Rates of return on common equity and rate

22 base were permitted to increase as interest rates rose.

23 Further, the present Commission has continued to allow

24 relatively high rates of return on common equity as intererst

25 rates have declined substantially.

26 Q. WHAT IS THE PROSPECT FOR IMPROVEMENT IN PECO'S FINANCIAL

27 CONDITION IN THE NEAR-TERM FUTURE?

1   A.   PECO's financial condition will benefit from the inclusion

2   of Limerick Unit No. 1 in the rate base. PECO's financial

3   condition will also benefit from declining interest rates,

4   especially taking into consideration the company's expected

5   external financing requirements. The achilles heel of the

6   company, however, is the resumption of Limerick Unit No. 2

7   construction. Regardless of the rate treatment of the

8   current case, resumption of construction of Unit No. 2

9   assures a continuation of the burdensome construction

10   requirements that have saddled PECO in recent years. There-

11   fore, the prospect for improvement in PECO's financial

12   condition in the near-term is not good.

13

14   Q.   **ARE THERE LEGAL DECISIONS THAT PROVIDE REGULATORS WITH**

15   **GUIDELINES TO DETERMINE A FAIR RATE OF RETURN ON COMMON**

16   **EQUITY FOR A PUBLIC UTILITY?**

17   A.   Yes. The well-known <u>Bluefield</u> and <u>Hope</u> Supreme Court deci-

18   sions provide guideposts that aid in the determination of a

19   common equity return rate for a public utility:

20   A public utility is entitled to such
rates as will permit it to earn a return on

21   the value of the property which it employs
for the convenience of the public equal to

22   that generally being made at the same time
and in the same general part of the country

23   on investments in other business undertakings
which are attended by corresponding risks and

24   uncertainties; but it has no constitutional
right to profits such as are realized or

25   anticipated in highly profitable enterprises
or speculative ventures. The return should be

26   adequate, under efficient and economic
management, to maintain and support its

27   credit and enable it to raise the money
necessary for the proper discharge of its

1   public duties.   A rate of return may be
2   reasonable at one time and become to high
        or too low by changes affecting opportun-
3   ities for investment, the money market and
        business conditions generally.
4   <u>Bluefield Water Works & Improvement Co. v.</u>
        <u>Public Service Comm. of West Virginia, 262</u>
5   U.S. 679, 692-93 (1923).

6   ...It is important that there be enough revenue
        not only for operating expenses but also for
7   the capital costs of the business. These in-
        clude service on the debt and dividends on the
8   stock.
        ...By that standard the return to the equity
9   owner should be commensurate with risks on
        investments in other enterprises having cor-
10   responding risks. That return, moreover,
        should be sufficient to assure confidence in
11   the financial integrity of the enterprise, so
        as to maintain its credit and to attract
12   capital.
        <u>FPC v. Hope Natural Gas Co.</u>, 320 U.S. 591,
13   603 (1944).

14   The approach I have utilized in this testimony is

15   consistent with the guidelines set forth in the <u>Bluefield</u>

16   and <u>Hope</u> decisions and with financial theory set forth in

17   well-known financial texts.

18

19   <u>Barometer Group Selection</u>

20   Q.   **WHAT CRITERIA DID YOU EMPLOY IN THE SELECTION OF A BAROMETER**

21   **GROUP?**

22   A.   My primary selection criteria were as follows:

23   · Value Line safety rank of 4

24   · Publicly traded common stock which
25   currently pays dividends

26   · Close general geographic proximity

27   · A first mortgage bond with a similar
          nominal rate and maturity date

1   I was able to select four companies that met all the

2   above criteria. Those companies are as follows:

3   . Dayton Power & Light Company

4   . Duquesne Light Company

5   . Ohio Edison Company

6   . Toledo Edison Company

7

8   Q. OF WHAT IMPORTANCE IS VALUE LINE'S SAFETY RANK?

9   A. In my opinion, the best indicator of the riskiness of a

10 company's common stock is the behavior of its market

11 price per share. Value Line describes safety rank as

12 follows:

13   Safety rank is a measurement of the
            total risk entailed in owning a particular
14   stock. It is derived primarily from the
            standard deviation of the weekly percent
15   changes in the price of a stock during
            the past five years. The smaller the
16   standard deviation, the more stable the
            stock. All stocks are ranked for safety
17   from 1 (highest) to 5 (lowest).
            Some allowance is made for less
18   quantifiable factors (such as diversity of
            market, quality of earnings and balance
19   sheet condition) by permitting a shift of
            one grade from that determined in the
20   standard deviation alone. For example, a
            stock that might rate a 1 on the basis of
21   Price Stability alone but has questionable
            earnings quality would be assigned a
22   safety grade of 2. The top 100 are assigned
            a safety grade of 1, the next 300 a grade
23   of 2, the next 830 are in grade 3, the next
            300 in 4 and the lowest 100 in grade 5.
24   The total risk in a security as
            expressed by Value Line Safety Ranking
25   encompasses both the inherent volatility
            of the stock--independent of the market as a
26   whole--and the stock's sensitivity to
            market changes as measured by the beta
27   factor.

1   Value Line's safety rank measures recent stock price

2   behavior, among other things. What I like about the safety

3   rank is that it measures the total risk entailed in owning

4   a particular stock rather than that of a company's bonds,

5   such as, bond rating. Please observe, however, that the

6   bond ratings of the barometer group companies and PECO are

7   similar:

8   Bond Rating
                                          Moody's   S&P
9
10   Dayton Power & Light   Baa1   BBB-

11   Duquesne Light   Baa1   BBB+

12   Ohio Edison   Baa3   BBB-

13   Toledo Edison   Baa3   BB+

14   Philadelphia Electric   Baa3   BBB-

15   Q. **WHAT ANALYSIS HAVE YOU PERFORMED THAT ASSURES THE SAFETY RANK**

16   **IS IN FACT A VALID CRITERIA TO USE IN THE SELECTION OF**

17   **SIMILAR RISK COMPANIES?**

18   A. In the description of safety rank that I provided above,

19   several key ratios such as price stability, quality of

20   earnings, financial condition, and beta were said to be used

21   by Value Line to determine the safety rank. On Schedule 2 I

22   have provided key measurements of the stock price behavior,

23   financial condition, and quality of earnings.

24   The index of price stability, as previously described,

25   is based upon a ranking of the standard deviation of weekly

26   percent changes in price of a stock over the last five years.

27   The lower the standard deviation the more stable the stock.

1   The top 5% (lowest standard deviations) carry a Price

2   Stability Index of 100, the next 5% 95, and so on down to 5.

3   The barometer group average price stability index is 93.

4   PECO has a price stability index of 100. Based on that

5   statistic alone, one would expect PECO to have a similar

6   safety rank to the barometer group companies.

7   Value Line also provides an index of Growth Persistence,

8   which is a measurement of the consistency of relative price

9   growth. Using each year of the past 10 (or fewer) as a base,

10   a count is made of the number of subsequent years in which

11   the relative price of the stock was higher than in the base

12   period. The sum of these counts is the basis for the index.

13   The highest possible sum is 45. These sums are then ordered

14   from 100 down to 5, the top 5% scoring 100, the next 5%, 95

15   and so on. Observe that PECO's growth persistence index of

16   10 is slightly higher but relatively similar to the barometer

17   group average of 5.

