

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

APPLICATION OF PECO ENERGY COMPANY FOR
APPROVAL OF ITS RESTRUCTURING PLAN
UNDER SECTION 2806 OF THE PUBLIC UTILITY CODE

DOCKET NO. R-00973953

PREPARED DIRECT TESTIMONY AND
EXHIBITS OF

ROGER D. COLTON

SUBMITTED ON BEHALF OF
THE ENVIRONMENTALISTS

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MARY ELLEN WOLF, REPORTER

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

2 A. My name is Roger Colton. My address is 34 Warwick Road, Belmont, MA 02178.

3 **Q. FOR WHOM DO YOU WORK AND IN WHAT CAPACITY?**

4 A. I am a principal in the firm of Fisher, Sheehan & Colton, Public Finance and
5 General Economics (FSC). I provide technical assistance to a variety of public
6 utilities, state agencies and consumer organizations on rate and customer service
7 issues involving telephone, water/sewer, natural gas and electric utilities. My
8 resume is attached as Exhibit RDC-1.

9 **Q. PLEASE DESCRIBE THE TYPES OF TECHNICAL ASSISTANCE YOU PROVIDE
10 ABOUT LOW INCOME ENERGY ISSUES.**

11 A. I am presently providing technical assistance on low-income fuel assistance, rate,
12 and energy efficiency programs to a variety of agencies and institutions, including
13 the Colorado Energy Assistance Foundation, the Vermont Department of Public
14 Service, Public Service Electric and Gas in New Jersey and Entergy in Texas.
15 Additional information is contained in RDC-1.

16 **Q. PLEASE DESCRIBE YOUR INVOLVEMENT WITH THE DEBATES
17 CONCERNING RESTRUCTURING THE ELECTRIC INDUSTRY.**

18 A. In 1995, I was hired by the National Council on Competition and the Electric
19 Industry (a joint project of the National Association of Regulatory Utility
20 Commissioners and the National Conference of State Legislatures) to prepare a
21 study of the impacts of electric competition on small business and residential
22 customers generally and low-income residential customers in particular. I recently
23 completed a study for Oak Ridge National Laboratory on how the concept of the
24 "obligation to serve" should play out in a restructured electric industry. I have also
25 worked on these issues for the New Hampshire Community Action Association,
26 the Maryland Office of Peoples Counsel and the Consumer Energy Cooperative.

27 **Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH THE DESIGN OF LOW-INCOME
28 UTILITY AFFORDABILITY PROGRAMS.**

29 A. I have been involved with designing low-income affordability programs for nearly
30 fifteen years. I have worked with electric and natural gas utilities, with state utility
31 commission staff, with community-based organizations, and with state
32 weatherization and fuel assistance offices to develop and implement affordable rate

1 programs, fuel assistance programs, and low-income energy efficiency programs in
2 nearly 25 states.

3 **Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY TODAY.**

4 A. The purpose of my testimony is to consider the adequacy of two components of
5 PECO's proposed restructuring plan as it relates to low-income consumers. More
6 particularly, after an introduction, my testimony is divided into four parts:

7 Part I evaluates the structure and approach of the proposed PECO consumer
8 education program;

9 Part II presents principles for the structure and design of an adequate and
10 appropriate PECO universal service program;

11 Part III critiques the existing PECO CAP, CAP Rate, and LIURP initiatives and
12 proposes modifications; and

13 Part IV summarizes my recommendations both as to consumer education and as to
14 universal service.

15 In brief, my testimony concludes that the Commission should direct substantial
16 revisions both to PECO's consumer education program and to PECO's universal
17 service program. My testimony concludes that PECO's consumer education
18 program looks far more like a marketing initiative than a consumer education plan.
19 It concludes further that PECO appears to try to design a "one size fits all"
20 education program that is inconsistent with the diverse nature of its consumer base.
21 It concludes finally that PECO has not engaged in either the pre-program planning
22 or in the development of an evaluation process that would mark an adequate and
23 appropriate consumer education program.

24 As to universal service, my testimony concludes that certain elements that are
25 critical to *any* universal service program are missing from the PECO proposal.
26 These elements include defining what services are to be supported as part of
27 universal service, defining the measurements for the "universality" of service, a
28 consideration of the diverse nature of consumers needing universal service
29 support, and an adequate planning and evaluation component. In addition to these
30 principles, my testimony critiques and makes recommendations regarding the level

1 of universal funding by PECO, the mechanism for both collecting and distributing
2 universal service funding, and the mechanism to be used for administering
3 universal service programs. My testimony concludes by evaluating and critiquing
4 PECO's existing universal service efforts.

5 INTRODUCTION

6 **Q. PLEASE EXPLAIN THE OVERALL CONTEXT OF YOUR TESTIMONY TODAY.**

7 **A.** My testimony is presented within the context of a great deal of concern about the
8 impact that moving to a competitive marketplace will have on low-income
9 consumers. In my research for Oak Ridge National Laboratory, I had occasion to
10 consider the extent to which other competitive, even if regulated, industries had
11 achieved and maintained universal service. I found that universal service was *not*
12 the norm and that the competitive market tended to impede rather than to promote
13 universal service. For example, I found that:

- 14 ● 56% of the population relying on public assistance goes without telephone
15 service;
- 16 ● 18% of the population goes without health insurance coverage;
- 17 ● Hospitals, both for-profit and non-profit alike, engage in the process of
18 "dumping" inability-to-pay customers into public institutions;
- 19 ● The population served in residual markets for auto and property insurance
20 receive less coverage and worse customer service, even though paying
21 substantially higher rates.

22 In each instance, it tends to be the poor and minority consumers who are charged
23 higher rates, provided lesser service or excluded from the market altogether.

24 The failure to achieve universal service for home energy generally, and electricity in
25 particular, is *substantively different from failing to achieve universal service for*
26 *telephone service, personal lines of insurance and even health care.* Allowing a
27 competitive electric industry to yield a market that results in penetration levels,
28 service levels and rate levels that mirror these other competitive industries for low-
29 income and minority consumers would be an unacceptable result.

1 Q. WHAT CRITERIA SHOULD THE PUC APPLY IN DECIDING WHETHER TO
2 APPROVE, DISAPPROVE OR MODIFY PECO'S PROPOSED CONSUMER
3 EDUCATION AND/OR UNIVERSAL SERVICE PLANS?

4 A. There are two fundamental criteria that the PUC should apply in any decision to
5 approve or modify PECO's consumer education program and PECO's universal
6 service plan:

- 7 1. Whether these programs serve to attain and maintain universal service
8 within the electric industry. In applying this criterion, universal service cannot
9 be measured by reference to customers as a whole. Instead, for there to be
10 universal service, there must be universal service in each sub-market as well
11 as for consumers as a whole; and
- 12 2. Whether these programs serve to prevent the involuntary deterioration in
13 *current penetrations of electric service amongst those seeking service*. As
14 can be seen in other industries providing essential services, a competitive
15 market is not necessarily supportive of the pursuit of universal service.
16 Moreover, as has been found in those other industries, a move to
17 competition can result in significant deterioration in service penetration
18 levels. Public policy should declare that any deterioration in universal
19 service in the electric industry will be unacceptable.

20 **PART I: PECO'S CONSUMER EDUCATION PROGRAM.**

21 **A. Overview**

22 Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

23 A. This section of my testimony critiques PECO's proposed Consumer Education
24 Program and offers recommendations for improvement.

25 Q. ARE THERE ANY GENERAL PRINCIPLES THAT GUIDE YOUR APPROACH TO
26 CONSUMER EDUCATION IN A RESTRUCTURED ELECTRIC INDUSTRY?

27 A. Yes. There are three.

- 28 ● First, there is a significant difference between three types of activity: (1)
29 engaging in marketing; (2) providing information; and (3) providing

1 education. What is needed from PECO at this point is consumer education,
2 not merely information provision, and not merely marketing.

- 3 ● Second, there is a need to recognize the diversity amongst consumers in
4 order to develop an effective education program. A "one size fits all"
5 approach is not likely to generate a successful education initiative.
- 6 ● Third, the actual provision of education is but one part of a consumer
7 education program. In addition to this component, an effective education
8 program must incorporate a significant planning component, a significant
9 evaluation component, and a significant component where PECO adjusts its
10 education efforts based on the feedback it develops as to program
11 effectiveness.

12 Each of these principles will be discussed in greater detail below. Moreover, my
13 testimony will evaluate the PECO proposal in light of these principles. Finally, I will
14 make recommendations.

15 **B. Marketing, Information and Education.**

16 **Q. PLEASE EXPLAIN THE DISTINCTION YOU DRAW BETWEEN PROVIDING**
17 **INFORMATION, PROVIDING EDUCATION, AND ENGAGING IN MARKETING.**

18 **A.** The May 8, 1997 statement of Commission Brownell makes the distinction quite
19 well. Therein, she states that "education can be distinguished from information
20 when a customer is able to take the information and use it to make better decisions
21 ... information does not qualify as education... [C]onsumer education involves
22 efforts to provide consumers with skills and knowledge to allocate their resources
23 wisely in the marketplace." In contrast, as Commissioner Brownell stated, "the
24 ultimate goal of marketing clearly is to promote the sales of goods and services."
25 "Marketing can be described as the process of planning and executing the
26 conception, pricing, promotion and distribution of ideas, goods and services to
27 create exchanges that satisfy individual and organizational goals."

