BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission	)	
v.	)	Docket No. R-850152
Philadelphia Electric Company	)	

DIRECT TESTIMONY AND EXHIBITS

OF

DR. JOHN W. WILSON

February 1986

GEC Statement No. 1C

R-850152
2-26-86 Hrg.

J. W. WILSON & ASSOCIATES, INC.
ECONOMIC COUNSEL
THIRD FLOOR • WATERGATE OFFICE BUILDING
2600 VIRGINIA AVENUE, N.W. • WASHINGTON, D.C. 20037

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Testimony of Dr. John W. Wilson

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is John W. Wilson. My address is 2600 Virginia Avenue, N.W., Washington, D.C. 20037.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING DEALING WITH PERFORMANCE INCENTIVES AND PHASE-IN ISSUES?

A. Yes; I have.

Q. WERE YOUR QUALIFICATIONS SET FORTH IN YOUR PREVIOUS TESTIMONY?

A. Yes; they were.

I. Purpose of Testimony

Q. WHAT IS THE PURPOSE OF THE TESTIMONY THAT YOU ARE PRESENTING AT THIS TIME?

A. This volume of my testimony deals with PECO's energy cost recovery (ECR) or fuel adjustment clause (FAC). It is organized in two parts. First, I discuss the concept of interim rate adjustment procedures in utility ratemaking, addressing the strengths and weaknesses of such procedures. Second, I explain in detail how the specific ECR approach which the Commission has prescribed for PECO can be integrated with the fuel cost recovery provisions of the nuclear performance incentive mechanism that I discussed in GEC Statement 1A.

II. ECR Design Considerations

Q. WHAT IS AN ENERGY COST RECOVERY OR FUEL ADJUSTMENT CLAUSE?

A. An energy cost recovery (ECR) or fuel adjustment clause (FAC) is a provision in an electric utility's rate schedule which permits the raising or lowering of electric utility rates in response to changes in the fuel (and, frequently, purchased power) cost element of a utility's complete cost of service, without regard to changes in any of the other cost elements. The essence of ECR or FAC procedures is that attention is focused only on those fuel and purchased power costs which the regulatory commission has already determined require interim attention between complete general rate investigations. By adopting such a procedure, regulatory authorities can permit rate adjustments to be made in response to changes in fuel and purchased power costs, without the necessity for a general investigation of all of the cost elements that would normally be considered in a complete rate case.

Purpose of an ECR

Q. WHAT IS THE GENERAL PURPOSE OF AN ENERGY COST RECOVERY OR FUEL ADJUSTMENT CLAUSE?

A. Electric utility rate levels have traditionally been designed to cover the total cost of service. Rate structures have generally been designed to reflect cost structures, but it has not been the usual practice to earmark any type of revenues to cover specific cost items. Viewed in this light, the purpose of interim adjustment procedures is to help the rate level keep pace with costs, whether they are going up or down.

Q. DO MOST STATES HAVE FAC OR ECR CLAUSES?

A. Yes. Fuel costs are now subject to special rate adjustment procedures in most regulatory jurisdictions because they are such a large fraction of the total cost of electric service, and also because they may be very volatile. Moreover, interim rate adjustments for fuel cost changes are easily implemented, because electric utilities maintain detailed records on fuel purchases, including fuel type (oil, coal, etc.), quantity (barrels, tons, etc.), price, heat content

(Btu's per ton, etc.), and on the electricity generated therefrom. Like the other accounting records of electric utilities, these data are maintained monthly, and they are available typically within fifteen to forty-five days after the end of each month for use in the calculation of interim fuel cost changes.

Q. WHY HAVE REGULATORY COMMISSIONS ADOPTED ECR AND FAC INTERIM RATE ADJUSTMENT PROCEDURES?

A. Before approving a utility's request for a rate increase, commissions generally institute an investigation and hearing into the need for higher rates. This process of investigation, known as a general rate case, involves the presentation of testimony and other evidence by the utility company, arguing its need for the higher rates. Supportive or opposing testimony may also be submitted by the staff of the commission and by intervenors, such as the state's consumer advocate or the utility's large customers.

After all the parties to the rate case have been heard and cross-examined, the commission examines the complete record of the proceeding and renders its decision with respect to the proposed rate change. The

commission may accept the proposed rates as filed; reject them entirely, thus continuing the old rates in effect; or, as is usually the case, permit the utility to increase its rates by some part of the total amount originally requested.

Each general rate investigation is a major undertaking for a public utility commission, and it generally extends over a period of at least several months. The substantial effort and time required for a general rate investigation are needed in part to satisfy the procedural requirement that the interested parties (including the company, the commission staff, and any intervenors who wish to participate) all have adequate opportunity to prepare their evidence and arguments and to be heard. Even more important than the procedural requirements are the scope and complexity of the issues that may be considered in a general rate investigation.

Because of the complexity and length of a complete general rate investigation, new rates, once established, are likely to remain in effect for at least a full year before they are superseded by the final decision that may result from the next succeeding rate investigation. In times of rapidly changing electric

utility costs, the time required for a complete general rate investigation can result in "regulatory lag" -- that is, rates which reflect cost circumstances as perceived at the time of the last rate case but out of line with current cost conditions.

In an effort to reduce the potential for regulatory lag resulting from the time and complexity of complete general rate investigations, interim adjustment procedures have been used to change electric utility rates between complete general rate investigations. The purpose of these interim adjustment procedures is to permit prompt changes in electric utility rate levels, in accord with changes in some of the more volatile cost elements, without the necessity of a complete rate investigation.

Q. HOW DO FAC OR ECR CLAUSES TYPICALLY WORK?

A. The use of these interim rate adjustment procedures involves three steps:

(1) Determination of the specific fuel and purchased power cost elements for which interim adjustments are to be made.

(2) From time to time, as changes in these costs occur, determination of the dollar impact of these cost changes on the total cost of service.

(3) Translation of the total cost change into a rate change of an amount sufficient to effect an appropriate revenue change.

Consequences Of An ECR

Q. WHAT ARE THE PRACTICAL CONSEQUENCES OF IMPLEMENTING INTERIM RATE ADJUSTMENT PROCEDURES SUCH AS AN ECR OR FAC?

A. Because they focus on only some of the many elements in the total cost of service for an electric utility, and because they do not involve any consideration of rate structure, these procedures permit prompt and more frequent adjustment of electric utility rate levels, in response to changes in the costs on which they are focused, than is possible in complete rate investigations. This advantage has the following consequences:

- If the costs subject to interim adjustment are moving in the same direction as the total cost of the utility, then the interim adjustment process helps keep the overall rate level in touch with the total cost level of the utility, and therefore it reduces the needed frequency of complete rate investigations.

- If the interim adjustment process permits regulatory resources to be concentrated on those cost elements that are large, highly volatile, or otherwise important, it conserves resources that would otherwise be used for repeated study in complete rate investigations of other cost elements not requiring such frequent regulatory attention.

- ECR or FAC procedures permit prompt rate adjustment at times when extremely large changes in one or another of the factors determining fuel costs make some interim adjustment in the rate level essential.

Q. WHAT IS THE RELEVANCE OF THESE CONSEQUENCES?

A. The first two consequences of using an interim rate adjustment process are simply procedural benefits. They are not glamorous, but they reduce regulatory lag. The third consequence is relevant only in extreme circumstances such as dramatic fuel price increases. In such circumstances, an immediate rate increase may be essential. Of course, fuel cost circumstances are no longer what they were in the 1970's. Recently, fuel costs have declined. Also, as new generating plants with lower fuel costs come on line, fuel costs will tend to fall. From a cost recovery point of view, the need for ECR or FAC procedures have diminished.

Disadvantages Of An ECR

Q. ARE THERE POSSIBLE DISADVANTAGES OF ECR OR FAC PROCEDURES?

A. Yes. Against the possible advantages of ECR or FAC procedures, there are also a number of disadvantages:

- Since interim rate adjustments are based upon consideration of some, but not all, of the costs of an electric utility, it is possible for the rate adjustments to go in one direction while total costs are moving in the other direction. This result is obviously worse than no interim rate adjustment at all.

- Interim adjustment procedures may be biased to register changes in those cost elements that are most subject to increase, without registering the offsetting factors, such as productivity improvement, that reduce total cost increases. (In principle, the opposite bias could also be found, but in fact it has not appeared to be a problem.)

- Interim adjustments may tend to weaken incentives.

- Interim adjustment procedures may distort incentives.

- Interim adjustment procedures, especially automatic ones, have been and may continue to be subject to abuse by the utilities to which they apply.

When a comprehensive fuel and purchased power cost adjustment procedure is used, the rate level is adjusted to reflect the actual total cost of fuel and purchased power per kilowatt-hour of electricity sold. This arrangement insures that an earmarked part of total revenue will equal fuel and purchased power costs; but this is no guarantee that the total revenues, including the base rates not subjected to interim adjustment, will correspond exactly with the total cost of service. Rates subject to comprehensive fuel and purchased power cost adjustments will move in accord with the total cost of service if and only if the changes in fuel costs -- including those resulting from changes in heat rates and in the loss factor, as well as those resulting from changes in fuel prices and the generation mix -- are the dominant factors in total cost changes. In periods when rapidly changing fuel costs have dominated total cost changes, it has been volatile fuel prices that were the dominant factor, rather than the generation mix or other aspects of total fuel costs. This suggests that comprehensive fuel adjustments confer little or no advantage over fuel price adjustments in the most important circumstances.

Q. WHAT IS THE MOST SERIOUS DISADVANTAGE OF A COMPREHENSIVE ECR OR FAC THAT REFLECTS GENERATION MIX CHANGES AS WELL AS FUEL PRICES?

A. The key disadvantage of a comprehensive fuel and purchased power cost adjustment procedure is that it could both weaken and distort the incentives for cost minimization. With this type of fuel adjustment procedure in effect, a utility may have no financial incentive to economize on the use of fuel, when to do so would require the expenditure of money on any other resource. The reason is the obvious one that fuel costs can be recovered immediately and in full; whereas variations in expenditure on other costs cannot be recovered at all, except to the extent that they occur within a period that becomes the test-year for a future general rate investigation. In contrast, an adjustment only for changes in fuel prices, but using the base-period fuel quantities per kilowatt-hour, does not permit the utility to recover the cost of using more fuel or more expensive types of generation in relation to the total kilowatt-hours sold.

Q. WHEN AN ECR IS IMPLEMENTED, COULD THERE BE ANY BENEFIT TO ALLOWING UTILITIES TO ADJUST CUSTOMER BILLS AFTER

THE END OF THE BILLING PERIOD TO COMPENSATE FOR FUEL CLAUSE REVENUE COLLECTIONS THAT EXCEEDED OR FELL SHORT OF ACTUAL FUEL COSTS?

A. Whether or not to allow a true-up after the billing period depends on whether it is deemed more important to equate revenues and cost or to encourage efficiency. Assuming that base-fuel costs are not overstated to begin with, rather than a true-up it is probably more beneficial to institute an ECR or FAC procedure, such as this Commission's prescribed ECR for PECO, that permits only a partial cost change passthrough.

Elements of Fuel and Purchased Power Costs

Q. WHAT ARE THE ELEMENTS OF FUEL AND PURCHASED POWER COST?

A. A utility's total fuel and purchased power expense depends upon four factors:

(1) the prices that it pays for fuel and purchased power;

(2) the quantity of electricity required to be generated;

(3) the quantities of fuel that must be burned in each of the utility's plants to generate one kilowatt-hour of electricity (these quantities are called the "heat rates"); and

(4) the proportions in which the total requirement for electricity is provided by the different generating plants and purchases (called the "generation mix").

The importance of fuel prices and power requirements is obvious, but factors (3) and (4) deserve some brief comment.

Q. WHY ARE HEAT RATES IMPORTANT?

A. Heat rates are important for two reasons. First, the heat rate is the technical efficiency of a generating plant in converting fuel into electric energy. A lower heat rate, meaning less fuel used per kilowatt-hour of electricity, corresponds to greater efficiency and to reduced fuel expense. Second, heat rates are important because they are not the same at all generating plants. Newer plants generally have lower heat rates than older ones, although the environmental policies of the past decade have slowed the rate of improvement. Also, generating units used for peaking purposes, such as gas turbines, generally have higher rates than baseload units, which are more efficient. The existence of

these differences in heat rates is one reason why the generation mix is important.

Q. PLEASE ELABORATE ON THE IMPORTANCE OF GENERATION MIX.

A. If costs were the same for all fuel purchases and if the fuel cost per kilowatt-hour were the same for all generating plants on a utility's system, the total fuel and purchased power cost would not depend upon which plants were used to generate the required total amount of electricity. But the fuel cost per kilowatt-hour is not the same at all plants. Hydroelectric plants have zero fuel cost, though their use is obviously limited by the available water. Nuclear plants have much lower fuel costs per kilowatt-hour than fossil-fuel plants (but much higher capital costs) because current nuclear fuel prices are much lower than fossil-fuel prices for the equivalent amount of heat energy. And even among fossil-fuel plants, fuel costs differ because of differences in fuel prices and heat rates. Prices are different for the different types of fuels -- coal, oil and natural gas -- and also because of differences in transportation cost and sulfur content, among other factors.

Since fuel costs per kilowatt-hour are different at different plants, a utility can reduce its total fuel cost by obtaining more electricity from plants with lower fuel costs per kilowatt-hour, and less electricity from plants with higher fuel costs per kilowatt-hour. In this way, the generation mix can have an important effect on total fuel costs.

Q. WHEN DO FUEL COSTS PER KWH CHANGE?

A. Fuel and purchased power cost per kilowatt-hour changes whenever fuel prices, loads, generation mix or heat rates change.

Fuel prices depend largely upon the fuel markets, and as such they are subject to variability, often unexpected. They may also depend upon the fuel purchasing practices of the utility, because contract terms are different from spot prices. In times of unexpectedly rapid fuel price inflation, fuel prices may also depend upon how aggressively utilities seek to enforce their contractual rights in the face of refusals of suppliers to deliver. Some utilities also purchase fuel from affiliates, and thus they may exercise some control over these prices.

Heat rates are more in the control of the utilities than fuel prices, but the heat rate for a single generating unit usually changes very little, except when modifications to the plant are made for environmental or other reasons.

Q. IS THE GENERATION MIX AN IMPORTANT VARIABLE AFFECTING FUEL COSTS PER KILOWATT HOUR?

A. Yes. Fuel costs range from zero for hydroelectric power up to 5 cents or more per Kwh for fossil generation. Among the factors that affect the generation mix, and through it the average fuel cost per kilowatt-hour, three are extremely important:

(a) hydrologic conditions affecting the availability of water for hydroelectric power;

(b) unavailability or restricted availability of existing nuclear units, owing to refueling, maintenance, or safety requirements; and,

(c) outages, especially for unscheduled maintenance for large, efficient baseload steam generating units.

When more water than usual is available, fuel costs go down; when less water is available, they go up. When nuclear and efficient fossil-fired plants are avail-

able, fuel costs are lower than when these plants are out of service entirely, or are able to operate only at a fraction of their designed capacity.

Q. IS THERE GENERAL AGREEMENT AS TO WHICH ELEMENTS OF FUEL AND PURCHASED POWER COSTS SHOULD BE SUBJECT TO AUTOMATIC INTERIM ADJUSTMENTS?

A. No. On a procedural level, it is important to emphasize that the determination of which cost elements to make subject to interim rate adjustments is a determination that should be made in advance of and outside of the adjustment process itself. The reason is that the value of the interim adjustment procedure lies largely in its focus on changes in specific cost elements without the need for a general rate investigation. In that regard, attention can properly be focused on certain costs, while ignoring all of the others, only after it has been determined which costs warrant this special attention.

An important consideration, therefore, is that there is not likely to be ready agreement about which cost elements require interim adjustment and which do not. Utility companies are likely to want interim adjust-

ments for those factors most responsible for increasing total costs, such as inflation in the prices of the inputs they purchase; whereas consumer groups are likely to want consideration of those factors that tend to reduce costs or offset inflation, such as improvements in productivity. To make the interim adjustment process work effectively, it would be appropriate for a regulatory commission to establish and enforce a firm policy defining the cost factors that may be considered in this process. If the commission chooses not to do so, interim adjustment proceedings could become complete rate investigations, and they will no longer serve the purpose for which they were designed.

Types Of ECR Rate Adjustments

Q. WHAT TYPES OF FUEL ADJUSTMENT PROCEDURES ARE USUALLY IMPLEMENTED?

A. There are two major types of fuel adjustment procedures that have gained wide acceptance:

- fuel price adjustments, in which rate changes are made to correspond only to the impact of fuel price changes on total fuel costs, disregarding the

impact of the other elements of total fuel costs; and

- fuel cost adjustments, in which rate adjustments are made to correspond to the full amount of the change in total fuel cost per kilowatt-hour of electricity sales, however that fuel cost change may occur.

Q. WHAT IS A FUEL PRICE ADJUSTMENT PROCEDURE?

A. In a typical fuel price adjustment procedure, the price of all electricity sales is adjusted upward or downward by a fixed amount (in mills per kilowatt-hour) for each unit change in the price of fuel (typically measured in cents per million Btu's). For example, a utility may have a retail fuel adjustment clause in which the rate is adjusted by, say, 1/10 mill (.01 cents) per kilowatt-hour for each increase or decrease of 1 cent per million Btu in the cost of fuel to the generating stations that supply it with electricity. The proper size of the fixed adjustment factor in this case depends upon the generating mix, heat rates, and loss factor of the utility in question; and it is ordinarily determined with reference to the base period conditions of these factors, usually those observed in the test year of the rate case in which the fuel adjustment procedure is established.

Q. WHAT IS A FUEL COST ADJUSTMENT PROCEDURE?

A. In a typical fuel cost adjustment procedure, the size of the rate adjustment is simply the change in the total fuel cost per kilowatt-hour of sales from the base level embodied in the base rates to the current period. Fuel cost changes may occur even without fuel price changes -- for example, as a result of changes in generation mix.

Generation Mix Changes

Q. ARE YOU DESCRIBING A NUCLEAR PERFORMANCE STANDARD THAT ELIMINATES AUTOMATIC FUEL COST ADJUSTMENTS IF COST INCREASES ARE ATTRIBUTABLE TO AN UNSATISFACTORY NUCLEAR OPERATING LEVEL?

A. Yes. The advantage of not letting the fuel cost adjustment reflect changes in the generation mix that occur when nuclear plant operation drops to an unreasonably low level is that the incentives for minimizing total short-run operating costs are preserved with the same strength that they have when there is no fuel adjustment at all. Since the adjustment to the utility's rates will not depend upon

the quantities of fossil fuel used to make up for poor nuclear performance, there is no financial incentive for the utility to treat fuel usage decisions differently than it would if there were no fuel adjustment at all. Beyond the established performance band, rates would not be increased on account of increased fuel expenditures due to increased fuel use; and, therefore, the utility gains no financial advantage by substituting fuel outlays for outlays on other inputs to the production of electricity.

Q. ARE FUEL PRICE ADJUSTMENTS OR FUEL COST ADJUSTMENTS MOST CLOSELY ASSOCIATED WITH ACTUAL GENERATING COST CHANGES?

A. Since changes in the generation mix may be the cause of the greatest amount of change in total fuel costs per kilowatt-hour, especially when fuel prices are relatively stable, rate level adjustments that reflect the impact of these changes are likely to be much more closely coordinated with changes in average fuel costs per kilowatt-hour than rate level changes reflecting only adjustments for fuel prices. This matching has a certain philosophical appeal, but closer inspection

suggests several important questions about its validity as a principle of public utility regulation.

Q. PLEASE EXPLAIN.

A. Fuel costs are only one of several cost components for electric utilities, and the merit of changing utility rates in accord with fuel costs changes is therefore dependent upon other costs remaining more-or-less constant, at least with respect to the factors that cause changes in fuel costs. As a practical matter, however, it is not valid to assume that other cost factors will not change. There are numerous opportunities for utility management to make substitutions between fuel and other inputs to the production of electricity. Changes in the quantity and therefore the expenditure on fuel may be inversely related to changes in the use of other productive resources, and it is inappropriate for regulatory policy to reflect the change in fuel expenditure in the rate level without also reflecting the offsetting changes in expenditure on other inputs. In addition to the important equity considerations of this policy, its effects on incentives may be strongly adverse. The utility has no financial incentive to economize on its use of fuel, if

these fuel savings depend upon the expenditure of other resources, because the cost of additional fuel can be passed on immediately to ratepayers, whereas the costs of other resources cannot.

Consider several examples of the reasons why changes in the generation mix occur. First, suppose that these changes are due to changes in the availability of the various plants that a utility can use for generating electricity. If the change in availability is due to scheduled maintenance, or to the normal seasonal variation in hydrologic conditions, it is incorrect to reflect this change in plant availability in rates if, as is usually the case, these normal and expected variations in availability are (as usual) already taken into account in computing base rates. If the change in generation mix is due to the addition or retirement of generating units, then it is also incorrect for the rates to reflect fuel cost differences due to this change in generation mix. The addition of a large new nuclear generating facility will reduce the average fuel cost of power production, because the fuel cost component of nuclear generation is much lower than the fuel cost of fossil-fuel generation. However, it does not necessarily follow that the total cost of nuclear

generation is less than the total cost of fossil-fuel power, and it is therefore incorrect to assume that rates will be lower simply because more nuclear generation is available. If there have been major changes in the utility's plant structure, there may have been major changes in all of the components of the utility's costs. Rate changes should therefore be based upon a full rate investigation, including analysis of the rate base, and not merely on changes in the fuel component of total costs per kilowatt-hour.

Q. WHAT ABOUT CHANGES THAT OCCUR BECAUSE OF UNFORESEEN OUTAGES?

A. Changes in the generation mix can, of course, result from unscheduled plant outages. If these outages are completely beyond the control of the utility's management, and if they have a substantial effect on the utility's fuel cost, then it has been argued that these cost effects should be passed on to ratepayers. However, it is unlikely that plant outages are completely beyond management control. In the competitive sectors of the American economy, each business bears the costs of its own operational failures and difficulties because it cannot include in its prices the

costs of production problems more severe than those experienced by its competitors. There is always a risk of encountering such difficulties, and that is one of the reasons why common equity costs and returns exceed risk-free capital costs. This discipline of competition is one of the most important goals to productive efficiency, and there is no reason why it should not also be applied to public utilities to the maximum extent possible.

If changes in the generation mix are <u>not</u> reflected in the rates, then a utility with unusually severe operational problems must bear the costs of these problems, at least until the next rate case, when it can attempt to convince its regulatory commission that these operational difficulties are a proper part of its cost and therefore its rate level. Conversely, a utility with an unusually good operating record will be able to earn greater profits than one whose track record is less satisfactory. These arrangements may be the best incentives for good operational performance. Thus, the elimination of ECR and FAC procedures entirely is a legitimate regulatory consideration, especially in periods like the present when fuel price

volatility is not expected to cause serious financial difficulties.

Incentive Considerations

Q. IS A PARTIAL FUEL COST RECOVERY MECHANISM PREFERABLE TO A COMPLETE COST RECOVERY?

A. The principal reason for permitting a partial -- but not complete -- inclusion of a fuel price or cost change in an interim adjustment to the rate level is that interim fuel adjustments are neither entirely good nor entirely bad. If a utility is required to exclude some fraction (say 20%) of its calculated fuel cost change from its rates, then most of the benefits that result from interim fuel cost adjustments are still being realized. At the same time, some of the incentives that depend upon the fixity of rates are also present, because some of the additional costs or cost savings that result from changes in fuel expenditures are borne by the utility. For this reason, the allowance of a rate level adjustment equal only to a percentage of the calculated change in fuel costs can be viewed as an incentive factor.

Q. WHY IS AN INCENTIVE FACTOR OF THIS TYPE AN IMPORTANT CONSIDERATION IN DESIGNING AN ECR PROCEDURE?

A. The argument for an incentive factor is based primarily on the proposition that public utility regulation has been and seems likely to remain an art rather than an exact science. Public utilities are far too complex for regulatory agencies to maintain rates at levels exactly equal to what costs currently are, and it is even more difficult for regulatory agencies to ensure continuously that costs are what they should be. Since rates can only be established in a zone of reasonableness, it is unrealistic to argue that monthly rate changes must be made exactly equal to monthly changes in fuel costs. An incentive factor of 80% is likely to provide most of the benefits of a fuel adjustment procedure, namely extension of time during which the divergence between rates and costs is kept within a zone of reasonableness, and it may add an important element to the rate design. Stronger incentives (i.e., lower percentage factors) may also be desirable; but once there is at least a significant incentive factor, it remains for the judgment of the regulatory agency to determine whether the benefits of stronger incentives are or are not outweighed by the possibility that

revenues will fail to keep pace with costs in a time of unsettled fuel prices.

Q. ARE THERE PARTICULAR CIRCUMSTANCES UNDER WHICH A STRONG INCENTIVE FACTOR IS ESPECIALLY IMPORTANT?

A. Yes. The need for a strong incentive factor is greater with a comprehensive fuel and purchased power adjustment procedure than it is with an adjustment procedure based only upon fuel price changes. The reason is that the fuel price adjustment procedure preserves most of the incentives for efficient management of fuel and other resources in the short-run, whereas comprehensive fuel cost adjustment procedures do not. Both approaches can dilute the incentive for the utility to obtain the lowest possible prices for its fuel.

Q. IS IT YOUR TESTIMONY THAT IT CAN BE A STRONG INCENTIVE FOR COST MINIMIZATION IF THE RATES OF A UTILITY ARE FIXED IN A MANNER THAT DOES NOT AUTOMATICALLY TRACK ALL COSTS ACTUALLY INCURRED BY THE UTILITY?

A. Yes. Such an approach could permit the shareholders to obtain some benefit from any cost savings that can be

achieved through improved productivity and efficiency, and it forces them to bear at least some of the consequences of cost overruns. At the same time, this approach could protect ratepayers from some of the cost consequences of managerial failure. Since the ratepayers derive no benefit from cost savings until they are eventually reflected in lower rates, and since an electric utility may be unable to continue to provide adequate service if it is not eventually compensated for its actual costs, periodic rate adjustments in general rate cases should eventually reflect newly attained cost levels and encourage further efficiency. One of the most important areas for informed judgment by regulatory authorities is in achieving an appropriate balance between performance incentives, which are strongest with fixed rates, and the reflection of performance results through changes in the rate level.

Q. IN WHAT WAY COULD ECRS DILUTE EFFICIENCY INCENTIVES?

A. Both fuel adjustment approaches distort the incentives for planning investments to achieve the minimum-cost combination of fuel and capital. However, a utility achieves only a diminution of risks, not an absolute

increase in its profits, by building generating plant with lower capital cost but higher fuel use. The reason is that the consequences of these investment decisions are established at the time the plant is built, and the cost -- both for fuel and for plant -- are reflected in base rates established in complete rate cases. If a utility's investment decisions result in higher fuel costs and lower expenditure for other inputs to the production of electricity, the utility does not need an interim adjustment to recover these higher fuel costs. All interim fuel adjustments do is protect the utility against the risk of unforeseen increases in fuel costs, thus reducing the risk associated with a fuel-intensive investment policy. Correspondly, use of generating plant with lower capital costs reduces the risk associated with regulatory lag in regard to the determination of base rates; but this also reduces the benefits that utilities realize when regulatory lag works in their favor.

Summary

Q. PLEASE SUMMARIZE THE POTENTIAL DRAWBACKS OF FUEL ADJUSTMENT CLAUSES.

A. The first problem with interim adjustment procedures is that they are concerned only with some, but not all, of the total costs of an electric utility; and there is no assurance that the costs for which adjustments are made must necessarily be moving in the same direction as total costs. If the costs for which interim adjustments are made go in one direction, while total costs go in the other, then the interim adjustment process will cause the costs and rate level to diverge faster than they would if there were no interim adjustments. For example, during periods when fuel costs fall but the total costs of electricity supply continue to rise, the operation of interim fuel adjustment procedures exaggerates the lag of the rate level behind rising costs. Thus, interim adjustment procedures are not always helpful in keeping rate levels aligned with total costs.

A second potential problem with interim adjustment procedures is that they may be biased to register changes in those cost elements that are most subject to increase, but not to reflect factors that may tend to make costs decrease. For example, automatic adjustment clauses have in the past been designed to register fuel prices, taxes, and wage rates, but they have given

little attention to productivity or efficiency. So long as there are any improvements at all in productivity and efficiency, average costs will increase less rapidly than the prices of the inputs that a utility buys. An interim adjustment procedure that comprehensively registers inflation in the prices of the inputs bought and used by a utility, but that does not reflect productivity and efficiency gains, will overstate the upward movement of costs. In times when productivity gains and improvements in efficiency come rapidly but the rate of price inflation is relatively slow, as in much of the 1950's and 1960's, unit costs of electricity may actually be falling despite the existence of modest inflation.

The third problem with interim adjustment procedures is that they tend to weaken the incentives for a utility to supply electricity at minimum cost. If the rate level is fixed, then it is the shareholders who stand to gain or lose the full amount of any cost savings or increases, at least until the next rate case, when the rate level is reset to the then prevailing cost level. If, instead, there are interim adjustment procedures to change the rate level quickly in response to cost changes, then these gains and losses are shifted very

quickly to the ratepayers; and management has less incentive to minimize costs than when the benefits go to the shareholders.

Q. PLEASE SUMMARIZE WHY AN INTERIM FUEL PRICE ADJUSTMENT MAY REDUCE THE INCENTIVE FOR A UTILITY TO MINIMIZE THE PRICES THAT IT PAYS FOR FUEL (AND FOR PURCHASED POWER, IF THE PRICE OF PURCHASED POWER IS ALSO ENTERED INTO THE CALCULATION OF THE ADJUSTMENT).

A. When markets for fuel are unsettled, it can be argued that there is considerable scope for aggressive action by utilities to seek lower priced fuel supplies. But if interim fuel price adjustments permit utilities to pass on fuel price increases to ratepayers, and also require utilities to pass on any fuel price savings, then the incentives for management aggressiveness in this regard can be reduced. For example, during the last decade many electric utilities agreed to renegotiation of their long-term contracts for coal and oil, thus allowing fuel prices to increase. Since it is extremely difficult for a regulatory authority to investigate in detail the circumstances of each such renegotiation, to determine whether in fact the electric utility had no practical option but to accept

fuel prices higher than those specified in its existing contract, the need for financial incentives affecting the utility is emphasized. If fuel adjustment clauses did not allow the utilities to pass on the higher fuel prices to the ratepayers promptly (or not at all until the next rate case), then perhaps they might have behaved differently in dealing with their fuel suppliers.

Q. ARE THERE ADDITIONAL DISADVANTAGES OF INTERIM FUEL COST ADJUSTMENT CLAUSES?

A. Yes. The final disadvantage of interim adjustment procedures, especially automatic ones, is that in some instances, the process has been badly designed, yet still received the regulatory approval necessary for its use. In other instances it is possible for a utility to misstate the facts that control the fuel cost adjustment process. With regard to the latter problem, the solution is increased vigilance by the regulatory authority. Especially in instances such as the present, where ECRs are based on forecasted fuel costs, careful regulatory scrutiny is essential. It is now generally recognized that interim adjustment procedures are not a device for abdication of regula-

tory responsibility, as they may sometimes have been in the past, but rather are a device enabling the regulatory authorities to focus their attention on those costs that are changing most rapidly and therefore are most in need of careful review.

II. Integrating the ECR and Nuclear Performance Incentive Standard

Q. CAN THE ECR APPROACH THAT THE COMMISSION HAS PRESCRIBED FOR PECO BE INTEGRATED WITH YOUR NUCLEAR PLANT PERFORMANCE INCENTIVE PROPOSAL?

A. Yes; it can. Because the nuclear operating performance incentive that I have proposed would essentially disallow the recovery of increased fuel or purchased power costs for replacement power if nuclear plant operations fall below the specified operating minimum (and provide for partial fuel savings retention at superior operating levels), my incentive proposal can be readily incorporated into the prescribed ECR method. The end result would be an ECR which provides for no recovery of increased fuel costs that result if nuclear plant operating levels drop below a 60 percent capacity factor and 80 percent recovery of all other fuel cost increases. Conversely, if fuel costs decline because nuclear plants operate at a capacity factor in excess of 70 percent, one half of those cost savings would be retained by the Company as would 20 percent of all other fuel cost reductions. This proposed division of nuclear performance related energy cost over or under

collections between PECO and its customers is portrayed graphically in Exhibit___(J.W.-21). As described more fully below, these reconciliation percentages for nuclear related fuel costs could be combined with other energy cost reconciliations so that:

(1) the Commission's prescribed 80/20 split between customers and the Company applied to energy cost variations attributable to nuclear operating levels within the 60 to 70 percent capacity factor range;

(2) a 50/50 split applied to energy cost reductions attributable to nuclear operating levels above 70 percent;

(3) the Company absorbed all energy cost increases attributable to nuclear operating levels below 60 percent; and

(4) the 80/20 split applied to all other under or over collections.