18   The next price measurement on Schedule 2 is Value Line's

19   Beta. The Beta is a measure of the sensitivity of a stock's

20   price to overall market fluctuations. A Beta of 1.50

21   indicates that a stock will normally rise (or fall) 15% for

22   each 10% rise (or fall) in the New York Stock Exchange

23   Composite Index. A beta of .50 indicates a stock tends to

24   rise (or fall) half as much as a rise (or fall) in the New

25   York Stock Exchange.

26   PECO has a Beta of .60; the barometer group average Beta

27   is .61. PECO's stock price, therefore, has a tendency to

28   experience fluctuation similar to the average of the baro-

1 meter group.

2 Having examined Value Line's price behavior

3 measurements, it can be readily observed that the barometer

4 group companies are similar in risk to PECO. Value Line

5 also, however, factors financial condition and quality of

6 earnings into the safety rank. On Schedule 2 I have

7 presented the capital structures for PECO and each of the

8 barometer group companies. I have used capital structure as

9 one indicator of financial condition. Observe that the

10 average capital structure of the barometer group is

11 essentially the same as that of Philadelphia Electric

12 Company.

13 Another indicator of a company's financial condition is

14 its interest coverage. Observe on Schedule 2 that PECO's

15 pre-tax coverage was 3.0 times, including AFUDC, and 2.1

16 times, excluding AFUDC, at June 30, 1985. The barometer

17 group of four electrics experienced a somewhat lower but

18 similar average pre-tax coverages of 2.6 and 1.8 times,

19 including and excluding AFUDC, respectively.

20 Finally, on Schedule 2, I have provided the percentage

21 of AFUDC to net earnings, which is a measurement of earnings

22 quality that is considered essential to Value Line's safety

23 ranking process. PECO has a somewhat inferior but similar

24 quality of earnings versus the average of the four electrics

25 (92.0 v. 82.8 percent).

26 The price measurements shown on Schedule 2 are

27 indicative of what has occurred over the past 5 to 10 years.

1   The capital structure, AFUDC as a percent of net earnings and

2   pre-tax interest coverages are ratios that indicate the

3   position the companies will be in in the near term, and

4   perhaps long term, future. I believe the information

5   contained in Schedule 2 supports Value Line's Safety Rank as

6   a reasonable criteria for selecting similar risk companies.

7

8   Rate of Return on Common Equity

9   Q. **WHAT METHODS DID YOU EMPLOY TO ESTIMATE THE REQUIRED RATE OF**

10   **RETURN ON COMMON EQUITY FOR PHILADELPHIA ELECTRIC COMPANY?**

11   A. I began my estimation process by first applying the DCF

12   method to PECO and my selected barometer group of four

13   electric companies. I then applied the risk spread method to

14   more accurately reflect the differences that exist between

15   PECO and the barometer group. I will provide a detailed

16   description of each of my common equity return rate

17   estimation methodologies directly. Before doing so I believe

18   it is necessary to discuss the trend of certain key ratios

19   that directly affect the required rate of return on common

20   equity. Those ratios are as follows:

21   . Market Price Index

22   . Dividend Yield

23   . Compound Dividend Growth Rate

24   . Dividend Payout Ratio

25

26   Q. **OF WHAT IMPORTANCE IS THE MARKET PRICE INDEX?**

A.   The market price index is calculated by dividing the average
of each year's high and low stock price by a base year's
average high-low stock price and multiplying the result by an
adjustment factor. The adjustment factor adjusts for stock
splits. Once calculated the market price index can be
plotted so that the trend can more easily be observed. Since
stock price is generally thought of as the common denominator
in return on equity estimation methods, its trend indicates
the direction of the required rate of return on common
equity. I have provided the market price index trend lines
for PECO, the four electrics, and the Moody's 24 on Schedule
3, Page 1. The raw data used in the plot is shown on page 2
of Schedule 3. The base year is 1974. Please observe the
continually widening gap between the trend line of the
Moody's 24 and the trend lines of PECO and the barometer
group of four electric companies. One can clearly see that
declining construction and falling interest rates have
resulted in considerable improvement since 1981 for the
electric utility industry as represented by the Moody's 24
Public Utilities. PECO and each of the four electrics have
not been so fortunate. Their construction programs have not
yet been completed. In addition, these companies are
experiencing problems associated with conversions, phase-ins,
excess capacity and/or possible cancellations. Such
expectations induce fear of low or negative dividend growth
prospectively. The result is a negative effect on the market
value of the stock. Fortunately, for PECO and each of the

1   four electrics, interest rates have declined in recent years.

2   As can be observed from the graph depicted on page 1 of

3   Schedule 3, investors have responded in a positive manner to

4   declining interest rates, despite all the unsolved

5   construction problems.

6   The market price index is useful for at least one other

7   purpose. It clearly indicates the comparability of PECO to

8   the barometer group of four electrics, which is supportive of

9   my selection criteria.

10 Q. **WHAT IS THE SIGNIFICANCE OF THE REMAINING THREE RATIOS:**

11   **DIVIDEND YIELD, COMPOUND DIVIDEND GROWTH RATE AND DIVIDEND**

12   **PAYOUT RATIO?**

13 A. I have depicted the trends of the dividend yield, the moving

14   average compound dividend growth rate and the dividend payout

15   ratio of PECO, the Four Electrics and the Moody's 24 on

16   Schedule 4, Pages 1-6. All three ratios provide insight into

17   the dividend policy. Knowledge of a firm's past long-term

18   dividend policy is essential to the rate of return estimation

19   process.

20   On Schedule 4, Page 1, I have provided the trend lines

21   for the dividend yield for the past ten-years, 1975-1984, and

22   spot at December 17, 1985. Page 2 of Schedule 4 contains the

23   dividend yields used to create the graph on Page 1. The

24   dividend yield is important because it is part of the general

25   DCF equation: $k = D/P + G$. The D/P is the dividend per share

26   divided by the market price per share, i.e., the dividend

27   yield.

1   The direction of dividend yields for electric utilities,

2 as represented by the Moody's 24, is clearly downward. This

3 downward movement is consistent with the upward movement of

4 the market price index observed on Schedule 3. The

5 explanation of this inverse downward movement is identical to

6 that of my market price index, i.e., declining construction

7 programs and lower interest rates. Unfortunately, for PECO

8 and the barometer group companies, yields remain high, which

9 is consistent with the problems associated with their ongoing

10 heavy construction programs, i.e., phase-ins, expectations of

11 excess capacity adjustments and/or possible regulatory

12 problems associated with plant cancellations. The situation

13 was extreme in early to mid-1984. Panic selling of stock of

14 companies with nuclear construction occurred. The result was

15 sharp declines in stock prices and a sharp rise in dividend

16 yields. The panic selling abated shortly thereafter and

17 prices and dividend yields of those utility stocks have

18 trended toward more realistic values. The dividend yields

19 are currently reflecting, in my opinion, the near-term risks.

20   On page 3 of Schedule 4, I have depicted the trend of

21 the moving average compound growth rate of dividends for

22 PECO, the barometer group of four electrics and the Moody's

23 24 Public Utilities. The raw data used to create the graphs

24 is shown on Schedule 4, page 4.

25   The dividend growth rate makes up the second portion of

26 the DCF method equation, "G". The ten-year moving average

27 flattens out wide variations that tend to exist in a shorter

1   period analysis. I believe it is also important to observe

2   shorter period trend lines in order to obtain a firmer grasp

3   of what may occur prospectively. The combination of the long

4   and short-run trends, together with cognizance of future

5   expectations, arms the analyst with the knowledge necessary

6   to exercise informed judgment that is essential in the

7   estimation of a prospective growth rate to be used in the DCF

8   calculation.

9   Observe from the graphs shown on page 3 of Schedule 4

10 that PECO and the barometer group have underperformed the

11 industry average. This behavior is consistent with the

12 fact that PECO and the barometer group have experienced

13 higher relative dividend yields than the industry average.