28 **Q. HAS THERE BEEN ANY CONSIDERATION OF THE DIFFERENCE BETWEEN**
29 **CONSUMER INFORMATION AND CONSUMER EDUCATION IN PENNSYLVANIA**
30 **IN PARTICULAR?**

1 A. Yes. In 1988, Drew Hyman, from Penn State University, considered this issue
2 within the context of low-income fuel assistance. The Penn State report made
3 several findings significant for today's consideration of PECO's consumer education
4 program:

- 5 ● Consumer knowledge of the existence of energy assistance and
6 conservation programs "is not very extensive... Most consumers do not have
7 *effective knowledge* about those programs which exist." (emphasis added).
- 8 ● The low level of knowledge about the various options available to consumers
9 raises a question as to whether some consumers are being denied access to
10 the assistance network because their knowledge is incomplete.
- 11 ● Consumer education can fill in the missing gaps in consumer knowledge and
12 *teach consumers to use the information* available to them in an effective
13 manner. (emphasis added).

14 The concept of advancing "effective knowledge" on the part of consumers is one
15 contribution the Penn State research has made to developing appropriate
16 consumer education in the energy context. "Effective knowledge" involves not only
17 conveying information, but teaching consumers how to use that information as well.
18 According to the Penn State work, consumers must know how to act upon the
19 information they are given. PECO could substitute the term "competitive market"
20 for "assistance program" and the Penn State lessons would be directly transferable.

21 **Q. DOES PECO TAKE THESE FACTORS INTO ACCOUNT IN ITS PROPOSED**
22 **CONSUMER EDUCATION PROGRAM?**

23 A. No. The proposed PECO consumer education program fails to take any of these
24 factors into account.

25 **C. Consumer Education and Consumer Diversity.**

26 **Q. PLEASE EXPLAIN WHAT YOU MEAN WHEN YOU TALK ABOUT THE**
27 **DIVERSITY AMONGST CONSUMERS NEEDING EDUCATION.**

28 A. Time and again in dealing with consumer education, research emphasizes the
29 diversity amongst consumers. Programs that fail to account for these differences
30 between consumers will fail their basic education function. I define "basic

1 education function" to mean imparting information as well as teaching consumers
2 how to use that information.

3 **Q. PLEASE EXPLAIN THE BASIS FOR YOUR CONCLUSION THAT THERE IS A**
4 **DIVERSITY AMONGST CONSUMERS.**

5 A. Consider first participation in public benefit programs. Why low-income households
6 do not participate in the Food Stamp program nationwide was the subject of a U.S.
7 General Accounting Office (GAO) study in 1988. The GAO found that in both
8 years, slightly more than half of all eligible households eligible for Food Stamps did
9 not participate in that program. A subsequent GAO study found that the groups
10 most likely to cite a lack of information about the Food Stamp program included
11 most categories of households headed by single individuals.¹ Finally, GAO said,
12 the groups most likely to report problems ("real or perceived") with the Food Stamp
13 program or access problems as their major reason for nonparticipation were
14 households that participated in SSI or other public welfare programs; households
15 headed by nonwhite widowed, divorced or separated individuals; nonwhite single
16 males; and households containing nonwhite married couples. GAO concluded that
17 the demographic analysis of information failures was significant for policymakers.

18 **Q. DOES THIS DATA ABOUT FOOD STAMPS APPLY TO CONSUMER ACTIONS**
19 **TOWARD THEIR HOME ENERGY BILLS AS WELL?**

20 A. Yes. I recently performed a study for the Colorado Energy Assistance Foundation
21 (CEAF) regarding nonparticipation in LIHEAP in Colorado. As with GAO's study of
22 food stamp nonparticipants, I found that the primary obstacle to participation in
23 LIHEAP in Colorado is the lack of information. Based on data specific to Colorado,
24 persons who are disproportionately represented in the populations that report not
25 knowing about LIHEAP include persons aged 65 and older, non-English speaking
26 households (and particularly non-English/non-Spanish speaking households),
27 African-Americans (but not Hispanics), and unmarried households.

¹These include households headed by white single men and women and those households headed by nonwhite single females.

1 **Q. CAN YOU BRIEFLY SUMMARIZE THE LESSONS FROM THE DATA ABOVE**
2 **FOR PURPOSES OF PECO'S CONSUMER EDUCATION PROGRAM?**
3 A. Yes. The data above standing together is much more important than any particular
4 set of data standing alone. Each example cited above tends to support the notion
5 that different subsets of the population tend to need different education than other
6 sub-sets. Moreover, reactions to education efforts can be categorized by
7 demographic characteristics. Even more important, however, is the fact that every
8 study tends to support this finding. The data is more compelling, too, because the
9 lesson is the same over a diverse range of circumstances. We should abide by its
10 lessons in designing the PECO consumer education program.

11 **Q. WHAT ARE THOSE LESSONS?**
12 A. The lessons are that in designing a consumer education program, there will be a
13 need: (1) to distinguish between the media used in disseminating the education;
14 and (2) to distinguish between the messages that comprise the education. Each of
15 these conclusions is considered in more detail below.

16 **Q. PLEASE EXPLAIN WHAT YOU MEAN WHEN YOU SAY THAT THERE IS A**
17 **DIFFERENCE IN THE MEDIA THAT SHOULD BE USED FOR CONSUMER**
18 **EDUCATION.**
19 A. Different media will reach and be relied upon by different consumers. A consumer
20 education program that fails to take this fact into account will simply fail to reach
21 substantial portions of the population. Consider for example, what we can learn
22 from fuel assistance outreach. A national study by the Center on Budget and Policy
23 Priorities (CBPP) examined specifically why elderly households did not participate
24 in the LIHEAP program. This report noted substantial barriers to participation,
25 including a lack of program trust. A study of methods for marketing energy
26 conservation programs to the elderly, this report noted, found that "many of the
27 elderly did not *trust* the programs." (emphasis added). The report found that in
28 designing outreach efforts, "the specific informational techniques used were less
29 important than the amount of trust [that] potential participants had in the sponsoring
30 organization."

1 **Q. WHAT DO WE KNOW ABOUT CONSUMER TRUST IN PHILADELPHIA?**

2 A. Trust in Philadelphia is directly correlated with income and socio-economic status.
3 An April 1997 report by The Pew Charitable Trusts found that education and age
4 are other important factors. Older, more educated and more affluent respondents
5 are more trusting than the less schooled and poorer. Poorly educated young whites
6 and young blacks are extremely distrustful. The Pew study found that few
7 Philadelphia residents trusted the news media (either print or broadcast). Distrust
8 of the various institutions was as likely to be grounded in fear of exploitation or
9 dishonesty as in crime. "The most distrustful respondents placed more emphasis
10 on dishonesty and human nature." Conversely, the most trusted institutions are
11 ones that involve personal contact. Four of the five most trusted institutions in the
12 city included family members (#1), people at church (#3), your boss (#4), and co-
13 workers (#5).

14 **Q. IS THERE ANY OTHER ASPECT OF THE NEED TO DISTINGUISH BETWEEN**
15 **THE MEDIA USED?**

16 A. Yes. Excessive reliance upon a media campaign as a mechanism for consumer
17 education is not likely to be successful. Professor Brenda Dervin² states that one
18 "well-established premise of public communication/education campaign design [is]
19 that mass mediated messages are rarely effective." According to Professor Dervin,
20 media-based campaigns tend to have low penetration levels, with a typical public
21 service announcement campaign producing awareness rates as low as 5 - 10%.
22 Similarly, media advertising was found to generate low consumer awareness of a
23 low-income energy assistance program in New York state. "[T]he CSA
24 weatherization program ... had relatively low visibility despite extensive advertising
25 and outreach campaigns."

26 **Q. PLEASE SUMMARIZE.**

27 A. There is a diversity of consumers both in what media they rely upon in obtaining
28 information and in what media they trust to impart appropriate information. PECO's
29 consumer education program should recognize this diversity.

²Communications Department, Ohio State University, Columbus, OH.