Q. PLEASE DESCRIBE THE FUNDAMENTAL OPERATION OF THE PRESCRIBED ECR.

A. The prescribed ECR involves a two step process: (1) developing forecasted fuel costs and (2) providing for the appropriate treatment of differences between actual and forecasted fuel costs.

Q. PLEASE DESCRIBE THIS TWO STEP PROCESS AND EXPLAIN HOW IT COULD BE MODIFIED TO ACCOMMODATE YOUR PROPOSED NUCLEAR PERFORMANCE STANDARD.

A. The first step is the development of forecasted fuel costs for a 12 month period. This forecast is based on three considerations:

- Electricity Generation Requirements,
- Generating Plant Mix, and
- Fuel Prices.

In order to forecast fuel costs, I suggest that a target capacity factor be specified by the Commission for nuclear units that PECO have the burden of specifying and justifying the projected output levels of other generation resources as well as fuel prices and total generation requirements. A target capacity factor of 65 percent would appear to be reasonable in this case as it represents the midpoint of the proposed 60-70 percent nuclear operating band. Projected fuel costs per kwh could then be calculated directly from these total output, fuel price and generation mix estimates. This procedure need not be modified to accommodate the proposed nuclear operating efficiency incentive plan.

The second step concerns the regulatory treatment of subsequent differences between forecasted and actual fuel costs. Under the prescribed ECR, 80 percent of net over or under collections would be subject to reconciliation and the remaining 20 percent would either be retained or borne by the Company as an efficiency incentive. To accommodate the proposed nuclear operating efficiency incentive plan, I suggest that this step be modified as described above so that there is no reconciliation for fuel cost increases attributable to nuclear plant capacity factors below 60 percent and only a 50 percent reconciliation for fuel cost reductions attributable to nuclear plant capacity factors above 70 percent. Thus, there would be no modification to the 80/20 split if nuclear plants (as a group) operate in the 60 to 70 percent capacity factor range. However, if nuclear plant performance either exceeds a 70 percent capacity factor or falls below 60 percent, the percentage of total over or under collections to be reconciled would be less than 80 percent.

Q. ARE THERE ANY QUALIFICATIONS OR OTHER CONSIDERATIONS IN THIS REGARD WHICH SHOULD BE CALLED TO THE COMMISSION'S ATTENTION?

A. Yes. It is possible, though perhaps not likely, that the energy cost impact of exceptionally good or bad nuclear performance (e.g., an average annual capacity factor above 70 percent or below 60 percent) may be offset by other factors such as fuel price changes or fossil plant performance to such an extent that the unreconciled under (or over) collection attributable to nuclear performance exceeded the total energy cost under (or over) collection. In that event, the Commission may wish to limit unreconciled energy cost under (or over) collections to no more than the total under (or over) collection. Thus, if nuclear operations fall to 55 percent, resulting in, say, $50 million more fossil fuel costs than would have been required with a 60 percent nuclear capacity factor and $80 million more than at 65 percent, but, at the same time, fossil fuel price reductions saved $100 million, there would be an energy cost over collection despite poor nuclear plant performance. Yet, despite a net over collection of $20 million in this illustration, a $36 million revenue deficiency would be imposed (i.e., $50 million plus 20 percent of $30 million less 20 percent of $100 million) if unreconciled amounts were not limited by total under (or over) collections as suggested above. By establishing the total net under (or over) recovery as a

limit, even if management is confronted with exceptionally poor nuclear operating circumstances, it will still have a strong incentive to attain maximum efficiency in other energy cost areas.

Q. IN WHAT WAY COULD PECO'S ENERGY COST RATE FACTOR BE MODIFIED TO IMPLEMENT THIS INCENTIVE ECR APPROACH?

A. First, the definition of "F" could be amended so as to include the following paragraph:

> The generation mix used to compute estimated energy-related costs should be based on an average annual capacity factor of 65 percent for all nuclear units owned individually or jointly by the Company. The remainder of the forecasted generation mix shall reflect efficient management, operation and dispatch of the Company's generation resources. This non-nuclear generation mix, as well as all forecasted fuel prices and load forecasts used by the Company in computing F must be fully supported and justified by the Company in each ECR filing.

Q. ARE THERE ADDITIONAL MODIFICATIONS THAT COULD BE MADE TO THE ENERGY COST RATE FACTOR?

A. Yes. I recommend that the definition of "E" (i.e., the reconciliation factor) in the ECR formula be amended so as to accommodate both the 80/20 split as prescribed by

the Commission and my proposed nuclear plant performance incentive. I would suggest the following language in this regard:

> Experienced net under or over collections of the cost of energy as of the end of the twelve month period shall (1) be subject to an 80 percent reconciliation, except that (2) any over collections as a result of the Company achieving an annual average nuclear capacity factor of more than 70 percent shall be subject to a 50 percent reconciliation, or (3) any under collections as a result of the Company achieving an annual average nuclear capacity factor of less than 60 percent shall be subject to no reconciliation; provided that the total net unreconciled amount [(1) plus (2) or (1) plus (3)] shall not exceed the total net under or over collection.

In addition to these major amendments, I would also urge the Commission to provide adequate time between an ECR filing and the implementation of rates. In order for the incentive system described above to be effective, the cost forecasts on which the system is based must be reasonable. An adequate period should be established for the Commission Staff and other parties to fully evaluate these forecasts and to present their views and evidence for the Commission's consideration. In my opinion, a period of at least 90 days should be provided for this purpose.

Also, I would urge the Commission to consider replacing the "firm" wholesale sales exclusion in the definitions of F and S_t with a "unit" wholesale sales exclusion. Except for unit sales, which typically involve an entitlement to the output of a specific generating plant, wholesale sales are not generally specifically attributable to particular generating units or to particular levels of system dispatch. As such, if this exclusion were applied to non-unit wholesale sales, it would likely require arbitrary energy cost assignments that could be manipulated to achieve a distorted end result. If there are other overriding considerations which the Commission determines require the exclusion of all firm wholesale sales from this computation, care should be taken in all ECR proceedings to assure that arbitrary wholesale cost assignments do not distort the end result.

Finally I would emphasize that under an ECR approach that is based on projections, it is critically essential for the Commission to assure that the load forecasts, projected fuel prices and assumed generation mix that determine forecasted fuel costs are reasonable and reflect efficient operations. If any of these factors is subject to unreasonable manipulations or

assumptions in developing forecasted fuel costs, the efficiency incentive that is incorporated by providing for only partial reconciliation will be undermined and/or distorted.

Q. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY ON THE ECR ISSUES IN THIS CASE?

A. Yes; it does.

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission	)	
	)	
v.	)	Docket No. R-850152
	)	
Philadelphia Electric Company	)	
	)	

EXHIBITS ACCOMPANYING THE TESTIMONY

OF

DR. JOHN W. WILSON

February 1986

GEC Statement No. 1C

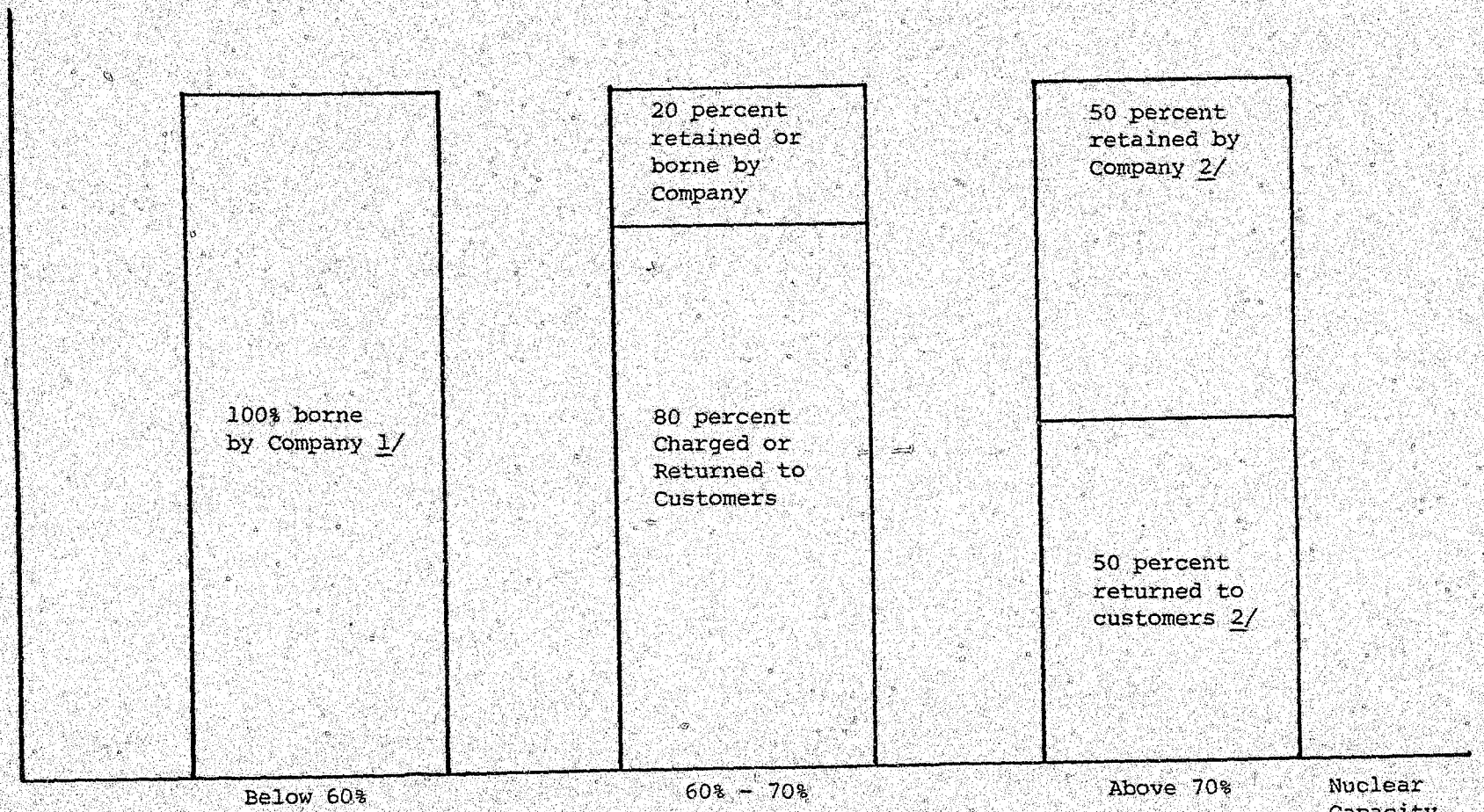
J. W. WILSON & ASSOCIATES, INC.

ECONOMIC COUNSEL

THIRD FLOOR • WATERGATE OFFICE BUILDING

2600 VIRGINIA AVENUE, N.W. • WASHINGTON, D.C. 20037

Division of Nuclear Performance Related Energy
Cost Over or Under Collections Between
Customers and Company



100% applies only to the difference between actual energy costs and what energy cost would have been with a 60 percent nuclear capacity factor.

50% applies only to the difference between actual energy costs and what energy cost would have been with a 70 percent nuclear capacity factor.

Docket No. R-850152
Exhibit (J.W.-21)
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PHILADELPHIA ELECTRIC COMPANY

(Electric Operations)

Updated and Rebuttal Testimony

of

Joseph F. Brennan, President
Associated Utility Services, Inc.

Concerning

Fair Rate of Return

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Q. ARE YOU THE SAME JOSEPH F. BRENNAN WHO PRE-FILED DIRECT TESTIMONY IN THIS PROCEEDING RELATING TO THE SUBJECT OF FAIR RATE OF RETURN?

A. Yes.

Q. WHAT IS THE NATURE OF YOUR TESTIMONY AT THIS TIME?

A. Subsequent to late September 1985, which is the point in time I finalized my direct testimony and exhibit pre-filed in this case, the Philadelphia Electric Company (PECO or the Company) substantially altered its financing plans. In addition, there has been a general downward movement in the cost of capital. A recalculation of the overall rate of return reflective of the altered financing plans and the downward movement in the cost of capital results in a lower overall rate of return recommendation.

My original recommendation was for an opportunity to earn an overall rate of return in the range of 13.15% to 13.34%. My recommendation included an opportunity to earn a 16.9% to 17.4% return rate on the common equity part of the Company's rate base. Notwithstanding the aforesaid, the Company's filing reflected an opportunity to earn a 12.70% after-income tax overall rate of return including a 15.75% return rate for common equity.

My recomputation of the cost of capital reflective of the altered financing plans and an update of the cost rate for common equity results in an after-income tax overall rate of return recommendation of 12.76%, including a recommended cost rate for common equity of not less than 15.90%.

In addition to an update of my recommendation, the purpose of this testimony is to offer rebuttal testimony to the direct testimony of Witnesses Rothschild, O'Donnell and Winter, all of whom have offered a rate of return recommendation in this proceeding.

Q. HOW HAVE YOU STRUCTURED YOUR UPDATED AND REBUTTAL TESTIMONY?

A. I have structured my updated and rebuttal testimony into three distinct but related parts. First, I will discuss changes occasioned by the Company's altered financing plans. Second, I will discuss the change in the cost of common equity to PECO. Third, I will provide rebuttal to the direct rate of return testimony of Witnesses Rothschild, O'Donnell and Winter.

Q. HAVE YOU PREPARED AN EXHIBIT TO ACCOMPANY YOUR UPDATED AND REBUTTAL TESTIMONY?

A. Yes. I have prepared JFB-3 regarding my updated testimony and JFB-4 regarding my rebuttal testimony.

ALTERED FINANCING PLANS

Q. SPECIFICALLY, WHAT ARE THE ALTERED FINANCING PLANS OF THE COMPANY?

A. My updated calculations reflect the following:

1. Actual issuance of $41 million of 10-1/2% Pollution Control Revenue Bonds in October 1985, not originally contemplated.

2. Actual issuance of $250 million of 11-3/4% and $150 million of 10-7/8% First Mortgage Bonds in November 1985, not originally contemplated.

3. Actual tender of $78.096 million of 17-5/8%, $76.131 million of 18-3/4%, and $62.621 million of 18% First Mortgage Bonds in December 1985, not originally contemplated.

4. Cancellation of plans to sell $100 million of First and Refunding Mortgage Bonds for November of 1985. Company plans to sell $100 million of First Mortgage Bonds in May of 1986.

5. Proposed issuance of $100 million Debentures in February 1986, $225 million of debentures in April 1986, and $225 million in June 1986, none of which was originally contemplated.

6. Proposed repayment of $550 million of Limerick Revolving Credit Line derived from proceeds of the sale of new debentures in February, April and June 1986. The Company did not originally propose to repay the $550 million Limerick Revolving Credit Line.

7. Proposed call in July 1986 of $46.904 million of 17-5/8% First Mortgage Bonds, not redeemed as a result of the tender offer in December 1985.

Q. WHAT INTEREST RATE DO YOU NOW ESTIMATE IS APPROPRIATE WITH RESPECT TO THE PROPOSED SALE OF $100 MILLION OF FIRST MORTGAGE BONDS IN MAY 1986, AND THE PROPOSED SALE OF AN AGGREGATE AMOUNT OF $550 MILLION OF DEBENTURES IN FEBRUARY, APRIL AND JUNE 1986?

A. I believe the 11-3/4% interest rate paid by PECO in late 1985 relative to its 29-year maturity $250 million issuance of First Mortgage Bonds provides a good basis for a reasonable estimate of the likely interest rate PECO would need to pay with respect to new First Mortgage Bonds and Debentures sold during the first half of 1986. With respect to the debentures, an estimate of 11-3/4% as a coupon rate may prove conservative, given the fact that debentures rank junior to First Mortgage Bonds with respect to claim on assets and earnings.

It should also be remembered that PECO First Mortgage Bonds are rated BBB- by S&P and Baa3 by Moody's, or the very lowest of the investment grade bond ratings. Moreover, January 1, 1986, Blue Chip Financial Forecasts for the four calendar quarters of 1986 reflects an unchanging interest rate relative to seasoned public utility bonds rated A; but such forecast, which is 11.0%, is 3/10ths of 1% higher than the 10.7% actual yield on recent public utility issues rated A late in December 1985. Further, the Value Line Investment Survey Part 2 Selection and Opinion dated November 15, 1985, reflects a forecast of a slight upward movement in long-term AAA corporate bond rates from the fourth quarter of 1985 (10.7%) to 10.9% for the first two quarters of 1986, and increasing to 11.0%

for the last two quarters of 1986. Value Line also forecasts AA rated public utility bond yields for year-end 1986 to be 11.5%.

On the basis of all the aforesaid, I believe for the purposes of calculating a composite cost of debt for use in an overall rate of return determination, an estimate of 11-3/4% as a coupon rate, or equivalent to the rate the Company actually paid the last time it raised new long-term debt, is a reasonable estimate to employ for these purposes, particularly since such issue was sold at a discount (namely, 99.579%) and the resulting yield to the buyer was 11.80%.

Q. ORIGINALLY THE COMPANY PLANNED TO SELL $50 MILLION OF NEW PREFERRED STOCK IN MAY OF 1986. DOES THE COMPANY STILL PLAN TO SELL THAT PREFERRED STOCK?

A. Yes.

Q. HAVE YOU REVISED YOUR ESTIMATE OF THE DIVIDEND RATE THAT IS APPROPRIATE WITH RESPECT TO THE PROPOSED SALE OF THE NEW PREFERRED STOCK?

A. Yes. As a result of the fact that long-term money cost rates have moved downward subsequent to my original estimates in September 1985, I have revised downward my estimate of the dividend rate appropriate for the proposed sale of new preferred stock. I originally estimated 12-1/2%, or the same rate as the long-term debt the Company contemplated selling at that time. Since the Company, as I also previously indicated, recently sold long-term debt with a coupon rate of 11-3/4%, I believe it is appropriate at this time to assume that the dividend rate on the new preferred stock to be sold in May of 1986 will be also 11-3/4%.

Q. WHY IS THE COMPANY NOW PLANNING TO ISSUE $550 MILLION OF DEBENTURES TO REPLACE THE LIMERICK REVOLVING CREDIT LINE IN LIGHT OF THE FACT

THAT THE COST RATE FOR THE LIMERICK REVOLVING CREDIT LINE IS THE PRIME RATE PLUS 1/4 OF 1%, CURRENTLY 9.75%, AT A TIME WHEN YOUR ESTIMATE OF THE COUPON RATE RELATIVE TO THE ISSUANCE OF THE NEW DEBENTURES IS 11-3/4%?

A. Forecasts of future interest rates suggest a slight upward movement as 1986 unfolds with respect to both long- and short-term debt. The Limerick Revolving Credit Line is to be repaid unless refunded in eight consecutive semi-annual installments beginning two years after the in-service date of Limerick 1. Since Limerick 1 went on line in early-1986, the payment of the Limerick Revolving Credit Line will commence in early-1988.

Likely, long-term interest rates in mid-1988 will be higher than what they happen to be at the moment because it appears long-term interest rates are now bottoming out. It is reasonable to assume short-term debt interest rates could move upward significantly over the course of the next few years, particularly if the rate of inflation also begins to move up, as is forecasted by many prognosticators. Long-term interest rates and inflation rate movements are interrelated. The January 1986 Blue Chip Financial Forecasts indicate the composite estimate of the change in the GNP Implicit Price Deflator and Consumer Price Index will move upward by 7/10ths to 8/10ths of 1% between the first quarter of 1986 and the first quarter of 1987. Thus, funding in mid-1986 on a permanent long-term basis, which is the preferable method of financing long-lived assets, likely will save consumers money viewed over the long term because the permanent funding of intermediate-term debt may be more if the Company waits until mid-1988 to commence such permanent funding. Quite frankly, in my opinion, for a company whose bonds are

at the bottom of investment grade ratings, a bird in the hand is worth two in the bush. I believe it is prudent financial management to anticipate, as best one can, likely changes in interest rates, particularly when the amount of money involved is very large, such as $550 million.

Q. WHAT IS THE END RESULT OF THE ALTERED FINANCING PLANS WITH RESPECT TO CAPITAL STRUCTURE RATIOS AND THE COMPOSITE COST RATE FOR DEBT ESTIMATED AND PRO FORMA AT JUNE 30, 1986?

A. The end result of the altered financing plans is an estimated and pro forma capital structure ratios at June 30, 1986, of 50.9% long-term debt, 10.7% preferred stock, and 38.4% common equity. These ratios compare with the originally estimated ratios at June 30, 1986, of 50.7% long-term debt, 10.8% preferred stock, and 38.5% common equity. In short, very little change.

The composite cost of long-term debt estimated at June 30, 1986, is now 10.86%, compared to the originally estimated 10.84%, again, a very small change.

The composite cost of preferred stock estimated at June 30, 1986, is now 10.50% compared to the originally estimated 10.54%.

Information pertaining to the development of the June 30, 1986, estimated and pro forma capital structure ratios, and the related composite cost of debt and preferred stock is shown on Updated Schedule 3, pages 1 and 2; Updated Schedule 4, pages 5 through 10; and Updated Schedule 5, pages 2 through 4; and Updated Schedule 6, page 3, respectively. These Updated Schedules are part of Exhibit JFB-3.

Q. PLEASE EXPLAIN YOUR PROPOSED RATEMAKING DISPOSITION OF THE $51.225 MILLION TENDER AND CALL PREMIUM.

A. As I previously indicated, the Company sold new long-term debt and used part of the proceeds to retire, through a tender offer, part of its existing long-term debt, which long-term debt carried high coupon rates. In addition, as I also previously indicated, the Company plans to call the balance of its 17-5/8% First Mortgage Bonds on July 1, 1986, since at that time the no-call provision will expire.

The prices paid or to be paid to bondholders under the tender offer and the call are at a premium. In other words, the Company had to or will have to pay more than the original principal amount of bonds issued in order to reduce or eliminate the amount of the three series of high coupon rate bonds. Specifically, the tender and call premium related to the three involved issues at June 30, 1986, on an estimated and pro forma basis aggregates $51.255 million. Such $51.255 million is comprised of $44.801 million related to the tender offer for the 17-5/8%, 18%, and 18-3/4% Series First Mortgage Bonds redeemed in part in December 1985, and $6.454 million related to the expected mid-1986 call price premium in regard to the balance of the 17-5/8% Series First Mortgage Bonds.

As shown on Updated Schedule 4, page 5A of 10, in developing the estimated and pro forma 10.86% composite cost of debt at June 30, 1986, I included a dollar amount of annual return of the tender and call premium in the amount of $2.441 million. This dollar amount will be collected from consumers and over time, as rates are set over the next twenty or so years, will be reset so as to return to the Company the aggregate tender and call premium of $51.255 million 21-year composite life of the two issues of First Mortgage Bonds (the 10-7/8% First Mortgage Bonds and the 11-3/4% First

Mortgage Bonds issued in December of 1985). Upon maturity of such bonds, the Company will be able to reduce the amount of bonds outstanding to an amount equal to that which was originally outstanding before a tender or call premium. At that point in time, there will be no need to reduce debt outstanding to develop a capital structure ratio for rate of return determination purposes.

Q. HOW HAVE YOU TREATED THE ISSUANCE AND SELLING EXPENSES RELATED TO THE TWO NEW ISSUES, PROCEEDS OF WHICH WERE USED TO RETIRE, IN WHOLE OR IN PART, HIGH COUPON BONDS; AND HOW DID YOU TREAT THE UNAMORTIZED DEBT ISSUANCE EXPENSES ASSOCIATED WITH THE ISSUES RETIRED IN WHOLE OR IN PART?

A. As can be seen by referring to page 9A of Updated Schedule 4, I have developed the effective interest rate relative to the two new issues, based upon discount and issuance expenses directly associated with the 11-3/4% and 10-7/8% First Mortgage Bond issues, together with unamortized balances of discount and issuance expenses related to the three redeemed issues. Those composite rates for the 11-3/4% and 10-7/8% Series are 12.05% and 11.27%, respectively.

Q. WHAT IS YOUR PURPOSE WITH RESPECT TO THE DEVELOPMENT OF THE COST RATE OF LONG-TERM DEBT WHICH WAS OR WILL BE USED TO RETIRE THE HIGH COUPON BONDS?

A. My purpose is to reflect costs no greater than the identifiable costs that are incurred by the Company in connection with accomplishing the call or tender. In this instance, under these circumstances, we can identify the amount of the premium and the amount of the issuance and selling expenses associated with new issues, proceeds of which were used to accomplish the tender or call. Further, it is, as I understand it, the Commission's intention to per-

mit a return on, as well as a recovery of, the premiums incurred as a result of the tender or call. The annual return of the tender and call premium will take place over 21 years the composite term of issue of the new series in an amount of $2.441 million ($51.255 tender and call premiums ÷ 21 years = $2.441 million per year). In addition, the Company should also be permitted to charge a price of service reflective of the issuance expenses associated with the issuance of the new securities, proceeds of which were used to effect the tender and call, as well as recovery of any unamortized balances related to issuance and selling expenses for debt retired as a result of the tender and call.

Q. HOW WAS THE LONG-TERM DEBT ISSUED TO COVER THE PREMIUMS FOR THE TENDER OFFER AND CALL PREMIUM REFLECTED IN THE ESTIMATED AND PRO FORMA JUNE 30, 1986, CAPITAL STRUCTURE RATIOS?

A. As can be seen by referring to Updated Schedule 3, page 1, I have treated the tender and call premium, aggregating $51.255 million, as a reduction in the long-term debt outstanding. The purpose of this treatment is to avoid developing a rate of return recommendation which is the product of a debt ratio higher than would be the case had there been no tender or call premiums. To illustrate the point, assume a utility has a rate base of $100, and a capital structure of $100 comprised of $50 of debt at a cost of 15% and $50 of equity. Assume further the debt is called at a 10% premium and replaced with debt at a lower cost rate, namely, 12%. After the call, debt outstanding is $55, common equity is still $50, and thus, the capitalization is $105, but the rate base is still $100. The new debt ratio is approximately 52.5% ($55 relative to $105), not 50.0%. Further, 52.5% of $100 of rate base is $52.50, and at a cost rate of

12%, the interest expense recovered through rates for service is $6.30. However, the interest expense to be paid is $6.60 (12% of $55). Moreover, there are no funds provided through the ratemaking process to repay the additional $5 in new debt incurred to reduce the old 15% cost rate paid.

In PECO's circumstance, the source of funds used to pay the tender or call premium is identifiable, namely, the issuance of specific additional bonds with an identifiable cost. If the total debt outstanding is not reduced for ratemaking purposes, the debt ratio would be higher than otherwise. A debt ratio higher than otherwise results in a different overall cost of money than otherwise, namely, artificially lower; and consumers would benefit twice. It must be remembered, as I will explain later, the consumer will benefit fully by a reduction in the composite debt cost rate as a result of a reduced interest rate due to the call and tender.

Q. IS THERE ANY PRESCRIBED REGULATORY TREATMENT OF WHICH YOU ARE AWARE RELATIVE TO THE RATEMAKING TREATMENT OF TENDER OR CALL OF HIGH COUPON SECURITIES, SUCH AS FIRST MORTGAGE BONDS?

A. No. I proceed from the premise that the Commission intends the Company to recover its costs that are identifiable. The technique I have employed does just that. In this instance, under these circumstances, the technique I have employed permits the Company to reduce its long-term debt by an amount equal to the premium paid on tender or call for the purpose of determining capital structure ratios and the fair rate of return, and earn during the recovery period a rate on the unamortized balance equal to the composite interest rate of the securities issued to effect the tender or call. In addition, the technique I have employed recovers the issuance and selling ex-

penses associated with the new issues as well as the unamortized balance of issuance and selling expenses related to the securities retired as a result of the tender and call. Upon maturity of the newly issued debt, the Company is in a position to retire the debt issued to pay the premium, and the rate base and capital structure are once again in harmony.

I urge the Commission to establish on a case-by-case basis the proper ratemaking treatment of premiums paid on tender or calls. I also urge the Commission to reflect in the development of an overall rate of return actual interest rates wherever possible up to the point in time a decision in this case is reached in lieu of any estimates provided by me or any other witness in this proceeding to the extent that such estimates are either higher or lower than the actual known number by decision date. By that technique, the price of service to be charged prospectively will be reflective of the cost of service to the greatest extent possible.

Q. HAVE YOU PREPARED A SCHEDULE SUMMARIZING THE END RESULT OF ALL OF THE COMPANY'S CHANGED FINANCIAL PLANS AND THE IMPACT OF YOUR UP-DATING WITH RESPECT TO CAPITAL STRUCTURE RATIOS AND CAPITAL COST RATES?

A. Yes. Updated Schedule 1, page 1 reveals the calculation of the cost of capital and fair rate of return estimated and pro forma at June 30, 1986 reflective of all of the changes I have just described and the updated cost rate for common equity capital, which I will discuss below. Please note by reference to Updated Schedule 1, page 1, I have employed a 15.90% cost rate for common equity capital or a cost rate just slightly higher than the basis of the Company's original filing, which is 15.75%. My original recommendation with

respect to the cost rate for common equity capital was a range of 16.9% to 17.4%. As I will discuss later, an update of my original calculations using an identical methodology produces a cost rate for PECO which is 15.9% to 16.4%. I have taken the lower number for the purpose of the recalculation of the cost of capital and fair rate of return estimated and pro forma at June 30, 1986, to avoid needless controversy and because the high end of my range is reflective of the impact of issuance and selling expenses which the Commission has not recognized for the past few years.

As can be seen by referring to Updated Schedule 1, page 1, the overall rate of return on an after-income tax basis is 12.76%; and based on an assumed 49.6% effective income tax rate, the before-income tax overall rate of return is now 19.88%. My original calculation shown on Schedule 1, page 1 of Exhibit JFB-1, revealed an after-income tax overall rate of return at the low end of the range of 13.15%, and on a before-income tax basis of 20.68%.

The Company's filing, as shown on TPH-2, Schedule A-1, indicated an after-income tax overall rate of return of 12.70% which, when converted to a before-income tax overall rate of return, assuming a 49.6% effective income tax rate, suggested a 19.79% overall rate of return.

Thus, on a post-income tax basis, my original recommendation of 13.15% at the low end of the range is now revised to 12.76%, or a decline of 0.39%. On a before-income tax basis, the decline is the difference between 20.68% and 19.88% or 0.80%. Further, comparing my updated recommendation to the Company's filing reveals an updated recommendation of 12.76% at the low end of the range, compared to the Company's filing of 12.70%, or a difference of 0.06%. On a

before-income tax basis, again based on a 49.6% effective income tax rate, my updated recommendation of 19.88% is 0.09% higher than the Company's filing of 19.79%. The reduction in my recommendation is the product of the Company's altered financing plans, the end result capital structure ratios, the end result of the tender and call of high coupon bonds, a change regarding the estimated cost rates relative to securities proposed to be issued between now and June 30, 1986, and a revised common equity cost rate in response to a change in the money market.

UPDATED COST RATE FOR COMMON EQUITY CAPITAL

Q. HAVE YOU PREPARED AN UPDATE OF THE DETAILS THAT WENT INTO YOUR RECOMMENDED COST RATE FOR COMMON EQUITY CAPITAL?

A. Yes. That information is shown on page 1 of Updated Schedule 2.

Q. WHY HAVE YOU UPDATED YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. I have updated my recommended common equity cost rate for two reasons. First, ratemaking is prospective and it is my policy to provide the Commission with the most recent available information for use in its fair rate of return determination. This update includes both embedded cost rates and the common equity cost rate. Second, each of the opposing party witnesses has mentioned PECO's recent stock price growth as an indication of the conservativeness or reasonableness of his recommendation. As part of my rebuttal to these witnesses, it is appropriate to reflect a full consideration of recent events and not just one factor.

Q. PLEASE DESCRIBE THE INFORMATION SHOWN ON PAGE 1 OF UPDATED SCHEDULE 2.

A. On page 1 of Updated Schedule 2, I have employed an identical methodology to that originally employed on page 1 of Schedule 2. I

have reflected in my calculations the latest numbers relative to a change in the dividend yield and the forecasted yields on public utility bonds rated Baa. The end result of these calculations is a 15.90% cost rate for common equity at the low end of the range as the indicated cost rate for common equity capital for PECO, calculated giving equal weight to an updated DCF and a risk spread study. The low end of the range is before recognition of any market pressure, selling and issuance expenses. My original calculation showed a cost rate of 16.9%.