14 Presently, at December 17, 1985, PECO's dividend yield was

15 12.8 percent. The average dividend yield for the barometer

16 group and the Moody's 24 at December 17, 1985 was 11.2 and

17 8.8 percent, respectively (See Schedule 4, Page 2). The

18 clear message is that investors are expressing a great degree

19 of uncertainty relative to PECO's dividend growth prospects.

20 There is little doubt that investors expect a lower growth

21 rate for PECO than for the barometer group and/or the Moody's

22 24.

23 Before moving on to the common equity return rate

24 estimation methods, I would like to review one more important

25 ratio relative to the dividend policy. On page 5 of Schedule

26 4, I have provided the 1975 - 1984 dividend payout ratio for

27 PECO, the barometer group of four electrics, and the Moody's

24 Public Utilities. Both PECO and the barometer group have experienced much higher payout ratios than the electric industry average. The reason for this phenomenon is that both PECO and the barometer group have been paying out a greater percentage of their earnings as dividends primarily because of their ongoing construction programs. The higher payout ratios are necessary to maintain a high yield to insure a certain degree of integrity necessary for capital attraction. It is clear that investors are requiring their cash up front in the form of high dividend yield as opposed to expectations of prospective growth.

To summarize PECO's past dividend policy, the company has had a relatively high dividend yield in comparison to the electric industry. In turn, the growth in dividends has been relatively lower than that of the industry. To maintain capital attraction, PECO has had to pay out a higher percentage of its earnings in dividends. PECO's current dividend yield is 12.8 percent which is the highest in the electric utiity industry. Whereas it is expected that PECO will maintain its dividend through adjustments to the payout ratio, the company's high yield relates to very low expectations of dividend growth in the next few years. Also, one cannot rule out the possibility of a dividend cut. In recent years we have seen major electric utilities cut their dividends as a result of problems associated with nuclear power plant cost overruns and cancellations. According to Salomon Brothers, Inc. and Value Line, Limerick Unit No. 2 is still a cancellation candidate.

1 Q. **WOULD YOU NOW PROVIDE AN EXPLANATION OF EACH OF YOUR COMMON**

2 **EQUITY ESTIMATION METHODS, THE DETAILS OF YOUR INPUTS, AND**

3 **THE RESULTANT INDICATED REQUIRED RATE OF RETURN ON COMMON**

4 **EQUITY FOR PHILADELPHIA ELECTRIC COMPANY?**

5 A. Yes. The first common equity estimation method that I

6 employed was the DCF method. Pure DCF theory requires that

7 the indicated dividend be divided by the current stock price,

8 plus an expected dividend growth rate, represented by the

9 formula:

10 $$K = \frac{D_1}{P_0} + G$$

11

12 where: K = indicated rate of return on common equity

13 D_1 = indicated dividend per share

14 P_0 = current stock price per share

15 G = expected dividend growth rate

16 There are several variations of the above formula,

17 particularly in the time periods used in the inputs. In the

18 past few years, utility stocks have experienced variations

19 that have necessitated the use of other than current (spot)

20 yield in the formula. In the past I have used some variation

21 of spot, 6-month and/or 12-month yields in the DCF formula,

22 for jurisdictional electric utilities depending largely upon

23 my judgment relative to the trend in the market place.

24 In this case, I have used an average of spot and 6-month

25 dividend yields to compute the DCF. Use of a longer period

26 yield, at this point in time, may not adequately reflect the

27 downward trend of dividend yields that I previously discussed

28 (see Schedule 4, Pages 1 and 2).

1   I have provided a summary of my recent dividend yield
2 analysis on Schedule 5, Page 1. Observe that at December 17,
3 1985, both PECO's and the Barometer Group's dividend yields
4 of 12.8 and 11.2 percent, respectively, are lower than the 6-
5 months average of 14.7 and 12.2, respectively. The 12-months
6 average ended November 30, 1985 are identical to the 6-months
7 average for both PECO and the barometer group. The average
8 of the spot December 17, 1985 yield, plus 6 months-ended
9 November 30, 1985 for PECO and the Barometer Group is 13.7
10 and 11.7 percent, respectively. I have given equal weight to
11 spot data and historic data. The weight given to spot data
12 in this case is reflective of the downward trend of dividend
13 yields. The equal weight given to the higher six month
14 average gives recognition to the possibility of things not
15 turning out quite as expected.
16   On Page 2 of Schedule 5, I have provided growth rate
17 estimates from sources available to me. Growth estimates for
18 PECO's dividends range from 1 to 2 percent, far below the
19 recently experienced five and ten-year historic growth rate
20 of 4 and 3 percent, respectively. The reason for such low
21 growth estimates is clear. Based on the sources available to
22 me, investors can expect earnings growth ranging from -2.3 to
23 2.0 percent. The midpoint is less than zero. Low earnings
24 growth estimates generally indicate low dividend growth
25 estimates. For purposes of the DCF calculation, however, I
26 will use the optimistic range of 1.0 to 2.0 percent. For
27 the barometer group I will use .9-2.5

1 percent, recognizing of course, the unavailability of Merrill

2 Lynch data on Duquesne Light.

3 Q. **WHAT IS THE END RESULT OF YOUR DCF ANALYSIS?**

4 A. The results of my DCF analysis are contained on Schedule 5,

5 Page 3. The DCF indicated required rate of return on common

6 equity range for PECO is 14.7 to 15.7 percent. The range for

7 the barometer group of four electrics is between 12.6 and

8 14.1 percent.

9

10 Q. **THE SECOND METHOD EMPLOYED WAS THE RISK SPREAD METHOD. WOULD**

11 **YOU PLEASE EXPLAIN THE THEORY AND APPLICATION OF THE METHOD?**

12 A. Yes. The theory behind the method is that risk can be more

13 accurately quantified by computing the spread that exists

14 between a firm and other companies. That quantification can

15 be approximated by comparing the yield to maturity of a

16 company's seasoned first mortgage bond to another company's

17 bond with a similar coupon, maturity date and call feature.

18 That spread is then added to the barometer group DCF results

19 to arrive at the indicated rate of return on common equity.

20   I have provided a summary of my risk spread analysis on

21 Schedule 6, Page 1. The average risk spread that was added

22 to the 12.6-14.2 percent DCF result range of the barometer

23 group of four electrics is approximately -.1 percent. The

24 resultant risk spread method indicated rate of return is in

25 the range of 12.5-14.1 percent.

26

27

1   The summary of my risk spread computations are found on

2   Schedule 6, Page 2. As can be observed, both Standard and

3   Poor's and Moody's calculate yields to maturity that

4   generally result in a negative spread between PECO and the

5   average for the four electrics. Those yields to maturity

6   together with other pertinent information are contained in

7   Schedule 6, Pages 3 and 4. Page 3 of Schedule 6 contains the

8   yields, spreads and other pertinent information that was

9   extracted from the S&P Bond Guide. Page 4 contains the

10   yields, spreads and other pertinent information extracted

11   from Moody's Bond Record. It can be observed that the

12   yields-to-maturity often differ from one agency to another.

13   The reason for this phenomenon is that each agency utilizes a

14   different pricing service to arrive at bid prices. I have

15   taken note of these imperfections. That is why I provided

16   the spreads based on the yield-to-maturity of both agencies

17   and averaged them. Also observe that I calculated the

18   current and the six-month average spreads. I then averaged

19   those spreads on page 2. The use of the average of the spot

20   and the six-month average is consistent with the yield time

21   period used in my DCF analysis.