1 **Q. CAN YOU BRIEFLY EXPLAIN WHAT YOU MEAN WHEN YOU TALK ABOUT**
2 **THE NEED FOR A DIFFERENCE NOT ONLY IN THE MEDIA USED, BUT IN THE**
3 **MESSAGES USED AS WELL?**

4 **A. Yes. My Colorado study of LIHEAP nonparticipants found, not surprisingly, that**
5 **different populations of low-income Colorado households face different barriers to**
6 **participation in the federal fuel assistance program. Aged households, who are**
7 **disproportionately represented in the group of LIHEAP non-participants, primarily**
8 **cite information problems. In Colorado, both African-Americans and Hispanics are**
9 **disproportionately represented in the population of households lacking telephones**
10 **in their homes. A look at that no-phone population finds that a lack of fuel**
11 **participation comes in association with the lack of telephone service. The mobility**
12 **of Colorado's low-income households also creates barriers to LIHEAP participation.**
13 **This conclusion is consistent with the Penn State research discussed above. One**
14 **impediment to participation in fuel assistance is the lack of what Penn State termed**
15 **"effective knowledge." Barriers associated with effective knowledge (as defined by**
16 **Hyman) are positively associated with recent residency.**

17 **Q. IS THIS VARIETY OF BARRIERS A COMMON PROBLEM IN OTHER**
18 **CONTEXTS?**

19 **A. Yes. The Center on Budget and Policy Priorities report referenced above noted**
20 **substantial barriers to fuel assistance participation, including difficulties in obtaining**
21 **access to the program. "In some areas, transportation to offices that accept**
22 **applications may be a problem, especially for the elderly. For those who are**
23 **homebound or socially isolated, getting to an office may be nearly impossible."**

24 **Similarly, a New England study found that the application forms for the Food Stamp**
25 **program in Vermont were a major barrier to participation. The participants,**
26 **according to the Vermont researchers, "viewed the 12-page application form as**
27 **complex and overwhelming." The report continued:**

28 **there were several participants ... in particular who were very open about**
29 **their lack of education (4th grade or less), and their inability to complete the**
30 **forms without assistance. Regardless of educational level, however, the**
31 **participants felt the instructions were not clear and that the wording of**
32 **several questions on the application form was confusing.**

1 Moreover, the Vermont Food Stamp program involved monthly income reporting.
2 While those forms were *not* major problems for most Food Stamp recipients on an
3 ongoing basis, according to the Vermont report, "there were several participants
4 who mentioned that *the first time* (emphasis in original) the monthly reporting form
5 arrived in the mail, they had been confused about what was expected." Finally,
6 according to the Vermont report, "a lack of knowledge about how or where to get
7 problems resolved had resulted in several families losing their eligibility."

8 **Q. PLEASE SUMMARIZE THE APPLICABILITY OF THIS DATA TO PECO'S**
9 **CONSUMER EDUCATION PROGRAM.**

10 A. A wise consumer educator who, in turn, trains energy efficiency educators counsels
11 that effective consumer education is *learner* and *learning* focused rather than
12 *teaching* and *teacher* focused. One of the basic precepts to effective education is
13 that an effective education program must begin with each person's needs,
14 knowledge and experience, and decide what needs to be learned instead of what
15 PECO wants to teach. As is demonstrated above, what different consumers "need
16 to learn" may vary widely. Some households (such as the Colorado no-phone
17 consumers) need to learn about a wide range of mechanisms for participation.
18 Some (such as Colorado's recent movers and the elderly in the CBPP study) need
19 to learn about community resources that will assist in participation. Some (such as
20 the Vermont food stamp households) need to learn about how to negotiate the
21 process of participation, even if just for the first time. Some (such as the Vermont
22 food stamp households) need to learn about where and how to seek help. Again,
23 not everyone needs everything. Instead, an effective education program needs to
24 determine what the consumers need to learn rather than what PECO wants to
25 teach. Diversity exists that must translate into different messages delivered to
26 different populations using different mechanisms.

27 **Q. DOES PECO TAKE THESE FACTORS INTO ACCOUNT IN ITS PROPOSED**
28 **CONSUMER EDUCATION PROGRAM?**

29 A. No. The proposed PECO consumer education program fails to take any of these
30 factors into account.

1 **D. Planning the Consumer Education Program.**

2 **Q. IN YOUR EARLIER COMMENTS, YOU INDICATED THAT THE ACTUAL**
3 **PROVISION OF EDUCATION IS BUT ONE PART OF A CONSUMER**
4 **EDUCATION PROGRAM. IN ADDITION TO THIS COMPONENT, AN EFFECTIVE**
5 **EDUCATION PROGRAM MUST INCORPORATE A SIGNIFICANT PLANNING**
6 **COMPONENT. PLEASE EXPLAIN WHAT YOU MEAN WHEN YOU TALK**
7 **ABOUT THE NEED FOR A PLANNING COMPONENT THAT EXTENDS BEYOND**
8 **THE ACTUAL PROVISION OF CONSUMER EDUCATION.**

9 **A.** One implication of the discussion above is that a consumer education program
10 begins many steps before the actual provision of education. In order to determine
11 what type of program should be adopted, substantial planning must occur before
12 the design and development of the program ever begins. The first step in the
13 PECO education program should be a consumer research step. A consumer
14 research section of the education plan should involve four primary inquiries: The
15 first three are from a consumer perspective while the fourth is not. The four
16 inquiries include (with the three consumer inquiries coming first):

- 17 1. What do people know about restructuring (thus informing decisions about
18 what people need to learn). As I state above, basic adult education
19 concepts counsel that education most readily occurs when it is *learner* and
20 *learning* focused rather than *teaching* and *teacher* focused. Education
21 should be based on what needs to be learned instead of what PECO wants
22 to teach.
- 23 2. Who do people turn to for information and how do they get their information?
24 Do they read it, or watch it, or listen to it? Do they get it from the media,
25 through the mail, or from their neighbors and friends?
- 26 3. Who are major influencers of behavior and opinion? From whom do people
27 take their "cues," neighbors, fellow workers, city/government officials, social
28 organizations? This inquiry differs in that it looks at behavior rather than at
29 information sources.

1 4. Who do different information sources reach? Do particular radio stations
2 reach particular audiences? Conversely, does the local newspaper
3 systematically "miss" some definable or discrete population? Do discrete
4 populations rely more on one source than any other?

5 In engaging in each of these steps, there is a need for PECO to segment its
6 research and analysis by relevant consumer groups. As the diversity discussion
7 points out above, such groups may be demarcated by age, race/ethnicity, socio-
8 economic status, or some other factor. Indeed, determining what the relevant
9 factors are will be part of the initial inquiry.

10 **Q. WHAT IS THE SECOND PLANNING STEP?**

11 A. The second step should involve setting goals, objectives, strategies and tactics.
12 While the "Consumer Education Program" set forth as an exhibit to the testimony of
13 Gwen King purports to set a "goal" supported by multiple objectives, its content is
14 both incomplete and inadequate.

15 **Q. CAN YOU ILLUSTRATE?**

16 A. Yes. The need for consumer education is five-fold:

- 17 1. To educate consumers about restructuring generally;
- 18 2. To educate consumers about *what* they will need to do ("I need to choose");
- 19 3. To educate consumers about *how* to do it ("I will find and assess information
20 in the following way");
- 21 4. To educate consumers about how to understand their energy consumption
22 patterns in order to decide how best to meet their needs;
- 23 5. To motivate consumers to engage in the decisionmaking ("*not making a*
24 choice is not okay").

25 The PECO proposal seems to focus almost exclusively on steps 1 and 2. It
26 appears to completely ignore the need for consumer education regarding Steps 3, 4
27 and 5. Even within the goal it sets, PECO does an inadequate job of translating

1 that goal into a plan.³ Basic planning calls for broad policy goals to next be
2 translated into objectives. Objectives are then matched with specific strategic
3 approaches which are then implemented through specific tactics. Objectives are to
4 be: (a) attainable; and (b) measurable. Without these attributes, it is impossible to
5 know to what extent, if at all, your strategies and tactics are working. What Ms.
6 King sets forth at Page 3 of GSK-1, with the exception of the first bullet, are not
7 objectives, but strategies. They say what PECO is going to *do* rather than what
8 PECO hopes to accomplish (*i.e.*, they present "how" statements rather than "what"
9 statements.) As a result, we are left with nothing to judge whether PECO's efforts
10 are accomplishing anything at all. Finally, we are left with no set of strategies that
11 specifically relate back to the objectives that have been set. An adequate planning
12 process would allow a measurement of whether the objective has been
13 accomplished and, if not, enable the planner to trace that failure to a specific
14 strategy or tactic that did not do what it was intended to do. PECO's plan allows
15 none of that to happen.

16 The immediate need for PECO is to retain a competent consumer education
17 consultant to engage in a planning process to establish goals, objectives, strategies
18 and tactics for a consumer education campaign.

19 **Q. WHAT IS THE THIRD STEP?**

20 A. The third step then is to decide, based on all of the above, what needs to be said.
21 In contrast to this need, the PECO Consumer Education Campaign is almost
22 completely devoid of substantive content. It's only "*almost* completely devoid"
23 because the goal references educating consumers "about electric industry
24 competition" and one objective references informing PECO employees "about
25 electric generation competition." Other than that, a reader of the consumer
26 education campaign is left continuously asking the questions: about what?
27 concerning what? including what? saying what?

³This sets aside the adequacy of the goal. The goal should not be "to create a campaign." Creating a campaign is —or at least should be— a means and not an end. The campaign should be created in *furtherance* of some goal rather than being the goal itself. Moreover, the PECO goal is somewhat pedantic at best. PECO states that the goal of its consumer education plan is to "educate the public." An adequate goal might be to convince consumers to make informed choices about their electric service provider and to empower them to do so.

1 The content of a Consumer Education Campaign should be much more narrowly
2 focused than PECO's statement about providing education "about electric industry
3 competition." A four phase consumer education program, modeled after the
4 program proposed in Vermont, would include:

5 Phase 1: Understanding Restructuring – Phase 1 would be designed to explain to
6 PECO customers the expected changes in the electric industry resulting from
7 restructuring. Its objective would be to raise the aided and unaided
8 awareness of restructuring to predetermined levels by a date certain.

9 Phase 2: Getting Ready for Choice – Phase 2 would be designed to explain to
10 PECO customers the need to make a choice and to educate consumers both
11 about their household energy consumption and about their options in energy
12 sources (including energy efficiency). Messages would include, for example,
13 how to evaluate the total bills (rather than looking simply for the least
14 expensive rates); how to evaluate green power claims; what types of
15 consumer protections might exist; and how to consider the environment
16 impacts of power choices.