With respect to the Barometer Group of Four Electric Companies With Bonds Rated BBB, the arithmetic average of a DCF and a risk spread calculation before recognition of any market pressure, selling and issuance expenses is 14.9% compared to the originally calculated 15.8%. Thus, for both PECO and the barometer group, the cost of common equity is approximately 1.0% less in late January 1986 compared to mid-September 1985.

With respect to the risk spread analysis, I employed a cost rate of 11.75% as the prospective cost to attract long-term debt rated BBB during the period of time the rates for service in question in this proceeding will be in effect, compared to the 12.5% I originally employed. The basis of my selection of an 11.75% cost rate for the companies whose bonds are rated BBB has been previously explained. Notwithstanding the fact that as interest rates fall, risk spreads rise and vice-versa, I held constant the 4.5% for PECO and 4.0% for the barometer group risk spread originally employed in order to be conservative and uncontroversial. The end result of these calculations is a 16.25% cost rate for common equity capital for PECO using the risk spread approach, and 15.75% for the

barometer group of four electric companies.

Q. IS THERE ANY CONFIRMATION REGARDING RISK SPREADS DERIVED FROM AN INDEPENDENT STUDY BASED UPON THE RESULTS OF INVESTING OVER A VERY LONG PERIOD OF TIME?

A. Yes. Ibbotson Associates publishes annually, Stocks, Bonds, Bills and Inflation. As can be derived from the published works of Ibbotson Associates, there is a difference in the realized return from the assumed purchase and sale of bonds and stocks based on the market price of bonds and stocks. Due to the nature of this type of study, results viewed over a few years can be quite misleading because this study does not attempt to show investor expectations from year to year or an average for just a few years. The results of this study are not either investor-expected or investor-required. Short-term results are the product of aberrations unrelated to underlying fundamentals. However, long-term averages cancel out short-term aberrations. Since the study is widely publicized and since the long-term average spread realized by investing in stocks and bonds is available to investors, it is for these reasons I believe this study can be considered corroborative of my studies which do proceed from calculations that reflect investor expectations.

For the period 1926-1984, the equity risk premium was 5.1%, which is the difference between the results of investing in corporate bonds and corporate common stocks. If the study was limited to the period 1952-1984, the risk premium was 6.2%. I suggest that this period of time may be a better indication of what investors observe is the result of investing in corporate bonds and corporate stocks because it was not until 1952 that the Federal Reserve and

the Treasury reached an accord which permitted interest rates to find their market level, given the fact that as a result of actions taken by the United States Government during World War II which were carried through to 1952, interest rates were "administered." Moreover, during the period 1926 through 1952, there was not only a World War which had a dramatic effect on interest rates as a result of actions taken by the government, but there was also a deep depression which was preceeded by a stock market crash.

Q. WITH RESPECT TO YOUR UPDATED DCF CALCULATION, HOW MUCH HAS THE DIVIDEND YIELD DECLINED?

A. The dividend yield declined 180 basis points. I originally computed a 15.0% dividend yield which was the product of giving equal weight to a spot price at September 19, 1985 and an average price for the twelve months ended August 31, 1985, and the Company's $2.20 dividend, all as developed on original Schedule 14. Substituting a spot price at January 27, 1986, and the average price for the twelve months ended December 31, 1985, again using the $2.20 dividend, and taking into account one-half the next period growth rate in dividends, results in a dividend yield of 13.20%. The difference between 15.0% and 13.2% is 180 basis points.

A similar computation with respect to the dividend yield for the barometer group of four electric companies reveals that the dividend yield now is 11.20%, compared to the originally calculated 12.10%, which is 90 basis points lower.

Q. WHAT CAUSED THE PECO DIVIDEND YIELD TO SIGNIFICANTLY DECLINE IN JUST ABOUT FOUR MONTHS?

A. The price of PECO stock moved from $14.625 on September 19, 1985 to $18.50 at January 27, 1986. This is an increase of over 26%. With

respect to the barometer group of four electric companies, the average price of stock at September 19, 1985 was $17.44, but moved to $19.69 by January 27, 1986, or an increase of 12.9%, or less than half the increase experienced by PECO. This information can be seen or derived from the information shown on page 2 of Schedule 14 and page 2 of Updated Schedule 14.

Q. DOES THE CHANGE IN PECO'S COMMON STOCK PRICE REQUIRE A REASSESSMENT OF AN APPROPRIATE PECO GROWTH RATE FOR DCF PURPOSES?

A. Yes. For the purpose of developing a DCF calculation as the indicated cost of common equity for PECO at this time, I believe it is appropriate to not just revise the dividend yield relative to the latest facts, but also the growth rate. Quite frankly, it is unreasonable to believe the price of stock would increase by 26% and investors would not expect a higher growth rate than formerly, particularly in light of the fact that utility stock prices generally increased, but far less than the PECO 26% stock price increase.

The growth rate I originally employed was 1.7%. The basis for that judgment was explained in my direct testimony and the calculations that went into that judgment were revealed on page 1 of original Schedule 15. With respect to the growth rate for the barometer group of four electric companies, I have not altered the growth rate I originally estimated, namely 2.9%, because while the stock price moved up 12.9%, such upward movement in stock price may reflect a lower cost of money with the passage of four months.

However, when the stock price goes up 26%, as is the case for PECO, as I previously indicated, such an increase is of such magnitude that a higher growth rate must be in the mind of investors.

Q. WHAT REVISED GROWTH RATE HAVE YOU EMPLOYED FOR PECO'S DCF CALCULATION?

A. Since the g part of the DCF model is supposed to be dividend growth, perhaps in this instance, at this time it is PECO's dividend growth data, both projected and historic, which now drives the price of PECO stock. As can be derived from the information shown on Schedule 15, page 1, the average of the Merrill Lynch (1.8%) and Value Line (2.0%) projected dividend growth rate and the 3.5% historical dividend growth rate, is 2.4%. A 2.4% growth rate in dividends is identical to the growth rate I used to develop the dividend yield part of my PECO DCF calculation originally and currently. Thus, given a 26% stock price increase, I will now use a 2.4% growth rate for the g part of the PECO DCF calculation as well as the next period dividend calculation as I originally employed.

Q. WHAT IS THE END RESULT OF YOUR REVISED PECO DCF CALCULATION?

A. The end result of the calculation of the dividend yield using the latest spot price as well as the twelve month average and taking into account one-half the next period dividend growth and growth in value indicates a cost rate for common equity capital using the DCF method for PECO is 15.60%, before recognition of issuance and selling expenses. Specifically, I have employed a dividend yield of 13.2% and a 2.4% growth rate. That compares with my original calculation of 16.7%, which was comprised of a 15.0% dividend yield and a 1.7% growth rate. The decline in the DCF computed cost rate for common equity is thus 1.1 percentage points.

Q. IS THERE ANY BENCHMARK REGARDING THE COST RATE FOR COMMON EQUITY CAPITAL DERIVED FROM A DCF COMPUTATION TO ASSESS THE REASONABLENESS OF PECO'S 15.60% COMPUTATION YOU JUST DISCUSSED?

A. Yes. The Federal Energy Regulatory Commission (FERC), in Opinion No. 442, announced that the second annual generically determined cost of common equity for the average risk electric company derived from a DCF calculation for the 12 months ended June 30, 1985 was almost 15.4%. The FERC's computation is derived from 100 electric companies. It should be noted, however, that the FERC, for ratemaking purposes, also announced that the cost rate for common equity capital was 14.4%. The reason for the difference is the FERC's assertion that the rate of return to be applied to the rate base is a mis-match under FERC procedures. The FERC rate base, revenues, and expenses are predicated upon a period of time quite different from the determination with respect to the rate of return. The rates for service filed may be made effective sixty days after filing, but the rate base, revenues and expenses used as a test year are for a period which is matched for a prospective period with the collection of the proposed rates. Thus, the FERC believes there is a mismatch which must be corrected. In Pennsylvania, usually rates are made effective after the end of even a forecasted test year, and thus, no correction is warranted. Even the FERC justification for a correction is dubious because the price of stock in the market presumably reflects whatever is the ratemaking practice of the regulator. Thus, the market has already made the adjustment. The FERC appears to have erred with a double correction because the FERC cost of common equity is based on the market price of stock.

I might also add, for full disclosure, that the FERC does employ a methodology to update its finding on a quarterly basis. However, that methodology is seriously flawed, given that only the dividend yield part of the calculation is updated and the growth

part of the calculation is ignored. The FERC itself recognized the flaw, in that between the first and the second generic determination, they amended the methodology in an attempt to correct the flaw by a change in the dividend yield calculation for updating purposes. The flaw still exists. For updating purposes, the growth rate is unchanged from that used in the annual determination. Accordingly, any updated cost rate published by FERC between annual generic determinations is, in my opinion, a number that is unreliable. Only the annual determination may be reliable.

Q. YOUR 15.60% UPDATED DCF FOR PECO IS 1.1 PERCENTAGE POINTS LOWER THAN YOUR ORIGINAL COMPUTATION BASED ON STOCK PRICES APPROXIMATELY FOUR MONTHS EARLIER, WHILE YOUR RISK SPREAD CALCULATION BASED ON ESTIMATES OF PROSPECTIVE LONG-TERM DEBT COST RATE COMPARED TO FOUR MONTHS AGO IS DOWN BY ONLY 3/4 OF 1%. IS THERE AN EXPLANATION FOR THIS DIFFERENCE?

A. I believe this kind of comparison suggests a DCF calculation is suspect and in this instance suspiciously low because of a significant increase in stock price in a very short period of time, thereby causing the dividend yield part of the calculation to fall substantially, but the growth rate part of the calculation, even if forecasts are employed, cannot change dramatically, because forecasts are published periodically and always lag the market price of the moment. Moreover, to the extent historic growth rates are also considered, it is perfectly obvious that the historical growth rate cannot change in response to a substantial sudden increase in stock price in a very short period of time, such as four months. It is for this reason I have never relied exclusively upon a DCF calculation to form a judgment regarding the cost rate for common

equity capital for ratemaking purposes. A DCF calculation can either over- or understate the cost of common equity depending upon whether or not there is a significant change up or down in the price of stock in a relatively short period of time. It is for this reason I also urge this Commission, as I have in the past, to reach a conclusion regarding the cost rate for common equity capital for ratemaking purposes by giving weight to another methodology such as the risk spread approach even though such methodology is based in part upon a DCF calculation. The methodology I have employed with respect to developing risk spread is to compute monthly, over a several year time frame, for many companies, a DCF cost of equity and, on a company-specific basis, compare that cost rate with a market-determined cost rate for debt. By the use of many companies and over a several year time span, aberrations tend to be averaged out. No doubt in some months the calculation produced a risk spread higher than appropriate and in other months lower than appropriate. The point is, however, that when a period of time other than a spot point in time is used, or even a one year period of time, the flaw in DCF occasioned by stock price aberrations or volatility are minimized and thus the spreads themselves are truer reflections when developed in that manner than would be the spread based upon a single calculation.

Moreover, the spread that is derived from a series of calculations over a many year time frame and varying interest rate levels is then matched with the prospective cost of debt, keeping in mind that spreads widen as debt cost rates fall and vice versa. Accordingly, while it is true the risk spread approach is DCF-related, the technique employed minimizes the flaws of DCF itself. Ac-

cordingly, the risk spread approach is a valuable tool to gain insight with respect to the cost rate for common equity. Again, however, since every method used is the product in the final analysis of the exercise of a series of subjective judgments, I do not urge this or any other Commission to rely exclusively upon the risk spread. Relying upon both risk spread and DCF, however, likely would lead to a more informed judgment and a truer reflection of the cost rate for common equity capital needed to be reflected in the price of utility service.

Finally, with respect to a DCF calculation or a risk spread calculation, my role is not to say what the cost of equity should be, but instead, what the marketplace says the cost of common equity is. In the short run, the market can be influenced by certain inefficiencies, which can distort the long-run required rate of return which is fair to the Company. Over time, there are those who argue that the market is efficient and self-correcting, but there are empirical studies recently published which suggest that the market may not, in fact, be efficient in the short-run.

Q. CAN YOU OFFER ANY REASONS WHY INVESTORS MIGHT THINK THE GROWTH IN VALUE OF PECO STOCK IS NOW MORE THAN IT USED TO BE?

A. Yes. Subsequent to the time I prepared my testimony, the Commission announced that PECO would be permitted to go forward with construction of Limerick 2. Investors apparently viewed that announcement as favorable. The announcement does not necessarily mean Limerick 2 will be allowed to enter the rate base at some future point in time or that the Company will be allowed to earn on the expected $3.2 billion investment in Limerick 2. However, PECO stock is held largely by individuals, rather than very sophisticated institutional

investors. I am of the opinion the average individual investor has not as yet given sufficient weight to the possibility that some, part, or all of Limerick 2 may not be permitted to earn a fair return, given this Commission's most recent decision regarding Pennsylvania Power & Light Company disallowing part of the rate base, even when construction is prudent. By the time the new unit comes on-line, hindsight judgment may indicate that the capacity available is more than needed. This is a regulatory-caused risk.

In addition, investors are aware of the fact that Limerick 1 is scheduled to come on-line in 1986 and may assume all of the Limerick 1 investment will be reflected in rate base and the Company will be in a position to substitute cash earnings for bookkeeping earnings (AFUDC) which of course, is also a positive note. In my judgment, the average investor may not be fully aware of the fact that the Commission has already concluded that the Company's 1976 and 1978 announcements of a delay in the Limerick construction schedule were unreasonable.

Accordingly, a general upward movement in the price of stock for electric companies, a favorable announcement with respect to Limerick 2, the imminent inclusion of Limerick 1 in the rate base, all have combined to lead the average investor to believe the stock value will grow at a greater rate than four months ago.

REBUTTAL REGARDING COST RATE FOR COMMON EQUITY

OCA Witness Rothschild

Q. PLEASE SUMMARIZE THE TESTIMONY OF OCA WITNESS ROTHSCHILD AS IT APPLIES TO PECO'S COMMON EQUITY COST RATE.

A. OCA Witness Rothschild uses a generic approach to the determination of PECO's common equity cost rate. He attempts to isolate the risk

associated with Limerick 2 and the eventual resolution of Limerick 1. I believe the ratemaking treatment of Limerick 1 should be synchronized with the Company's rate of return, because to do otherwise would provide a non-compensatory rate of return which may double-count any judgments regarding prudent expenditures for Limerick 1. It is important that any penalty assessed to the Company regarding imprudence not be counted twice.

In its most recent decision concerning the generic rate of return on common equity (Docket No. RM85-19-000), the FERC indicated in Order No. 442 that it is neither necessary nor feasible to segment the electric utility industry to develop benchmark rates of return for electrics engaged in nuclear construction and those not so burdened. Moreover, the FERC, when deciding the issue of jurisdictional versus non-jurisdictional risk, decided that the wholesale operations had equivalent risk to retail operations, and that the average equity cost rate for jurisdictional operations can be estimated from industry-average data. This indicates that the FERC does not believe it is possible or feasible to separate the common equity cost rate according to varying risks. If the FERC cannot accomplish this segregation of risk, OCA Witness Rothschild's ability in this regard is definitely suspect.

Q. IS THERE PRECEDENT FOR SEPARATING A PUBLIC UTILITY'S RISK IN A MANNER SUGGESTED BY OCA WITNESS ROTHSCHILD WHICH WOULD JUSTIFY DIFFERING COMMON EQUITY COST RATES FOR THE SAME COMPANY?

A. No. To the best of my knowledge, the Pennsylvania Public Utility Commission has never engaged in a differentiation of risk which is suggested by OCA Witness Rothschild. It is, therefore, without precedent that differing common equity cost rates apply to the

specific assets included or excluded from the rate base. Moreover, OCA Witness Rothschild has offered no evidence whatsoever that the difference between the 14.75% common equity cost rate (see page 4, line 15) and the 14.00% rate of return which he recommends (see line 8 of page 4) is entirely attributable to the risk of Limerick 2. OCA Witness Rothschild has not, nor can he state with any degree of precision that the Limerick 2 investment undertaken by PECO is equivalent to 75 basis points in added Company risk.

Moreover, with regard to the capital structure ratios selected by OCA Witness Rothschild, his position is inconsistent with his approach to separating the Company's common equity cost rate. In previous PECO proceedings, witnesses for the City of Philadelphia have argued for a segmentation of the Company's capital structure and embedded cost rates of debt and preferred stock according to the Company's various operations (steam, gas, electric and CWIP). This approach has previously been rejected more than once by the Commission. This rejection not only supports the use of the Company's capitalization, but also the use of the Company's overall capital cost rates consistent with that capitalization.

In addition, when this Commission assessed a penalty to PP&L regarding excess capacity (Docket No. R-842651), no adjustment was made to the 15-1/2% common equity cost rate included in the rate of return which was determined at that time. There is no justification that a company should be penalized twice; once through a rate base disallowance, and again through a lower rate of return. This would be manifestly unfair to stockholders since the result would be a double penalty.

Q. OCA WITNESS ROTHSCHILD SUGGESTS THAT PECO'S AFC RATE BE ADJUSTED TO REFLECT THE COMPANY'S LIMERICK RISK. DOES THIS PROVIDE A PLAUSIBLE APPROACH FOR THE COMPANY?

A. No. On page 11, line 23 through page 12, line 2, OCA Witness Rothschild suggests that the Limerick 2 AFC rate be used as a balance wheel to account for the difference between PECO's 14.75% total company common equity cost rate and the 14% common equity cost rate attributable to rate base assets. This would represent a clear departure for both the Pennsylvania Commission and the FERC as to the manner in which the AFC rate is computed. I know of no similar circumstance where the allowance for equity funds used during construction is different from the most recently prescribed common equity cost rate taken from either the FERC or the Pennsylvania Commission orders, when so stated. The procedure advocated by OCA Witness Rothschild would also be inconsistent with the procedure used to calculate the rate on borrowed funds used during construction which is the total Company's embedded debt cost rate.

To quantify the amount of risk difference OCA Witness Rothschild attributes to the Limerick 2 investment, an analysis of the Company's 1984 year-end capitalization and the capital assigned to the CWIP account (according to the Company's January 29, 1985 AFUDC filing pursuant to the Commission's Order dated August 17, 1973 -- RID No. 29) will show the fallacy of this approach. At year-end 1984, PECO's total common equity account was $2,891.0 million whereby the common equity attributed to the CWIP account was $1,589.6 million. If non-CWIP common equity were allowed a rate of return of just 14%, the Company's earnings would be $182.2 million ($2,891.0 million - $1,589.6 million = $1,301.4 million x 0.14). If

the Company's total equity account requires a 14.75% common equity cost rate, the overall Company earnings would need to be $426.4 million ($2,891.0 million x .1475). The difference, of $244.2 million, would be attributed to the CWIP common equity. This would mandate a 15.36% ($244.2 million ÷ $1,589.6 million) as the earnings rate necessary on the CWIP balance at December 31, 1984 for the Company to be made whole. I find nothing in Mr. Rothschild's evidence which would indicate that the difference in common equity cost rate would be 1.36% (15.36% - 14.00%).

As earlier demonstrated, PECO's total company common equity cost rate is at a minimum 15.90%. Applying this earnings rate to the $2,891.0 million total company equity would provide an earnings requirement of $459.7 million. Reducing this amount by the earnings attributed to OCA Witness Rothschild's 14% common equity cost rate would leave an earnings requirement of $277.5 million ($459.7 million - $182.2 million) on CWIP common equity. This would require a 17.5% ($277.5 million ÷ $1,589.6 million) AFC rate on equity funds for the Company to realize its 15.90% investor-required common equity cost rate.

If the Company were forced to book an AFC rate using 17.5% on the Limerick 2 investment, this would virtually mandate that the Company breach the Commission's cap on Limerick 2 investment for ratemaking purposes. OCA Witness Rothschild's proposal is placing the Company at even greater risk since he is arguing for a prohibitively high carrying cost on the Limerick 2 investment which is out-of-keeping with the Commission-required cap to complete the project.

Q. DOES THE RECENT PECO COMMON STOCK PRICE PERFORMANCE PROVIDE AN INDICATION THAT INVESTORS REFLECT THE SPECIAL RISKS PERCEIVED BY OCA WITNESS ROTHSCHILD?

A. No. Although the November 1985 common stock prices (see Schedule 4, page 1) demonstrate that PECO has not participated in the "very healthy" market-to-book ratios of other electric companies, the PECO common stock price has recently improved as I previously indicated. Even with this performance, investors do not believe that PECO's actual earnings are adequate, although OCA Witness Rothschild seems to believe that the 130% market-to-book ratio for the Moody's 24 show more than adequate earnings. The fact is that the price of PECO stock, or any stock, is related to expected earnings, dividends and future price earnings multiples. In the case of PECO, investors today think they see light at the end of the tunnel, namely, higher future earnings of much better quality now that Limerick 1 is scheduled to go commercial and reflected in the cost of service.

At page 28, lines 14 through 17, OCA Witness Rothschild seems to acknowledge that a company's common equity cost rate must be a function of its unique buisness and financial factors. Nevertheless, he repudiates this approach for PECO, given his substantial reliance upon a generically-determined common equity cost rate. OCA Witness Rothschild's generic approach to the cost rate of common equity will provide a noncompensatory rate of return for PECO given its higher risk unassociated with its current nuclear construction program. An average common equity cost rate is only applicable to a company having average risk characteristics. The quality rating of the Moody's 24 electrics' debt (i.e., bond rating) excluding nuclear construction is Aa, and for the group of Moody's 24 electric

utilities engaged in nuclear construction, the bond rating is a weak A. PECO has an inferior Baa3 (Moody's) and a BBB- (S&P) bond rating. This clearly shows higher risk than either of these groups. Yet the OCA Witness Rothschild's generic approach to the common equity cost rate does not reflect this fact.

OCA Witness Rothschild makes no attempt to link the average Moody's 24 electric utility with PECO regarding the territory served, regulatory climate, generating fuel mix, percent of industrial sales, or other business risk factors which bear upon the common equity cost rate. PECO is clearly more risky than the average electric, a fact which OCA Witness Rothschild apparently chooses to ignore.

Q. DOES OCA WITNESS ROTHSCHILD ACKNOWLEDGE THE INFIRMITIES OF THE DCF METHOD AS IT APPLIES TO PECO USING PRESENT MARKET PRICES, AND THE GENERALLY RESTRICTIVE ASSUMPTION OF THE DCF MODEL?

A. Yes. OCA Witness Rothschild states that PECO's DCF calculation is less accurate than normal. This must mean that DCF is always an imprecise measurement and that the special risk characteristics of PECO makes it more so.

At page 15, lines 8-12, OCA Witness Rothschild states some of the restrictive assumptions of his version of DCF. If growth is assumed to be constant with no assumed change in dividend payout ratio, and if the price-earnings multiple does not change, then the growth in the common stock price will track both earnings and dividends. Later at page 20, lines 6 through 10, OCA Witness Rothschild acknowledges that the DCF method becomes more accurate when earnings growth is considered. As just explained, a constant growth rate in dividends and earnings (assuming no payout change) combined

with an unchanging price/earnings multiple indicates that the value (i.e., price) of a firm's equity will grow at the same rate as earnings per share. Hence, OCA Witness Rothschild's use of book value growth (determined by his "b x r" approach) provides an inadequate and incomplete representation of investor-expected growth. It is apparent that OCA Witness Rothschild's DCF approach contains unrealistic assumptions. In fact, PECO's earnings/book ratio has changed over time which demonstrates non-constant growth, and the Company's price-earnings multiple has not remained constant. Therefore, OCA Witness Rothschild's "b x r" approach which assumes constant growth in earnings, dividends, and book value per share is not the driving factor which investors use when determining common stock prices. This is not the real world of investing, since none of these variables remain constant.

Q. GIVEN THE MANY SHORTCOMINGS OF THE DCF METHOD, ARE OCA WITNESS ROTHSCHILD'S ADMONITIONS REGARDING THE USE OF GROWTH IN EARNINGS AND DIVIDENDS JUSTIFIED?

A. No. OCA Witness Rothschild cautions that one mistake which must be avoided in implementing the DCF is use of the compound annual growth rates from historical periods. This view is inconsistent with his statement (see page 16, lines 8-9) that, "For most electric utilities, business conditions are relatively stable." He seems to indicate that, while local economic conditions, certain extraordinary events and the timing of rate cases temporarily impact utility earnings, electric utilities generally tend to have reasonably predictable earnings levels. If this is true, then for a reasonable time frame historical growth could be representative of prospective growth.

Moreover, OCA Witness Rothschild's discussion regarding management's success in earning profits (see page 12, lines 5-7) which establishes the value of assets rather than cost of assets, is inconsistent with his discussion at page 23, whereby he bases his entire discussion of growth in the context of book values. OCA Witness Rothschild cannot have it both ways, arguing for market values on one hand and basing his judgment on book value growth.

Q. IS THERE AN ALTERNATIVE APPROACH TO PECO'S COMMON EQUITY COST RATE USING A VARIATION OF THE DCF APPROACH?

A. Yes. OCA Witness Rothschild seems to suggest (see page 14, line 24 through page 15, line 2, and page 17, line 18 through page 18, line 8) that specific future cash flows could be discounted to determine the investor-required return rate if some of the constant growth assumptions of the DCF cannot be fulfilled. Rather than rely upon OCA Witness Rothschild's erroneous approach to determine book value growth, through the "b x r" approach, I have had prepared a schedule of specific cash flows for PECO based upon reasonably plausible investor expectations. Exhibit JFB-4, Schedule 1 provides PECO's investor-expected market returns of 15.92% using an internal rate of return approach. This is precisely the approach suggested by OCA Witness Rothschild at page 11, lines 12 and 13 of his testimony. On Schedule 1 of Exhibit JFB-4, future dividend payments for 1986 through 1990, are taken from page 2, and it is assumed that the common stock market value will appreciate from the average price considering the 52-week range and January 28 closing price to book value which is projected through the end of 1990. This represents a far more reasonable approach to assessing investor expectations than those considered by OCA Witness Rothschild. Implicit in this cash

flow approach is a 15.92% investor-expected return reflecting both higher dividends and capital appreciation.

Q. DOES OCA WITNESS ROTHSCHILD APPLY UNIFORM PRINCIPLES IN HIS APPLICATION OF THE DCF METHOD?

A. No. OCA Witness Rothschild's citation of "both historical performance and practical knowledge of the future" (see page 18, lines 18-20) allows him to alter these data in an inconsistent manner. In essence, OCA Witness Rothschild both embraces and ignores historical performance. For example, investors are already expecting earnings increases which are reflected in common share values, but if OCA Witness Rothschild is not in touch with these expectations, then his resulting recommendation will be a clear misspecification of the cost rate of common equity capital.

Q. UNDER WHAT CONDITIONS WOULD SUSTAINABLE GROWTH REPRESENT AN ACCEPTABLE DCF GROWTH COMPONENT?

A. Sustainable growth is only appropriate if investors do not believe there could be a change in earnings/book ratio or dividend payout ratio. Investors must anticipate that future changes are possible since Merrill Lynch (see Exhibit JFB-4, Schedule 2) reports show that during the last five years PE experienced a 12% return on book common equity, but for the next five years, the expectation is 14%. Merrill Lynch also forecasts a future dividend payout ratio of 75% for PECO in the next 10 years. Combining the future five-year ROE with a 25% retention rate (the complement of a 75% dividend payout ratio), indicates that PECO's sustainable growth would be 3.5% (14% x .25). The Merrill Lynch steady-state EpS growth rate is 2.9% for PECO. These data clearly demonstrate that the "b x r" growth formulation can be altered to provide whatever growth rate is desired

by a particular analyst.

Q. HAS OCA WITNESS ROTHSCHILD PROPERLY SEGMENTED THE MOODY'S 24 ELECTRIC UTILITIES?

A. No. OCA Witness Rothschild has misspecified his nuclear construction groups. Provided on Schedule 3 of Exhibit JFB-3 is the March 28, 1984 The Outlook listing electric utilities with no nuclear exposure, electric utilities with nuclear exposure but no problems, and electric utilities with nuclear exposure and problems. From this publication, it is clear that OCA Witness Rothschild has misclassified five utilities. These include Carolina Power & Light, Detroit Edison, Pacific Gas & Electric Company, Pennsylvania Power & Light Company, and South California Edison. These utilities have no problems with their nuclear construction programs. Moreover, two of the companies with problems; namely, Cincinnati Gas & Electric and Dayton Power & Light, are no longer involved in nuclear construction. The Zimmer Nuclear Station will be converted to a coal-fired plant.

Q. DO THE RATES OF RETURN FOR PECO AND EACH OF THE GROUPS SELECTED BY OCA WITNESS ROTHSCHILD PROVIDE REASONABLE RESULTS BY REFERENCE TO ALTERNATIVE INVESTMENT OPPORTUNITIES (I.E., PUBLIC UTILITY BOND YIELDS)?

A. No. The rates of return stated for November 30, 1985 (see page 28, lines 1-10) provide inadequate spreads over bond yields at that time. The following comparison shows that using OCA Witness Rothschild's DCF approach, the common equity risk spreads are generally less than 2% for the Moody's 24 electric companies excluding nuclear construction, telephone companies, and Philadelphia Electric Company.

	Cost of Equity As Calculated By Rothschild at November 30, 1985	Moody's November 1985 Bond Yield	Spread
DCF based upon Moody's 24 excluding Nuclear Construction	12.96%	11.10% (Aa)	1.86%
DCF based upon Moody's Gas Distribution Companies	14.58%	11.10% (Aa)	3.48%
DCF based upon Telephone Companies	12.89%	11.10% (Aa)	1.79%
DCF based upon Philadelphia Electric Company	14.00%	12.04% (Baa)	1.96%
DCF based upon electric utilities engaged in nuclear construction	14.12%	11.49% (A)	2.63%

These risk spreads certainly make no sense in the context of the higher risk of PECO, given its inferior Baa3 bond rating and the significantly higher risk for telephone companies facing significant competitive pressures.

Q. WHAT SHOULD BE CONSIDERED IN SELECTING A REASONABLE DCF GROWTH RATE?

A. The Value Line published historical and projected growth rates in earnings per share influence investors. Therefore, these growth rates must be considered because it has previously been shown that the restrictive assumptions of the DCF model do not conform with OCA Witness Rothschild's view of constant growth. To the extent that investors pay attention to the Value Line published growth rates in earnings per share and dividends per share, they must be investor-influencing and have an impact upon investor expectations when pricing public utility common stock.

There is no basis for OCA Witness Rothschild's conclusive statement that it would be improper to use the Value Line growth

rates because they are not the kind of growth the DCF formula is referring to. If investors rely upon Value Line, which they do, then these published growth rates influence investor expectations. Therefore, it is necessary to consider these growth rates when relying upon common stock market prices which are established by investors based upon expectations which are influenced by the Value Line growth rates.

Q. WILL YOU COMMENT UPON OCA WITNESS ROTHSCHILD'S IMPLEMENTATION OF HIS VERSION OF THE DCF?

A. OCA Witness Rothschild describes the three approaches to developing his judgment of future ROEs (Return on Equity is an integral part of the "b x r" approach): a continuation of the 1984 ROE, an ROE derived from I/B/E/S earnings per share projections, and Value Line projected ROEs. He applies this approach consistently for all groups of companies utilized in his study with the exception of PECO. Although OCA Witness Rothschild does not compute a DCF cost rate for each individual company within the Moody's 24 groups he does show a composite calculation based upon each group average (see Schedule 5, page 1). PECO is a member of one group. By reference to Schedule 5, page 3, OCA Witness Rothschild shows for PECO a 15.08% equity return for 1984 (see Column 9), a 14.00% Value Line future estimated equity return (see Column 11), and a 14.54% estimated return on equity for 1985 derived from I/B/E/S data (see Column 12). While he uses these figures within the group average with absolutely no adjustment, he arbitrarily ignores these figures when he performs a DCF analysis independently for PECO (see Schedule 4, page 1). This is a glaring inconsistency. It is irrelevant whether Value Line did or did not factor disallowances for Limerick

1 or 2 into their forecast. What may influence investors who read Value Line, for those who use the "b x r" method, is the ROE actually published. Accordingly, any adjustment by OCA Witness Rothschild to the Value Line forecast is improper.