22

23   Q. WHAT IS THE RANGE OF THE INDICATED RATE OF RETURN ON COMMON

24   EQUITY FOR PHILADELPHIA ELECTRIC COMPANY?

25   A. The range of the indicated rate of return on common equity

26   for Philadelphia Electric Company is between 12.5 and 15.7

27   percent. This range

1   is based upon the results of my DCF and risk spread analyses.

2   Those statistics are summarized as follows:

3   <u>Range (%)</u>

4   DCF

5   PECO   14.7-15.7

6   Four Electrics   12.6-14.1

7   Risk Spread   12.7-14.2

8   Please observe that the PECO specific DCF result is in

9   the higher segment of the range. I believe the DCF result

10   should be viewed as a more credible method than the risk

11   spread. There are at least two important indicators relative

12   to the direction of capital cost rates in the risk spread

13   method that should not be ignored. The first indicator is

14   the fact that interest rates have fallen significantly. The

15   second indicator is the fact that PECO's yield to maturity

16   for a similar bond is lower than the average of the barometer

17   group of four electrics. A lower yield to maturity suggests

18   lower relative risk. When the indication of lower relative

19   risk and the 12.6-14.2 percent DCF result for the barometer

20   group of four electrics are viewed with PECO's 14.7-15.7 DCF

21   results, one begins to question the inputs to PECO's DCF

22   calculation. I believe the answer lies in the 14.7 percent

23   six-month average dividend yield to which 50 percent

24   weighting was given. If the spot yield of 12.8 percent was

25   used with the mid-point dividend growth rate of 1.5 percent,

26   the result would be 14.3 percent. There are many possible

27   combinations one could consider. Ultimately, judgment must

1   enter the determination of a common equity return rate
2   calculation at some point. Based upon my judgement, the
3   the indicated required rate of return on common equity for
4   Philadelphia Electric company is between 14.0-15.0 percent.
5
6   Q.   WHAT TESTS HAVE YOU PERFORMED THAT INDICATES THAT YOUR
7   JUDGMENTAL 14.0-15.0 PERCENT RANGE IS SUFFICIENT TO PROVIDE
8   RESPONDENT WITH AN OPPORTUNITY TO MAINTAIN ITS CREDIT RATING
9   NECESSARY TO CAPITAL ATTRACTION?
10 A.   Please observe the calculation of pre-tax opportunity rate
11   interest coverage on Schedule 7. My 14.0-15.0 common equity
12   return rate range results in a pre-tax opportunity rate
13   coverage range of 3.0-3.1 times. In calculating the
14   opportunity rate interest coverage I assumed a 40 percent
15   effective tax rate. At June 30, 1985 PECO had a 41 percent
16   effective tax rate. The electric industry composite median
17   tax rate at June 30, 1985 was 39 percent. Therefore, a 40
18   percent tax rate fits well within the range of current
19   effective tax rates.
20   The 3.0-3.1 times coverage is at the top to slightly
21   exceeding PECO's five-year and June 30, 1985 pre-tax
22   coverages of 2.5 and 3.0 times, respectively. PECO's 3.0-3.1
23   opportunity rate coverage is at the lower end of the industry
24   average spot and historic coverage range of 3.3 and 3.0
25   times, respectively.

1   Since interest coverage is a major determining factor

2 relative to capital attraction, I believe my opportunity rate

3 pre-tax interest coverage range of 3.0-3.1 times indicates

4 that my recommended 14.0-15.0 percent rate of return on

5 common equity range is sufficient to provide the company an

6 opportunity to maintain the credit and provide for capital

7 attraction.

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

10   A.   Yes, it does.

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PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

Philadelphia Electric Company (Docket No. R-850152)

Appendix A

to

Direct Testimony

of

Andrew R. O'Donnell

Concerning

Fair Rate of Return

Andrew R. O'Donnell
Educational and Professional Background

Current: <u>Fixed Utility Financial Analyst</u>, Pennsylvania
Public Utility Commission. Responsible for
advising the Commission through direct testimony as
to the required rate of return in fixed utility
rate cases. I have worked in the Rate of Return
Section since March, 1976.

Previous: <u>Assistant Controller</u>, Harrisburg Dairies, Inc. and
Subsidiaries, 1973.

<u>Accountant</u>, Modjeski and Masters, Consulting
Engineers, 1974.

<u>Accountant</u>, Pa. Dept. of Agriculture, 1974-1976.

Education: <u>Bachelor of Science</u>, Major in Accounting,
Elizabethtown College, Elizabethtown, PA, 1973.

<u>Associate in Science</u>, Business Administration,
Harrisburg Area Community College, Harrisburg, PA,
1971.

<u>OTHER EDUCATION:</u>

Shippensburg State College, Graduate School of
Business Administration, <u>Managerial Finance</u>, 1980.
Studies focused primarily on the use of the Capital
Asset Pricing Model in the formation of financial
policy.

Pennsylvania State University, Continuing Education
Program, <u>Report Writing Seminar</u>, 1979.

University of Toronto, Graduate School of Business
Administration, <u>Workshop in Public Utility</u>
<u>Management</u>, 1978. Studies included the DCF Theory
and the use of the Capital Asset Pricing Model in
the determination of required rate of return.

Michigan State University, Graduate School of
Business Administration, <u>Annual Regulatory Studies</u>
<u>Program</u>, 1976.

Pennsylvania State University, Continuing Education
Program, <u>Regulatory Studies Program</u>, 1976.

Franklin and Marshall College, Lancaster, PA,
various <u>Accounting, Finance and Management</u> courses,
1972.

Rate of Return Testimony: Before the Pennsylvania Public Utility
                Commission --

    R-78010545, Peoples Natural Gas Company

    R-78040598, Equitable Gas Company

    R-78120724, Columbia Gas Company

    R-79030781, Philadelphia Electric Co., Gas Operations

    R-79040785, Philadelphia Electric Co., Steam Heat Operations

    R-79100972, Apollo Gas Company

    R-79100981, Carnegie Natural Gas Company.

    R-79090956, National Fuel Gas Distribution Corporation

    R-80041169, Equitable Gas Company

    R-80061221, Western Pa. Water Co., Pittsburgh Suburban Dist.

    R-80061743, South Penn Gas Company, Shippensburg District

    R-80111375, North Penn Gas Company

    R-811488, UGI Corporation - Gas Utility Division

    R-811615, T. W. Phillips Gas and Oil Company

    R-821966, Chartiers Natural Gas Company, Inc.