17 Phase 3: Making a Good Choice – Phase 3 would be designed to educate
18 consumers to help them through the choice-making process. It would
19 educate consumers on what types of offers they might expect to see, what
20 consumers should do in response to various offers, what information to look
21 for in particular, and who to call with questions.⁴

22 Phase 4: Continuing to Make Good Choices – Phase 4 would educate consumers
23 on how to evaluate their home energy bill on a continuing basis. This phase

⁴In Pennsylvania, the PUC consumer education order specifically contemplates the task of educating consumers about their energy consumption patterns and the role of energy efficiency. Such an approach is appropriate. A consumer education program, as will be discussed later with respect to universal service, should not focus exclusively on supply-side options. It is essential for consumers to be educated on how to assess energy efficiency as one of their energy service options. A company that offers somewhat lower rates might, in fact, not be the least cost supplier of service if a different company offers marginally higher rates along with significant energy efficiency investments.

1 would allow consumers to use their bills as a feedback on what they are
2 doing with their own household energy consumption. It would educate
3 consumers about how to understand their consumption patterns.

4 **Q. HOW DOES PECO'S PROPOSED PLAN TAKE THESE FACTORS INTO**
5 **ACCOUNT?**

6 A. PECO's Consumer Education Program fails to recognize any of these various
7 messages. Moreover, PECO's plan fails to recognize the need for a phased
8 approach to setting forth these messages. Even the phasing that PECO sets forth
9 seems to be differentiated by audiences rather than by messages.

10 **Q. WHAT IS THE FOURTH STEP?**

11 A. Finally, the PECO education program should decide, again based on everything
12 that's been said above, on the *mechanisms* for delivering its education. In this
13 respect, several specific observations can be made about the PECO education plan
14 with several different but related specific recommendations being made for change:

15
16 **Community outreach:** The community outreach proposed by PECO involves a
17 very passive effort. The PECO effort instead should be more proactive. Rather
18 than providing a "speakers bureau," for example, PECO should commit a dedicated
19 staff to providing training and education on customer choice. A myriad of different
20 consumer groups can be reached through specialized targeting. It would seem, for
21 example, that PECO could rely more heavily on *employers* to provide information to
22 *employees*. *Employers could be taught (and provided a small economic incentive if*
23 *necessary) on how to provide employee training on choosing an electric provider.*
24 Given the significance of the sector of the economy that is being "restructured,"
25 providing such training could be a valuable employee benefit. Other service
26 providers could be approached as well. Persons who, either for a fee or as a
27 volunteer service, provide assistance on preparing tax returns could be provided
28 with training. Agencies that provide consumer credit counseling could be trained on
29 how to educate consumers about restructuring. Agencies that provide housing
30 counseling (pre- and post-purchase counseling as well as work-outs for
31 delinquencies) could be trained. Such training would not occur through a "speakers
32 bureau" but would need to occur through a dedicated consumer education staff.

1 **Community outreach:** PECO's proposed community outreach demonstrates a
2 real unstated cultural and socio-economic bias. Each of the four mechanisms that
3 is presented revolves around membership in organizations: sponsoring meetings
4 with groups; providing material for organization newsletters; making presentations
5 to organization meetings; providing brochures for organization distribution.
6 Substantial research reveals, however, that low-income households tend to join
7 fewer organizations (*dramatically fewer organizations*) of *any* nature than persons
8 in higher socio-economic brackets. The key to the development of effective
9 partnerships is the *segmentation* of the consumer population into its various
10 constituent parts as discussed above concerning diversity. Collaborating with the
11 state Division of Motor Vehicles, PECO could provide information through vehicle
12 registration renewal form mailings. Materials could be provided with unemployment
13 checks or with various forms of public assistance (e.g., LIHEAP, food stamps,
14 TANF). One of the recurring themes in educating consumers about public
15 assistance is tying the education to programs in which the consumer is already
16 involved. Again, however, this is not likely to be done on an *ad hoc* basis. There
17 needs to be a dedicated consumer education staff to pursue such measures.

18 **Media reliance:** PECO states that it will implement a "broad-based external
19 communications plan" (GSK-1, page 13). It then states that its plan "includes the
20 use of various media, including television, radio, newspaper, and direct mail."
21 Moving beyond the more limited 1997 effort, PECO's 1998 "broad-based education
22 effort" "will include television communications, as well as radio and newspaper
23 messages." PECO's 1998 "extensive broad-based communications effort" includes
24 "television, radio, newspapers and direct mail." In 1999, PECO proposes to use
25 "communications [that] would include television, radio and newspaper outreach." In
26 2000, PECO proposes to use direct mail for a limited number of consumers and
27 "television, radio and newspaper advertising."

28 As was discussed above, however, excessive reliance upon a mass media
29 campaign as a mechanism for consumer education is not likely to be successful.
30 PECO seems to include little else. Even though clearly PECO's proposed
31 consumer information campaign involves some direct mail components that are not
32 media-related, it would nonetheless appear that the proposed consumer education

1 program is too heavily media-dependent. The heavy reliance on mass media
2 makes PECO's proposed program look more like a marketing effort than a
3 consumer education effort.

4 **E. The Role of Evaluation and Adjustment.**

5 **Q. IS THERE SOME FINAL COMPONENT TO THE CONSUMER EDUCATION**
6 **PROGRAM THAT IS NOT EVIDENT IN THE PECO PROPOSAL?**

7 **A.** Yes. PECO provides no mechanism to evaluate and adjust its consumer education
8 program as it is implemented. Given the inadequacies of PECO's process of
9 setting goals, objectives, strategies and tactics, I recognize that it is impossible for
10 PECO now to set forth an appropriate monitoring, feedback and adjustment
11 process. Without measurable objectives, for example, it is not possible to
12 determine whether the education program is accomplishing what it was intended to
13 accomplish, let alone decide whether any failure that might exist flows from a
14 strategic miscalculation or an error in tactics. Moreover, without being able to trace
15 a tactic back through a strategy to a measurable objective, it is impossible to
16 determine whether a failed tactic flows from a design failure or an implementation
17 failure.

18 PECO *does* state that all customer groups will be surveyed "at various times
19 between early 1997 and late 2000." It does *not* indicate when, or about what, or for
20 what purpose. This monitoring should be much more specific. PECO further states
21 that "the specific messages communicated to customers in 1999 and 2000 will be
22 dependent on research ..." The monitoring proposed here, however, is not simply
23 to help define the message. In addition, the monitoring should be designed to
24 determine:

- 25 1. Whether the objectives are being met, and to what extent;
26 2. If not, where the consumer education process is breaking down; and
27 3. What should be changed in the education process to respond to the findings
28 in 1 and 2 immediately above.

1 A procedure for evaluation and adjustment within a planning process is set forth in
2 Exhibit RDC-2.

3 Only after PECO completes each of the steps outlined in Exhibit RDC-2 is it ready
4 to sit down and develop its consumer education program. It knows what education
5 needs to occur. It knows what needs to be done in order to educate rather than
6 simply to provide information. It knows how to reach different consumers with
7 different messages. It knows how to evaluate and modify its program if the program
8 falls short of expected or desired outcomes. In sum, PECO knows specifically what
9 it is trying to accomplish and specifically how it intends to accomplish it. It can only
10 at that point develop its Consumer Education Program. Its program would include
11 tasks, timelines, dates for deliverables, and resource commitments in furtherance of
12 its planning and evaluation efforts.

13 **F. Proposal for PECO Consumer Education Program.**

14 **Q. GIVEN YOUR RECOMMENDATIONS ABOVE, AS WELL AS YOUR**
15 **EVALUATION OF THE PECO PROPOSAL, WHAT DO YOU RECOMMEND THE**
16 **COMMISSION DO RELATIVE TO PECO'S PROPOSED CONSUMER**
17 **EDUCATION PROGRAM?**

18 **A.** The Pennsylvania PUC should reject PECO's proposed consumer education
19 program. In its stead, the PUC should adopt the eleven-step plan set forth in
20 Exhibit RDC-3.

21 **PART II: PRINCIPLES OF A UNIVERSAL SERVICE PROGRAM.**

22 **A. Overview.**

23 **Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.**

24 **A.** This section of my testimony outlines the basic principles of a low-income program
25 and evaluates PECO's proposed universal service program in light of those
26 principles.

27 **Q. PLEASE EXPLAIN WHY IT IS IMPORTANT FOR AN INCUMBENT ELECTRIC**
28 **UTILITY SUCH AS PECO TO DEVELOP A UNIVERSAL SERVICE PROGRAM.**

1 A. While low-income customers tend to use less electricity, and spend fewer dollars on
2 electricity than the average household in Philadelphia, the *burden* of such
3 expenditures is much greater. The lower total electric bill in Philadelphia is offset
4 when differences in income are considered. For instance, the average household
5 size in Philadelphia is 2.6 persons and 1997 median household income for this
6 average household is \$51,200. By definition, however, the same household
7 containing 2.6 persons living at 150 percent of the federal poverty level had a 1997
8 income of about \$18,366. As a percentage of its income, therefore, the low-income
9 household living at exactly 150% of poverty level spends 2.8 times what the
10 average household spends on energy in terms of energy burden (5.1% vs. 1.8%).⁵
11 Remember, however, that low-income households live at *or below* 150% of the
12 poverty level, and most people are "below" rather than "at" the ceiling. Households
13 living below 150% of the poverty level spend an even larger percentage of their
14 income on electricity. The *average* person living at or below 150% of Poverty in
15 Philadelphia⁶ would spend 5.9 times what the average household spends on
16 electricity (10.6% vs. 1.8%).