OCA Witness Rothschild has arbitrarily cut PECO's ROEs developed from 1984 experience, the Value Line forecast, and the I/B/E/S data. There is no justification for OCA Witness Rothschild's inclusion of a 12.25% to 13.25% ROE when his data suggests 14% to 15% values. Based upon these inputs which are reflective of investor expectations, reinvestment growth shown on line 3 of Schedule 4, page 1, would be:

	Value Line	I/B/E/S	1984 ROE
ROE	14.00%	14.54%	15.08%
Retention rate	11.79% to 12.00%	15.06% to 15.27%	18.10% to 18.30%
Reinvestment Growth	1.65%-1.68%	2.19%-2.22%	2.73%-2.76%

The average growth rate is 2.2% (1.65% + 1.68% + 2.19% + 2.22% + 2.73% + 2.76% = 13.23% ÷ 6) from the array of growth rates developed using OCA Witness Rothschild's "b x r" approach.

The DCF results for PECO using the growth rates shown above, excluding the negative new financing growth and flotation expenses, would be:

	1984 High/Low	12-31-84	11-30-85
Dividend Yield (with 1/2 growth to next year)	15.10% to 15.18%	14.90% to 14.98%	14.09% to 14.16%
Reinvestment growth	1.65% to 2.73%	1.65% to 2.73%	1.68% to 2.76%
Cost Rate	16.75%-17.91%	16.55%-17.71%	15.77%-16.92%

The lowest DCF cost rate shown from these data is 15.77%. These DCF cost rates are without regard to either the dilution adjustment for new financing growth or a flotation cost allowance.

Obviously the DCF cost rates shown by OCA Witness Rothschild on Schedule 4, page 1, are not a reasonable representation of investor expectations. Moreover, the "low estimate" DCF calculated by OCA Witness Rothschild is particularly unreasonable, since these results (13.46% to 14.18%) shown on line 7 are less than the dividend yields shown on line 1 (13.97% to 14.98%). These cost rates reflect the unlikely assumption that growth will be negative, and hence, a dividend cut is in the offing. At this time, there are no forecasts of a PECO dividend cut, which makes OCA Witness Rothschild's recommendation particularly unreasonable.

Q. PLEASE COMMENT ON OCA WITNESS ROTHSCHILD'S DILUTION ADJUSTMENT AND ISSUANCE COST ADJUSTMENT?

A. OCA Witness Rothschild states that common stock offerings at prices above book value increase growth, and conversely, common stock sales below book value suppress growth. Since Value Line and the I/B/E/S analysts are aware of the relationship between market price and book value and since Value Line and the I/B/E/S analysts have knowledge of the company's capital needs for the future, any impact from ac-

cretion or dilution relative to common stock sales above or below book value have already been factored into the Value Line and I/B/E/S projected growth rates. Likewise, the historical growth rates in earnings per share and dividends per share also reflect any prior sales of common stock above, at, or below book value. Hence, to make a separate calculation to consider accretion or dilution resulting from common stock sales different from book value would be double counting. However, a negative allowance for future equity sales below book value is a self-fulfilling prophecy, because this negative growth factor suppresses growth and mandates a continuation of common stock prices less than book value which causes more dilution.

As to the 0.40% allowance for financing costs, this essentially nets out the -0.41% new financing growth factor shown on Schedule 4, page 1, line 4, under the column "Based on November 30, 1985 Market Data." Hence, if the Commission is to ignore, as it recently has, an allowance for financing costs, it should likewise ignore the negative new financing growth, using the November 30, 1985, market data. These two items should therefore be considered a wash.

Q. OCA WITNESS ROTHSCHILD HAS COMMENTED UPON THE FERC'S POSITION REGARDING THE GENERIC ELECTRIC UTILITY RATE OF RETURN ON COMMON EQUITY. WILL YOU CLARIFY THE FERC'S POSITION IN THIS REGARD?

A. In the FERC's final rule in Docket No. RM85-19-000, the benchmark investor-required rate of return was 15.36% for the average risk electric utility. Since everyone agrees that PECO has above-average risk, given its Baa3 bond rating, the Company's common equity cost rate must obviously be higher. OCA Witness Rothschild apparently does not understand the FERC's "ratemaking rate of return" cited in

Order 442, since this has no relevance to the ratemaking process in Pennsylvania. The PUC uses a terminal rate base at the end of a projected year which ends prior to the time the Company realizes new cash flows derived from proposed rates permitted by the Commission. In the case of PECO, the future June 30, 1986 rate base will precede the July 1986 effective date of new rates determined in this case. All revenues allowed by the Commission in this case occur after the terminal date used to measure PECO's rate base. This is unlike the FERC procedure which uses a fully projected 13-month average rate base occurring during the initial period that new rates will be collected. Hence, OCA Witness Rothschild is misinformed with respect to the FERC's generic common equity cost rate, since the only relevant cost rate is the 15.36% investor required return. In addition, for reasons previously mentioned, there is no need for the FERC to make an adjustment for a "ratemaking" rate of return.

Throughout the testimony of OCA Witness Rothschild, he repeatedly refers to the FERC Order No. 420 (see Response to Interrogatory No. 23). In that Order the FERC stated:

> "It seems reasonable to believe that investors would make use of all available data, historical, current, and forecast. As a result, the Commission believes that investors do give consideration to analysts' forecasts and that it is thus appropriate to take them into account when estimating their dividend growth expectations." (Order 420, page 79)

The most recent FERC Order 442 contains much information which refutes the testimony of OCA Witness Rothschild as it applies to my testimony. Specifically with respect to the quote at the top of page 51 and statements made on pages 52 and 57, OCA Witness Rothschild should be informed that the FERC stated in Order 442 that:

"In determining the growth rate, the Commission departs somewhat from the last proceeding and chooses to place primary reliance on a two-stage growth analysis as well as a fundamental (br + sv) analysis. The fundamental analysis allows the Commission to evaluate the reasonableness of the factors underlying and creating the expected dividend growth. Estimates of investor growth expectations should not be based on unrealistic forecasts of utility returns, retention rates, and the like. Further, since most available forecasts are essentially short-term, their reasonableness as long-term rates should be considered. This can be done by evaluating their implications in the context of a two-stage growth model.

The Commission also believes that both historical and forecast data should be used to evaluate the parameters for the approaches used. However, where historical data is used, there must be good reason to believe that the past can be used to measure expectations of the future." (Order 442, page 57)

Q. WILL YOU COMMENT UPON OCA WITNESS ROTHSCHILD'S CRITIQUE OF THE COMMON EQUITY RISK SPREAD APPROACH?

A. OCA Witness Rothschild, over the years, has used many different approaches to the cost rate of common equity capital. At one time, he used "market structure of yields" (his variation of risk spread), CEPT (Comparable Earnings Pricing Technique), and others.

OCA Witness Rothschild attacks the risk spread method, yet he used market structure of yields in the past, and at one time characterized this as a "perfect" and "excellent" method.

OCA Witness Rothschild's interpretation of this approach (see page 54 and Schedule 9) is one of comparing apples and oranges. He attempts to compare market-required expected returns (representing the investor-required future yield on debt) and regulatory allowed returns on book value. This is an invalid comparison and cannot be used in the context of a forward-looking risk premium approach based upon market values.

OCA Witness Rothschild's comments on page 55-56 with regard to income taxes are irrelevant. The tax preference granted to capital gains has been in effect for many years, and has been reflected by investors in their purchase and sell decisions. Likewise, capital gains treatment is available to debt investors who can profit from the capital appreciation between market prices of bonds below their stated redemption value.

With regard to OCA Witness Rothschild's comments (see page 56) regarding future inflation as a risk factor, public utility stocks are at risk in a manner similar to bonds. While the magnitude of the risk may impact financial assets differently, utility stocks are thought to be interest rate sensitive; and to the extent that interest rates rise and fall based upon changing inflation expectations, this would also impact common stock prices. The fact is, public utility achieved returns on book common equity during the past ten years did not increase on either a timely basis or to an appropriate level to offset the rate of inflation. This is proof enough that utility common stock, like utility debt, is subject to the risk of inflation.

Trial Staff Witness O'Donnell

Q. WITH RESPECT TO THE TESTIMONY OF TRIAL STAFF WITNESS O'DONNELL, CAN YOU HIGHLIGHT THE DIFFERENCES BETWEEN HIS RECOMMENDATION AND YOURS?

A. Yes. Trial Staff Witness O'Donnell has adopted the capital structure ratios I recommended. In addition, he has adopted the composite cost of debt and preferred stock I recommended. Accordingly, the only difference between the recommendation of Trial Staff Witness O'Donnell and me is with respect to the cost rate for common equity capital.

Trial Staff Witness O'Donnell recommends a 14.0% to 15.0% range in cost rate for common equity capital. Trial Staff Witness O'Donnell's recommendation is without regard to recognition of issuance and selling expenses. My updated recommendation is 15.9% without regard to selling and issuance costs which I estimate to be 0.48% (15.93% x 1.03 = 16.41% - 15.93% = 0.48%). Thus, the difference in Witness O'Donnell's and my recommendations is from 0.90% to 1.90% when issuance and selling expense impact is ignored.

Q. WILL YOU NOW PLEASE TURN TO THE SPECIFIC RECOMMENDATION OF TRIAL STAFF WITNESS O'DONNELL AND DESCRIBE BRIEFLY THE METHODS HE USED TO ARRIVE AT HIS RECOMMENDATION?

A. Trial Staff Witness O'Donnell first applied a DCF calculation to PECO and a selected barometer group of four electric companies. Trial Staff Witness O'Donnell then applied what he referred to as a risk spread method to more accurately reflect the differences that exist between PECO and the barometer group.

Trial Staff Witness O'Donnell's DCF method is comprised of a dividend yield which is the product of a yield based on a current price of stock and a six month average price of stock and an erroneous assumption that it is not necessary to recognize the fact that the price of stock is reflective of the next period dividend. In addition, Trial Staff Witness O'Donnell employs two growth rates; the high and low growth rates projected by Value Line, Salomon Brothers, and Merrill Lynch. Finally, Trial Staff Witness O'Donnell claims his risk spread method is a technique which more accurately reflects the difference that exists between PECO and a barometer group with regard to the cost rate for common equity capital. That technique employs the difference in bond yields for the barometer

group and the Company and uses that difference to adjust the barometer group DCF cost of equity.

Q. DO YOU AGREE WITH TRIAL STAFF WITNESS O'DONNELL'S CONCLUSION THAT THE PROPER OPPORTUNITY COST RATE FOR COMMON EQUITY CAPITAL FOR RATE OF RETURN DETERMINATION PURPOSES IS 14 TO 15 PERCENT?

A. No. Witness O'Donnell's recommendation is inappropriately low. The reason Witness O'Donnell's recommendation is inappropriately low is that he has misspecified the DCF model, the growth rate in his DCF calculation is miscalculated, and his risk spread method is flawed.

Q. HOW HAS HE MISSPECIFIED THE MODEL?

A. On page 16, lines 10-15 of his direct testimony, Trial Witness O'Donnell shows the periodic form of the DCF model as:

$$K = \frac{D_1}{P_0} + g$$

In the periodic form of the DCF model, the dividend is specified as D_1, the next year's dividend, or the current indicated annual dividend grown one year at the growth rate g. Trial Staff Witness O'Donnell, however, in his actual use of DCF fails to grow his dividend yield as required by his own model. If he had, in fact, followed his own model's specification, his cost rate recommendation for the Company would have been a range of 14.84% (13.7% (1.01) + 1%) to 15.97% (13.7% (1.02) + 2%), or a midpoint of 15.41%. Alternatively, if one-half the growth rate were used to adjust the dividend yield, a technique both OCA Witness Rothschild and I have followed (which has often been accepted by this Commission), Trial Staff Witness O'Donnell's results would have been from 14.77% (13.7%(1.005) + 1%) to 15.84% (13.7%(1.01) + 2%), or a midpoint of 15.31%.

Q. IS THERE ANY JUSTIFICATION FOR NOT INCORPORATING RECOGNITION THAT THE NEXT DIVIDEND AND NOT THE CURRENT DIVIDEND IS THE PROPER DIVIDEND TO USE IN A DCF CALCULATION?

A. No. My own methodology is more conservative than Witness O'Donnell's own model shown at line 10, page 16 of his direct testimony which he does not follow. My approach, by using a one-half "g" adjustment, reflects the reality that dividends are not received continuously which apparently is what Trial Staff Witness O'Donnell believes.

Q. WILL YOU NOW PLEASE TURN YOUR ATTENTION TO TRIAL STAFF WITNESS O'DONNELL'S GROWTH RATE CALCULATION IN THE DCF COMPUTATION RELATED TO PECO. WHAT GROWTH RATE HAS TRIAL STAFF WITNESS O'DONNELL EMPLOYED, AND HOW DOES THAT COMPARE WITH THE GROWTH RATE YOU EMPLOYED?

A. As can be seen on Schedule 5, page 2, of Trial Staff Exhibit No. ARO-1, Trial Staff Witness O'Donnell has considered the projected growth rates in E.P.S. and D.P.S. for PECO by Value Line, Merrill Lynch, and Salomon Brothers (DPS only). He selects a range of 1.0% to 2.0%, the low and high of the projections shown (ignoring the Merrill Lynch negative growth projected for EPS). He chooses this range while completely ignoring the higher historical growth rates he has calculated for the Company on his Schedule 4, page 4, No. ARO-1. On Schedule 4, page 4, Trial Staff Witness O'Donnell shows a five year moving average growth rate in dividends of 4.09% and a ten year moving average growth rate of 2.98%. While Trial Staff Witness O'Donnell has placed great faith in this type of historical growth rate in the past (see for example his testimony in the Duquesne case, R-850021), he ignores the role of historical evidence of growth rates as influencing investor expectations in this case.

Obviously, employing his previous technique would produce a higher common equity cost rate. An average of the five year and ten year historical growth rates in dividends shown by Trial Staff Witness O'Donnell on page 4 of Schedule 4 would indicate a growth rate of 3.5% (4.09% + 2.98% = 7.07% ÷ 2). Thus, had Witness O'Donnell relied, even in part, on his own historical growth rates as investor influencing - say fifty percent weighting - his growth rate range would have been from 2.25% (1.00% + 3.50% = 4.50% ÷ 2) to 2.75% (2.00% + 3.50% = 5.50% ÷ 2). The resulting common equity cost rate for PECO would be in a range of 16.10% (13.7%(1.01125) + 2.25%) to 16.64% (13.7%(1.01375) + 2.75%), using the periodic form of the DCF model he purports to sponsor on page 16 of his direct testimony.

Q. ARE YOU AWARE OF THE FACT THAT TRIAL STAFF WITNESS O'DONNELL APPARENTLY DID NOT RELY EXCLUSIVELY UPON PECO TO ARRIVE AT HIS JUDGMENT AS TO THE PROPER COST RATE FOR COMMON EQUITY CAPITAL FOR THE COMPANY?

A. Yes. Trial Staff Witness O'Donnell has also relied upon a DCF calculation pertaining to four similar risk companies.

Q. DO YOU AGREE WITH THE APPROACH WHICH BLENDS A BAROMETER GROUP WITH THE COMPANY IN QUESTION TO ARRIVE AT THE COST RATE FOR COMMON EQUITY CAPITAL FOR THE COMPANY IN QUESTION IN THIS PROCEEDING?

A. Generally, no. However, I do believe that one should perform calculations relative to a barometer group for use primarily as a check on the Company in question. In some instances, when the Company's data is a complete aberration, a proxy group obviously must be used. The quest in this proceeding with respect to overall cost of money and the cost rate for common equity capital is to discover the cost to PECO, not a barometer group.

Moreover, Witness O'Donnell's own calculations demonstrate that reliance on his Barometer Group is inappropriate because the DCF calculation for his Barometer Group is significantly lower than his DCF for PECO, thereby demonstrating a substantial difference in risk between PECO and his Barometer Group.

Q. ARE YOU FAMILIAR WITH THE FACT THAT TRIAL STAFF WITNESS O'DONNELL DEVELOPED A RISK SPREAD METHOD TO REFLECT THE DIFFERENCE IN RISK THAT MAY EXIST BETWEEN PECO AND THE BAROMETER GROUP?

A. Yes. Trial Staff Witness O'Donnell developed differences in yield to maturity for long-term debt for PECO and each of his four barometer electric companies as a method to adjust common equity cost rate differences between the Company and the average for his barometer group. The derivation of the yield differences is shown on pages 2-4, inclusive, Schedule 6 of Trial Staff Exhibit No. ARO-1. The end result of these calculations by Witness O'Donnell is to adjust downward his indicated coat rate for common equity capital by 0.1%.

Q. DO YOU AGREE WITH THIS ADJUSTMENT?

A. No. First of all, there is no need for any adjustment. The cost rate for common equity capital for PECO should be the product of the Company's specific information to the greatest extent possible. Second, the bond yield differences could easily be the product of a number of factors not taken into account by Trial Staff Witness O'Donnell. One factor would be limited trading activity of the bonds for each of the companies he employed for the purpose of computing the yield differences, rather than risk differences.

For instance, please observe by reference to page 4, Schedule 6 of Trial Staff Exhibit No. ARO-1, where it is shown that the average

difference in the yield between PECO (PECO) and Duquesne is but 0.08%. The other three companies shown in this tabulation all do business in Ohio and are regulated by the Public Utility Commission of Ohio.

It should also be noted that in an October 24, 1985, Order relative to Metropolitan Edison, this Commission opined that PECO was more, not less, risky than the barometer group used by Trial Staff Witness O'Donnell in that case. The three out-of-state companies used by Trial Staff Witness O'Donnell in the Metropolitan Edison case are the same companies he used in this case. Accordingly, Trial Staff Witness O'Donnell has now opined that PECO is less risky than his barometer group, which is at odds with this Commission's opinion expressed late in 1985.

Q. WOULD YOU SUMMARIZE THE ERRORS AND DISTORTIONS IN TRIAL STAFF WITNESS O'DONNELL'S EQUITY COST RATE OPINION?

A. First, Trial Staff Witness O'Donnell misapplied the periodic DCF model he originally sponsored which results in a lower, misspecified common equity cost rate recommendation. Second, Trial Staff Witness O'Donnell, in a marked departure from his previously strongly supported position, declines to give any weight to historical rates of growth in dividends or earnings as investor influencing. Third, Trial Staff Witness O'Donnell employs a group of companies unlike PECO when, in fact, there is no need at all to employ any such proxy when there is ample evidence available for PECO alone. Fourth, Trial Staff Witness O'Donnell's judgment is at odds with the Commission's opinion that PECO's risk is greater, not less, than the barometer group's risk. For these reasons, Trial Staff Witness O'Donnell has rendered an opinion as to the cost rate for PECO com-

mon equity which is unfair to the common stockholders of the Company and which, if adopted by this Commission would threaten the financial stability of PECO and place in jeopardy the ability of the Company to serve its customers as required by its franchise viewed over the long term.

GSA Witness Winter

Q. WOULD YOU COMMENT NEXT ON GSA WITNESS WINTER'S EQUITY COST RATE OPINION?

A. Yes. GSA Witness Winter recommends an equity cost rate range of 15.09% to 16.09% based primarily on a two-stage Discounted Cash Flow (DCF) model. While this range is not completely unreasonable for a DCF equity cost analysis, GSA Witness Winter attempts to corroborate his DCF findings with several risk premium methodologies which are flawed and therefore incorrectly support his DCF findings. In addition, GSA Witness Winter has erred in his calculation of the upper range of his two-stage DCF analysis and has recommended an upper limit lower than required by his own DCF model.

Q. WOULD YOU PLEASE EXPLAIN WITNESS WINTER'S MISTAKE WITH RESPECT HIS DCF MODEL?

A. Yes. GSA Witness Winter's two-stage DCF model is shown on page 26 of his testimony. This model requires the input of the current price, current dividend and specified growth rates for two periods. GSA Witness Winter specifies growth rates "0" short-term (5 years) and 1.0% long-term for the low end of his range and 1.0% short-term (5 years) and 2.0% for the high end of his range. Although GSA Witness Winter does not specify the exact current price he uses in the model, a price of $15.17 per share is inferred from the $2.20 current annualized dividend and the 14.5% current dividend yield stated

by GSA Witness Winter. Solving GSA Witness Winter's model for the low end of his growth rates ("0" and 1.0% growth rates respectively) in fact produces the 15.09% cost rate shown. However, GSA Witness Winter's solution of the model for the high end of his range (growth rates of 1.0% short-run and 2.0% long-run), is incorrect. The correct answer appears to be 16.23%.

Q. IS THIS THE ONLY PROBLEM YOU HAVE WITH GSA WITNESS WINTER'S DCF EQUITY COST RATE FINDINGS?

A. No, it is not. GSA Witness Winter relies entirely on projections of security analysts in choosing his growth rates and ignores the history of growth in dividends. While investors' expectations are certainly not solely the product of historical growth rates in dividends, to assume that investors completely ignore the recent history of dividend increases of more than 2.5% per year as one input with respect to their view of the future is inappropriate. Apparently, GSA Witness Winter rejects this historical record on the grounds that share price growth has not kept pace with dividend growth, which, in fact, means only that share prices at times may be driven by factors other than just dividend growth patterns (interest rate levels, for example). Recent share price gains for PECO would indicate that higher dividend growth is obviously expected (giving support to the use of historical growth rates).

In addition, GSA Witness Winter, after accepting solely analysts' forecasts as representative of investors' short-term expectations, rejects the only long-run analysts forecast of growth available to him, namely the steady-state (long-term) earnings growth forecast of 2.9% by Merrill Lynch (p. 32 GSA Statement No. 1). If Witness Winter had used the 2.9% long-term forecast as the

long-term growth in his two-stage DCF model, his high range equity cost rate recommendation would have been 16.77% and his low range 16.23%, a full percentage point higher than his expressed opinion.

Q. WILL YOU NOW EXPLAIN YOUR EARLIER STATEMENT THAT GSA WITNESS WINTER EMPLOYED FLAWED RISK PREMIUM ANALYSES IN SUPPORT OF HIS DCF OPINION?

A. GSA Witness Winter has employed an historical risk premium approach, a PECO-specific risk premium approach, and finally, he attempts to directly compare PECO common stock with bonds rated "B" and "CCC" (Caa). GSA Witness Winter's historical approach is flawed because the use of long-term historical risk premiums fail to take into consideration the fact that the common stock risk premium rises as bond yields fall and fall as bond yields rise as may be seen from Schedule 16, page 1 of 4 in the Exhibit accompanying my direct prefiled testimony. For example, in 1981-82 when PECO long-term bonds were yielding 15.6%, the common stock premium was 1.3% and in 1983-84 when bond yields had fallen to 13.7%, the risk premium was 3.7%. Obviously, the use of historical average premiums calculated over long periods of time when bond yields are fluctuating widely does not capture the true risk premium of stocks over bonds at a particular point in time or at a particular interest rate level.

GSA Witness Winter offers little evidence with respect to PECO-specific risk spreads. He indicates that he finds risk spreads between 2.2% and 5.9% with PECO bonds having maturities of 10 to 20 years yielding from 10.3% to 12.9%. It is unclear from his testimony whether he is supporting an equity cost rate of 18.8% (12.9% + 5.9%) or 12.5% (10.3% + 2.2%) or some other combination or combinations of premiums and yields (such as, 10.3% + 5.9% = 16.2%, or 12.9% + 2.2% = 15.1%).

Finally, GSA Witness Winter, without evidence, asserts his opinion that PECO common stock is comparable in risk to bonds rated between B and CCC. He asserts that PECO has less risk "than that associated with the triple-C bonds of a company that is near bankruptcy." (GSA Statement No. 1, p. 46) Aside from the fact that Standard & Poor's does not mention "bankruptcy" in their rating definitions, GSA Witness Winter provides no evidence, and no compelling argument, that PECO's common stock is comparable in risk to the bonds he cites. If common equity cost rates and bond yields are to be compared indiscriminantly, without reason, we might consider the year-end yield of a PECO First Mortgage Bond (the 18-3/4%, due 2009) yielding 15.54%. Certainly, the PECO common stockholder is at much greater risk than any PECO First Mortgage bondholder. GSA Witness Winter's finding that his DCF equity cost rates are reasonable based on his finding of 14.0% and 16.0% yields to maturity for bonds rated "B" to "CCC" is unfounded.

Q. DOES THIS CONCLUDE YOUR UPDATED AND REBUTTAL TESTIMONY?

A. Yes, it does.

PECO Statement 28

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PHILADELPHIA ELECTRIC COMPANY

(Electric Operations)

Sur-Surrebuttal Testimony

of

Joseph F. Brennan, President
Associated Utility Services, Inc.

Concerning

Fair Rate of Return

Q. ARE YOU THE SAME JOSEPH F. BRENNAN WHO OFFERED DIRECT AND UPDATED AND REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE NATURE OF YOUR TESTIMONY AT THIS TIME?

A. I have been requested by Philadelphia Electric Company (PECO or the Company) to respond to certain of the surrebuttal testimony of Commission Trial Staff Witness Andrew R. O'Donnell, General Services Administration Witness Philip R. Winter, and Consumer Advocate Witness James A. Rothschild.

SUR-SURREBUTTAL TESTIMONY TO TRIAL STAFF WITNESS ANDREW R. O'DONNELL

Q. ARE YOU FAMILIAR WITH WITNESS O'DONNELL'S SURREBUTTAL TESTIMONY REGARDING A COMPARISON OF YOUR PAST RECOMMENDATIONS AND THE COMMISSION'S PAST ALLOWED RETURN ON COMMON EQUITY WITH BOND YIELDS AND THE RELATED SPREAD OR DIFFERENCE BETWEEN THE TWO?

A. Yes. Based upon information derived from the last five PECO electric retail rate case decisions of this Commission, Witness O'Donnell purports to compare my recommended rate of return on equity in each case with a rated average bond yield for the six months prior to each Commission decision. Based upon this comparison, Witness O'Donnell purports to calculate the average risk spread between my common equity recommendations and the current debt cost rate and the average risk spread between the Commission-allowed cost rate for common equity and the current debt rate.

Q. ARE WITNESS O'DONNELL'S CALCULATIONS CONSISTENT?

A. No. Witness O'Donnell's calculation is performed consistently for all prior rate cases by using six-month average bond yields. However, with regard to the current case, Witness O'Donnell employed a spot yield, not the preceding six-month average. Had Witness

O'Donnell employed a six-month average for the current case, the spread between my recommended common equity cost rate rate and Witness O'Donnell's would be lower. This is important, not only for consistency, but because Witness O'Donnell states that his calculation shows the spread he derived from my recommendation is too high, while the spread derived from his recommendation is appropriate. Later in my testimony, I will discuss Witness O'Donnell's calculation of the spread related to my recommendation. For the moment, I will focus on Witness O'Donnell's recommendation.

Q. WHAT SPREAD DOES WITNESS O'DONNELL CLAIM HIS MID-POINT 14.5% COMMON EQUITY RETURN RATE WOULD PRODUCE?

A. Witness O'Donnell's 14.5% mid-point common equity return rate less a spot February 5, 1986 Baa bond yield of 10.7% is 3.80%.

Q. WHAT WOULD BE THE SPREAD BASED ON THE RECENT SIX-MONTH AVERAGE Baa BOND YIELD?

A. The latest available six-month average bond yield (ended December 31, 1985) is 12.36%. Thus, Witness O'Donnell's 14.50% less 12.36% is 2.14%, not 3.80%, computed on a consistent basis with Witness O'Donnell's other calculations on Schedule 1, page 3. Thus, if Witness O'Donnell believes a spread of 3.80% is appropriate, his recommended return on common equity would need to be 16.16% based upon the yardstick he employed, namely, a 12.36% six-month average Baa yield and his judgment that a 3.80% spread is appropriate.

Q. IS THERE A FURTHER PROBLEM WITH WITNESS O'DONNELL'S CALCULATIONS?

A. Yes. Another problem with Witness O'Donnell's calculation is that it proceeds from the premise that the past Commission allowed rates of return on common equity were perfect, not understated or overstated. A cursory review of the tabulation suggests that hindsight

reveals the Commission allowed rate of return on equity was generally understated, as evidenced by an upward movement in the allowed rate in four of the first five cases (1979-84, inclusive) and an upward movement in interest rates. If the allowed rate was understated, the spread is understated. Remember, ratemaking is prospective, and we know that for most of the years 1979-84 the next year's cost of capital was higher than the previous year. Thus, use of a tabulation of risk spreads based on Witness O'Donnell's method produces an understated spread.

Q. IS THERE A PROBLEM WITH WITNESS O'DONNELL'S CALCULATION OF THE RISK SPREAD HE ASCRIBES TO YOUR RECOMMENDATION IN THIS CASE?

A. Yes. Witness O'Donnell's Schedule 1 reveals two calculations in regard to my recommendation. First, he calculates the spread based on the mid-point of my original recommendation. However, my updated recommendation corresponds to the lower end of the range of my original recommendation. The two spreads calculated by Witness O'Donnell are not comparable.

Q. ARE THERE YET OTHER PROBLEMS WITH WITNESS O'DONNELL'S SCHEDULE 1 CALCULATIONS?

A. Yes. If the purpose of Witness O'Donnell's testimony, at least in part, is to develop spreads between debt and equity for PECO based upon my past recommendations, the proper method to employ is the forecasted bond yield I used in each of those cases relative to my recommended return on common equity in order to gain insight as to the difference between my recommended return on common equity and the bond yield I assumed would be the appropriate bond yield. The average risk spread I recommended in the last five cases, excluding the current case, was about 3.8% relative to an average forecasted

interest rate of 12.67%. The range of risk premium I recommended was a high of 5.0% at the 10% interest rate level and a low of 3% at the 15% interest rate level. Therefore, my updated risk premium recommendation of 4.5% at the 11.75% interest rate level is well within the parameters of my past recommendations.

For example, in Docket No. R-79060865, I recommended a 15.0% opportunity rate for common equity for PECO and at that time I assumed long-term First Mortgage Bonds to be issued by PECO would have a cost rate of 10%. Thus, the implicit spread between my recommendation as to the cost rate for equity and debt was 5% when interest rates were at the 10% level. For clarification, it should be noted that in none of the five cases reported by Witness O'Donnell did I recommend a cost rate for common equity based upon a risk spread study exclusively. I used another technique as well, such as DCF. In regard to Docket No. R-79060865, Witness O'Donnell's Schedule 1, page 3 reveals that he believes my recommendation was a spread of but 2.00%, when instead, it was implicitly 5.00%, as previously mentioned. The difference is the product of the fact that the method Witness O'Donnell chose to employ was an average bond yield for the preceding six months, which produced a 13% bond yield, rather than a 10% bond yield I did employ. Accordingly, Witness O'Donnell's technique distorts the spread between my recommended return on common equity and the bond yield I assumed the Company would need to pay relative to a prospective bond issue. Moreover, the Commission did not adopt Witness O'Donnell's 13% number, but instead a lower number, and thus the 1.35% spread Witness O'Donnell ascribes to the Commission also is understated.

It should also be noted that in most of the past five cases the actual interest rate subsequently paid by the Company was higher than the assumed interest rate I employed in my composite debt cost rate calculation. In other words, I underestimated the cost of long-term debt. The reason for the underestimation is obvious, namely, during the period 1979-84 there were strong, significant sudden movements in interest rates. The technique I have employed to make a recommendation with respect to prospective interest rates, was to assume a rate not terribly different from the most recent rate paid if there was a recent issue. The end result, of course, is that in some instances the Company paid more than I assumed, and in other instances, such as the current case, less. It is difficult to forecast long-term interest rates, particularly during the course of the past several years when interest rates were extremely volatile, moving both up and down in a relatively short period of time. However, in all cases, including the current case, I urge the Commission to employ the actual rate paid, rather than an estimate, if the proposed sale of new debt takes place subsequent to the time of the estimate but prior to the Commission's decision date.

Q. IS THERE ANOTHER ASPECT OF WITNESS O'DONNELL'S SPREAD TABULATION WHICH SHOULD BE CORRECTED?

A. Yes. In the current case, Witness O'Donnell shows my updated recommended 15.90% return on common equity as being 5.20 percentage points higher than the early February 1986 BBB bond yield of 10.70%. PECO sold new long-term debt, and by long-term debt I mean near thirty-year debt, late in 1985. The coupon rate paid was 11-3/4%. Accordingly, the difference between a recommended 15.90% return on equity and a rate identical to what the Company most recently paid,

namely 11.75%, is not 5.20%, but 4.15%. The 11.75% interest rate in this regard is specific to PECO. The 10.70% employed by Witness O'Donnell is not specific to PECO. Moreover, the difference between Witness O'Donnell's mid-point 14.50% common equity recommendation and 11.75% is 2.75%, which is considerably less than the 3.80% Witness O'Donnell believes appropriate.