    R-821906, Peoples Natural Gas Company

    R-822133, Equitable Gas Company

    R-822169, Pennsylvania Power & Light Company

    R-832315, Peoples Natural Gas Company

    R-832409, Pennsylvania Power Company

    R-832448, R-832449, R-832450, South Penn Gas Company

    R-842651, Pennsylvania Power & Light Company

    R-842632, West Penn Power Company

    R-842770, Metropolitan Edison Company

    R-842771, Pennsylvania Electric Company

    R-850021, Duquesne Light Company

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

Philadelphia Electric Company (Docket No. R-850152)

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Public Utility Commission

Exhibit to the

Direct Testimony

of

Andrew R. O'Donnell

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JAN 27 1986

Concerning

Fair Rate of Return

Philadelphia Electric Company
Index to Exhibit ARO-1

PHILADELPHIA ELECTRIC COMPANY
SUMMARY OF FAIR RATE OF RETURN RECOMMENDATION
JUNE 30, 1986 AND PROSPECTIVE

	CAPITAL STRUCTURE RATIO (%)	REQUIRED COST/ RETURN RATE (%)	WEIGHTED AVERAGE REQUIRED COST/ RETURN RATE (%)
LONG-TERM DEBT	50.70	10.84	5.50
PREFERRED STOCK	10.80	10.54	1.14
COMMON EQUITY	38.50	14.0-15.0	5.39-5.78
TOTAL	100.00		12.03-12.42

PHILADELPHIA ELECTRIC COMPANY
THE BAROMETER GROUP OF FOUR ELECTRICS
COMPARATIVE STATISTICS

| | SAFETY RANK | PRICE STABILITY INDEX | PRICE GROWTH PERSIS- TENCE INDEX | BETA | CAPITAL STRUCTURE(1) | | | PRE-TAX INTEREST COVERAGE INCLUDING AFUDC(1) (TIMES) | PRE-TAX INTEREST COVERAGE EXCLUDING AFUDC(1) (TIMES) | AFUDC AS A PERCENT OF NET EARN- INGS(1) (%) |
					LTD (%)	PS (%)	CEQ (%)			
PHILA. ELECTRIC	4	100	10	0.60	51.0	11.0	38.0	3.0	2.1	92.0
DAYTON P&L	4	85	5	0.65	47.0	11.0	42.0	2.9	2.3	66.0
DUQUESNE LIGHT	4	100	5	0.60	51.0	10.0	39.0	2.6	2.0	91.0
OHIO EDISON	4	85	5	0.65	49.0	12.0	39.0	2.1	1.4	65.0
TOLEDO EDISON	4	100	5	0.55	50.0	14.0	36.0	2.3	1.4	109.0
AVERAGE	4	93	5	0.61	49.3	11.8	39.0	2.5	1.8	82.8

NOTES: 1. AS OF JUNE 30, 1985

SOURCE: THE VALUE LINE INVESTMENT SURVEY
ELECTRIC UTILITY QUALITY MEASUREMENTS, SALOMON BROS., INC., OCTOBER 14, 1985

PHILADELPHIA ELECTRIC COMPANY VS.
THE BAROMETER GROUP OF FOUR ELECTRICS AND THE MOODY'S 24

PECO   FOUR ELECTRICS   MOODY'S 24

MARKET PRICE INDEX (1974=1.00)

1974 THROUGH 1984 AND SPOT AT DECEMBER 17, 1985
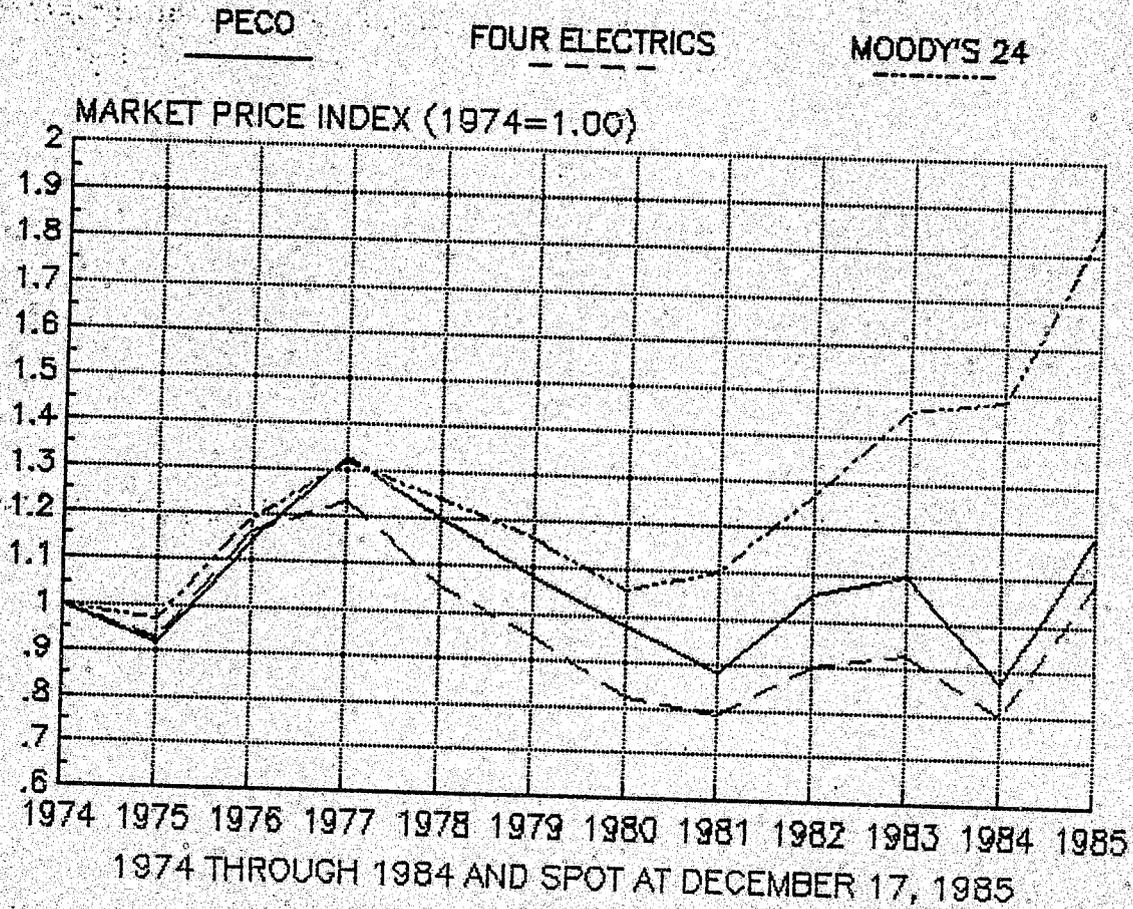
PHILADELPHIA ELECTRIC COMPANY VS.
THE BAROMETER GROUP OF FOUR ELECTRICS AND THE MOODY'S 24
1974 THROUGH 1984 AND SPOT AT DECEMBER 17, 1985
MARKET PRICE INDEX (1974=1.00)

	PECO	FOUR ELECTRICS	MOODY'S 24
1974	1.00	1.00	1.00
1975	0.92	0.93	0.97
1976	1.14	1.16	1.19
1977	1.33	1.23	1.32
1978	1.20	1.06	1.24
1979	1.08	0.95	1.16
1980	0.98	0.82	1.06
1981	0.88	0.79	1.10
1982	1.06	0.90	1.27
1983	1.10	0.93	1.46
1984	0.87	0.80	1.48
12/17/85	1.19	1.09	1.86