17 The enormity of *this* figure becomes evident when one considers total shelter costs.
18 According to the U.S. Department of Housing and Urban Development (HUD), if a
19 household spends more than 30 percent of its income on shelter costs (defined as
20 rent/mortgage plus all utilities except telephone), the household is paying more than
21 its income can be expected to support.

22 **Q. ARE THE CONCERNS EXPRESSED ABOVE EQUALLY APPLICABLE TO ALL**
23 **LOW-INCOME PHILADELPHIA RESIDENTS?**

24 A. No. The concerns expressed above generally refer to the "average" low-income
25 household. One should consider, however, the distribution of low-income
26 households over the full range of poverty levels. Exhibit RDC-4.A reveals that
27 when one talks of households "at or below" 150 percent of the federal poverty level,

⁵PECO's total residential revenues of \$1,381,593,000 divided by 1,318,863 residential accounts gives an average annual residential bill of \$1,048. Using a low-income multiplier of 0.9 (to reflect lower consumption) gives an average low income annual bill of \$943.

⁶The average Poverty Level for households living at or below 150 percent of Poverty in Philadelphia was 73 percent in 1990, the last year for which data is available.

1 there are significant numbers of households who live at the very lowest levels of
2 that range. Clearly, a \$1,000 bill for a household living at 30% of Poverty is a
3 greater burden than a \$1,000 bill for a household living at 150% of Poverty.

4 While this is true as a matter of arithmetic, let me illustrate the magnitude of the
5 problem for households at income levels lower than the average. Exhibit RDC-4.B
6 sets forth the relevant data for the state of Pennsylvania. This Exhibit provides
7 several important pieces of information. First, it provides the actual distribution of
8 LIHEAP clients (in terms of numbers of households and percentage of total) by
9 annual income. It then calculates an electric burden as a percentage of income
10 given average bills. Note that more than 42% of LIHEAP recipients pay roughly
11 20% or more of their income for electric bills; roughly 15% percent pay 32% or
12 more.

13 **Q. WILL NOT REDUCED BILLS THAT ARISE THROUGH COMPETITION HELP**
14 **MAKE ELECTRICITY MORE AFFORDABLE TO THESE CONSUMERS?**

15 A. Let me set aside for the moment whether competition will result in reduced bills to
16 low-income and payment-troubled customers. Let us assume, simply for the sake
17 of analysis, that competition in the electric industry will reduce total low-income
18 electric bills by 10 percent. Exhibit RDC-4.C sets out a restated electricity burden
19 table given these bill reductions. As can be seen, even if competition succeeds in
20 reducing total electric bills by as much as ten percent, there will continue to be a
21 significant issue regarding the affordability of electric service and thus the
22 attainment and preservation of universal service. As Exhibit RDC-4.C shows, even
23 if total electric bills are reduced by ten percent attributable to competition, there will
24 be more than 40% of LIHEAP recipients who pay 17% or more of their income for
25 electric bills; roughly 15 percent pay 30% or more.

26 **Q. ARE THERE ANY BASIC PRINCIPLES THAT SHOULD GOVERN THE DESIGN**
27 **AND IMPLEMENTATION OF A UNIVERSAL SERVICE PROGRAM?**

28 A. Yes. There are four basic principles that should govern a Universal Service
29 Program:

- 30 1. In order to adopt a rational Universal Service Program, there must be some
31 pre-established definition of what "service" must be universal.

- 1 2. In order to adopt a rational Universal Service Program, there must be some
2 *pre-established definition of what state of affairs represents "universal"*
3 *service.*
- 4 3. A rational Universal Service Program needs to recognize the diversity
5 amongst consumers. As with consumer education, a "one size fits all"
6 approach is not likely to be successful.
- 7 4. An appropriate Universal Service Program should be based on an
8 appropriate planning process and should include a process for evaluation
9 and program modification.

10 **B. Defining the "Service" in a Universal Service Program.**

11 **Q. PLEASE EXPLAIN IN GREATER DETAIL YOUR PRINCIPLE THAT A**
12 **UNIVERSAL SERVICE PROGRAM MUST DEFINE WHAT "SERVICE" MUST BE**
13 **UNIVERSAL.**

14 A. It seems axiomatic that in order to achieve a particular goal, one must have a clear
15 definition of what that goal is. My recommendation is that the first part of PECO's
16 *Universal Service Program set out a definition of what "service" must be universal.*
17 My recommended definition would include the following four components:

- 18
- 19 1. **Universal service includes access to the distribution system of the**
20 **same type and quality as customers not being supported through**
21 **Universal Service Program:** The Pennsylvania PUC should reach the
22 same conclusion recently articulated by the FCC, when the FCC found:
23 "*... the overarching universal service goals may not be accomplished if low-*
24 *income universal service support is provided for service inferior to those*
25 *supported for other subscribers."* A Universal Service Program based on
26 prepayment meters, service limiter adapters, and the like, does not offer
27 access to service of the same type and quality as all other consumers.
- 28 2. **A Universal Service Program should not be called upon to support**
29 **unfettered consumption:** A Universal Service Program should not be
30 exclusively focused on consumption. It is reasonable, assuming that a
31 consumer has received all available energy efficiency treatment, to limit the

1 actual consumption that is eligible for support. Because of the natural
2 variability of consumption amongst households around a mean, such a limit
3 should not be placed at or below average usage. A reasonable rule is that
4 universal service should not underwrite the cost of electric consumption
5 greater than 120% of the average median residential consumption for the
6 rate class, size and type of dwelling in which the service is provided for
7 households who have received (or been offered) energy efficiency treatment.

- 8 3. **Universal service implies an affordability of service:** As my recent
9 research for Oak Ridge National Laboratory found, offering unaffordable
10 service is the equivalent of not offering service at all. Again looking at the
11 Telecommunications Act of 1996 for guidance, the responsibility of a
12 universal service program is to make "quality services ... available at just,
13 reasonable, and affordable rates." The 1996 Act explicitly requires the FCC
14 to adopt provisions to ensure the "affordability" of telecommunications
15 services, "including to low-income consumers." The Pennsylvania PUC
16 should adopt a similar policy.
- 17 4. **Universal service implies equal availability to consumer choice:** As part
18 of quality service, low-income customers should be able to exercise choice
19 over their power producers. If residential consumers, generally, have a
20 choice of four electric providers, in other words, confining a low-income
21 consumer to just one provider does not involve the provision of universal
22 service. In this sense, a universal service program that involves one
23 exclusive provider of last resort does not offer low-income customers a
24 "choice." A single provider of last resort offers the low-income consumer just
25 one choice. The need for a full array of provider choice is discussed further
26 below.⁷

27 **Q. WHAT DOES AFFORDABILITY OF SERVICES MEAN?**

28 A. I recommend that the Pennsylvania PUC adopt the same approach as the FCC in
29 its recent universal service docket. The FCC decided that the concept of

⁷See, pages 34 - 38, *infra*, and accompanying text.

1 "affordability" includes both an "absolute" ("to have enough or the means for") and
2 a "relative" ("to bear the cost of without serious detriment") component. According
3 to the FCC, "both the absolute and relative components must be considered in
4 making the affordability determination required under the statute."

5 In implementing these policy decisions, the "affordability" of PECO's universal
6 service program should be judged by whether service under the program offers a
7 level of affordability consistent with the PUC's percentage of income payment plan
8 matrix in the CAP regulations within the consumption constraint set out above.

9 **C. Measuring Universal Service.**

10 **Q. PLEASE EXPLAIN IN GREATER DETAIL YOUR PRINCIPLE THAT A**
11 **UNIVERSAL SERVICE PROGRAM MUST DEFINE WHAT STATE OF AFFAIRS**
12 **REPRESENTS "UNIVERSAL" SERVICE.**

13 **A.** Having decided what "service" must be offered as part of a universal service
14 program, the next step in designing such a program is to decide how to measure
15 "universality." For all the reasons I outlined above, universal service means that, at
16 worst, there should be no degradation in existing levels of universality of service. In
17 this respect, "universality" is to be measured by: (a) affordability; (b) penetration
18 levels; and (c) payment troubles.

19 **Q. HOW DO YOU PROPOSE TO MEASURE DEGRADATION IN AFFORDABILITY?**

20 **A.** Affordability should be measured in terms of numbers of households with electricity
21 burdens at or below the PUC-defined levels of affordability for CAPs. If there is an
22 increase in the number of consumers with excess burdens measured by these CAP
23 levels of affordability, there has been a degradation in universal service.