Q. WHAT DO YOU CONCLUDE IN REGARD TO WITNESS O'DONNELL'S SPREAD TABULATION PRESENTED IN HIS SURREBUTTAL TESTIMONY?

A. The end result of Witness O'Donnell's presentation with respect to spreads between return on equity and debt cost rate is flawed and unreliable and should be disregarded.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS O'DONNELL CITES ONE INSTANCE WHERE THE COMMISSION DID NOT TAKE INTO ACCOUNT THE NEXT PERIOD DIVIDEND IN ARRIVING AT A DIVIDEND YIELD IN A DCF CALCULATION?

A. Yes. However, Witness O'Donnell, who does have ready access to every decision reached by the Commission, could have presented all of the facts, namely, that the Commission in many instances has taken into account the next period dividend in applying a DCF calculation. Just to cite a few, and these are recent cases in which AUS has been involved, be advised the Commission has recognized and allowed a dividend yield more than D_o: Equitable Gas Company, Docket No. R-842769; Philadelphia Suburban Water Company, Docket No. R-842592; Riverton Consolidated Water Company, Docket No. R-842675; Western Pennsylvania Water Company, Docket No. R-842621; Bell Telephone Company of Pennsylvania, Docket No. R-842779; Duquesne Light Company, Docket No. R-842583; Philadelphia Electric Company, Docket No. R-842590.

It is difficult to understand how Witness O'Donnell can only remember one instance where the Commission did not, and seems to have no knowledge whatsoever of the great many and recent instances where the Commission did take into account the next period dividend in its DCF calculation.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS O'DONNELL CLAIMS THAT THE INPUTS HE USED IN THIS CASE, AND IN THE RECENT DUQUESNE CASE, (DOCKET NO. R-850021) ARE THE SAME AND THAT NO AVERAGING PROCESS WAS EMPLOYED IN EITHER THIS OR THE DUQUESNE CASE IN ARRIVING AT ITS JUDGMENT AS TO GROWTH RATE IN ITS DCF CALCULATION?

A. Yes. However, Witness O'Donnell's statement in this regard begs the question. In the Duquesne case Witness O'Donnell gave great weight to historical growth. Historic growth rates in the Duquesne case were low. In this case involving PECO, Witness O'Donnell gave little weight to historic data, which growth rates were higher than forecasted growth rates.

Had Witness O'Donnell in this case relied upon the historical moving averages for PECO as shown on Schedule 4, page 4, of the exhibit to accompany his original pre-filed direct testimony, the five-year moving average ended 1984 was 4.09% and the ten-year moving average ended 1984 was 2.98%. In other words, the moving average growth rate would have been 3% to 4%. However, in the PECO case, Witness O'Donnell appears to abandon historical growth rates as a practical matter. In this case involving PECO, Witness O'Donnell appears to rely initially upon forecasts, which coincidentally are lower than the PECO historic moving average growth rates, notwithstanding his use in Duquesne of apparently historic moving average growth supported by forecasts he relied upon

primarily in Duquesne, and instead employs a growth rate of 1% to 2%.

Q. IS THERE AN APPARENT INCONSISTENCY BETWEEN WITNESS O'DONNELL'S TESTIMONY AND HIS RECOMMENDATION IN THIS CASE?

A. Yes. On page 5 of Witness O'Donnell's pre-filed surrebuttal testimony, beginning at line 12, it is stated, "My judgmental 14.0%-15.0% common equity return rate recommendation was based upon calculations specific to PECO and my judgment relative to the reasonableness of the inputs of those calculations." Frankly, it is hard to comprehend that statement in light of Witness O'Donnell's Duquesne testimony, where in his conclusion was a cost rate very near the mid-point of his Duquesne specific calculations and his pre-filed surrebuttal testimony in this case.

In this case, the O'Donnell PECO growth rate, 1.0% to 2.0%, is a growth rate that is significantly under the last four consecutive years' historic dividend growth rate and the five-year average historic growth rate shown on Schedule 4, page 4 of his exhibit to accompany his pre-filed direct testimony. Since Witness O'Donnell's recommendation in this case appears to be the mid-point of his recommended 14.0% to 15.0% common equity cost rate range, namely, 14.50%, in effect Witness O'Donnell is using a growth rate of 1.5%, which is the mid-point of a 1% to 2% growth rate range. Whether one uses the five- or ten-year moving average dividend growth rate shown by Witness O'Donnell on Schedule 4, page 4 of the exhibit to accompany his pre-filed direct testimony in this case, the average growth rate for the five years ended 1984, or the latest year shown by Witness O'Donnell, the growth rate would be a range of approximately 2% to 3%, and the mid-point would be 2.5%, or not terribly different

from my updated recommended growth rate of 2.4%. Accordingly, Witness O'Donnell's recommendation just on growth rate alone with respect to DCF appears to be approximately one percentage point less than appropriate using his own technique in the Duquesne case, and PECO specific as claimed by Witness O'Donnell.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS O'DONNELL COMMENTS ON PAGE 5, AT LINE 5 OF HIS PRE-FILED SURREBUTTAL TESTIMONY, THAT YOU HAVE CHANGED YOUR GROWTH RATE ESTIMATION PROCESS IN THIS CASE VERSUS THE DUQUESNE CASE AT R-850021?

A. Yes. I certainly did change for the simple reason that PECO's stock price changed dramatically in a very short period of time. I might add that, had I not changed, I would be remiss. Since the growth rate in a DCF calculation is supposed to be growth in value, and since the price of PECO stock has increased from $14-5/8 on September 19, 1985, the spot price I used when I prepared my pre-filed direct testimony, to $19.50, the spot price on February 13, 1986, or by over 33%, it is obvious that between September 19, 1985 and February 13, 1986, investors expected a higher growth rate for PECO. This is particularly true when viewed in light of the fact that the Dow Jones Utility Index increased by about 16%, or about half the PECO stock price increase (179.11 on February 13, 1986 ÷ 153.72 on September 19, 1985 = 116.5 - 100 = 16.5%).

I might further add that the growth rate I have now employed, namely 2.4%, is identical to the growth rate I did employ in my original calculation with respect to the dividend yield part of the DCF calculation. In other words, my updated recommendation reflective of a dramatic change in market attitude toward PECO, with respect to growth rate, still falls within the range of the growth

rates I did originally consider.

Q. IS THERE OTHER EVIDENCE TO SUPPORT THE NOTION THAT WITNESS O'DONNELL DID NOT REACH HIS OPINION BASED ON PECO-SPECIFIC DATA?

A. Yes. On Schedule 5, page 3 of the exhibit to accompany Witness O'Donnell's pre-filed direct testimony, please observe that with respect to his DCF calculation, wherein he concludes that 14.7% to 15.7% is appropriate for PECO, whereas for the barometer group, the range is 12.6% to 14.2%. Since Witness O'Donnell's conclusion in this proceeding is 14.0% to 15.0% for PECO, it is obvious that the low end of Witness O'Donnell's recommendation is derived from his barometer group because there is not a PECO cost rate as low as 14.0%, as calculated by Witness O'Donnell. The mid-point of Witness O'Donnell's recommendation based on PECO-specific data using his DCF calculation is 15.2%. Obviously, that is higher than the mid-point of his recommendation of 14.5% arrived at, apparently, by taking into account not PECO-specific but also his barometer group calculations. In addition, as I have previously indicated, had Witness O'Donnell consistently employed the methods he employed in Duquesne and applied them similarly, his conclusion with respect to PECO would be at least one percentage point higher.

<u>WITNESS PHILIP WINTER</u>

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS WINTER'S UPDATED AND SURREBUTTAL TESTIMONY REFLECTS HIS USE OF A 10.36% COMPOSITE DEBT COST RATE FOR PECO COMPARED TO YOUR USE OF A 10.86% COMPOSITE DEBT COST RATE?

A. Yes.

Q. HAS WITNESS WINTER ATTEMPTED TO EXPLAIN THE DIFFERENCE?

A. Yes. Witness Winter first states that my number is in error because I relied upon Treasury Bill future contract yields to estimate end of test year yields on PECO's floating rate Pollution Control Notes. Witness Winter faults my use of such contract yields because such yields have been consistently above forecasts and Witness Winter faults me because he says elsewhere I rely upon Blue Chip Financial Forecasts but did not do so with respect to T-Bill yields.

Q. DO YOU AGREE WITH THESE COMMENTS?

A. No. Treasury Bill future contracts are the product of actual transactions of people who have risked money and thus, such contract yields are a better indication of cost than is a forecast. If there was such a thing as public utility bond future contracts I would use those in preference to forecasts.

With respect to Witness Winter's criticism of me because I did not rely upon Blue Chip Financials, and his citation of my rebuttal testimony at pages 3 and 5, Witness Winter knows full well that those citations relate to my statement that I will use the most recent actual PECO bond sale as the best yardstick of what PECO will pay and I cited Blue Chip Financials with respect to evidence that interest rates are not expected to change very much. Witness Winter's testimony in this regard therefore is misleading.

Q. ARE YOU AWARE OF THE FACT THAT ON PAGE 3 AT LINE 8 WITNESS WINTER STATES, "HE HAS PROVIDED NO JUSTIFICATION FOR SWITCHING FROM ONE SOURCE OF FORECASTS TO ANOTHER IN HIS TESTIMONY."

A. Yes. Apparently, Witness Winter believes that T-Bond futures are forecasts. They are not forecasts. They are contracts which must be honored. Thus, there is no switching of forecasts. Furthermore, with respect to my forecast of long-term debt cost rates for PECO,

while it is true I have cited Blue Chip, my estimate was based on recent actual rate paid by PECO as the best guide with respect to the near-term future.

I believe forecasts are useful if there is nothing else available to use. However, when the recent rate paid is not expected to change much, a recent actual rate is a more appropriate number to use that is a forecast applicable to not just PECO. Finally, as I previously indicated, by the time the Commission renders its decision in this case, I advocate the substitution of the actual rate paid for any forecast in regard to the planned sale of securities. Accordingly, Witness Winter's remarks are really much ado about nothing.

Q. DOES WITNESS WINTER ALSO PROPOSE TO DISALLOW ANY PROJECTED EFFECT OF PERMANENT FUNDING OF THE $550 MILLION REVOLVING CREDIT LINE NOW USED TO FINANCE LIMERICK 1?

A. Yes. Apparently, Witness Winter does agree with me that it is preferable to finance long-lived assets with long-term debt as opposed to debt which begins to mature within a few years. However, Witness Winter apparently believes interest rates will fall, and possibly PECO's bond rating will be increased. The end result of his comments appear to be that the Limerick Revolving Credit Line of $550 million should not be permanently funded.

Q. DO YOU AGREE WITH WITNESS WINTER IN THIS REGARD?

A. No. Witness Winter cites falling oil prices as one evidence that inflation rates may not increase or may fall, and money cost rates of course, are inflation-rate sensitive. Witness Winter totally neglects to mention the huge federal deficit that needs to be funded and a budget that must be balanced. Federal deficit financing and

other factors, such as the value of the U.S. dollar falling in relation to the value of other currencies, could lead to upward pressures on the rate of inflation just as much or to the same extent that oil price declines exert downward pressure. The truth is that no one really knows and any forecast by Witness Winter in this regard is speculation.

With respect to Witness Winter's belief that PECO's bond rating may be increased, this is also speculation. PECO's present financial performance hardly commands the bond rating it presently obtains, namely BBB-. In addition, there is a risk of a rate base reduction and any significant rate base reduction could cause a downgrading to less than investment grade or lower than BBB-. Permanent, instead of interim financing, is appropriate regarding facilities to be placed in service shortly.

Witness Winter also mentions an alleged 210 basis points difference in cost between the 9.75% PECO now pays for the revolving credit line and an 11.88% cost rate for new long-term debt I have employed in my testimony. Witness Winter goes on to comment that if my recommendation is accepted, ratepayers will be faced with the increased cost associated with this proposed exchange whether or not the exchange actually took place. Witness Winter apparently neglected to read my rebuttal testimony whereby I stated that I urged this Commission by decision date to take into account the actual rates paid by PECO at the time the decision in this proceeding is rendered. By the time the decision in this proceeding is rendered, the Company likely will have funded on a permanent basis that which is now funded on a temporary basis with respect to the Limerick Revolving Credit Line.

Lastly, the interest rate relative to the Limerick Revolving Credit Line is variable and pegged to short-term rates. Short-term rates can be extremely volatile. Permanent funding now locks in a fixed rate on a relatively reasonable basis. Again, as Witness Winter agrees, long-lived assets should be funded with long-term, not short-term debt, and I believe at other than potentially volatile rates of interest, but rather at a fixed rate of interest.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS WINTER IS CRITICAL OF PAST ESTIMATES OF THE COMPANY AND YOU WITH RESPECT TO TIMING OF NEW ISSUES AND THE COST OF NEW CAPITAL AND SUGGESTS, AT LEAST IMPLICITLY, THAT THE ESTIMATES FAVOR THE COMPANY TO THE DETRIMENT OF THE RATEPAYER?

A. Yes. I have reviewed my estimates over the past several cases and in more times than not I have underestimated the interest rate as opposed to overestimating the interest rate. Further, in regard to timing of new issues, the Company's judgment is influenced by market conditions over which the Company has no control. One should readily understand the difficulty this Company or any company would have with respect to timing of issues given the great volatility of the bond market over the course of the past several years and given the difficult financial problem of attempting to finance billions of dollars of new construction in a relatively short period of time for a company whose bonds are rated BBB-.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS WINTER RECOMMENDS NON-RECOGNITION OF THE $2.441 MILLION OF AMORTIZATION RELATIVE TO THE PREMIUM PAID IN CONNECTION WITH A TENDER AND THE PROSPECTIVE CALL OF HIGH COUPON BONDS?

A. Yes.

Q. WHAT REASONS ARE OFFERED BY WITNESS WINTER FOR THIS RECOMMENDATION?

A. Witness Winter offers several reasons. First, Witness Winter claims I did not provide reasons for the significant difference in the premium paid and to be paid nor provide workpapers in support of the premium amounts or the supposed imbalance between PECO's rate base and capitalization. Witness Winter further opined that time constraints precluded interrogatories on these issues since my testimony was not received until the afternoon of February 4, four days after the filing deadline. First, it was my understanding my testimony was timely filed. Moreover, Witness Winter went on to state that the deadline for filing his testimony was February 12. That left eight days for Witness Winter to request workpapers. No request was forthcoming. Further, for the record, I received Witness Winter's surrebuttal testimony on February 14, 1986, or two days after the deadline. In addition, February 14 was a Friday. Thus, the next three days were not business days, given Monday, February 17, was Presidents' Day. Therefore, February 18 was the first official day one could review his surrebuttal testimony, or five days after the February 12 due date.

With respect to the issue of tender and call premiums, the call price premium to be paid in the middle of 1986 (as distinguished from a tender offer premium) is a premium mandated by the Company's mortgage indenture. It is not a premium that at this time is subject to negotiation and/or what the market will bear. You must pay the call price stated in the indenture or you cannot call the debt. This is very customary and not unique. Incidentally, typically, there is a five-year no-call protection demanded by investors. In

the middle of 1986, the first no-call provision expires. It is for this reason the Company tendered for the high coupon bonds in late 1985. They were precluded by the indenture provision from making a call. The Company's goal was to retire as much of the high coupon debt as quickly as possible in the public interest. Not all of the holders tendered and thus the balance will be retired through a call.

A premium of 20.66% paid in late-1985 was market required. The premium of 13.76% to be paid in mid-1986 is what the indenture requires. Nothing more, nothing less.

Q. WHAT OTHER REASONS DID WITNESS WINTER CITE IN RECOMMENDING DISALLOWANCE OF THE $2.441 MILLION AMORTIZATION OF THE PREMIUM PAID DUE TO THE TENDER AND CALL OF HIGH COUPON DEBT?

A. Witness Winter believes, apparently, that interest earned on the collection of the $2.441 million should be taken into account in the composite debt cost rate calculation. First, it should be noted that the Company does not have the use of $2.441 million for one year, simply because interest on the bonds issued to create the wherewithal to pay the premium is paid semi-annually. Second, the Company effected the tender in late 1985. Rates for service in question in this proceeding, including the recovery of the $2.441 million, will not begin until after mid-1986.

With respect to the fact that in the second year the $2.441 million would change, so will a lot of other elements of ratemaking change in the second year including, likely, higher wages, possibly higher taxes, increases in rate base without necessarily a corresponding increase in revenues, etc. The point is that when rates are again reset, this element of ratemaking together with every

of ratemaking will then be recast on a then going-
The intention is to recover from consumers over the
a period the full amount of the premium, including the
of the premium because the consumers are getting the
ower interest rate due to the tender and call of high

ER WITH THE FACT THAT WITNESS WINTER BELIEVES THAT THE
RED STOCK NEWLY ATTRACTED IS MORE THAN ONE PERCENTAGE
AN IS THE COST OF ATTRACTING NEW DEBT FOR PECO?

STORY OF PREFERRED STOCK SALE SUGGEST AN ABILITY TO
RED STOCK AT A COST RATE MORE THAN ONE PERCENTAGE
AN THE ATTRACTION RATE FOR NEW LONG-TERM DEBT ATTRAC-
E POINT IN TIME?

time PECO sold long-term debt and preferred stock at
ame time was December of 1984. At that time the Com-
to sell 30-year First Mortgage Bonds and paid 14.15%
later to sell new preferred stock.

3, 1983, the Company also sold long-term debt with a
13-3/8% and, just a few months later, in November,
stock at a cost rate of 13.35%.

Winter does offer information shown on his Schedule 16
pical difference he says between bonds and preferred
s 100 basis points. What Witness Winter ignores is
this is not PECO's specific data, and one does not
r not the data relied upon by Witness Winter with
yields published by Moody's are 30-year bond yields
not the preferred stock is preferred stock with

bcc: William T. Payn

sinking funds that retire the issue in three years, ten years, twenty years, or forty years. These and other factors affect the interest or dividend rate, for Witness Winter's information. The data relied upon is simply too broad-based to draw conclusions relative to PECO, particularly when company-specific data is available.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS WINTER HAS UPDATED HIS COMMON EQUITY RECOMMENDATION WITHOUT REGARD TO ANY CHANGE IN THE GROWTH FACTOR EMPLOYED IN HIS DCF COMPUTATION?

A. Yes. Witness Winter would have us believe that a 33% increase in the price of PECO stock in a five-month period is the product of an investor judgment that PECO will not experience a higher growth rate compared to five months ago. Witness Winter believes that the price increase leading to the lower PECO dividend yield is the Commission's decision to allow completion of Limerick 2. He ascribes that news to a reduced prospect for dividend reduction. If that news reduces the prospect of a dividend reduction, it must also result in an investor expectation of a higher growth rate viewed over the long term. If Limerick 2 was cancelled, or not built, presumably the current investment in Limerick 2, which is near $1.0 billion, would need to be written off. Such a write-off could cause the common dividend to be reduced. Obviously, in regard to Limerick 2, absent a write-off, investors would expect higher earnings than otherwise. Witness Winter, as well as Witnesses O'Donnell and Rothschild, readily reduced their DCF dividend yield caused by a higher PECO stock price, driven in considerable part, they believe, by a Limerick 2 go-ahead, but ignore the concurrent fact of a likely investor-expected a higher growth rate than otherwise, due to the avoidance of a write-off of the Limerick 2 investment. It is il-

logical to assume the news of a Limerick 2 go-ahead drove the stock price up by as much as 33% in just five months but did not alter investor expectations under these circumstances.

Q. SPECIFICALLY, WHAT IS WITNESS WINTER'S NEW COST OF COMMON EQUITY RECOMMENDATION?

A. Witness Winter has reduced his recommendation from 15.6% to 14.56%.

Q. IS THERE A POINT OF REFERENCE THAT CAN BE USED TO DEMONSTRATE THE INAPPROPRIATENESS OF A REVISED 14.56% COST RATE FOR EQUITY FOR PECO?

A. Yes. If 14.56% was appropriate for PECO, and if PECO is required to pay 11.75% to attract new 30-year First Mortgage Bond capital, or a rate identical to the rate recently paid by PECO, the spread between debt and equity would be but 2.81 percentage points. This Commission's findings in the past with respect to the cost of equity for PECO have included direct or indirect spreads higher than 2.81% at a time when interest rates were higher than 11.75%. As I have previously indicated, as interest rates fall, spreads tend to rise and vice versa. Accordingly, one would expect to find a recommended cost of equity with a spread higher than, rather than lower than, what the Commission has previously found when interest rates were significantly higher than 11.75%. When the Commission thought interest rates would be 10%, the spread was 4% to 5%, as I previously indicated.

Clearly, Witness Winter's revised recommendation is inappropriately low since it produces an opportunity for but a 2.8% spread.

Q. ARE YOU FAMILIAR WITH WITNESS WINTER'S TESTIMONY ON PAGE 26 OF HIS SURREBUTTAL TESTIMONY WHEREIN HE STATES THAT HE MADE NO MISTAKE IN HIS ORIGINAL PRE-FILED TESTIMONY?

A. Our calculations reveal that, based upon a 14.5% yield and a 1% short-term and 2% long-term growth rate on a two-stage DCF calculation, the cost rate is 16.23%, not his 16.09%. I might add, if one used a 14.645% yield in the original computation, as Witness Winter's surrebuttal suggests, the two-stage calculation would be 16.38%, not 16.09%. We will be glad to provide Witness Winter specific details of this difficult computation. However, the issue is now moot, given Witness Winter's update, since his new calculations are correct, at least in terms of arithmetic.

JAMES A. ROTHSCHILD

Q. ARE YOU FAMILIAR WITH THE TESTIMONY OF WITNESS ROTHSCHILD ON PAGE 2 OF HIS SURREBUTTAL TESTIMONY WHEREIN HE STATES, "IT IS WELL-KNOWN THAT IF THE DCF METHOD IS PROPERLY APPLIED, IT WILL PRODUCE THE RETURN ON EQUITY REQUIRED TO PRODUCE A MARKET-TO-BOOK OF 1.0?"

A. Yes. Witness Rothschild goes on to state that his non-nuclear electric company group market-to-book ratio was 1.31 and those companies earned 13.42% in 1985 and are expected to earn, based on a Value Line projection, 14.05% in the future. Implicit in Witness Rothschild's statement is the notion that the present price of stock is driven by either the average earned return on book equity of 13.42% or the projected 14.05%. If that is the case and either such earnings rates produced the market-to-book ratio of 1.31, simply dividing either by 1.31 would obtain the earnings book ratio necessary to make the stocks sell at book value. Thus, 13.42% divided by 1.31 equals an earnings rate of just 10.24% and 14.05% divided by 1.31 equals an earnings rate of but 10.73% on book value of common equity for PECO stock to sell at book value.

Q. DO YOU BELIEVE THAT AN EARNINGS RATE OF EITHER 10.24% OR 10.73% IS A REALISTIC ASSESSMENT OF THE MARKET-REQUIRED RETURN ON COMMON EQUITY FOR EITHER PECO OR WITNESS ROTHSCHILD'S BAROMETER GROUP OF NON-NUCLEAR COMPANIES TO BE ABLE TO SELL STOCK AT BOOK VALUE?

A. No. The cost rate to attract new long-term debt for PECO is obviously above 10.24% or 10.73%. Investor-required returns on common equity are obviously greater than investor-required returns on long-term debt invested in the same company at the same point in time.

What these data demonstrate is the fact that the present price of stock obviously is an aberration or unsustainable and that it is not the 13.42% or the 14.05% which drives the stock price to be whatever it is. Accordingly, reliance upon a DCF methodology in circumstance of a price which is an aberration or unsustainable produces obviously an unreliable result and a result which on its face is inappropriately low.

Q. ARE YOU FAMILIAR WITH THE FACT THAT ON PAGE 3 OF WITNESS ROTHSCHILD'S PRE-FILED SURREBUTTAL TESTIMONY HE CLAIMS THAT THE CURRENT COST OF PECO STOCK BASED ON A SPOT PRICE OF FEBRUARY 6, 1986 SHOWS THAT THE COST OF EQUITY TO PECO IS DOWN AROUND 12% PLUS FINANCING COSTS AND THAT SUCH RESULTS ARE SUPPOSEDLY CONFIRMED BY THE MOODY'S 24 UTILITIES?

A. Yes. Again, sole reliance upon DCF to draw conclusions is misplaced and can, and in this instance certainly does, produce a result that defies basic tenets of corporate finance. The return rate required by investors in common stock is several percentage points above the return rate required by investors investing in long-term debt of the same company at the same point in time. This Commission has a long history of recognizing that basic tenet of corporate finance. While

it may be true that the spread between the return rate on equity and debt varies from time to time depending upon interest rate levels, there is also a history of recognition of the fact that as interest rates fall the spread widens and vice versa. Accordingly, since this Commission has recognized spreads for PECO of four percentage points when interest rates are 12%, it follows that the spread between debt and equity cost rate for PECO is significantly more than the less than 1% suggested by a Rothschild opinion that the PECO cost of common equity is as low as 12% at a time when new PECO long-term debt (30 years) is just under 12%.

For clarification, it should be stated that since the risk spread method, like the DCF method, is the product of a series of subjective judgments, my recommendation is not based upon risk spread only but on the combination of DCF and risk spread. Witness Rothschild, who used to rely upon risk spread or a variation of risk spread, abandoned risk spread when his technique consistently applied produced much higher results than a DCF calculation, and now appears to rely exclusively upon DCF. Exclusive reliance on DCF is simply wrong and inappropriate at this point in time, given the unusual circumstances and the recent behavior of PECO's stock price.

Q. PLEASE RESPOND TO WITNESS ROTHSCHILD'S STATEMENT ON PAGE 5 OF HIS PRE-FILED SURREBUTTAL TESTIMONY?

A. Witness Rothschild appears to explain away a 33% increase in PECO's stock price in just five months on the premise that four or five months ago there was "a serious possibility of dividend cut." This is faulty logic. The 33% increase in the price of PECO stock in just five months, during which time utility stock prices increased by half that amount, may be attributed to the Commission's announce-

ment that the Company may proceed to construct Limerick 2. Presumably, investors believe that the Company will obtain a return on their investment in Limerick 2 as opposed to possibly no return on Limerick 2, or a write-off of the existing Limerick 2 investment. If the supposed imminent threat of a dividend cut was significantly reduced by a Limerick 2 go-ahead, it follows that a write-off possibility related to Limerick 2 is avoided and thus expected earnings and dividends could be higher than otherwise. Higher than otherwise earnings, obviously, results in the possibility of higher than otherwise dividends. Witness Rothschild reflects the lower yield occasioned by a significant stock price increase, but ignores the obvious higher long-term growth rate prospects related to the higher price.

Q. ARE YOU FAMILIAR WITH WITNESS ROTHSCHILD'S TESTIMONY ON PAGE 6 OF HIS PRE-FILED SURREBUTTAL TESTIMONY WHEREIN HE STATES YOU WISH TO ADD A GROWTH RATE SUPPOSEDLY DERIVED FROM THE CURRENT ENVIRONMENT TO A DIVIDEND YIELD THAT WAS BASED TO A LARGE EXTENT ON MARKET PRICE OF STOCK WHEN INVESTORS APPARENTLY FELT THE DIVIDEND WAS IN SERIOUS JEOPARDY?

A. Yes. Witness Rothschild criticizes the dividend yield I use in developing a DCF presumably because it is based upon an average yield for a twelve-month period and a spot point in time. The purpose of this particular technique is to recognize the fact that stock prices have been and likely will continue to be volatile and that there can be sharp movements, either up or down, in a very short period of time. This makes the use of a DCF calculation not just difficult but less reliable than what would normally be the case if stock prices were steady, changing little. The quest of the

Company, the quest of the Commission, and the quest of consume
should be a price of service reflective of the cost of service
the future. To ignore the volatility of stock prices in developi
a dividend yield in a DCF calculation for rate of return determina
tion purposes is to ignore reality. I might add that when stoc
prices in the past moved downward significantly, I continued to us
a twelve-month average and a spot price for the very same reasons
advocate the use of a twelve-month average yield and a spot yield
this time. It is simply recognition of potential volatility and
attempt to get a handle on what is the prospective yield viewed ov
the longer term than the circumstances of the moment. It is inco
ceivable to me that any analyst faced with the facts of a 33% chan
in price in a five month period and with knowledge of the fact th
in the past stock prices also changed dramatically in relative
short periods of time would argue that the present price, whatev
it is, higher or lower than the past, was the price on a sustainab
basis into the indefinite future, keeping in mind that a DCF ca
culation is, as a matter of theory, an infinite cost rate.

Q. ARE YOU FAMILIAR WITH WITNESS ROTHSCHILD'S TESTIMONY WITH REGARD
FERC OPINIONS 420 AND 442?

A. Yes. Witness Rothschild cites those opinions as support for t
notion that a PECO risk spread between debt and common equity is 2

The FERC generically-determined rates of return are serious
flawed and subject to petitions for reconsideration and/or challen
in the courts. In addition, investors do not pay too much attenti
to FERC decisions in regard to electric company common equity co
rate funding, given that the FERC only regulates about 5% of t
electric revenues, and thus, 95% is state rate price regulated.

Further, Witness Rothschild neglected to report that FERC stated in Opinion No. 420 that a 13.3% interest rate level on public utility bonds for the base year, which was the twelve months ended June 30, 1984, indicates a risk premium of 2.5% to 2.8% or a return on equity requirement of 15.8% to 16.2%. While the FERC did state that such a rate range was upwardly biased, the FERC also stated that 15.8% to 16.2% was at the high end of the range of reasonableness for the average risk electric. Of course, PECO is not an average risk electric. FERC specifically provides an opportunity for those who are either above or below average risk to develop a cost of equity based on company-specific facts rather than the generically-determined industry average risk.

With respect to Opinion No. 442, the FERC's discussion of risk premium reveals that their analysis of the evidence of record would suggest a cost of equity of 16.0% to 16.3% and that, while the difference between that rate and the Commission's DCF estimate of 15.32% (before flotation adjustment) appears large, in the FERC's opinion, the evidence is not sufficient to warrant rejection of the DCF estimate. One reason cited by the FERC for not relying upon a risk premium method was a change in federal reserve policy several years ago, after which interest rates became quite volatile. Common stocks can be and have been quite volatile. Accordingly, in my judgment, any criticism relative to the risk premium method in regard to volatile interest rates is equally applicable to the DCF method given volatile stock prices. We need to look no further than the price movement of PECO's stock over the course of the past five months to prove that point.

Q. ARE YOU FAMILIAR WITH WITNESS ROTHSCHILD'S TESTIMONY REGARDING FERC ORDER NO. 442 AND THEIR FINDING OF A 15.4% RETURN ON EQUITY FOR THE 12-MONTHS ENDED JUNE 1985 FOR THE AVERAGE RISK ELECTRIC COMPANY?

A. Yes. Witness Rothschild says I am only partially correct in citing that number. Witness Rothschild cites, as did I, a 14.4% number. The 14.4% number, as I indicated in my updated and rebuttal testimony is simply not applicable to PECO retail rates in Pennsylvania for the reasons cited in my previously-filed rebuttal testimony.

Q. ARE YOU FAMILIAR WITH WITNESS ROTHSCHILD'S TESTIMONY ON PAGE 9 OF HIS PRE-FILED SURREBUTTAL TESTIMONY WHEREIN HE STATES, "A DCF METHOD BASED UPON A b x r METHOD WITH REASONABLE ESTIMATES USED FOR THE b AND THE r IS A HIGHLY RELIABLE METHOD."

A. Yes. The only proof mentioned by Witness Rothschild with respect to such method being highly reliable is his own experience. It is one thing to assert an alleged fact, and it is another to prove it. Conspicuously, Witness Rothschild has offered no proof whatsoever in regard to this assertion.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS ROTHSCHILD SAYS THAT YOUR REASON FOR URGING THE COMMISSION TO RELY UPON THE RISK PREMIUM METHODOLOGY IS THAT THE DCF METHODOLOGY IS UNRELIABLE WHEN THERE IS A SIGNIFICANT CHANGE, UP OR DOWN, IN THE PRICE OF STOCK IN A RELATIVELY SHORT PERIOD OF TIME?

A. Yes. What Witness Rothschild neglects to add is the fact that I do not recommend reliance upon either risk spread or DCF exclusively but instead urge averaging the two methods for reasons previously explained.