SOURCE: STANDARD & POOR'S COMPUSTAT DATA BASE
WALL STREET JOURNAL, DECEMBER 18, 1985

PHILADELPHIA ELECTRIC COMPANY VS.
THE BAROMETER GROUP OF FOUR ELECTRICS AND THE MOODY'S 24

PECO   FOUR ELECTRICS   MOODY'S 24

DIVIDEND YIELD

1975 THROUGH 1984 AND SPOT AT DECEMBER 17, 1985
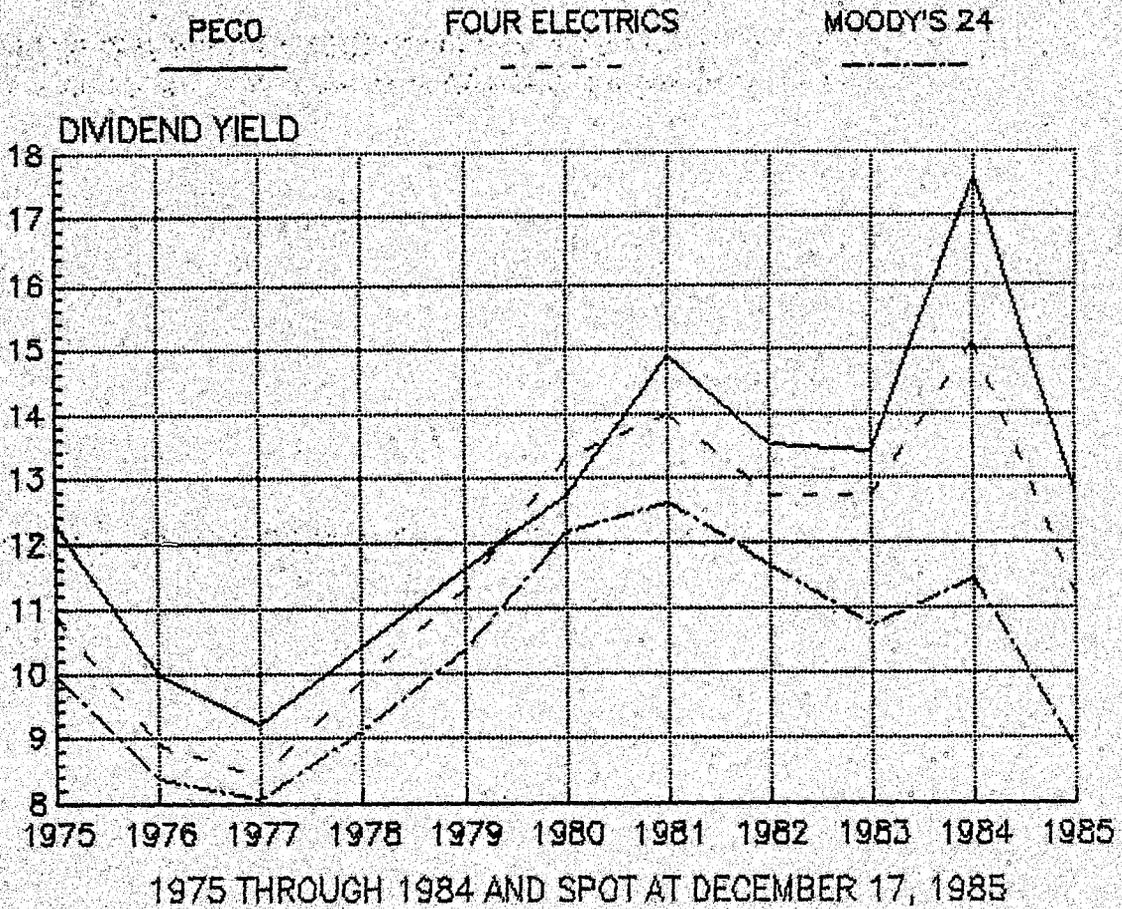
PHILADELPHIA ELECTRIC COMPANY VS.
THE BAROMETER GROUP OF FOUR ELECTRICS
AND THE MOODY'S 24 PUBLIC UTILITIES
DIVIDEND YIELD
1975 - 1984 AND SPOT AT DECEMBER 17, 1985

	PECO	FOUR ELECTRICS	MOODY'S 24
1975	12.3	10.9	10.0
1976	10.0	8.9	8.4
1977	9.2	8.4	8.1
1978	10.4	9.9	9.1
1979	11.6	11.3	10.4
1980	12.7	13.3	12.2
1981	14.9	14.0	12.6
1982	13.5	12.7	11.7
1983	13.4	12.7	10.7
1984	17.6	15.1	11.5
12/17/85	12.8	11.2	8.8

SOURCE: S&P COMPUSTAT DATA BASE

PHILADELPHIA ELECTRIC COMPANY VS.
THE BAROMETER GROUP OF FOUR ELECTRICS AND THE MOODY'S 24

FOUR ELECTRICS   PECO   MOODY'S 24

FIVE—YEAR COMPOUND DIVIDEND GROWTH RATE — MOVING AVERAGE

FOUR ELECTRICS   PECO   MOODY'S 24

TEN—YEAR COMPOUND DIVIDEND GROWTH RATE — MOVING AVERAGE

PHILADELPHIA ELECTRIC COMPANY,
THE BAROMETER GROUP OF FOUR ELECTRICS,
AND THE MOODY'S 24 PUBLIC UTILITIES
COMPOUND DIVIDEND GROWTH RATE
FIVE AND TEN-YEAR MOVING AVERAGE

	YEAR	PHILA. ELECTRIC	FOUR ELECTRICS	MOODY'S 24
FIVE-YEAR:	1975	-0.09	1.86	2.29
	1976	0.19	1.55	2.63
	1977	1.56	1.24	3.33
	1978	1.91	1.16	3.72
	1979	1.88	1.27	5.10
	1980	1.90	1.08	5.71
	1981	3.00	1.54	6.03
	1982	3.21	2.13	5.92
	1983	3.32	2.56	5.88
	1984	4.09	2.25	5.42
TEN-YEAR:	1975	1.32	4.04	3.57
	1976	1.05	3.12	3.20
	1977	0.93	2.39	3.27
	1978	0.93	1.86	3.30
	1979	0.90	1.65	3.64
	1980	0.90	1.47	3.97
	1981	1.59	1.54	4.37
	1982	2.38	1.68	4.72
	1983	2.61	1.86	4.88
	1984	2.98	1.76	5.32