24 **Q. WHAT IS THE ROLE OF SERVICE PENETRATION RATES IN MEASURING**
25 **WHETHER SERVICE IS "UNIVERSAL"?**

26 **A.** Service penetration levels, too, have relevance. As the FCC decided:

27 a low or declining penetration rate may be an indicator that rate levels in a
28 jurisdiction are not affordable. In general, we find subscribership levels
29 provide relevant information addressing the basic question of whether

1 consumers have the means to subscribe to telephone service. We find
2 monitoring subscribership to be a tool in evaluating the affordability of rates.
3 It should not, however, be the exclusive tool in measuring affordability.
4 Subscribership levels do not address the second component of the definition
5 of affordability, namely, whether paying the rates charged for services
6 imposes a hardship for those who subscribe. (citations omitted).

7 Penetration rates should be monitored to determine whether there is a "low or
8 declining rate."

9 **Q. HOW DO YOU PROPOSE TO MEASURE PAYMENT TROUBLES?**

10 A. A universal service program should include a separate index for payment-troubles,
11 including at least the following four components:

- 12
- 13 1. **Termination rate** (the number of residential service terminations divided by the
14 number of residential customers).
- 15 2. **Money at risk:** (the sum of money owed by customers in arrears and the
16 money owed by customers on deferred payment agreements divided by total
17 residential billings).
- 18 3. **Deferred payment agreement success:** (the percent of customers who
19 successfully complete deferred payment agreements).
- 20 4. **Weighted arrears:** (the total residential monthly arrears not subject to deferred
21 payment agreements divided by the average residential monthly customer
22 bill).

23 The factors should be applied in a manner to provide for a comparison of the
24 current performance of the Company to the performance of the Company for the
25 three years prior to the initiation of customer choice.

26 **Q. IS IT IMPORTANT TO USE ALL FOUR FACTORS?**

27 A. Yes. The four part measurement is designed to avoid creating unintended
28 incentives for the Company to engage in harmful activities. Thus, for example, if
29 one were to look only at whether PECO minimizes service terminations, the
30 Company would have an incentive to reduce terminations while not improving its
31 collections. If one were to look only at whether PECO minimizes arrearages, the
32 Company would have an incentive to disconnect customers rather than to place

1 them on deferred payment arrangements. The four-part structure is necessary for
2 the Company to address each aspect of payment troubles.

3 **Q. HOW SHOULD THESE MEASURES BE USED IN PECO'S UNIVERSAL SERVICE**
4 **PROGRAM?**

5 A. I again turn to the FCC for guidance. The FCC found that subscribership levels
6 could be used as an early identification of degradation in universal service. These
7 statistics, the FCC said:

8 provide an objective criterion to assess the overall success of state and
9 federal universal service policies in maintaining affordable rates. . . [T]o the
10 extent that subscribership levels fall from the current levels on a statewide
11 basis, the Commission and affected state should work together informally to
12 determine the cause of the decrease and the implications for rate
13 affordability in that state.

14 The measures outlined above should be used in the same way in measuring the
15 "universality" of service. If any one of the measures begins to fall from current
16 levels, PECO should be required to bring its universal service program back to the
17 Commission for review to identify the causes of the fall; and to identify and
18 implement remedies.⁸

19 **Q. SHOULD THE FCC STATEMENT BE MODIFIED IN ANY FASHION FOR USE BY**
20 **PECO?**

21 A. Yes. There should be two modifications in addition to using the full range of criteria
22 rather than simply penetration levels. First, the criteria outlined above should be
23 applied on a service-territory basis rather than on a statewide basis. Second, the
24 criteria should be applied to each relevant sub-class of customers rather than to the
25 residential customer class as a whole. I discuss the diversity amongst customers in
26 greater detail below.

⁸In essence, the evaluation and feedback process outlined in Exhibit RDC-2.

1 **D. Considering Customer Diversity for Universal Service Purposes.**

2 **Q. PLEASE EXPLAIN IN GREATER DETAIL YOUR PRINCIPLE THAT A RATIONAL**
3 **UNIVERSAL SERVICE PROGRAM MUST RECOGNIZE THE DIVERSITY**
4 **AMONGST LOW-INCOME CONSUMERS.**

5 A. Adequately addressing universal service problems on a utility's system requires a
6 sophisticated analysis. In fact, a utility who is appropriately addressing payment
7 problems should not have "a" universal service strategy, but instead should have
8 *many* universal service strategies.

9 **Q. WHY?**

10 A. This is true because there is no single population of nonpayers. Instead, there are
11 many different types of nonpayers. Each type of nonpayer may require a different
12 approach. For example, a person who has a substantial mismatch between
13 *household income and expenses should be treated differently than a household*
14 whose income might possibly be sufficient to pay their family bills with a more
15 efficient, somewhat lower, end-use consumption. To treat each of these groups in
16 an identical fashion will ultimately be ineffective. In addition, it will waste money,
17 both by incurring unnecessary and ineffective expenses and by costing PECO
18 revenue that it should have collected.

19 **Q. CAN YOU EXPLAIN WHAT YOU MEAN BY MANY DIFFERENT TYPES OF**
20 **NONPAYERS?**

21 A. Exhibit RDC-5 explains that there are at least eight groups of non-paying customers
22 which PECO should consider in designing its universal service strategies. In light of
23 these differences, to have only one universal service strategy is not only bad public
24 policy, it is bad business policy as well.

25 **Q. HOW SHOULD PECO'S UNIVERSAL SERVICE PROGRAM ADDRESS THIS**
26 **DIVERSITY IN CONSUMERS?**

27 A. As with its Consumer Education Program, PECO needs to learn more about its
28 customer base. Accordingly, as part of its universal service program, PECO
29 should, no less frequently than biannually, conduct a comprehensive study of
30 nonpaying residential customers to develop a segmentation of nonpaying

1 customers by reason for nonpayment. The results of this inquiry should be made
2 available to interested parties and should include recommendations as to how, if at
3 all, PECO will separately address each reason for nonpayment through its
4 Universal Service Program.

5 **E. Planning and Evaluation.**

6 **Q. PLEASE EXPLAIN IN GREATER DETAIL YOUR PRINCIPLE THAT A RATIONAL**
7 **UNIVERSAL SERVICE PROGRAM MUST BE BASED ON ADEQUATE**
8 **PLANNING AND MUST INCORPORATE A PROCEDURE FOR PERIODIC**
9 **EVALUATION AND MODIFICATION.**

10 **A.** My testimony above describes in detail the process of planning, which involves a
11 process of setting goals, objectives, strategies and tactics. Moreover, the process
12 of program evaluation and modification is set forth in Exhibit RDC-2 and described
13 in detail in the Consumer Education Program section above. PECO's universal
14 service program exhibits no more of the planning, evaluation and modification
15 aspects of appropriate program design and implementation than its consumer
16 education program does.

17 **PART III: CRITIQUE OF PECO'S PROPOSED UNIVERSAL SERVICE PROGRAM.**

18 **Q. WHAT IS THE PURPOSE OF THIS PART OF YOUR TESTIMONY?**

19 **A.** This part of my testimony will specifically assess the efficacy of PECO's CAP, CAP
20 Rate, and LIURP initiatives in light of the Pennsylvania PUC's directives regarding
21 universal service. In addition, in this part of my testimony, I will make
22 recommendations for modifications in PECO's existing programs.

23 **A. General Program Structure Issues.**

24 **Q. PLEASE IDENTIFY THE GENERAL PROGRAM STRUCTURE ISSUES THAT**
25 **YOU WILL DISCUSS BELOW.**

26 **A.** This section of my testimony will discuss the following four issues:

- 27
28 1. The level of universal service program funding;

- 1 2. The collection of PECO's universal service support;
2 3. The distribution of universal service support; and
3 4. The administration and oversight of PECO's universal service programs.

4 **1. The Level of Universal Service Funding.**

5 **Q. WHAT LEVEL OF FUNDING SHOULD BE COMMITTED TO PECO'S UNIVERSAL**
6 **SERVICE PROGRAMS?**

7 A. There are two levels of funding that must be considered here. First, the base level
8 of universal service funding is to be equal to no less than the level of universal
9 service spending in the period prior to the advent of customer choice. The phrase
10 "no less than" has significance here. This base level of funding is a floor, not a
11 ceiling. Second, long-term funding is to reflect those costs necessary to extend
12 universal service programs, including a CAP program which meets the PUC
13 guidelines, to 100 percent of eligible consumers over a three year period. In
14 addition, the long-term funding is to reflect increased expenditures on the LIURP
15 initiative.

16 **Q. HAVE YOU QUANTIFIED THE BASE LEVEL OF UNIVERSAL SERVICE**
17 **FUNDING?**

18 A. Yes. My calculation differs from the calculation which PECO sets forth in its
19 universal service program in one important respect. The difference involves the
20 appropriate year from which to calculate the base level of funding. PECO proposes
21 to use the most recent year (1996) as the base year of universal service
22 expenditures. PECO expenditures on its CAP program (including the CAP Rate),
23 however, substantially trended downward in 1996 (Exhibit RDC-6.A). One reason
24 for this is the apparant effort by PECO to reduce its universal service support in
25 light of the advent of competition in the electric industry.

26 **Q. IS THERE REASON NOT TO USE 1996 AS THE BASE YEAR?**

27 A. Yes. There are two reasons. First, the intent of the legislature and the PUC,
28 however, appears to be to prevent the reductions in universal service support that
29 could be expected to arise from a competitive industry. In order to do that, it is
30 necessary to use a base year that predates a move toward electric industry

1 restructuring. Second, 1996 was not a typical year for either CAP or the CAP Rate.
2 On the one hand, the CAP Rate was operating as a pilot project, with a limited
3 enrollment. On the other hand, because of the operation of the CAP Rate, the
4 enrollment to the basic CAP was stopped. As a result, the enrollment in each
5 program individually, and thus in both programs combined, was artificially restricted
6 in 1996. PECO's future universal service program should not be budgeted using
7 such restricted amounts.