Q. ARE YOU FAMILIAR WITH THE FACT THAT WITNESS ROTHSCHILD RESPONDS "NO" TO THE FOLLOWING QUESTION: "DO YOU AGREE WITH MR. BRENNAN THAT THIS COMMISSION SHOULD SET RATES UNDER THE ASSUMPTION THAT INVESTORS ARE NAIVE?"

A. Yes. Contrary to the implication stated in the question, I do not use the word "naive" anywhere in my testimony.

It is true that I believe Philadelphia Electric stock is over-priced. I believe history will bear out that judgment. I also believe the price of all stocks at the moment are overpriced and again, history will bear that judgment out. Underlying fundamentals do not support the present price of stocks generally. This is particularly true for utility stocks in this circumstance, and as Witness Rothschild agrees, the DCF technique is intended to produce a market price approximating book value. Earnings rates of the moment, or even those that Witness Rothschild says are expected, do not support the present price of stock. Accordingly, a DCF calculation wherein the best part of the total return falling out of the computation is the dividend yield, results in an understatement of the cost rate when prices are higher than otherwise, and unsustainable.

Q. ARE YOU FAMILIAR WITH WITNESS ROTHSCHILD'S STATEMENT ON PAGE 11?

A. Yes. Witness Rothschild states, "Comments by Witness Brennan that the market price of PECO stock have been over-valued by investors violate generally-accepted financial principals of stock valuation." If there is any violation of generally-accepted financial principals, it is Witness Rothschild's violation of common sense to believe that the return rate on common equity can be as low as 10-1/2%, which is the result of his market-to-book ratio of 1.31 and a

14% expected return on book value of common equity, as I previously discussed, at a time when the cost rate to attract new long-term debt for the same company is above the 10-1/2% level.

Q. ARE YOU FAMILIAR WITH WITNESS ROTHSCHILD'S TESTIMONY WHEREIN HE STATES AT PAGE 11 THAT YOU ARE TO BE FAULTED BECAUSE YOU DID NOT BASE YOUR CONCLUSION ON A BROAD-BASED SELECTION OF ELECTRIC COMPANIES, AND WITNESS ROTHSCHILD CLAIMS THAT YOU HAVE MISINTERPRETED THE FERC WITH RESPECT TO WHETHER IT IS POSSIBLE OR FEASIBLE TO SEPARATE THE COMMON EQUITY COST RATE ACCORDING TO VARYING RISKS?

A. Yes. First, my primary concern is to discover the cost rate for common equity capital for PECO, not a barometer group, and not the industry average. Each company is unique in some way and I believe the price of PECO service should be company-specific to the greatest extent possible. I stand on the testimony that the FERC decided not to separately calculate the cost of equity in a generic proceeding for nuclear utilities and part of the rationale advanced by the FERC was that the cost rate for nuclear utilities did not distort an industry average keeping in mind that within the industry, there are companies that are both above and below average risk. What the FERC did, in fact, was to set in place a mechanism which allows a company that believes it is above or below the industry average risk to obtain rate relief, including rate of return determination based on a company-specific finding.

Q. ARE YOU FAMILIAR WITH WITNESS ROTHSCHILD'S TESTIMONY REGARDING SCHEDULE 1, PAGES 1 AND 2 OF EXHIBIT JFB-4?

A. Yes. Witness Rothschild has erred in his statements. Specifically, Witness Rothschild appears to believe that my computation is the product of an assumption that the stock will sell at 112% of book

value at the end of the five year period used for illustrative purposes to determine the investor-expected market return implicit in the price of stock at the beginning of 1986, using the closing price of January 28, 1986 and the mid-point of the range for the 52 weeks then ended. Apparently, Witness Rothschild divided the $22.39 shown on page 1 of Schedule 1 of Exhibit JFB-4 by the $19.91 year-end book value shown under the 'Column 1990' on page 2 of Schedule 1. Witness Rothschild apparently neglected to carefully read the note shown on page 1. Note 2 on page 1 shows that the $22.39 figure is not the market price at all, but the sum of the fifth year dividend calculated to be $2.48 and a sale price equal to the $19.91 book value. In short, Witness Rothschild's criticism is misplaced because he miscalculated.

Accordingly, all of Witness Rothschild's rhetoric relative to a 14.4% return shown by me in 1990 producing a book value of 1.12 is in error and his further comments that the current cost of equity for ratemaking must therefore be materially less than 14.4% is also in error.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes.

PECO Exhibit JFB-3

R-850152

2-26-86

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PHILADELPHIA ELECTRIC COMPANY
(Electric Operations)

Exhibit of Updated Schedules

to Accompany

the Updated and Rebuttal Testimony

of

Joseph F. Brennan, President
Associated Utility Services, Inc.

Philadelphia Electric Company
Cost of Capital and Fair Rate of Return
Estimated and Pro Forma at June 30, 1986

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.9%	10.86%	5.53%
Preferred Stock	10.7	10.50	1.12
Common Equity	38.4	15.90	6.11
Overall Cost of Capital	100.0%		12.76%

Indicated level of coverage related to the debt part of the rate base to be achieved if the Company actually experienced (after attrition) a 12.76% overall fair rate of return relative to an original cost rate base.

Before-income tax interest coverage (1)	3.6x
After-income tax interest coverage (12.76% ÷ 5.53%)	2.3x
Overall coverage of interest and preferred stock dividends (12.76% ÷ 6.65% (5.53% + 1.12%))	1.9x

Notes:

(1) Based upon the assumption that the Company actually achieved an overall rate of return relative to an original cost rate base of 12.76% and the Company experienced an assumed 49.6% effective income tax rate prospectively, the before-income tax overall rate of return would be 19.88% (12.76% - 5.53% = 7.23% ÷ 50.4% (100.0% - 49.6% = 50.4%) = 14.35% + 5.53%). Thus, the indicated before-income tax coverage of rate base related interest expense, based on these assumptions, would be 3.6x (19.88% ÷ 5.53%).

Philadelphia Electric Company
Summary of Basis for Cost Rate for Common Equity

	Philadelphia Electric Company	Barometer Group of Four Electric Companies With Bonds Rated Baa
I. Traditional Discounted Cash Flow Employing Historic and Forecasted Growth Rates		
(A) Dividend Yield (2)	13.20%	11.20%
(B) Growth in Value (3)	2.40	2.90
(C) DCF Cost Rate (sum of average yield and growth)	15.60%	14.10%
II. Risk Spread Analysis		
(A) Forecasted Bond Yield (4)	11.75%	11.75%
(B) Risk Spread	4.50 (5)	4.00 (6)
(C) Risk Spread Cost Rate	16.25%	15.75%
III. Average of DCF (I) and Risk Spread Cost Rate (II) before recognition of any market pressure, selling and issuance expenses	15.93%	14.93%
IV. Recommendation After Recognition of Issuance and Selling Expenses (15.93% x 1.03%) and (14.93% x 1.03%)	16.41%	15.38%

See page 2 for Notes

Philadelphia Electric Company
Summary of Cost of Capital and Fair Rate of Return

Notes:

(1) The dividend yield and growth rate for the barometer group is the arithmetic average of the achieved results for each individual company.

(2) The dividend yields, which includes an adjustment for one-half the next period dividend growth, are developed on Updated Schedule 14, page 1.

(3) With respect to the Barometer Group, the growth rate is assumed to be unchanged from the original filing. With respect to PECO, the growth rate data is unchanged at 1.7%, but it is obvious that an increase in stock prices from $14.625 on September 19, 1985 (the spot date used in my original Schedule 14, page 2) to $18.50 on January 27, 1986, (the spot date price used Updated Schedule 14, page 2) indicates a 26% price increase in price which must, at least in part reflect, right or wrong, an investor expectation of higher growth. I have therefore increased the growth rate to 2.4% from 1.7% as a reflection of what the market believes. Interestingly, the spot price for the Barometer Group moved up an average of only 13% between September 19, 1985 and January 27, 1985 as can be derived from the information shown on page 2 of Original and Updated Schedule 14. This evidence above suggests the upward movement in price for PECO is more than just a general market movement. Since the g part of the DCF model is supposed to be dividend growth, perhaps in this instance it is PECO dividend growth data, both projected and historic, which now drives the price. As can be derived from Schedule 15, page 1, the average of the Merrill Lynch 1.8%, the Value Line 2.0% projected dividend growth rate, and the 3.5% historical dividend growth rate is 2.4%, which 2.4% is identical to the growth rate I used to develop the dividend yield based on the next period dividend. Thus, I will now use a 2.4% growth rate in value as a result of the 26% price increase in just four months.

(4) Forecasted A rated long-term debt yield for 1986 is 11.0% (see Updated Schedule 6, page 3). The spread between A rated and Baa rated long-tem debt is more than 0.5% which can be derived from the information shown on page 1, Schedule 6 for the five years ended 1985. Also, Philadelphia Electric Company sold on November 20, 1985, 29 year First Mortgage bonds at a coupon rate of 11.75%. Thus, a forecasted Baa rated long-term debt yield of 11.75% for both Philadelphia Electric Company and the Barometer Group of Baa Rated Electric Companies is indicated when A rated long-term debt is expected to yield 11.0%, and the forecast for 1986 is for slightly higher long-term debt cost rates compared to the end of 1985.

(5) On average, for the years 1983-1984, Philadelphia Electric Company's long-term debt cost rate was 13.7% with a corresponding risk spread of 3.7% (see Schedule 16, page 1). Generally, as interest rates fall, risk spreads widen. For this reason, I believe 4.5% is an appropriate risk spread at the 11.75% interest rate level. Thus, even though for PECO long-term interest rates prospectively are down 0.75%, I have held the risk premium constant at 4.5%. This is obviously a conservative approach.

(6) Same as original testimony, namely a risk spread of 4.0% notwithstanding a reduction in prospective long-term interest rate from 12.5% to 11.75% or a 0.75% reduction keeping in mind as interest rates fall, generally speaking, risk spread tends to widen, but there is not a notch for notch decline. The Updated approach is obviously conservative.

Philadelphia Electric Company (Company Alone)
Capitalization and Capital Structure Ratios Based Upon Investor-Provided Capital
Actual at June 30, 1985, and Estimated and Pro Forma at June 30, 1986

	June 30, 1985 (Actual)			June 30, 1986 (Estimated and Pro Forma		
		Ratios			Ratios	
	Amount Outstanding ($000's)	Excl. S-T Debt	Incl. S-T Debt	Amount Outstanding ($000's)	Excl. S-T Debt	Incl. S-T Debt
Long-Term Debt: (1)						
First Mortgage Bonds	$2,538,190			$2,774,438 (3)		
Debentures	320,800			870,800 (4)		
Pollution Control Notes	518,185			559,185 (5)		
Term Bank Loans	775,000			225,000 (6)		
Serial Notes	20,000			20,000		
Other Long-Term Debt	1,866			326 (7)		
Tender and Call Premium	-0-			(51,255)(8)		
Total Long-Term Debt	4,174,041	51.5%	51.5%	4,398,494	50.9%	50.9%
Preferred Stock	890,881	11.0	11.0	926,182 (9)	10.7	10.7
Common Equity:						
Common Stock	2,469,098			2,641,663 (10)		
Other Paid-in Capital	6,091			6,091		
Retained Earnings (2)	566,018			672,285 (11)		
Total Common Equity	3,041,207	37.5	37.5	3,320,039	38.4	38.4
Total Permanent Capital	8,106,129	100.0%	100.0	8,644,715	100.0%	99.9
Short-Term Debt	-0-		0.0	56,335 (12)		0.1
Total Capital Employed	$8,106,129		100.0%	$8,701,050		100.0%

Comment: The Company's construction expenditures for 1985 are expected to be $962.0 million.

If the investment in subsidiary companies at June 30, 1985 of $129.743 million were removed from common equity, the capital structure ratios would be as follows:

Long-Term Debt	52.3%	52.3%	51.6%	51.6%
Preferred Stock	11.2	11.2	10.9	10.9
Common Equity	36.5	36.5	37.5	37.5
Total	100.0%	100.0	100.0%	99.9
Short-Term Debt		0.0		0.1
Total		100.0%		100.0%

See following page for Notes.

Philadelphia Electric Company (Company Alone)
Capitalization and Capital Structure Ratios Based Upon Investor Provided Capital
Actual at June 30, 1985 and Estimated and Pro Forma at June 30, 1986

Notes:

(1) Includes current portion of long-term debt and excludes unamortized debt premium, discount or expense.

(2) Includes unappropriated undistributed subsidiary earnings.

(3) Reflects the proposed issuance of $100 million of First Mortgage Bonds in May 1986, the actual issuance on November 20, 1985 of $250 million 11-3/4% First Mortgage Bonds and $150 million 10-7/8% First Mortgage Bonds, the tender of $78.096 million of 17-5/8% Series First Mortgage Bonds, $76.131 million of 18-3/4% First Mortgage Bonds and $62.621 million of 18% Series First Mortgage Bonds and the proposed call on July 1, 1986 of $46.904 million of the 17-5.8% Series First Mortgage Bonds.

(4) Reflects the proposed issuance of $100 million Debentures in February, 1986, $225 million Debentures in April, 1986 and $225 million Debentures in June, 1986.

(5) Reflects the actual issuance of $41 million 10-1/2% Pollution Control Revenue Bonds on October 1, 1985.

(6) Reflects the proposed repayment of $550 million Limerick Revolving Credit Line.

(7) Reflects the retirement of the Conrail Note on January 1, 1986 of $1.540 million.

(8) Reflects the total premium of $51.255 million comprised of $44.801 million from the Tender Offer of the 17-5/8%, 18% and 18-3/4% Series First Mortgage Bonds and $6.454 million from the call of the 17-5/8% Series First Mortgage Bonds.

(9) Reflects the proposed issuance of $50.0 million of preferred stock in May 1986 and sinking fund requirements, $3.330 million on the 8.75% Series, $3.0 million on the 7.325% Series, $1.469 million on the 9.52% Series, $4.4 million on the 10.0% Series, and $2.5 million on the 15.25% Series Cumulative Preferred Stock.

(10) Reflects the estimated proceeds of $118.925 million from participating Company's Dividend Reinvestment plan, $11.465 million from the Employee Stock Purchase Plan and $42.175 million from continuous offerings of common stock.

(11) Company provided estimate of retained earnings at June 30, 1986.

(12) Company provided estimate of short-term debt at June 30, 1986.

Philadelphia Electric Company (Company Only)
Composite Interest Rate of Long-Term Debt
at June 30, 1986 (Estimated and Pro Forma)

	Amount Outstanding ($ 000's)	Percent to Total	Effective Interest Rate (1)	Weighted Interest Rate	Ann Inte Co
First Mortgage Bonds:					
4 3/8% Series, due 1986	$ 50,000	1.37%	4.43%	0.06%	
4 5/8% Series, due 1987	40,000	1.10	4.69	0.05	
3 3/4% Series, due 1988	40,000	1.10	3.82	0.04	
5 % Series, due 1989	50,000	1.37	5.00	0.07	
6 1/2% Series, due 1993	60,000	1.65	6.57	0.11	
4 1/2% Series, due 1994	50,000	1.37	4.50	0.06	
9 % Series, due 1995	59,452	1.63	8.49 (2a)	0.14	
8 1/4% Series, due 1996	80,000	2.20	8.31	0.18	
6 1/8% Series, due 1997	75,000	2.06	6.16	0.13	
7 1/2% Series, due 1998	100,000	2.74	7.51	0.21	
7 1/2% Series, due 1999	100,000	2.74	7.54	0.21	
7 3/4% Series, due 2000	60,800	1.67	7.43 (2b)	0.12	
7 3/8% Series, due 2001	80,000	2.20	7.38	0.16	
8 1/2% Series, due 2004	125,000	3.43	8.51	0.29	
11 5/8% Series, due 2000	65,000	1.78	11.73	0.21	
11 % Series, due 2000	55,938	1.53	10.72 (2d)	0.16	
9 1/8% Series, due 2006	100,000	2.74	9.23	0.25	
9 5/8% Series, due 2002	100,000	2.74	9.74	0.27	
6 % Series, due 2007	23,500	0.64	6.21	0.04	
8 5/8% Series, due 2007	75,000	2.06	8.72	0.18	
8 5/8% Series, due 2003	75,000	2.06	8.70	0.18	
9 1/8% Series, due 2008	100,000	2.74	9.13	0.25	
12 1/2% Series, due 2005	100,000	2.74	12.64	0.35	
13 3/4% Series, due 1992	125,000	3.43	13.90	0.48	
15 1/4% Series, due 1996	52,500	1.44	15.40	0.22	
15 % Series, due 1996	21,000	0.58	15.17	0.09	
18 3/4% Series, due 2009	48,869	1.34	18.96	0.25	
18 % Series, due 2012	37,379	1.03	18.39	0.19	
15 3/8% Series, due 2010	100,000	2.74	15.53	0.43	
13 3/8% Series, due 2013	125,000	3.43	13.67	0.47	
13.05 % Series, due 1994	20,000	0.55	13.19	0.07	
14 % Series, due 1994	80,000	2.20	14.10	0.31	
11 3/4% Series, due 2014	250,000	6.86	12.05	0.83	
10 7/8% Series, due 1995	150,000	4.12	11.27	0.46	
11 3/4% Proposed Series	100,000	2.74	11.87	0.33	
Debentures:					
14 1/8% Series, due 1990	50,000	1.37	14.28	0.20	
14 3/4% Series, due 2005	100,000	2.74	14.89	0.41	
11.75 % Proposed Series	100,000	2.74	11.88	0.33	
11.75 % Proposed Series	225,000	6.17	11.88	0.73	
11.75 % Proposed Series	225,000	6.17	11.88	0.73	
Sinking Fund Debentures:					
4.85 % Series, due 1986	20,800	0.57	3.38 (2d)	0.02	
14 1/2% Series, due 2009	150,000	4.12	14.73	0.61	
Total Bonds	$3,645,238	100.00%		10.88%	

See pages 6, 7 and 8 for Notes.

Philadelphia Electric Company (Company Only)
Composite Interest Rate of Long-Term Debt
at June 30, 1986 (Estimated and Pro Forma)

	Amount Outstanding ($ 000's)	Percent to Total	Effective Interest Rate (1)	Weighted Interest Rate	Annu Inter Cos
Pollution Control Notes:					
5.50 %, due 1997	$ 24,485	4.38%	5.02%(2e)	0.22%	
13 %, due 2010	71,500	12.79	13.38	1.71	
11 1/2%, due 2011	18,500	3.31	13.16	0.44	
Floating Rate, 1982 Series A	60,000	10.73	5.74 (7a)	0.62	
Floating Rate, 1982 Series B	40,000	7.15	5.35 (7b)	0.38	
Floating Rate, 1983 Series A	50,000	8.94	5.35 (7c)	0.48	
Floating Rate, 1984 Series A (York)	4,500	0.81	5.15 (7d)	0.04	
Floating Rate, 1984 Series A (Salem)	4,200	0.75	5.15 (7d)	0.04	
10 1/2% Series due 2015	245,000	43.81	10.79	4.73	
10 1/2% Series due 2014	41,000	7.33	10.79	0.79	
Total Pollution Control Notes	$ 559,185	100.00%		9.45%	
Term Bank Loans					
Citibank N.A.	$ 75,000	33.33%	9.50% (3)	3.17%	
Chase Manhattan N.A.	75,000	33.33	10.00 (4)	3.33	
Morgan Guaranty Trust Co.	25,000	11.11	9.98 (5)	1.11	
Chemical Bank	50,000	22.23	9.98 (6)	2.22	
Total Term Bank Loans	$ 225,000	100.00%		9.83%	
Total Long-Term Debt:					
Bonds	$3,645,238	81.92%	10.88%	8.91%	
Pollution Control Notes	559,185	12.57	9.45	1.19	
Term Bank Loans	225,000	5.05	9.83	0.50	
Serial Notes	20,000	0.45	17.06	0.08	
Other Long-Term Debt	326	0.01	8.97 (8)	0.00	
Total Long-Term Debt	4,449,749	100.00%		10.68%	$47
Annual Return of Tender and Call Premium (9)	--				
Total Long-Term Debt	4,449,749				4
Tender and Call Premium (10)	(51,255)				
Total Long-Term Debt Net of Tender and Call Premium	$4,398,494			10.86%	$4

See pages 6, 7 and 8 for Notes.

Philadelphia Electric Company (Company Only)
Composite Interest Rate of Long-Term Debt
at June 30, 1986 (Estimated and Pro Forma)

Notes:

(1) Effective interest rate for each Series as developed on pages 9 and 10.

(2) The effective interest rates for these series were adjusted to recognize previous years' gains on reacquired debt. These rates were computed by multiplying the amount outstanding by the unadjusted effective interest rate, subtracting the amortization during the twelve months ended June 30, 1985, of net gains from repurchase and dividing the resulting interest cost by the amount outstanding.

(a) $59,452,000 x 8.87% = $5,273,392 - $226,383 = $5,047,009 ÷ $59,452,000 = 8.49%

(b) $60,800,000 x 7.85% = $4,772,800 - $258,185 = $4,514,615 ÷ $60,800,000 = 7.43%

(c) $55,938,000 x 11.15% = $6,237,087 - $239,102 = $5,997,985 ÷ $55,938,000 = 10.72%

(d) $20,800,000 x 4.89% = $1,017,120 - $314,687 = $702,433 ÷ $20,800,000 = 3.38%

(e) $24,485,000 x 5.65% = $1,383,403 - $154,125 = $1,299,278 ÷ $24,485,000 = 5.02%

(3) Effective interest rate is equal to the estimated prime rate charged by Citibank at June 30, 1986, of 9.50%.

(4) Effective interest rate calculated as the prime rate charged by Chase Manhattan Bank plus 1/2 of 1%. Estimated at June 30, 1986, the effective cost rate is 10.00% based upon an estimated prime rate of 9.50% (9.50% + 0.50% = 10.00%).

(5) Effective interest rate calculated as the prime rate charged by Morgan Guaranty Trust Company times 105%. Estimated at June 30, 1986, the effective cost rate is 9.98% based upon an estimated prime rate of 9.50% (9.50% x 105% = 9.98%).

(6) Effective interest rate calculated as the prime rate charged by Chemical Bank times 105% (during the period 5-28-84 through 5-28-87). Estimated at June 30, 1986, the effective cost rate is 9.98% based upon an estimated prime rate of 9.50% (9.50% x 105% = 9.98%).

Philadelphia Electric Company (Company Only)
Composite Interest Rate of Long-Term Debt
at June 30, 1986 (Estimated and Pro Forma)

Notes (continued):

(7) Company provided weighted interest rate.

The Floating Rate Monthly Demand Pollution Control Revenue Bonds bear an interest rates payable monthly which will vary monthly based upon separate Interest Indexes for each series computed as a 30-day average of yields at par of short-term securities which are exempt from federal income taxation. In the event the Interest Index for any month cannot be computed, the interest rate for the Bonds during that month will be equal to 60% of the yield applicable to the 13-week United States Treasury bills sold at the most recent Treasury auction held within 30 days prior to the date on which the calculation is to be made. This alternative method is employed to estimate the monthly interest rates for June 1986. The settled yield on Treasury Bill Future Contracts with a settlement date of June 1986 of 7.29% will be employed for this purpose.

(a) The estimated effective interest rate for 1982 Series A of 5.74% is computed as 60% of the January 14, 1986, settled yield on Treasury Bill Future Contracts with a settlement date of June 1986 of 7.29% ÷ net proceeds ratio (based upon $924,000 discount and issuance expenses) x principal amount outstanding added to 1.25% Letter of Credit Commission and Administrative Costs x the aggregate amount of the Letter of Credit ÷ the principal amount outstanding ((60% x 7.29% = 4.37% ÷ 98.46% = 4.44% x $60,000,000 = $2,664,000) + (1.25% x $62,196,986 = $777,462) = $3,441,462 ÷ $60,000,000 = 5.74%).

(b) The estimated effective interest rate for 1982 Series B of 5.35% is computed as 60% of the January 14, 1986, settled yield on Treasury Bill Future Contracts with a settlement date of June 1986 of 7.29% ÷ net proceeds ratio (based upon $616,000 discount and issuance expenses) x principal amount outstanding added to 0.875% Letter of Credit Commission, and Fee and Administrative Costs x the aggregate amount of the Letter of Credit ÷ the principal amount outstanding ((60% x 7.29% = 4.37% ÷ 98.46% = 4.44% x $40,000,000 = $1,776,000) + (0.875% x $41,464,657 = $362,816) = $2,138,816 ÷ $40,000,000 = 5.35%).

(c) The estimated effective interest rate for 1983 Series A of 5.35% is computed as 60% of the January 14, 1986, settled yield on Treasury Bill Future Contracts with a settlement date of June 1986 of 7.29% ÷ net proceeds ratio (based upon $802,000 discount and issuance expenses) x principal amount outstanding added to 0.875% Letter of Credit Commission, and Fee and Administrative Costs x the aggregate amount of the Letter of Credit ÷ the principal amount outstanding ((60% x 7.29% = 4.37% ÷ 98.40% = 4.44% x $50,000,000 = $2,220,000) + (0.875% x $51,830,822 = $453,520) = $2,673,520 ÷ $50,000,000 = 5.35%).

Philadelphia Electric Company (Company Only)
Composite Interest Rate of Long-Term Debt
at June 30, 1986 (Estimated and Pro Forma)

Notes (continued):

(7)

(d) The estimated effective interest rate for 1984 Series A (York and Salem Counties) of 5.15% is computed as 60% of the January 14, 1986, settled yield on Treasury Bill Future contracts with a settlement date of June 1986 of 7.29% ÷ net proceeds ratio (based upon $250,511 discount and issuance expenses) x principal amount outstanding added to 0.625% Letter of Credit Commission, and Administrative Costs x the aggregate amount of the Letter of Credit ÷ the principal amount outstanding ((60% x 7.29% = 4.37% ÷ 97.12% = 4.50% x $8,700,000 = $391,500) + (0.625% x $9,018,563 = $56,366) = $447,866 ÷ $8,700,000 = 5.15%).

(8) Composite of company-provided interest rates on other long-term debt.

(9) Determined by calculating annual payment that would provide a return of $51.255 million of the tender and call premium over 21 years (composite of the terms of issue of the 11-3/4% First Mortgage Bonds of 29 years and 10-7/8% First Mortgage Bonds of 10 years) ($51.255 million ÷ 21years = $2.441 million).

The composite term of issue was calculated based on the relative proportion of the principal amounts of the 11-3/4% Series and 10-7/8% Series employed to finance the tender offer and proposed call. Of the total principal amount issued, $200 million of the 11-3/4% Series and $150 million of the 10-7/8% Series will be employed to finance the tender and proposed call equal to a total of $350 million. Thus, the 11-3/4% Series comprised 57.14% ($200 million ÷ $350 million) and the 10-7/8% Series comprised 42.86%($150 million ÷ $350 million) of the funds employed to finance the tender offer and proposed call. The composite term of issue referred to above is, therefore, the sum of 57.14% x 29 years = 17 years and 42.86% x 10 years = 4 years and 17 years + 4 years = 21 years.

(10) Sum of actual premiums of $44.801 million paid by the Company in connection with the tender offer of the 17-5/8%, 18-3/4% and 18% Series First Mortgage Bonds in December 1985 and the estimated call premium of $6.454 million applicable to the proposed call on July 1, 1986 of the balance of the 17-5/8% First Mortgage Bonds. ($44.801 million + $6.454 million = $51.255 million).

Source of Information: Company provided data

Philadelphia Electric Company

Calculation of the Effective Interest Rate of First and Refunding Mortgage Bonds

Series	Date of Issue	Date of Maturity	Average Term in Years (1)	Original Amount Issued	Total Expenses, Premium or (Discount)	Net Proceeds on Principal Amount Issued	Net Proceeds Ratio	Effective Interest Rate (2)
First Mortgage Bonds:								
4 3/8% Series, due 1986	12- 1-58	12- 1-86	28	$ 50,000	$ (463,097)	$ 49,536,903	99.07%	4.43%
4 5/8% Series, due 1987	9- 1-57	9- 1-87	30	40,000	(415,004)	39,584,996	98.96	4.69
3 3/4% Series, due 1988	5- 1-58	5- 1-88	30	40,000	(482,646)	39,517,354	98.79	3.82
5 % Series, due 1989	10- 1-59	10 -1-89	30	50,000	18,437	50,018,437	100.04	5.00
6 1/2% Series, due 1993	3- 1-68	3- 1-93	25	60,000	(480,686)	59,519,314	99.20	6.57
4 1/2% Series, due 1994	5- 1-64	5- 1-94	30	50,000	25,238	50,025,238	100.05	4.50
9 % Series, due 1995	2- 1-70	2- 1-95	20.8	80,000	960,024	80,960,024	101.20	8.87
8 1/4% Series, due 1996	8- 1-71	8- 1-96	25	80,000	(495,210)	79,504,790	99.38	8.31
6 1/8% Series, due 1997	10- 1-67	10- 1-97	30	75,000	(384,944)	74,615,056	99.49	6.16
7 1/2% Series, due 1998	6-15-72	6-15-98	26	100,000	(156,059)	99,843,941	99.84	7.51
7 1/2% Series, due 1999	1-22-73	1-22-99	26	100,000	(499,981)	99,500,019	99.50	7.54
7 3/4% Series, due 2000	12-15-70	12-15-00	23.5	80,000	(879,028)	79,120,972	98.90	7.85
7 3/8% Series, due 2001	12-15-71	12-15-01	30	80,000	(83,239)	79,916,761	99.90	7.38
8 1/2% Series, due 2004	1-16-74	1-16-04	30	125,000	(111,634)	124,888,366	99.91	8.51
11 5/8% Series, due 2000	4-15-75	4-15-00	25	65,000	(526,075)	64,473,925	99.19	11.73
11 % Series, due 2000	11- 1-75	8- 6-00	15.5	80,000	(876,944)	79,123,056	98.90	11.15
9 1/8% Series, due 2006	3- 1-76	3- 1-06	30	100,000	(1,034,220)	98,965,780	98.97	9.23
9 5/8% Series, due 2002	8- 1-76	8- 1-02	26	100,000	(1,043,108)	98,956,892	98.96	9.74
6 % Series, due 2007	2- 1-77	2- 1-07	28	23,500	(639,048)	22,860,952	97.28	6.21
8 5/8% Series, due 2007	3-15-77	3-15-07	30	75,000	(788,291)	74,211,709	98.95	8.72
8 5/8% Series, due 2003	7-15-77	7-15-03	26	75,000	(570,154)	74,429,846	99.24	8.70
9 1/8% Series, due 2008	3-15-78	3-15-08	30	100,000	(41,614)	99,958,386	99.96	9.13
12 1/2% Series, due 2005	10-15-79	10-15-05	26	100,000	(1,057,750)	98,942,250	98.94	12.64
13 3/4% Series, due 1992	10-15-80	10-15-92	12	125,000	(1,072,443)	123,927,557	99.14	13.90
15 1/4% Series, due 1996	4-28-81	4-28-96	10.5	52,500	(410,978)	52,089,022	99.22	15.40
15 % Series, due 1996	4-28-81	4-28-96	10.5	21,000	(183,965)	20,816,035	99.12	15.17
17 5/8% Series, due 2011	7- 1-81	7- 1-11	30	125,000	(2,634,392)	122,365,608	97.89	18.01
18 3/4% Series, due 2009	9-15-81	9-15-09	30	125,000	(1,377,265)	123,622,735	98.90	18.96
18 % Series, due 2012	4- 1-82	4- 1-12	30	100,000	(2,091,008)	97,908,992	97.91	18.39
15 3/8% Series, due 2010	10 -1-82	10- 1-10	28	100,000	(1,005,722)	98,994,278	99.01	15.53
13 3/8% Series, due 2013	6-15-83	6-15-13	30	125,000	(2,649,000)	122,351,000	97.88	13.67
13.05 % Series, due 1994	11-26-84	11-26-94	10	20,000	(148,322)	19,851,678	99.26	13.19
14 % Series, due 1988-94	12 -1-84	12 -1-94	6.9	80,000	(369,080)	79,630,920	99.54	14.10
11 3/4% Proposed Series (3)	5- 1-86	5- 1-16	30	100,000	-	-	99.00	11.87

See page 9a for notes.