SOURCE: STANDARD & POOR'S COMPUSTAT DATA BASE

PHILADELPHIA ELECTRIC COMPANY VS.
THE BAROMETER GROUP OF FOUR ELECTRICS AND THE MOODY'S 24

PECO   FOUR ELECTRICS   MOODY'S 24

DIVIDEND PAYOUT RATIO
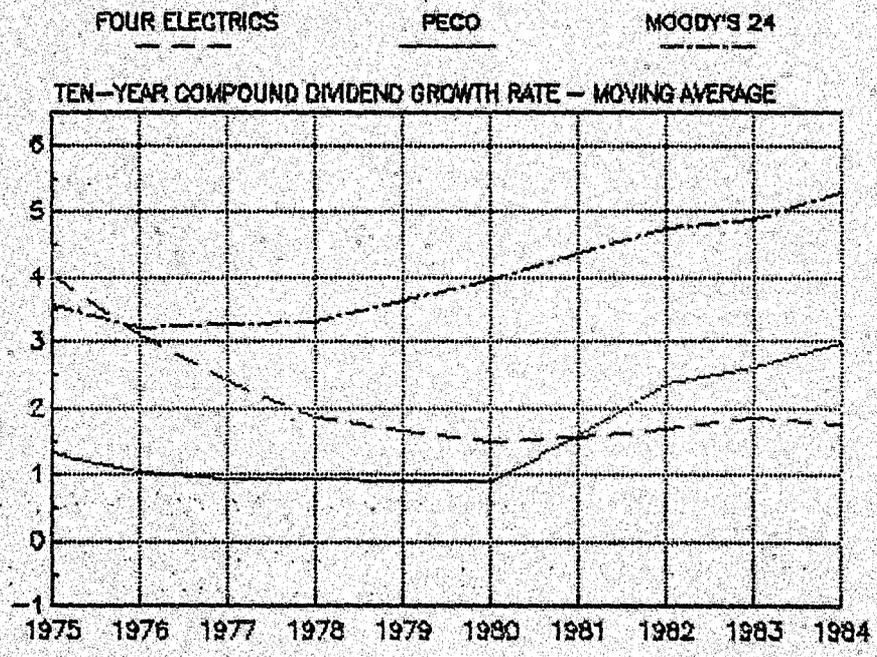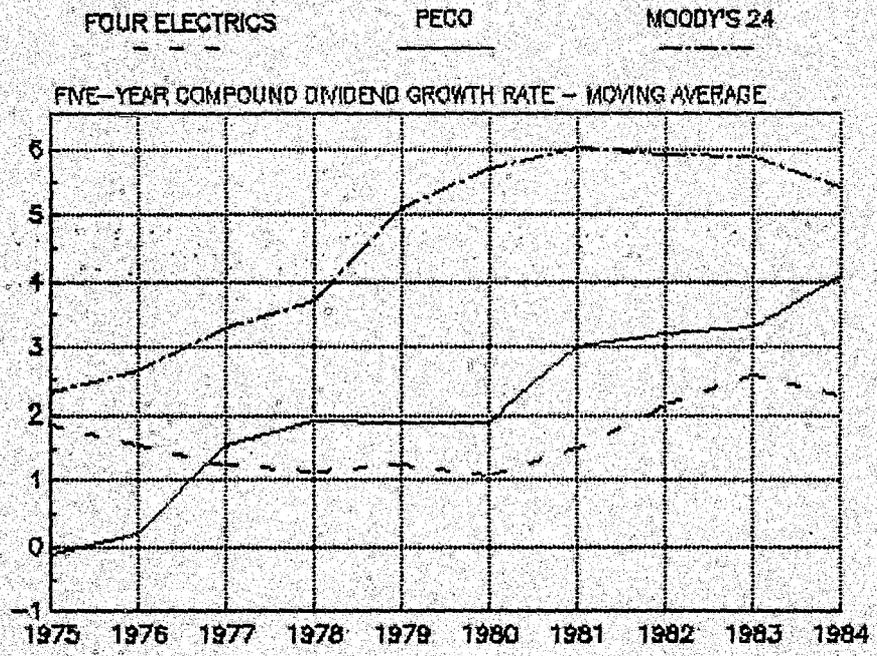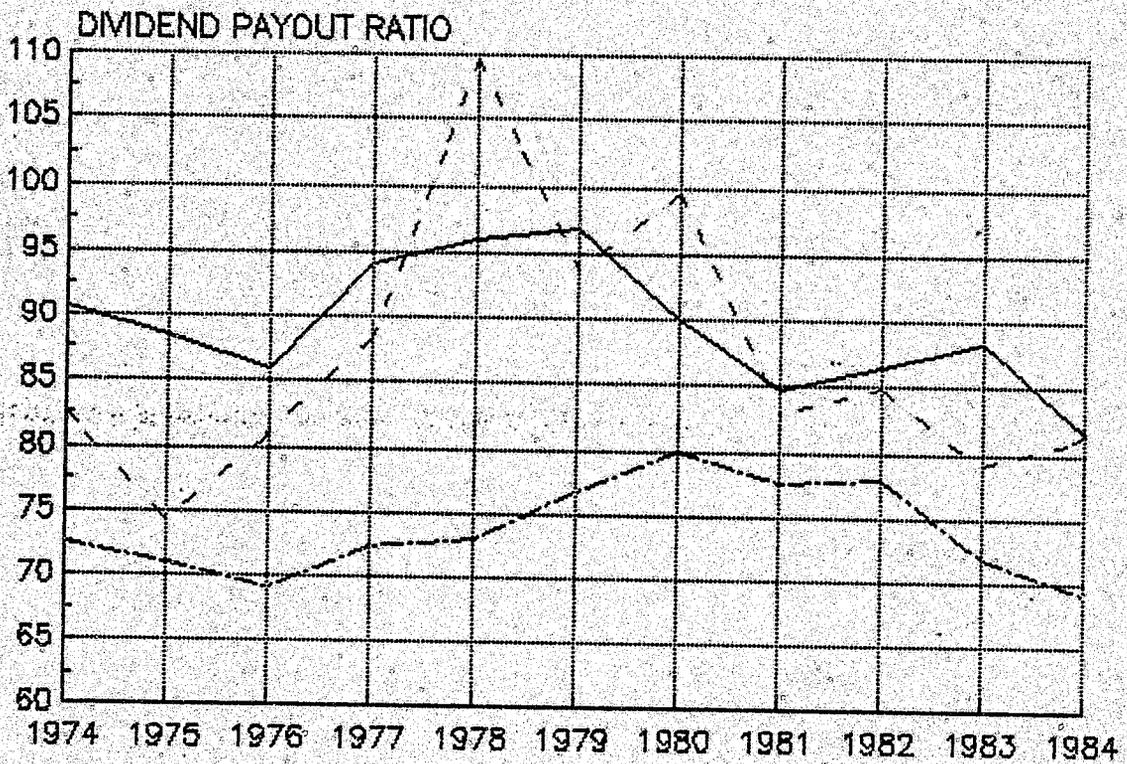
PHILADELPHIA ELECTRIC COMPANY,
THE BAROMETER GROUP OF FOUR ELECTRICS,
AND THE MOODY'S 24 PUBLIC UTILITIES
DIVIDEND PAYOUT RATIO
1975 - 1984

	PECO	FOUR ELECTRICS	MOODY'S 24
1975	88.45	74.26	71.09
1976	85.74	81.17	69.05
1977	94.09	88.21	72.36
1978	95.99	109.69	73.01
1979	96.85	93.68	76.78
1980	89.98	99.66	80.04
1981	84.68	82.94	77.55
1982	86.31	84.82	77.99
1983	88.15	79.05	71.91
1984	81.50	81.28	69.20

SOURCE: S&P COMPUSTAT DATA BASE

PHILADELPHIA ELECTRIC COMPANY
AND THE BAROMETER GROUP OF FOUR ELECTRICS
SUMMARY OF DIVIDEND YIELD ANALYSIS

	SPOT AT DEC. 17, 1985 (%)	6-MONTHS ENDED NOV. 30, 1985 (%)	12-MONTHS ENDED NOV. 30, 1985 (%)	AVERAGE OF 12/17/85 SPOT PLUS 6-MONTH ENDED NOV. 30, 1985 (%)	AVERAGE OF 12/17/85 SPOT PLUS 12-MONTH ENDED NOV. 30, 1985 (%)
PHILADELPHIA ELECTRIC	12.8	14.7	14.7	13.7	13.7
FOUR ELECTRICS	11.2	12.2	12.2	11.7	11.7

SOURCE: STANDARD & POOR'S STOCK GUIDE (JAN. 1985 - DEC. 1985)
WALL STREET JOURNAL, DECEMBER 18, 1985

PHILADELPHIA ELECTRIC COMPANY
BAROMETER GROUP OF FOUR ELECTRICS
GROWTH RATE ANALYSIS

	VALUE LINE'S '82 –'84 '88 –'90		SALOMON BROS. PROJECTED 5-YEAR	MERRILL LYNCH 5-YEAR	
	EPS (%)	DPS (%)	DPS (%)	EPS (%)	DPS (%)
PHILA. ELECTRIC	2.0	2.0	1.0	-2.3	1.8
	=====	=====	=====	=====	=====
DAYTON P&L	0.5	3.5	3.0	4.2	0.0
DUQUESNE LIGHT	3.5	2.5	1.5	N/A	N/A
OHIO EDISON	2.0	2.0	3.0	-2.0	1.8
TOLEDO EDISON	2.0	2.0	2.0	0.4	0.9
AVERAGE	2.0	2.5	2.4	0.9	0.9
	=====	=====	=====	=====	=====