8 Instead, I recommend a base universal service expenditure of \$59.1 million. The
9 calculation of this figure is set forth in Exhibit RDC-6.B. In calculating this figure, I
10 accept PECO's statements for CAP administrative costs (\$2.675 million) and for
11 collection costs (\$13.216 million). Both of these figures are consistent with
12 previous PECO calculations of administrative and collection costs, developed with
13 no incentive for such costs to be over- or under-stated.

14 **Q. HAVE YOU QUANTIFIED WHAT THE LONG-TERM FUNDING LEVEL OF CAP**
15 **WOULD BE?**

16 A. Yes. I estimate the cost for 100 percent participation of this entire eligible
17 population of 130,000 consumers would be roughly \$59.247 million. This
18 calculation is set forth in Exhibit RDC-7.

19 **Q. SHOULD PECO HAVE ANY DIFFICULTY WITH ANY INCREASED SPENDING**
20 **THAT MAY ACCOMPANY AN EXPANSION OF THE CAP PROGRAM?**

21 A. No. The PUC universal service order indicates that the baseline of funding for a
22 CAP should include the write-off of uncollectible expenses. "A utility may need to
23 shift funds from write-offs ... to CAPs or LIURP." PECO's previous analysis of "high
24 risk" customers states "it appears that the high risk groups account[] for most write-
25 offs" (88% according to PECO's calculation). PECO further states that 73 percent
26 of the high risk groups had incomes below 150% of poverty. Qualitatively adjusting
27 the contribution of low-income high risk consumers upwards (to 85%) to account for
28 the fact that the lower income consumers are likely to contribute more of the
29 uncollectibles yields a low-income high risk contribution to uncollectibles of roughly
30 \$26 million.

1 **Q. HAVE YOU CALCULATED WHAT THE RATE OF FUNDING FOR LIURP WOULD**
2 **BE?**

3 A. Yes. The base rate of funding for LIURP should be \$2.8 million. In contrast, the
4 long-term level of LIURP funding should be set equal to 0.25 percent of its total
5 revenues. Given 1995 retail revenues of \$3.336 billion,⁹ the long-term LIURP
6 funding level should be \$8.34 million.

7 **Q. HAVE YOU CALCULATED WHAT THE RATE OF FUNDING FOR CARES, MEAF**
8 **AND LIHEAP OUTREACH SHOULD BE?**

9 A. Using the same I analysis as I used for CAP, the base rate of funding for CARES,
10 MEAF and LIHEAP outreach should be \$0.96 million.

11 **2. The Collection of Universal Service Funding.**

12 **Q. FROM WHOM SHOULD THESE UNIVERSAL SERVICE FUNDS BE**
13 **COLLECTED?**

14 A. The universal service funds should be collected from all customers who take
15 "delivery service" in the PECO service territory. This approach is consistent with
16 the FERC approach in Order No. 888. In that Order, FERC stated that it had
17 jurisdiction over the transmission of retail electricity in interstate commerce. FERC
18 offered, however, the notion that every retail transaction contains an element called
19 "delivery service."

20 Although we are unable to draw the bright line for distribution facilities that
21 many commenters would like, we believe it is important to make two
22 clarifications regarding local distribution in the context of retail wheeling.
23 First, even when our technical test for local distribution facilities identifies no
24 local distribution facilities for a specific transaction, we believe that states
25 have authority over the *service* (emphasis in original) of delivering electric
26 energy to end users. Second, through their jurisdiction over retail delivery
27 services, states have authority not only to assess stranded costs but also to
28 assess charges for stranded benefits, such as low-income assistance and
29 demand-side management. Because their authority is over services, not just
30 the facilities, states can assign stranded costs and benefits based on usage

⁹Energy Information Administration, *Financial Statistics of Major U.S. Investor-Owned Electric Utilities: 1995*, at 255 (December 1996).

1 (kWh), demand (kW), or any combination or method they find appropriate.
2 They do not have to assign them to specific facilities. (footnote 547 omitted).

3 Thus, while we believe in most cases there will be identifiable local
4 distribution facilities subject to state jurisdiction, we also believe that even
5 where there are no identifiable local distribution facilities, states nevertheless
6 have jurisdiction in all circumstances over the service of delivering energy to
7 end users. Under this interpretation of state/federal jurisdiction, customers
8 have no incentive to structure a purchase so as to avoid using identifiable
9 local distribution facilities in order to bypass state jurisdiction and thus avoid
10 being assessed for stranded costs and benefits.

11 Assessing the universal service charge on all end use sales using this "delivery
12 service" approach is appropriate for PECO. Given this approach, a universal
13 service budget of \$76.347 million would yield a per kWh charge of \$0.00233 per
14 kWh on all retail sales in the PECO service territory. This charge would apply
15 irrespective of who the generator of kWh is.

16 **Q. WHY SHOULD ALL CUSTOMERS HELP FUND THE UNIVERSAL SERVICE**
17 **PROGRAM?**

18 **A.** Four factors go into the determination that all end users should help fund the PECO
19 universal service program:

- 20 1. Electric utilities have been granted two sets of public perquisites: (a) the right
21 to exercise eminent domain; and (b) the right to use the public's streets,
22 alleys and public ways as transportation corridors. In accepting these public
23 perquisites, electric utilities have dedicated their property so supported to a
24 public use. The "bargain" that has been made in consideration of these two
25 public perquisites is both explicit and continuing. Public rights-of-way are
26 acquired and paid for through government action, usually the exercise of a
27 jurisdiction's eminent domain powers. Thus, the public rights of way are the
28 most valuable property rights in the hands of government. Local
29 governments must receive fair compensation for granting use of the rights-
30 of-way. Electric utilities were deemed to provide *public* compensation in the
31 form of universal service and regulated rates. For utilities, in other words,
32 compensation for use of the public rights-of-way was passed onto the end
33 consumer through dedication of the utility land in support of universal

1 service, rather than being paid directly to the governments, the actual owner
2 of the public rights-of-way.

- 3 2. Those public benefits have a distinct value, which is positive. Indeed, the
4 right to eminent domain is not only *valuable*, but is essential to public
5 utilities.

6 ... the specific right of the power of eminent domain has been given to
7 most utilities. This right enables them to condemn private property
8 and, with the payment of just compensation, to take it for 'public use'
9 when necessary to the proper conduct of their business. This right is
10 essential to resolve the complex property acquisitions required for
11 powerline and pipeline right of way."

12 This value inures to the benefit of all ratepayers. If a utility could not use
13 eminent domain, in other words, the increased costs that would arise as a
14 result would be borne by all ratepayers. All end users gain the benefit of
15 eminent domain.

- 16 3. A commitment to universal service is simply the compensation to the public
17 for having provided these public benefits. As discussed in detail above,
18 there has been an exchange of consideration. On the one hand, electric
19 utilities are provided the right to use public streets and to exercise eminent
20 domain. On the other hand, the utilities "pay" for these grants through a
21 commitment to universal service.

- 22 4. As discussed in detail above, offering unaffordable service is the functional
23 equivalent of denying service altogether. Accordingly, a commitment to
24 universal service implies a commitment to affordable service.

25 In sum, having obtained the benefits of the bargain, all service providers and all
26 end users should be required to help fulfill the responsibility part of the bargain. To
27 allow otherwise would be to grant the benefit while forgiving the costs.

1 **3. The Distribution of Universal Service Funds.**

2 **Q. HOW DO YOU RECOMMEND THAT UNIVERSAL SERVICE FUNDS BE**
3 **DISTRIBUTED TO ELIGIBLE CONSUMERS?**

4 A. There are two aspects to the distribution of universal service funds. First, there is a
5 geographic aspect. All geographic areas should receive their fair share of funds.
6 Having said this, however, funds that are collected from any particular geographic
7 area need not be earmarked for return to that area. Neither counties nor other
8 geographic areas need to be self-supporting of the universal service program
9 serving their area.

10 **Q. WHAT IS THE SECOND ASPECT OF DISTRIBUTION?**

11 A. The second aspect involves the distribution of funds amongst service providers.
12 Universal service funds should be distributed so as to be competitively neutral.
13 Moreover, the distribution of universal service funds should not create perverse
14 incentives that might adversely affect the operation of the universal service
15 program. Accordingly, the universal service funds should be apportioned between
16 the distribution company and the electric service provider (whomever that might be)
17 in the same proportion that the distribution and electric service bills each are to the
18 total bill. Thus, for example, assume that Greenacre Electric Company supplies
19 kWh and PECO supplies distribution to Customer A. Assume Customer A's total
20 bill is \$100; Greenacre's charges are \$35 and PECO's charges are \$65.
21 Greenacre should receive 35% of the universal service support for this customer
22 while PECO receives 65%. To distribute funds in this fashion (rather than providing
23 all universal service funds only to PECO) would promote competitive neutrality and
24 would eliminate the perverse incentives that might otherwise arise.