Philadelphia Electric Company
Calculation of the Effective Interest Rates on 11-3/4% and 10-7/8% Series First Mortgage Bonds

Series	Date of Issue	Date of Maturity	Average Term in Years (1)	Original Amount Issued ($000)	Total Expenses, Premium or (Discount)	Net Proceeds on Principal Amount Issued	Net Proceeds Ratio	Effective Interest Rate (2)
Based on Discount and Estimated Issuance Expenses Directly Associated with Issue, Unamortized Balances of Discount and Expenses Related to Tender Offer of the 17-5/8%, 18-3/4% and 18% Series First Mortgage Bonds and to the Proposed Call of the 17-5/8% Series First Mortgage Bonds (4)								
11 3/4% Series, due 2014	11-20-85	11-20-14	29	250,000	6,039,829(5)	243,960,171	97.58%	12.05%
10 7/8% Series, due 1995	11-20-85	11-20-95	10	150,000	3,490,201(6)	146,509,799	97.67	11.27

Notes:
(1) Determined by taking into account the effect of annual sinking fund requirements which are met by the retirement of bonds which reduce the average term of each series for those issues which have sinking fund requirements.
(2) Effective cost rate is the cost rate to maturity using as inputs the average term of each series, the stated interest rate and net proceeds ratio.
(3) For the proposed new series of first mortgage bonds planned to be issued in May 1986 and the stated coupon rate is estimated to be 11-3/4%, the average term of issue is assumed to be 30 years, and the net proceeds ratio is estimated to be 99.00%.
(4) The unamortized balance of discount and expenses for the 17-5/8%, 18-3/4% and 18% Series First Mortgage Bonds at the time of the tender offer totaled $3,265,829. The unamortized balance of discount and expenses for the 17-5/8% First Mortgage Bonds at the time of the proposed call (July 1, 1986) is $824,701. These balances were allocated to the 11-3/4% and 10-7/8% Series First Mortgage Bonds in amounts equal to the proportion of the principal amounts of both Series used to finance the tender offer and proposed call. Of the total principal amount issued, $200 million of the 11-3/4% Series and $150 million will be employed to finance the tender offer and proposed call equal to a total of $350 million. Thus, the 11-3/4% Series comprised 57.14% ($200 million ÷ $350 million) and the 10-7/8% Series comprised 42.86% ($150 million ÷ $350 million) of the fund employed to finance the tender offer and proposed call.
(5) Includes unamortized discount and expense of $1,866,095 ($3,265,829 x 57.14%) related to the 17-5/8%, 18-3/4% and 18% First Mortgage Bonds tendered in December 1985 and $471,234 ($824,701 x 57.14%) related to the proposed call of the balance of the 17-5/8% bonds in July 1986 allocated as developed in Note 5.
(6) Includes unamortized discount and expense of $1,399,734 ($3,265,829 x 42.86%) related to the 17-5/8%, 18-3/4% and 18% First Mortgage Bonds tendered in December 1985 and $353,467 ($824,701 x 42.86%) related to the proposed call of the balance of the 17-5/8% bonds in July 1986 allocated as developed in Note 5.

Source of Information: Company provided data

Philadelphia Electric Company

Calculation of the Effective Interest Rate of Debentures, Sinking Fund Debentures and Pollution Control Notes

Series	Date of Issue	Date of Maturity	Average Term in Years (1)	Original Amount Issued (000's)	Total Expenses, Premium or (Discount)	Net Proceeds on Principal Amount Issued	Net Proceeds Ratio	Effective Interest Rate (2)
Debentures:								
14 1/8% Series, due 1990	4-15-80	4-15-90	10	$ 50,000	$ (411,981)	$ 49,588,019	99.18%	14.28%
14 3/4% Series, due 2005	4-15-80	4-15-05	25	100,000	(894,198)	99,105,802	99.11	14.89
11 3/4% Proposed Series (3)	2-10-86	2-10-06	20	100,000	---	---	99.00	11.88
11 3/4% Proposed Series (3)	4- 1-86	4- 1-06	20	225,000	---	---	99.00	11.88
11 3/4% Proposed Series (3)	6- 1-86	6- 1-06	20	225,000	---	---	99.00	11.88
Sinking Fund Debentures:								
4.85 % Series, due 1986	10- 1-61	10- 1-86	18	40,000	(188,855)	39,811,145	99.53	4.89
14 1/2% Series, due 2009	2-15-84	2-15-09	18	150,000	(2,185,784)	147,814,216	98.54	14.73
Pollution Control Notes:								
5.50 % due 1997	11-22-72	11-22-97	18.8	30,000	(580,818)	32,419,182	98.24	5.65
13 % Series B, due 2010	6- 1-81	6- 1-10	28.5	71,500	(1,982,849)	69,517,151	97.23	13.38
11 1/2% Series B, due 2011	6- 1-81	6- 1-11	30	18,500	(2,285,721)	16,214,279	87.64	13.16
10 1/2% Series, due 2015	5-15-85	5-15-15	30	245,000	(6,360,000)	238,640,000	97.40	10.79
10 1/2% Series, due 2014	10- 1-85	10- 1-14	29	41,000	(1,043,100)(4)	39,956,900	97.46	10.79
Serial Notes:								
17 % Series, due 1986-87	6-29-82	6-29-87	4.5	20,000	(35,961)	19,964,039	99.82	17.06

Notes: (1) Determined by taking into account the effect of annual sinking fund requirements which are met by the retirement of bonds which reduce the average term of each series for those issues which have sinking fund requirements.

(2) Effective cost rate is the cost rate to maturity using as inputs the average term of each series, the stated interest rate and net proceeds ratio.

(3) For the proposed new series of Debentures to be issued in February, April and June 1986, the stated coupon rate is estimated to be 11-3/4%, the average term of issue is assumed to be 20 years and the next proceeds ratio is estimated to be 99.00%.

(4) Estimated.

Source of Information: Data provided by the Company upon request
Annual Report to the Federal Energy Regulation Commission (Form 1)

Philadelphia Electric Company
Composite Cost Rate of Preferred Stock
Estimated at June 30, 1986

	Amount Outstanding ($000's)	Percent to Total	Effective Cost Rate (1)	Composit Cost Rat
Cumulative Preferred Stock:				
11.75 % Proposed Series	$50,000	5.40%	11.87%	0.64%
14.15 % Series	50,000	5.40	14.84	0.80
14.625% Series	50,000	5.40	14.89	0.80
13.35 % Series	75,000	8.10	13.98	1.13
12.80 % Series	75,000	8.10	13.42	1.09
17.125% Series	30,000	3.24	17.62	0.57
15.25 % Series	47,500	5.13	15.72	0.81
10.00 % Series	17,600	1.90	10.07	0.19
8.75 % Series	40,010	4.32	8.81	0.38
9.52 % Series	38,000	4.10	9.83	0.40
9.50 % Series	75,000	8.10	9.64	0.78
8.75 % Series	65,000	7.01	8.89	0.63
7.85 % Series	50,000	5.40	7.98	0.43
7.80 % Series	75,000	8.10	7.92	0.64
7.75 % Series	20,000	2.16	7.91	0.17
7.325% Series	51,000	5.50	7.40	0.41
7.00 % Series	29,600	3.20	7.21	0.23
4.68% Series	15,000	1.62	4.76	0.08
4.40 % Series	27,472	2.96	4.33	0.13
4.30 % Series	15,000	1.62	4.44	0.07
3.80 % Series	30,000	3.24	3.80	0.12
Total Cumulative Preferred Stock Outstanding	$926,182	100.00%		10.50%

Note: (1) Effective cost rate for each issue as taken from calculations on page 3.

Source of Information: Company provided data.

Philadelphia Electric Company
Calculation of Preferred Stock Effective Cost Rate

Series	Date of Issue	Original Amount Issued	Premium or (Discount) At Issuance Net of Expenses	Net Proceeds on Principal Amount Issued	Net Proceeds Ratio	Effective Cost Rate
Cumulative Preferred Stock:						
11.75%(8)	5- 1-86	$50,000,000	-	-	99.00%	11.87%
14.15	12-11-84	50,000,000	$(2,323,000)	$47,677,000	95.35	14.[redacted]
14.625	3-28-84	50,000,000	(888,000)	49,112,000	98.22	14.89
13.35	11-15-83	75,000,000	(3,384,000)	71,616,000	95.49	13.98
12.80	2- 9-83	75,000,000	(3,443,000)	71,557,000	95.41	13.42
17.125	2-18-82	30,000,000	(525,484)	29,474,516	97.17 (1)	17.62
15.25	3-18-80	50,000,000	(925,000)	49,075,000	97.02 (2)	15.72
10.00	3-18-80	22,000,000	(131,000)	21,869,000	99.26 (3)	10.07
8.75	5- 1-78	50,000,000	(225,000)	49,775,000	99.31 (4)	8.81
9.52	5- 4-76	50,000,000	(920,369)	49,079,631	96.86 (5)	9.83
9.50	4-18-74	75,000,000	(1,093,088)	73,906,912	98.54	9.64
8.75	7-22-70	65,000,000	(1,040,129)	63,959,871	98.40	8.89
7.85	3-10-71	50,000,000	(801,475)	49,198,525	98.40	7.98
7.80	4-20-72	75,000,000	(1,105,544)	73,894,456	98.53	7.92
7.75	11-16-71	20,000,000	(399,174)	19,600,826	98.00	7.91
7.325	4- 2-73	75,000,000	(441,533)	74,558,467	99.02 (6)	7.40
7.00	2- 4-69	40,000,000	(646,306)	39,353,694	97.04 (7)	7.21
4.68	5-14-53	15,000,000	(243,769)	14,756,231	98.37	4.7[redacted]
4.40	2- 1-42	27,472,000	448,876	27,920,876	101.63	4.[redacted]
4.30	2- 5-48	15,000,000	(468,342)	14,531,658	96.88	4.44
3.80	12- 4-46	30,000,000	(30,218)	29,969,782	99.90	3.80

See Notes on following page.

Philadelphia Electric Company
Calculation of Preferred Stock Effective Cost Rate

Notes:

(1) Net proceeds ratio calculation based upon the average principal amount outstanding in recognition of annual sinking fund requirements to arrive at an effective cost rate. Average principal amount outstanding of $18,600,000 less $525,484 (discount and issuance expenses) equals $18,074,516 (net proceeds on average amount outstanding) $18,074,516 ÷ 18,600,000 = 97.17%.

(2) Net proceeds ratio calculation based upon the average principal amount outstanding. Average principal amount outstanding of $31,000,000 less $925,000 (discount and issuance expenses) equals $30,075,000 (net proceeds on average amount outstanding) $30,075,000 ÷ $31,000,000 = 97.02%.

(3) Net proceeds ratio calculation based upon the average principal amount outstanding. Average principal amount outstanding of $17,600,000 less $131,000 (discount and issuance expenses) equals $17,469,000 (net proceeds on average amount outstanding) $17,469,000 ÷ $17,600,000 = 99.26%.

(4) Net proceeds ratio calculation based upon the average principal amount outstanding. Average principal amount outstanding of $32,517,500 less $225,000 (discount and issuance expenses) equals $32,292,500 (net proceeds on average amount outstanding) $32,292,500 ÷ $32,517,500 = 99.31%.

(5) Net proceeds ratio calculation based upon the average principal amount outstanding. Average principal amount outstanding of $29,310,345 less $920,369 (discount and issuance expense) equals $28,389,976 (net proceeds on average amount outstanding) $28,389,976 ÷ $29,310,345 = 96.86%.

(6) Net proceeds ratio calculation based upon the average principal amount outstanding. Average principal amount outstanding of $45,000,000 less $441,533 (discount and issuance expenses) equals $44,558,467 (net proceeds on average amount outstanding $44,558,467 ÷ $45,000,000 = 99.02%

(7) Net proceeds ratio calculation based upon the average principal amount outstanding. Average prinicpal amount of $21,851,852 less $646,306 (discount and issuance expenses) equals $21,205,546 (net proceeds on average amount outstanding) $21,205,546 ÷ $21,851,852 = 97.04%.

(8) For the proposed new series of $50 million Preferred Stock planned to be issued in May 1986, the stated dividend rate is estimated to be 11.75% and the net proceeds ratio is estimated to be 99.00%.

Source of Information: Company provided data

Estimates of the Consumer Price Index
GNP Implicit Price Deflator (1) and Interest Rates for 1986

	Estimated Year-End 1986				
	Consumer Price Index(2)	GNP Implicit Price Deflator (3)	Prime Rate(4)	Public Utility Bonds(7)	Treasur Bonds(1
The Value Line Investment Survey	5.1%	5.1%	11.5%	11.5%(5)	N/A
Standard & Poor's Corporation	3.7	3.2	8.5	N/A	8.7%
Blue Chip Economic Indicators	4.2	4.2	N/A	N/A	N/A
Blue Chip Financial Forecasts	4.2	4.0	9.5	11.0(6)	9.6%

Notes:

(1) Based upon an annual rate of increase or percent change.

(2) For the year 1986, the CPI is estimated to be 4.2% by the Value Line Investment Survey, 3.3% by Standard & Poor's Corporation, 4.6% by Blue Chip Economic Indicators and 3.9% by Blue Chip Financial Forecasts, for the four-quarter period ending December 31, 1986.

(3) For the year 1986, the GNP Implicit Price Deflator is estimated to be 4.0% by the Value Line Investment Survey, 3.1% by Standard & Poor's Corporation, 4.6% by Blue Chip Economic Indicators, and 3.8% by Blue Chip Financial Forecasts for the four-quarter period ending December 31, 1986.

(4) For the year 1986, the prime rate is estimated to be 10.8% by the Value Line Investment Survey, 8.7% by Standard & Poor's Corporation and 9.4% by Blue Chip Financial Forecasts, for the four-quarter period ending December 31, 1986.

(5) Estimate for Aa Public Utility Bonds from the Value Line Investment Survey.

(6) Estimate for A Public Utility Bonds.

(7) For the year 1986 AA rated public utility bonds are estimated to yield 11.7% by Value Line Investment Survey. The A rated public utility bonds are estimated by Blue Chip Financial Forecasts to yield 11.0% for the four-quarter period ending December 31, 1986.

(8) Estimate for 30-year Treasury bonds.

(9) Estimate for 20-year bonds.

(10) For the year 1986, Treasury Bonds are estimated to yield 9.6% by Blue Chip Financial Forecasts, for the four-quarter period ending December 31, 1986.

Source of Information: Value Line Investment Survey - Selection & Opinion, November 15, 1985
Standard & Poor's Trends & Projections, January 16, 1986
Blue Chip Economic Indicators, January 10, 1986
Blue Chip Financial Forecasts, January 1, 1986

Development of Dividend Yield for Use in Discounted Cash Flow (DCF) Analysis for Philadelphia Electric Company, and Barometer Group of Four Electric Companies with Bonds Rated Baa

	1 Current Dividend Yield(1)	2 Next Period Dividend Growth Rate (2)	3 Current Dividend Yield Reflecting Growth (3)	4 12-Month Average Dividend Yield (1)	5 Next Period Dividend Growth Rate (2)	6 12-Month Yield Reflecting Growth (3)	7 Average Yield (Average of Col. 1,3,4,&6)(4)
Philadelphia Electric Company	11.9%	2.4%	12.2%	14.2%	2.4%	14.5%	13.2%
Barometer Group of Four Electric Companies with Bonds Rated Baa							
Detroit Edison Company	10.0%	3.0%	10.3%	10.6%	3.0%	10.9%	10.5%
Duquesne Light Company	12.2	2.7	12.5	12.9	2.7	13.2	12.7
New York State Electric and Gas Corporation	9.1	5.0	9.6	10.0	5.0	10.5	9.8
Ohio Edison Company	11.2	1.4	11.4	12.3	1.4	12.5	11.9
	10.6%	3.0%	10.9%	11.5%	3.0%	11.8%	11.2%

Notes:
(1) As developed on Updated Schedule 14, page 2.
(2) Average of Merrill Lynch and Value Line projected dividend growth rates and the historic dividend growth rate as shown on Schedule 15, page 1 (columns 2, 5, and 7).
(3) Dividend yields reflecting next period growth in dividends are computed by increasing the yields by the next period dividend growth rate. The next period dividend growth rate is the average of historic and projected dividend growth rates.
(4) Average of current and 12-month average yields and current yield reflecting next period growth in dividends and 12-month average yields reflecting next period growth in dividends. The price of common stock may be reflective of the next period dividend which is a requirement of the DCF model when the dividend is paid discretely or periodically rather than continuously. However, there are no empirical studies which prove that investors in fact always expect the next period dividend and reflect that estimate in the current price of stock. Thus, it is possible that the present price of stock is reflective of the current annualized dividend. Moreover, sometimes the current dividend yield, which of course is the product of a stock price of a particular day, could be distorted because the price that day may be abnormally high or low or not representative of the future. Thus, judgments about the future should be the product of a recent period, such as the last twelve months' average dividend yield, as well as reflecting the value of the next period dividends expected by investors.

Calculation of Current and Average Dividend Yield for Philadelphia Electric Company, and the Barompeter Group of Four Electric Companies with Bonds Rated Baa

	Current Dividend Per Share	Current Market Price (1-27-86)	Current Dividend Yield	12-Month Average Dividend	12-Month Average Closing Price	12-Mo Avera Clos Yiel
Philadelphia Electric Company	$2.20	$18.50	11.9%	$2.20	$15.52	14.
Barometer Group of Four Electric Companies with Bonds Rated Baa :						
Detroit Edison Company	$1.68	$16.875	10.0%	$1.68	$15.91	10.
Duquesne Light Company	2.06	16.875	12.2	2.06	15.92	12.
New York State Electric & Gas Corp.	2.56	28.25	9.1	2.50	25.04	10.
Ohio Edison Company	1.88	16.75	11.2	1.88	15.29	12.
Average			10.6%			11.

Note: (1) The average dividend yield was computed by relating the indicated annualized dividend rate and closing market price on the last trading day of each month for the twelve months ended December 31, 1985.

Source of Information: Associated Utility Services, Inc., Computerized Data Base
Interactive Data Corporation
Standard & Poor's Compustat Service, Inc., Utility Compustat II

PELO Exhibit JFB-4
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PHILADELPHIA ELECTRIC COMPANY
(Electric Operations)

Exhibit

to Accompany

the Updated and Rebuttal Testimony

of

Joseph F. Brennan, President
Associated Utility Services, Inc.

Philadelphia Electric Company
Investor Expected Market Returns

	Amounts	Present Value Factor	Present Value Amount
CF_0	$ (17.08)(1)	1.0000	$ (17.08)
CF_1	2.20	0.8627	1.90
CF_2	2.24	0.7442	1.66
CF_3	2.32	0.6420	1.49
CF_4	2.40	0.5538	1.33
CF_5	22.39	0.4778	10.70
Total	$ 14.47		$ 0.00
Internal Rate of Return(2)	15.92%		

Note: (1) Based upon the average of PECO's common stock trading range over the past 52 weeks and the closing price on January 28, 1986 (i.e., $18.75 + $13.875 + $18.625 = $51.25 ÷ 3 = $17.08).

(2) The internal rate of return is calculated based upon the purchase of a share of common stock as noted above, the receipt of annual dividend payments for the years 1986 through 1990 as developed on page 2 of this Schedule and the sale of the share of common stock at 1990 year-end book value as developed on page 2 of this Schedule. Hence, the fifth year's cash flow is comprised of $2.48 dividends dividends and $19.91 per share sale price.

Philadelphia Electric Company
Projected Financial Performance

	1986	1987	1988	1989	1990
Earnings Per Share	$2.60	$2.65	$2.75(1)	$2.80(1)	$2.85(1)
Dividends Per Share	2.20	2.24	2.32(1)	2.40(2)	2.48(2)
Book Value Per Share (Year-End)	18.30	18.71	19.14	19.54	19.91
Average Book Value Per Share	18.10	18.50	18.92	19.34	19.73
Rate of Return On Average Book Common Equity	14.36%	14.32%	14.53%	14.48%	14.45%
Dividend Payout	0.85	0.85	0.84	0.86	0.87

Note: (1) The Value Line report (dated 12-27-85) projects average Earnings per Share of $2.80 for PECO in 1988-90. The projections shown above also provide a $2.80 average EPS during that period.

(2) The Value Line report (dated 12-27-85) projects average Dividends per Share of $2.40 for PECO in 1988-90. The projections shown above provide a $2.40 average DPS during that period. The assumed quarterly dividend payment for all intervening years are: 1986-$0.55 per share ($2.20 annualized 1987-$0.56 per share ($2.24 annualized), 1988-$0.58 per share ($2.32 annualized), 1989-$0.60 per share ($2.40 annualized), and 1990-$0.62 per share ($2.48 annualized).

Source of Information: Value Line Investment Survey Edition 1, December 27, 1985

PHILA ELECTRIC

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
High	25.1	25.0	23.5	19.5	15.5	18.0	21.3	19.8	17.6	17.0	14.4	17.5	18.3	16.0	18.0			
Low	20.6	21.3	17.0	9.4	11.1	14.9	17.1	15.0	13.5	11.4	11.9	13.0	13.5	9.0	13.9			

1988 | 1989 | 1990

December 27, 1985 Value Line

.93 X Dividends p sh divided by Interest Rate

Target Price Range

Relative Price Strength

Insider Decisions 1985

	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Institutional Decisions

	3Q'84	4Q'84	1Q'85	2Q'85	3Q'85
to Buy	30	29	35	47	48
to Sell	26	29	24	26	26
Hldg's(000)	16944	21678	22994	24338	26021

Percent shares traded

TIMELINESS 3 (Relative Price Performance Next 12 Mos.) Average

SAFETY 4 (Scale: 1 Highest to 5 Lowest) Below Average

BETA .65 (1.00 = Market)

1988-90 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	30	(+65%)	22%
Low	18	(+0%)	12%

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	88-90E
Revenues per sh	20.90
"Cash Flow" per sh	4.20
Earnings per sh (A)	2.80
Div'd Decl'd per sh ◆(B)	2.40
Cap'l Spending per sh	4.55
Book Value per sh	19.65
Common Shs Outst'g (C)	283.30
Avg Ann'l P/E Ratio	8.5
Relative P/E Ratio	.70
Avg Ann'l Div'd Yield	10.0%
Revenues ($mill)	4250
Net Profit ($mill)	675
Income Tax Rate	30.0%
Net Profit Margin	15.9%
Long-Term Debt Ratio	40.5%
Common Equity Ratio	40.5%
Total Capital ($mill)	9910
Net Plant ($mill)	11890
% Earned Total Cap'l	9.0%
% Earned Net Worth	13.5%
% Earned Comm Equity (C)	14.0%
% Retained to Comm Eq	2.0%
% All Div'ds to Net Prof	88%

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
	14.36	15.15	15.32	14.64	18.97	17.68	17.66	18.69	19.04	19.05	22.92	22.43	21.03	18.18	18.37	17.05	17.65	
	3.24	3.34	3.29	3.04	3.24	3.10	3.22	3.22	3.37	3.29	3.29	3.39	3.48	3.48	3.70	3.40	3.85	
	1.84	2.10	2.08	1.99	1.81	1.86	1.91	1.87	1.87	1.86	2.00	2.25	2.39	2.40	2.70	2.50	2.60	
	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.76	1.80	1.80	1.80	1.90	2.06	2.12	2.20	2.20	2.20	
	10.01	8.76	8.94	8.31	8.94	5.63	5.48	5.75	5.30	5.09	6.26	7.25	6.92	7.21	6.49	5.45	4.60	
	18.95	19.54	20.00	19.61	20.21	19.05	19.13	19.26	19.28	19.06	18.72	18.10	17.93	17.99	17.81	17.90	18.15	
	35.13	40.14	44.73	52.38	53.33	64.20	69.31	74.62	76.51	82.88	92.63	108.51	125.77	142.81	162.30	176.35	186.85	
	11.6	10.8	11.0	10.5	7.3	7.4	8.7	10.4	9.5	8.4	6.8	5.8	6.3	7.0	5.0	6.2		
	.83	.69	.75	1.04	1.02	.99	1.11	1.36	1.29	1.22	.90	.70	.69	.59	.46	.51		
	7.7%	7.2%	7.2%	7.9%	12.5%	12.0%	9.9%	9.1%	10.1%	11.5%	13.2%	14.6%	13.8%	12.6%	16.3%	14.3%		
							1224.1	1394.8	1456.8	1578.5	2123.4	2433.4	2644.8	2596.1	2981.0	3010	3300	
							164.6	173.4	184.9	194.5	227.1	277.6	336.2	389.1	492.4	515	570	
							31.7%	29.3%	28.2%	18.9%	16.4%	19.3%	28.2%	22.4%	20.9%	22.5%	24.8%	
							13.5%	12.4%	12.7%	12.3%	10.7%	11.4%	12.7%	15.0%	16.5%	17.1%	17.2%	
							51.0%	51.3%	51.4%	50.9%	49.9%	51.3%	50.9%	50.0%	51.7%	49.0%	48.0%	
							34.9%	35.5%	34.9%	35.9%	36.5%	36.7%	37.9%	38.0%	36.8%	39.0%	40.0%	
							3797.2	4049.7	4231.9	4401.2	4752.4	5348.7	5947.7	6758.5	7851.5	8060	8450	
							3886.9	4165.9	4449.2	4741.4	5180.0	5714.1	6455.6	7272.2	8459.9	9240	9870	
							6.3%	6.3%	6.5%	6.6%	7.0%	7.7%	8.3%	8.2%	8.8%	9.0%	9.5%	
							8.9%	8.8%	9.0%	9.0%	9.5%	10.7%	11.5%	11.5%	13.0%	12.5%	13.0%	
							9.5%	9.2%	9.6%	9.5%	10.1%	11.4%	12.3%	12.5%	14.1%	13.5%	14.0%	
							1.3%	.6%	.4%	.3%	1.0%	1.8%	1.7%	1.4%	2.6%	1.5%	2.0%	
							89%	95%	97%	98%	93%	88%	89%	91%	85%	90%	87%	

Bold figures are Value Line estimates

CAPITAL STRUCTURE as of 9/30/85

Total Debt $4527.8 mill. **Due in 5 Yrs** $809.8 mill.
LT Debt $4416.2 mill. **LT Interest** *$452.0* mill.
Incl. $18.4 mill. debt discount.
Incl. cap. leases $248.5 mill.
(LT interest earned: 1.7x)

Pension Liability None in '84 vs. None in '83

Pfd Stock $890.9 mill. **Pfd Div'd** $89.2 mill.
8,977,950 shs. 3.8% to 17.125%, all cum. and $100 par. Callable at prices ranging from $101 to $171.125/sh. Incl. 3,253,230 shs. with mandatory redemption requirements.

Common Stock 172,469,460 shs.

ELECTRIC OPERATING STATISTICS

	1982	1983	1984
Change Sales (KWH)	+4.6	−6.7	+6.6
Avg. Res'l Use (KWH)	6544	6990	6960
Avg. Revs. per KWH (¢)	7.37	7.84	8.29
Capacity at Peak (Mw)	8006	7974	7765
Peak Load, Summer (Mw)	5691	5879	5925
Annual Load Factor (%)	56.8	58.1	57.7
Change Customers (yr. end)	+.6	+.9	+1.1
Fixed Charge Cov. (%)	131	118	117

ANNUAL RATES

of change (per sh)	Past 10 Yrs	Past 5 Yrs	Est '82-'84 to '88-'90
Revenues	1.5%	.5%	1.5%
"Cash Flow"	1.0%	1.5%	3.0%
Earnings	2.5%	6.0%	2.0%
Dividends	2.5%	3.5%	2.0%
Book Value	−1.0%	−1.5%	1.5%

QUARTERLY REVENUES ($ mill.)

Calendar	Mar. 31	June 30	Sept. 30	Dec. 31	Full Year
1982	757.1	592.6	661.6	633.5	2644.8
1983	723.2	572.2	668.3	632.4	2596.1
1984	818.0	703.2	755.6	704.2	2981.0
1985	852.3	683.5	750.9	723.3	3010
1986	880	700	850	790	3300

EARNINGS PER SHARE (A)

Calendar	Mar. 31	June 30	Sept. 30	Dec. 31	Full Year
1982	.71	.42	.73	.53	2.39
1983	.70	.44	.78	.48	2.40
1984	.79	.58	.73	.60	2.70
1985	.79	.57	.59	.55	2.50
1986	.75	.55	.75	.55	2.60

QUARTERLY DIVIDENDS PAID (B)

Calendar	Mar. 31	June 30	Sept. 30	Dec. 31	Full Year
1981	.45	.45	.50	.50	1.90
1982	.50	.50	.53	.53	2.06
1983	.53	.53	.53	.53	2.12
1984	.55	.55	.55	.55	2.20
1985	.55	.55	.55	.55	

BUSINESS: Philadelphia Electric Company supplies electricity (81% of revs.), gas (16%) and steam (3%) in Philadelphia and environs. Service area is highly industrialized. Electric revenues: residential, 35%; commercial, 15%; industrial, 42%; other, 8%. Gas revenues: residential, 44%; commercial and industrial, 45%; other, 11%. Prime fuels: oil, 15%; coal, 22%; nuclear, 18%; hydro, 4%; purchased power, 41%. Fuel costs: 47% of revenues; labor, 17%. '84 depreciation rate: 1.9%. Estimated plant age: 9 yrs. Has 10,508 employees, 300,257 common stockholders. Chairman & C.E.O.: J.L. Everett. President: J.H. Austin, Jr. Incorporated: Pennsylvania. Address: 2301 Market St., Philadelphia, PA 19101.

Regulators have voted to allow completion of the utility's Limerick #2 nuclear plant. On December 5, the Pennsylvania commission (PUC) approved a plan permitting PE to resume construction of Limerick #2, providing that the utility agrees to a cost cap of approximately $3.2 billion. Any costs above the cap will not be recoverable through higher rates. In addition, regulators established certain plant performance standards with corresponding incentives and penalties. PE has 30 days to respond to the completion plan.

With the risk of cancellation removed, the dividend appears secure, but capital needs will remain high through 1990. For investors, the main danger of a cancellation is that a writeoff of its $880 million Limerick #2 investment could pressure PE to cut or eliminate the common dividend. Now that the commission has given its approval to resume construction, PE faces an extended period of heavy capital expenditures. Over $3.7 billion of expenditures are projected in 1986-89, with roughly half financed externally.

An important rate case is pending. In late September, PE filed for an electric rate increase request of $671 million, net of fuel savings. The request seeks to place Limerick #1 and 100% of the facilities shared by the two reactors into the rate base, and proposes a three-year phase-in of higher rates. A satisfactory decision (expected in mid-1986) is important because of anticipated capital needs for Limerick #2 construction outlays. Based on past commission practices, the PUC will probably suspend the increase until June 1986 and allocate only 50% of common facilities to Unit #1.

The current yield has dropped several notches. The PUC's go-ahead for Limerick #2 has eliminated the immediate risk of a dividend cut, in our opinion. Nonetheless, PE still faces a lengthy period of heavy capital expenditures and will be highly dependent on responsive regulatory treatment. Accordingly, we continue to regard these high-yielding shares as unsuitable for conservative accounts. *P.W.L./J.M.F.*

Business Revenues (and Pretax Margins) by Business Line

	1982	1983	1984	1985
Electric	2181.0(16.6%)	2107.9(17.3%)	2435.7(17.0%)	2470(17.0%)
Gas	390.4(6.3%)	417.1(6.4%)	463.0(7.7%)	470(7.5%)
Steam	73.4(2.6%)	71.1(2.8%)	32.3(5.3%)	70.0(5.5%)
Company Total	2644.8(14.7%)	2596.1(15.2%)	2981.0(15.2%)	3010(15.5%)

(A) Next earnings report due mid-Feb. Estimated current cost egs./sh.: '84, 75¢.
(B) Next dividend meeting about Jan. 28. Goes ex about Feb. 25. Dividend payment dates: Mar. 30, June 29, Sept. 30, Dec. 19. ■ Dividend reinvestment plan available.
(C) Rate base determin.: Fair Value. Rate allowed on common equity in '84: 16.2%. Regulatory Climate: Below Average. Bk. in millions.