SOURCE: THE VALUE LINE INVESTMENT SURVEY, SEPTEMBRT 27, 1985
(EAST) AND OCTOBER 25, 1985 (CENTRAL).
ELECTRIC UTILITY MONTHLY, SALOMON BROS., INC., DEC. 18, 1985.
QUANTITATIVE ANALYSIS, MERRILL LYNCH, SEPTEMBER, 1985

PHILADELPHIA ELECTRIC COMPANY
BAROMETER GROUP OF FOUR ELECTRICS
SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS

	DIVIDEND YIELD (%)	GROWTH RATE (%)	DCF (%)
PHILA. ELECTRIC	13.7	1.0-2.0	14.7-15.7
FOUR ELECTRICS	11.7	.9-2.5	12.6-14.2

SOURCE: SCHEDULE 5, PAGE 1 (YIELD)
           SCHEDULE 5, PAGE 2 (GROWTH)

PHILADELPHIA ELECTRIC COMPANY
SUMMARY OF RISK SPREAD ANALYSIS

DCF INDICATED RATE OF RETURN ON COMMON EQUITY (FOUR ELECTRICS) (&)	AVERAGE RISK SPREAD (%)	INDICATED RATE OF RETURN ON COMMON EQUITY (PECO) (&)
12.6-14.2	-.1	12.5-14.1
========	========	========

SOURCE: SCHEDULE 5, PAGE 3
          SCHEDULE 6, PAGE 2

PHILADELPHIA ELECTRIC COMPANY
SUMMARY OF RISK SPREAD ANALYSIS
NOVEMBER 30, 1985 AND FOR THE SIX MONTHS-ENDED NOVEMBER 30, 1985

| | STANDARD & POOR'S | | MOODY'S | | |
	NOV. 30, 1985 (%)	SIX MONTH AVERAGE ENDED NOV. 30, 1985 (%)	NOV. 30, 1985 (%)	SIX MONTH AVERAGE ENDED NOV. 30, 1985 (%)	AVERAGE (%)
DAYTON P&L	-0.15	0.13	0.10	-0.10	-0.01
OHIO EDISON	0.10	0.11	0.01	-0.08	0.04
DUQUESNE LIGHT	-0.17	-0.07	0.08	-0.17	-0.08
TOLEDO EDISON	-0.88	-0.56	-0.25	-0.32	-0.50
AVERAGE	-0.28	-0.10	-0.02	-0.17	-0.14

SOURCE: SCHEDULE 6, PAGES 3 AND 4

PHILADELPHIA ELECTRIC COMPANY
RISK SPREAD ANALYSIS - STANDARD & POOR'S

	NOMINAL INTEREST RATE (%)	MATURITY DATE (%)	YIELD TO MATURITY						
COMPANY NAME			NOVEMBER 1985 (%)	OCTOBER 1985 (%)	SEPTEMBER 1985 (%)	AUGUST 1985 (%)	JULY 1985 (%)	JUNE 1985 (%)	6-MONTH AVERAGE (%)
PHILA. ELECTRIC	8.63	2007	11.37	11.99	12.33	11.92	12.38	11.79	11.96
DAYTON P&L	8.50	2007	11.52	11.60	11.90	11.65	12.06	12.25	11.83
DUQUESNE LIGHT	8.38	2007	11.27	11.56	12.19	11.82	12.27	12.01	11.85
OHIO EDISON	8.38	2007	11.54	12.01	12.16	11.92	12.37	12.19	12.03
TOLEDO EDISON	9.65	2006	12.25	11.99	12.12	12.71	13.10	12.94	12.52

SPREAD (PECO - FOUR ELECTRICS)

	NOVEMBER	OCTOBER	SEPTEMBER	AUGUST	JULY	JUNE	6-MONTH AVERAGE
DAYTON P&L	-0.15	0.39	0.43	0.27	0.32	-0.46	0.13
OHIO EDISON	0.10	0.43	0.14	0.10	0.11	-0.22	0.11
DUQUESNE LIGHT	-0.17	-0.02	0.17	0.00	0.01	-0.40	-0.07
TOLEDO EDISON	-0.88	0.00	0.21	-0.79	-0.72	-1.15	-0.56
AVERAGE	-0.28	0.20	0.24	-0.11	-0.07	-0.56	-0.10

SOURCE: S&P BOND GUIDE (JAN. 1985 - DEC. 1985)

PHILADELPHIA ELECTRIC COMPANY
RISK SPREAD ANALYSIS - MOODY'S

	NOMINAL INTEREST RATE	MATURITY DATE	YIELD TO MATURITY						
COMPANY NAME	(%)	(%)	NOVEMBER 1985 (%)	OCTOBER 1985 (%)	SEPTEMBER 1985 (%)	AUGUST 1985 (%)	JULY 1985 (%)	JUNE 1985 (%)	6-MONTH AVERAGE (%)
	-----	-----	-----	-----	-----	-----	-----	-----	-----
PHILA. ELECTRIC	8.63	2007	11.62	11.99	12.33	12.04	12.39	11.79	12.03
DAYTON P&L	8.50	2007	11.52	12.16	12.81	12.13	12.37	11.79	12.13
DUQUESNE LIGHT	8.38	2007	11.61	12.29	12.19	12.39	12.10	12.03	12.10
OHIO EDISON	8.38	2007	11.54	12.19	12.34	12.35	12.53	12.20	12.19
TOLEDO EDISON	9.65	2006	11.87	11.99	12.12	12.61	12.54	12.92	12.34

SPREAD (PECO - FOUR ELECTRICS)

	NOVEMBER 1985	OCTOBER 1985	SEPTEMBER 1985	AUGUST 1985	JULY 1985	JUNE 1985	6-MONTH AVERAGE
DAYTON P&L	0.10	-0.17	-0.48	-0.09	0.02	0.00	-0.10
DUQUESNE LIGHT	0.01	-0.30	0.14	-0.35	0.29	-0.24	-0.08
OHIO EDISON	0.08	-0.20	-0.01	-0.31	-0.14	-0.41	-0.17
TOLEDO EDISON	-0.25	0.00	0.21	-0.57	-0.15	-1.13	-0.32
	-----	-----	-----	-----	-----	-----	-----
AVERAGE	-0.02	-0.17	-0.04	-0.33	0.01	-0.45	-0.16
	=====	=====	=====	=====	=====	=====	=====

SOURCE: MOODY'S BOND RECORD (JAN. 1984 - DEC. 1985)

PHILADELPHIA ELECTRIC COMPANY
OPPORTUNITY RATE INTEREST COVERAGE

	CAPITAL STRUCTURE RATIOS (%)	REQUIRED COST/ RETURN RATES (%)	WEIGHTED REQUIRED COST/ RETURN RATES (%)	EFFECTIVE TAX RATE COMPLEMENT (%)	PRE-TAX RATE OF RETURN (%)
LONG-TERM	50.70	10.84	5.50		5.50
PREFERRED	10.80	10.54	1.14	0.60	1.90
COMMON EQUITY	38.50	14.0-15.0	5.39-5.78	0.60	8.98-9.63
TOTAL	100.00		12.03-12.42		16.38-17.03

PRE-TAX OPPORTUNITY RATE INTEREST COVERAGE: 3.0-3.1 TIMES

PRE-TAX INTEREST COVERAGE:	JUNE 1985	1980-1984 AVERAGE
PECO	3.0	2.5
ELECTRIC COMPOSITE MEDIAN	3.3	3.0

EFFECTIVE TAX RATE:		
PECO	41.0	
ELECTRIC COMPOSITE MEDIAN	39.0	

SOURCE: ELECTRIC UTILITY QUALITY MEASUREMENTS, SALOMON BROS., INC., OCTOBER 14, 1985.