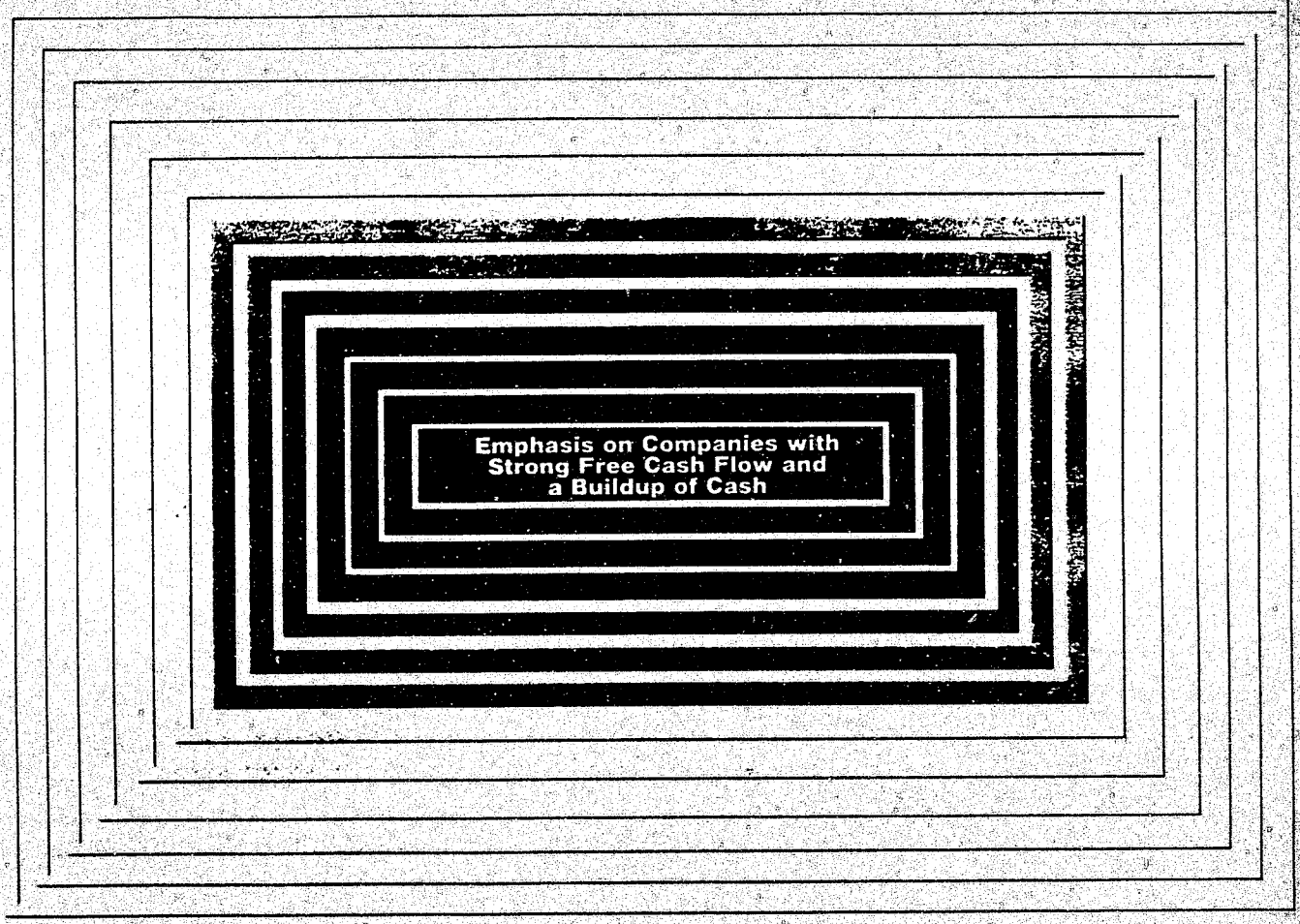
Company's Financial Strength	C++
Stock's Price Stability	95
Price Growth Persistence	10
Earnings Predictability	95

Merrill Lynch

Quantitative Analysis

November/December 1985

Common Stock Valuation
A Bimonthly Report



Merrill Lynch Capital Markets
Securities Research & Economics Divisions
Quantitative Analysis

Carmine J. Grigoli
Vice President
212 637-6000

Eric S. Mitofsky
Assistant Vice President

Mahavir Sarda
Capital Markets Analyst

Company	Decile Rank Alpha	Mkt. vs. Consensus	Relative Strength	QHQ	Detailed Alpha Analysis: Implied Return %	Req. Return %	Beta	Alpha %	Std. Alpha Decile	Implied Return Assumptions: Proj. 5 Year Growth Rate EPS %	DPS %	Steady-State Years	Steady-State EPS Growth %	Payout %
Olsten	7	4	1	1-1	13.6	14.5	1.1	-.9	8	20.0	9.2	10	12.0	25
Oneok	4	7	8	3-3	13.8	12.5	.7	1.3	3	8.3	6.0	12	5.6	60
Orange/Rock Util	5	8	5	3-3	12.2	11.6	.5	.7	4	5.7	5.0	9	4.0	65
Outboard Marine	3	4	10	2-2	15.0	13.4	.9	1.6	3	12.0	16.4	11	8.0	55
Overnite Trans	10	6	5	3-2	12.0	15.1	1.2	-3.2	10	10.0	12.8	15	8.0	55
Owens-Corning	6	2	5	2-3	14.9	15.2	1.3	-.3	7	12.0	16.9	12	9.0	40
Owens Illinois	9	3	2	2-2	11.4	14.2	1.1	-2.8	9	5.6	7.0	12	7.0	50
Oxford Inds	10	7	6	2-2	10.4	14.0	1.0	-3.5	10	12.0	12.0	15	8.0	35
Ozark Holdings	4	10	1	4-4	15.5	14.6	1.1	.9	5	18.3	21.7	24	9.5	45
PHH Group	10	2	3	3-1	12.6	16.5	1.5	-4.0	10	12.0	14.7	15	8.0	50
Pnc Financial	5	1	4	1-1	14.7	14.4	1.1	.3	5	13.0	11.6	15	10.0	32
PPG Industries	6	9	2	3-2	14.1	14.4	1.1	-.2	6	16.6	10.0	11	7.0	50
PSA Inc	4	6	4	4-4	14.5	13.4	.9	1.1	4	16.7	.0	24	9.5	40
PACCAR Inc	7	8	8	4-3	13.7	14.1	1.0	-.5	7	10.0	11.9	16	7.5	45
Pacific Gas&Elec	2	6	5	3-3	13.6	11.4	.4	2.2	1	3.3	3.8	8	4.2	65
Pacific Lighting	7	10	4	3-3	10.9	11.7	.5	-.8	7	4.1	7.0	12	3.8	70
Pacific Telesis	5	4	6	3-2	13.4	12.8	.7	.7	4	8.3	6.9	10	6.0	60
Pacificorp	5	6	3	3-3	13.0	12.7	.7	.2	5	6.2	4.4	12	4.1	65
Pall Corp	8	4	5	1-1	13.5	14.7	1.2	-1.2	8	20.0	14.3	18	9.0	40
Pan AM Corp	8	1	1	4-4	13.4	14.4	1.1	-1.0	8	14.9	NA	18	8.6	40
Pandick	9	3	10	2-2	15.2	17.5	1.7	-2.3	9	16.9	19.7	15	15.0	15
Panhandle East	9	10	6	4-3	12.7	14.8	1.2	-2.0	9	5.7	5.0	18	7.0	60
Parker Drilling			10	DEX			1.2							
Parker Hannifin	9	10	9	3-1	13.4	15.7	1.4	-2.4	9	12.0	7.5	14	8.0	45
Pay N Pak Stores	1	7	7	3-2	17.6	14.0	1.0	3.6	1	13.9	11.4	18	8.0	50
Payless Cashways	1	9	10	3-2	18.8	15.9	1.4	3.0	2	30.8	34.3	18	9.0	50
Penney J.C.	2	6	5	3-2	13.9	12.0	.6	1.9	2	9.5	11.7	14	7.5	50
Pennsylvania P&L	6	7	6	3-3	11.3	11.6	.5	-.4	6	-1.0	.0	8	4.0	65
Pennwalt Corp			6	RVW			.9							
Pentair Inc	3	9	3	3-2	14.5	13.1	.8	1.4	4	14.0	8.9	12	10.0	35
People Express			2	DEX			1.0							
Pennzoil	4	9	4	3-2	15.7	14.7	1.2	.9	4	13.0	4.9	15	13.0	50
Peoples Energy	7	3	6	4-3	13.0	13.7	.9	-.7	7	4.0	4.0	11	3.0	65
The Pep Boys	4	5	1	2-1	14.9	14.1	1.0	.8	5	18.5	25.1	25	12.0	35
Pepsico	2	2	1	2-1	13.5	11.6	.5	1.9	2	15.0	12.0	18	10.0	40
Perkin Elmer	1	6	7	3-1	22.9	16.4	1.5	6.5	1	56.0	19.9	10	10.0	40
Petrie Stores	4	6	3	2-3	13.9	12.9	.8	1.0	4	14.0	10.0	17	8.0	65
Petrolite	4	8	9	3-3	13.9	12.9	.8	1.0	4	9.9	11.2	20	9.0	50
Pfizer	5	6	3	3-2	13.6	13.3	.9	.2	5	14.0	12.7	30	8.0	50
Phelps Dodge			3	DEX			1.6							
Phila Electric	2	3	7	4-4	14.5	11.9	.6	2.6	1	-2.3	1.8	10	2.9	75
Phila Suburban			4	RVW			1.0							
Philip Morris	1	2	9	1-1	19.1	13.2	.8	5.9	1	18.0	18.0	15	9.0	45
Philips Inds	10	4	4	2-2	9.8	15.5	1.3	-5.6	10	2.0	6.9	10	7.0	40
Petrol			10	DEX			1.0							

Tick Symbol	X	Five Year Return On Equity: Last %	Five Year Return On Equity: Next %	Projected EPS Growth Rate: Quarterly EPS Ending	Quarterly EPS Y-To-Y %	Fiscal Year Ending	Fiscal Year Curr. %	Fiscal Year Next %	Change in EPS Est: 1 Mo.	Change in EPS Est: 3 Mo.
OLS	A	15	21	DC	16	DC85	19		NA	NA
OKE	N	14	16			AU86	16		C	C
ORU	N	13	15			DC85	-4	8	C	NA
OM	N	10	16	SP	19	SP85	-39	41	C	C
OVT	N	18	19			DC85	14	12	C	C
OCF	N	9	15	DC	18	DC85	11	5	C	D
OI	N	8	13	DC	6	DC85	11	19	C	C
OXM	N	16	14	NV	64	MY86	41	56	C	C
OZA	A	8	13	SP	-115	DC85	-35	0	C	D
PHH	N	18	24	OC	11	AP86	13	10	C	C
PNCF	O	15	16	DC	1	DC85	17	11	B	B
PPG	N	13	18	DC	22	DC85	8	6	C	C
PSA	N	5	7	DC	1090	DC85	600	-50	NA	NA
PCAR	O	12	20	DC	-42	DC85	-41	4	D	D
PCG	N	13	13			DC85	3	4	C	NA
PLT	N	12	10			DC85	43	3	C	C
PAC	N	13	14			DC85	9	6	NA	NA
PPW	N	14	16			DC85	8		NA	NA
PLL	A	24	23			JL86	21	20	C	C
PN	N	36	21	SP	100	DC85	-25	180	NA	NA
PI	N	20	15			AU86	51		C	C
PEL	N	14	17			DC85	-36	0	C	C
PKD	N	7								
PH	N	13	20	DC	-15	JE86	1		D	D
PNP	N	13	13	NV	7	FB86	-4	15	D	E
PCI	N	15	21	NV	21	NV85	-3	21	D	D
JCP	N	12	12			JA86	-1	11	C	NA
PPL	N	12	11			DC85	-19	3	C	C
PSM	N	8								
PNTA	O	15	17	DC	13	DC85	-1	13	D	D
PEXP	O	1								
PZL	N	19	24			DC85	93	-1	C	C
PGL	N	13	13			SP85	21	0	C	C
PBY	N	16	20			JA86	10		NA	NA
PEP	N	16	21	DC	29	DC85	27	18	C	B
PKN	N	14	14	OC	-3	JL86	-5	29	C	E
PST	N	18	17			JA86	31	20	C	C
PLIT	O	19	17	OC	-17	OC85	-4	10	C	D
PFE	N	18	28	SP	14	DC85	14	11	C	C
PD	N	-5								
PE	N	12	14			DC85	-2		NA	NA
PSC	N	10								
MO	N	21	18	DC	26	DC85	23	19	D	D
PHL	N	18	15	SP	13	MR86	16	16	C	C
P	N	14								

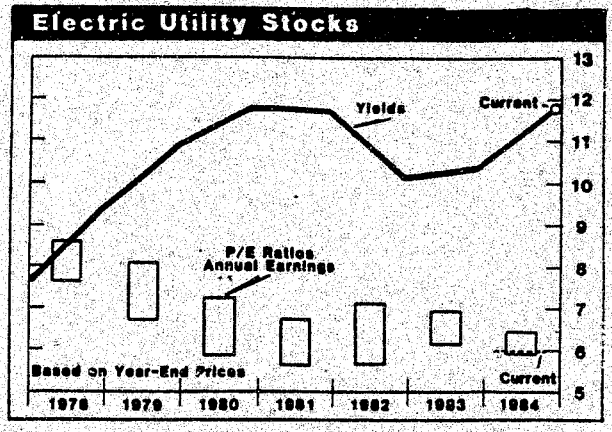
Exhibit JFB-4, Schedule 2
Page 2 of 2

Electric utilities: selective approach vital

Electric utilities have been under a cloud as a result of growing nuclear plant problems. Although prospects for stocks of companies with heavy nuclear exposure remain dim, we believe selected utilities that have little or no nuclear exposure are attractively priced for investors seeking income and moderate appreciation.

Utilities generally have been market laggards for more than a year; the S&P index of electric utility issues has dropped about 3% since the beginning of 1983, compared with an 11% gain in the broad market, as measured by the S&P 500.

The stocks began their downturn in the latter part of last year as news of troubled nuclear plants began to appear regularly. Utilities involved in nuclear construction projects saw their stock prices plummet, while non-nuclear issues remained relatively steady. As the chart on page 840 shows, by early October the divergent market action of the two groups became readily apparent.



Electric Utilities:

With no nuclear exposure

	Latest 12 Mos. Earns. Per Sh.	Indic. Divd.	Stock Price	P/E Ratio	Yield %
Allegheny Power System	$3.54	◊$2.60	26	7.3	10.0
Black Hills Power & Light	2.99	◊▶1.68	21	7.0	8.0
Central Illinois Light	2.87	◊▶2.14	20	7.0	10.7
Central Ill. Public Svce.	2.33	◊1.52	15	6.4	10.1
Central Louisiana Elec.	2.85	◊▶1.84	18	6.3	10.2
Empire District Electric	2.51	◊▶1.64	16	6.4	10.3
Hawaiian Electric	4.12	◊▶3.12	34	8.3	9.2
Idaho Power	4.50	◊3.08	33	7.3	9.3
Interstate Power	2.40	◊1.82	17	7.1	10.7
Iowa Public Service	3.31	◊2.68	24	7.3	11.2
•IPALCO Enterprises	4.17	◊2.92	27	6.5	10.8
•Kansas Power & Light	4.66	◊▶2.76	29	6.2	9.5
Kentucky Utilities	3.57	◊2.36	23	6.4	10.3
Louisville Gas & Electric	2.87	◊▶2.36	24	8.4	9.8
Minnesota Power & Light	3.90	◊▶2.56	25	6.4	10.2
Missouri Public Svce.	3.05	◊1.20	17	5.6	7.1
Montana-Dakota Utilities	$3.90	◊▶$2.44	29	7.4	8.4
Montana Power	4.22	◊▶3.00	28	6.6	10.7
Nevada Power	2.74	◊▶2.72	27	9.9	10.1
N. Indiana Public Svce.	1.73	◊▶1.50	14	8.1	10.7
•Oklahoma Gas & Elec.	2.68	◊1.92	20	7.5	9.6
Orange & Rockland Util.	2.64	◊1.92	20	7.6	9.6
Potomac Electric Power	2.26	1.94	20	8.8	9.7
St. Joseph Light & Power	2.83	◊1.60	17	6.0	9.4
Savannah Elec. & Pwr.	2.63	◊1.44	15	5.7	9.6
Sierra Pacific Power	1.70	◊1.54	15	8.8	10.3
Southern Indiana G&E	4.57	◊2.48	28	6.1	8.9
•Southwestern Pub. Ser.	2.45	◊▶1.74	19	7.8	9.2
•★TECO Energy	3.14	◊▶2.04	26	8.3	7.8
Texas-New Mexico Pwr.	3.79	◊2.38	25	6.6	9.5
Tucson Electric Power	5.37	◊2.60	38	7.1	6.8
Utah Power & Light	2.31	◊2.32	22	9.5	10.5

With nuclear exposure, but no problems

Atlantic City Electric	$3.48	◊$2.36	20	5.7	11.8
Baltimore Gas & Electric	4.95	◊3.00	31	6.3	9.7
Boston Edison	3.60	◊▶3.00	27	7.5	11.1
Carolina Power & Light	3.21	◊‡2.52	22	6.9	11.5
Consolidated Edison	4.16	2.12	24	5.8	8.8
Delmarva Power & Light	2.45	◊1.80	18	7.3	10.0
Detroit Edison	2.21	◊▶1.68	13	5.9	12.9
Dominion Resources	3.28	◊2.56	22	6.7	11.6
Duke Power	3.77	◊2.36	24	6.4	9.8
Florida Power & Light	5.02	◊▶3.60	37	7.4	9.7
Florida Progress	$2.64	◊▶$2.04	19	7.2	10.7
Iowa Elec. Light & Pwr.	2.14	◊▶1.84	15	7.0	12.3
Iowa-Illinois G&E	4.20	◊▶2.60	22	5.2	11.8
•New England Elec. Sys.	5.48	◊▶3.40	35	6.4	9.7
Northern States Power	5.60	◊2.96	36	6.4	8.2
Pacific Gas & Electric	2.15	◊1.60	13	6.0	12.3
Pacific Pwr. & Lt.	0.45	◊2.16	22	NM	9.8
Penn. Power & Light	3.06	◊▶2.48	21	6.9	11.8
P.S. of Colorado	1.86	◊▶1.84	17	9.1	10.8
P.S. of New Mexico	3.53	◊‡2.84	23	6.5	12.3

apparent. The last two months of the year saw a steep slide in nuclear-exposed utilities, triggered by the abandonment of PUBLIC SERVICE COMPANY OF INDIANA's half-finished Marble Hill facility on which the company had spent $2.8 billion.

Cancellation of nuclear plants is not a new phenomenon; according to the Department of Energy, 100 nuclear units had been cancelled by the end of 1982. However, the cancellations have become more costly since they have been occurring when plants have been closer to completion.

What's to blame for the nuclear power industry's woes? For one thing, the Federal Nuclear Regulatory Commission (NRC) has become a more vigilant watchdog since the infamous Three Mile Island accident in early 1979. The NRC has mandated expensive safety measures on the construction of nuclear plants and is a strict enforcer of safety guidelines. The plants, as a result, experienced huge cost overruns, which were compounded by high inflation and interest rates. In some cases, costs have soared more than tenfold over original estimates.

In addition, many of the nuclear plants are no longer needed because of falling demand for electricity, due chiefly to conservation efforts. Most nuclear units under construction were planned some ten years ago when electricity sales were growing at a robust pace and were expected to continue to do so. Electric kilowatt hour sales are now, however, estimated to increase only 3% yearly through 1990, down from a 7% annual gain over the past decade.

For many utilities, the optimistic forecasts that were made in the mid-1970s have resulted in construction programs that will produce significant excess capacity in the current decade and through the mid-1990s. The reserve margin (the percentage by which installed capacity exceeds the highest level of demand the utility expects to face) for the U.S. as a whole stands at roughly

With nuclear exposure, but no problems (continued)

	Latest 12 Mos. Earns. Per Sh.	Indic. Divd.	Stock Price	P/E Ratio	Yield %
Public Service E&G	3.40	◇▶$2.64	21	6.2	12.6
San Diego Gas & Elec.	3.20	◇‡1.96	19	5.9	10.3
South Carolina E&G	2.44	◇▶2.05	18	7.4	11.4
•S. California Edison	6.22	◇▶3.80	37	5.9	10.3
Southern Company	2.72	◇▶1.80	16	5.9	11.3
Texas Utilities	3.97	◇▶$2.36	24	6.0	9.8
•★Wisconsin Elec. Pwr	3.97	2.10	26	6.5	8.1
Wisconsin Pwr. & Lt.	3.97	◇▶2.48	27	6.8	9.2
Wisconsin Public Service	3.94	2.32	26	6.6	8.9

With nuclear exposure and problems

American Electric Pwr.	$2.44	◇▶$2.26	17	7.0	13.3
Arizona Public Service	3.46	◇2.60	18	5.2	14.4
Central Hudson G&E	3.94	◇2.72	20	5.1	13.6
Central Maine Power	2.51	◇▶1.96	14	5.6	14.0
Central Vermont P S	2.94	◇▶1.80	15	5.1	12.0
Cincinnati Gas & Electric	2.94	◇2.16	12	4.1	18.0
Cleveland Electric	3.28	◇2.40	17	5.2	14.1
Commonwealth Edison	4.43	3.00	23	5.2	13.0
Consumers Power	3.12	◇2.52	11	3.5	22.9
Dayton Power & Light	2.80	◇2.00	14	5.0	14.3
Duquesne Light	2.20	◇▶2.06	14	6.4	14.7
Eastern Utilities Assoc.	2.80	◇▶1.82	14	5.0	13.0
Gulf States Utilities	2.31	◇1.64	12	5.2	13.7
Houston Industries	3.58	◇2.32	19	5.3	12.2
Illinois Power	3.80	◇▶2.64	20	5.3	13.2
Kansas City P&L	4.15	◇▶2.24	18	4.3	12.4
Kansas Gas & Elec.	3.08	◇▶2.36	16	5.2	14.8
Long Island Ltg.	2.80	[2]...	7	2.5	[2]...
Middle South Utilities	2.46	◇▶$1.74	13	5.3	13.4
New York State E&G	3.06	◇▶2.32	17	5.6	13.6
Niagara Mohawk Power	2.77	◇1.92	14	5.1	13.7
Northeast Utilities	2.37	◇1.48	12	5.1	12.3
Ohio Edison	2.22	◇▶1.84	12	5.4	15.3
Philadelphia Electric	2.40	◇2.20	14	5.8	15.7
Portland General Electric	3.01	◇1.78	14	4.7	12.7
P.S. of Indiana	4.46	1.00	9	2.0	11.1
P.S. of New Hampshire	3.49	2.12	10	2.9	21.2
Puget Sound Power & Lt.	1.93	◇▶1.76	13	6.7	13.5
Rochester Gas & Elec.	3.23	◇2.04	15	4.6	13.6
Toledo Edison	3.50	◇▶2.52	18	5.1	14.0
Union Electric	2.66	◇1.72	13	4.9	13.2
United Illuminating	5.67	◇3.20	22	3.9	14.5
Washington Water Power	3.02	◇2.48	18	6.0	13.8

★Master list issue. •Bold type denotes recommended issue. †Based on latest 12 mos. earnings. [1]Year ending August. [2]Dividend omitted March, 1984. [3]After net charge of $3.66. [4]Will no longer qualify effective Jan. 1, 1985. ◇Qualified utility company; the dividends paid by these companies that are automatically reinvested in their common stock qualify for up to $750 ($1,500 on joint return) of tax exclusion. To the extent that the dividend is treated as a return of capital for tax purposes, it will not be eligible for exclusion. ▶Offers 5% discount. ‡Offers 3% discount. NM-Not Meaningful.

35%; a generally acceptable level is 25%. There is excess capacity in every region of the country, with margins running as high as 42% in the West. Even taking into account probable revisions of current nuclear construction schedules, utilities are expected to continue to experience excess capacity through the end of the decade.

Utilities that have little or no nuclear exposure generally are relatively healthy from a financial standpoint. Some, such as CONSOLIDATED EDISON, even boast of excess cash. Without the drain of costly construction projects, most of these utilities do not require much additional capital from financial markets.

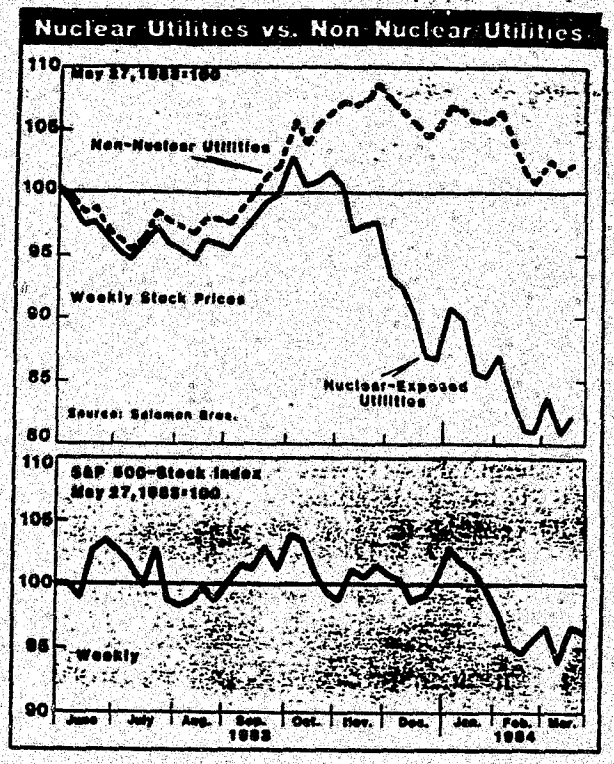
Rate increases for the industry as a whole this year are expected to be somewhat greater than the estimated $5.25 billion granted last year, owing to higher interest rates and nuclear plant problems. At the same time, kilowatt hour sales should rise close to 4% this year (vs. 3.4% in 1983 and 2.7% in 1982) as the economic expansion continues. The expected strong recovery in the Midwest should be a contributing factor to the overall increase.

An easing of construction expenditures is also expected to help the utilities. Capital spending is estimated to have peaked last year at about $37 billion, an increase of nearly 30% from total construction outlays in 1980. By 1987, Edison Electric Institute estimates that utilities' capital spending will drop to $27.8 billion.

As construction projects are completed and added to the rate base, the industry's reported earnings should reflect actual cash income, rather than a noncash credit—allowance for funds used during construction (AFUDC). This credit has represented an increasing portion of utilities' profits. It has been estimated that about half of the industry's aggregate earnings are due to AFUDC, which makes no contribution to cash flow.

According to Salomon Brothers, 57% of construction expenditures were financed externally last year (50% is considered average); this year only 34% is expected to be financed externally. Those utilities building nuclear plants, however, will have to finance a much higher percentage externally. TOLEDO EDISON, for example, is constructing three plants, and the company is expected to generate only 4% of its funds internally over the 1984-86 period; MINNESOTA POWER & LIGHT, which is not involved in building nuclear plants, is estimated to generate 183% of its funds internally over the same period.

A key question for utilities with nuclear plant problems is how regulatory commissions will treat a utility's huge investment in the costs of units that have been



cancelled close to completion. The best alternative for the utilities would be to require the customers to pay all the costs by permitting the company to amortize the construction costs over a given period, while earning a return on the unamortized portion. The worst alternative for the utilities would be to have the stockholders bear all the costs by forcing the utility to write off the entire cost of the project.

Imposing the costs of cancellation on the stockholders could lead to bankruptcy if the total "sunk" cost of the construction project is greater than the net worth of the firm. But it is unlikely that any commission would cause a utility to face such a severe sentence. A bankruptcy—or near-bankruptcy—would ultimately damage both the industry and the customers it serves.

Utility Dividends

Since utilities are regarded essentially as income investments, the safety and growth potential of a stock's dividends must be carefully considered before a purchase decision is made. This is all the more important in the present shaky environment. It is likely that more utilities with nuclear plant problems will follow the lead of PUBLIC SERVICE COMPANY OF INDIANA, which last October cut its dividend, and LONG ISLAND LIGHTING COMPANY, which recently omitted its payment indefinitely.

The yield on the S&P electric utility stock-price index stands at about 12%, based on indicated 1984 dividends, which is more than seven percentage points above the yield of the average stock, as represented by the S&P 500 index. We would be wary of utilities whose yields are much higher, since the above-average returns could signal a dividend cut or omission.

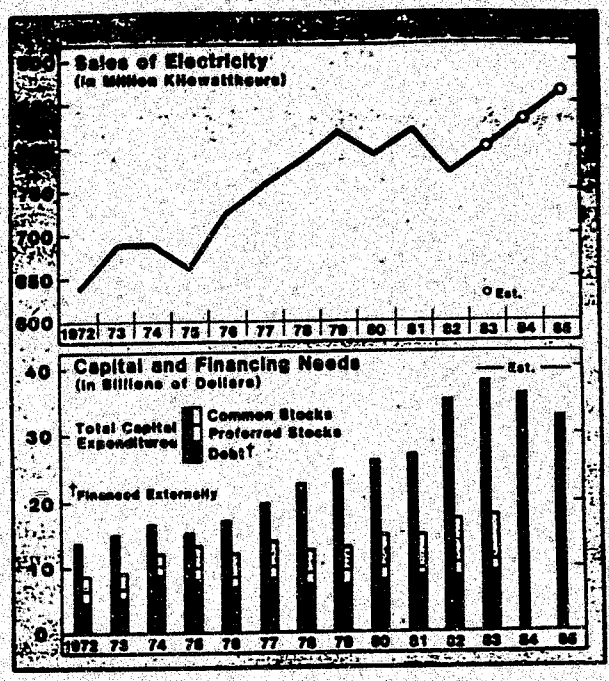
Investment Recommendations

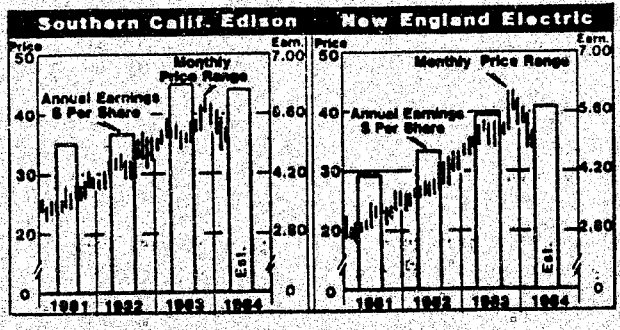
The table on pages 838-839 breaks down utilities into three categories: those that have no nuclear exposure; those that have nuclear exposure, but no problems with the nuclear plants; and those with nuclear exposure and problems.

We would avoid the issues in the third category, despite their deeply depressed prices. Although the seriousness of the problems faced by these utilities varies widely and not all of the companies will cut or omit dividends, the negative investor psychology regarding the group is likely to persist.

Our favorites for a combination of rising dividend income and moderate appreciation over the long term from the two other categories are Master list TECO ENERGY ***and*** WISCONSIN ELECTRIC POWER, ***as well as*** IPALCO ENTERPRISES ***(formerly Indianapolis Power & Light),*** KANSAS POWER & LIGHT, OKLAHOMA GAS & ELECTRIC, SOUTHWESTERN PUBLIC SERVICE ***and the two issues appraised here.***

NEW ENGLAND ELECTRIC SYSTEM, which serves more than a million customers in Massachusetts, Rhode Island and New Hampshire, has in effect a 15-year plan designed to reduce capital expenditures, eliminate dependence on foreign oil and improve returns to investors. Under the plan, peak load growth will be reduced to 1.8% annually, 49% of total energy needs will be met by coal and use of foreign oil will be cut to 10% from 73%. The company is also engaged in oil/gas exploration and development and expects these operations to eventually account for up to 20% of total assets vs. 16% at the end of 1983. Funds needed for construction—estimated at $770 million for the 1984-1987 period—are expected to be generated mainly internally by 1987. Per-share earnings this year should climb to $5.70 from $5.48 in 1983. The dividend, boosted 6.3% with the January payment, is expected to rise at a rate above the industry average. ***The stock (NES, 35, NYSE), at a historically modest 6.1 times estimated 1984 earnings and yielding 9.7% from the $3.40 annual dividend, has appeal for growing income and moderate appreciation over the long term.***





SOUTHERN CALIFORNIA EDISON operates in a growing area in central and southern California; electric kilowatt hour sales are estimated to increase 2% annually through 1990. Rate relief has been fairly timely, as the utility's regulatory environment is favorable. SCE's power generation emphasis since 1980 has been on development of renewable and alternative sources, including wind, geothermal, solar, fuel cells and hydroelectric. By 1987, nuclear generation is expected to comprise 20% of the fuel mix; there have been no problems with nuclear plants. Earnings, which are estimated to dip to $6.15 a share this year from $6.22 in 1983 largely because of technical factors, should trend higher in the years ahead. The dividend was hiked 8% in September to $0.95 quarterly, and further annual increases above the industry norm are expected. ***The shares (SCE, 37, NYSE), which are to be split 2-for-1 in July, are appraised at a modest six times estimated 1984 earnings; they are an appealing income investment with modest capital gain potential.***