25 **Q. PLEASE EXPLAIN YOUR CONCERNS ABOUT COMPETITIVE NEUTRALITY**
26 **AND INCENTIVES.**

27 A. By "competitively neutral," I intend that the universal service funds be distributed
28 such that they do not affect the decision of a service provider to serve or not serve
29 a particular group of customers. In addition, the universal service funds should be
30 distributed such that they do not affect the decision of the consumer to use one
31 service provider over another. If, for example, PECO were to receive all of the

1 universal service funds, low-income customers would be given a financial incentive
2 to "choose" PECO as their service provider (whether or not PECO was the least
3 cost service provider),. Moreover, service providers other than PECO would have
4 no incentive to take on the (presumably) higher cost low-income customers, since
5 those higher costs would receive no offset from the universal service fund. The
6 principle of competitive neutrality is violated in each way.

7 The PUC should also have a concern that committing all universal service funds
8 exclusively to PECO would result in an "over-population" of the group of universal
9 service customers served by PECO in much the same fashion that existing residual
10 market pools have been overpopulated in the workers compensation, automobile,
11 and property insurance industries. This concept of overpopulation is one that
12 drives many reforms in the residual insurance markets today. Opposite of what
13 might be the concern of many low-income *energy* advocates, one of the primary
14 concerns amongst all types of residual insurance markets is not that consumers will
15 be denied access to the market, but rather that the residual market will grow to
16 include consumers who ought *not* to be there. One analysis of the workers comp
17 residual market, for example, reported:

18 Agents and brokers see a crisis in the growing unwillingness of private
19 carriers to write workers' compensation insurance for certain types of
20 companies in certain states, and in the vast numbers of employers
21 who, as a result, are forced to seek the mandatory coverage in the
22 residual market. That means assigned risk pools in which policies are
23 parceled out and losses split according to market share among all
24 private carriers operating within a state. Originally conceived as a
25 last-ditch option for high-risk or accident-plagued businesses, the
26 residual market has now become the nation's largest single provider
27 of workers' compensation coverage. It accounts for almost 22 percent
28 of premiums written in the 33 states where the [National Commission
29 on Compensation Insurance] administers the pools.

30 This overpopulation, however, is not unique to workers comp. New Jersey's state
31 supreme court, for example, noted with respect to its state Joint Underwriting
32 Association (JUA) for *automobile* insurance that by 1988, there was no legal
33 compulsion and little business incentive for insurers to write voluntary-market

1 coverage. More than half of New Jersey's drivers (approximately 2.2 million) were
2 insured by the JUA.

3 Confining the distribution of universal service benefits exclusively to PECO creates
4 an incentive for electric service providers to do precisely what service providers in
5 other industries have done.

6 **Q. DO YOU HAVE SOME OTHER CONCERN ABOUT EARMARKING ALL**
7 **UNIVERSAL SERVICE FUNDS TO PECO?**

8 **A.** The creation of public market pools for residual customers in workers comp, auto
9 and property insurance has resulted not in the offer of universal service as defined
10 above, but rather in the creation of a ghetto where the residual customers are
11 segregated and provided lesser service at higher prices. The property insurance
12 industry is one such example. In the mid-1960s, the property insurance industry
13 reacted to the extensive urban rioting by denying insurance to inner city property
14 owners. The reason for the denial was simple: the insurance companies feared the
15 payouts that would be necessary from the violence and property destruction that
16 arose as a result. Congress reacted to this abandonment of the inner city market
17 by enacting the FAIR laws in 1968. "Since the Panel had found the main cause of
18 insurance unavailability to be fear of catastrophic losses due to rioting, it felt that a
19 government guarantee would allow insurance companies to continue to provide
20 basic property insurance."

21 The new federal statute, however, did not accomplish what it was intended to
22 accomplish. Rather than encouraging the insurance industry to become involved
23 with the urban communities, instead, the competitive insurance companies sought
24 to insure the "best" risks while dumping the remaining risks into the public market.
25 Because the FAIR plans offered less insurance coverage at higher rates and with
26 less supportive service, the markets were subject to *de facto* abandonment
27 notwithstanding FAIR. It was widely believed the FAIR plans would make
28 insurance available to all "insurable risks." Regrettably, this did not come to pass.
29 The single most devastating factor upon the effectiveness of FAIR was the higher
30 rate it offered as compared to the voluntary market. Denied coverage in the
31 voluntary market for whatever reasons, rejected applicants found themselves

1 paying appreciably higher premiums for less coverage. Some of the plan's rates
2 were over three times those of the voluntary market with the result that "risks often
3 were 'written-out' by the voluntary market and then 'rated-out' by FAIR plans." This
4 combination of inadequate service and even higher prices was devastating for
5 communities. The consequence of the FAIR structure, therefore, was not to protect
6 the residual market, but to segregate it out for less service at higher prices.

7 Similarly, in the auto insurance industry, while the assigned risk pool and joint
8 underwriting association will make automobile insurance available to residual risks,
9 there is no pretense that *equivalent* insurance is available, let alone equivalent
10 insurance on equivalent terms. In the case of residual market automobile
11 insurance, almost all state plans limit coverage in both dollar amount and type of
12 coverage, although less so now than in the past. Typically, the coverage was
13 limited to the minimum requirements of compulsory insurance and financial
14 responsibility. Moreover, residual market plans commonly charge higher rates than
15 the voluntary markets. Indeed, at least one court has steadfastly ruled that residual
16 market insureds are *supposed* to pay higher rates.¹⁰ According to a 1974 Federal
17 Insurance Administration study, rates in such plans averaged 45% higher than
18 rates for similar drivers in the voluntary market.

19 My proposal helps avoid creating this same situation in the electric industry.
20 Allowing the distribution of PECO's universal service support funding between the
21 distribution company and service provider will help prevent the "provider of last
22 resort" from imposing unreasonable terms, rates and conditions on residual, low-
23 income, consumers.

24 **Q. WOULD ALLOWING THE DISTRIBUTION OF UNIVERSAL SERVICE FUNDS IN**
25 **THE FASHION YOU PROPOSE HAVE ANY AFFIRMATIVE BENEFITS (RATHER**
26 **THAN SIMPLY ELIMINATING PERVERSE INCENTIVES)?**

27 **A.** Yes. In contrast to earmarking all universal service funds to PECO, my
28 recommended approach creates incentives for electric service providers to develop
29 innovative approaches to inability-to-pay problems. If a service provider can

¹⁰*State ex rel. Commissioner of Ins. v. North Carolina Rate Bureau*, 300 N.C. 381, 434, 269 S.E.2d 547, 580 (1980). (emphasis added).

1 develop effective ways to manage the risk of serving residual market members, the
2 provider can minimize costs and maximize profits from such service.

3 **Q. WOULD DISTRIBUTING THE UNIVERSAL SERVICE FUNDS IN THIS FASHION**
4 **INTERFERE WITH THE DESIGNATION OF PECO AS THE "PROVIDER OF**
5 **LAST RESORT"?**

6 **A.** No. If a universal service customer was the customer of PECO as the provider of
7 last resort, PECO would supply both distribution service and electric service. As a
8 result, it would receive 100 percent of the universal service funds for that customer.
9 However, if PECO were to impose unreasonable costs or arbitrary terms on
10 consumers who were being served by PECO in its capacity as provider of last
11 resort, other electric service providers could compete for the right to serve those
12 customers on more reasonable terms and conditions and, if successful, take both
13 the customer and the universal service support which would accompany that
14 customer.

15 **4. The Administration and Oversight of Universal Service Funds.**

16 **Q. WHAT IS YOUR RECOMMENDED METHOD OF ADMINISTERING UNIVERSAL**
17 **SERVICE FUNDS?**

18 **A.** PECO should contract out the administration and delivery of universal service
19 programs to an experienced non-profit, community based organization with both a
20 strong track record in the provision of energy assistance, conservation and
21 education programs, and the ability to leverage significant amounts of additional
22 public and private resources to help resolve the energy problems of PECO's low
23 income customers. These programs should include: budget counseling, home
24 repair, heating system repair, job development and placement and related services.

25 The structure I recommend involves a private non-profit agency modeled after an
26 institution such as the Colorado Energy Assistance Foundation. Such an institution
27 is a private, non-profit agency with an independent Board of Directors, who is
28 subject to the additional oversight of a publicly accountable commission. The
29 Colorado Energy Assistance Foundation (CEAF) is a non-profit fundraising
30 organization under the direction of the Colorado Commission for Low-Income

1 Energy Assistance created by Governor Romer in 1988. In turn, in 1989, that
2 Commission created CEAF, which was designed to bridge the gap between the
3 growing need for heating assistance statewide and the decreasing availability of
4 federal funds. In addition to its own Board of Directors, therefore, CEAF is subject
5 to oversight by the Commission which consists of gubernatorial appointments from
6 the various stakeholders in low-income assistance. Representatives of public and
7 private utilities, relevant state agencies, and community-based organizations sit on
8 the Commission.

9 Oversight of the private non-profit organization can be modeled after the oversight
10 of the universal service fund created for telephone service in Illinois. The Illinois
11 Telephone Assistance Program was created by state law and is based on voluntary
12 contributions to fund assistance to low-income families who need basic local phone
13 service. UTAC is the non-profit organization comprised of phone company and
14 consumer, as well as low-income, representatives and created under direction of
15 the Illinois State Commerce Commission to administer the new telephone
16 assistance program. Beginning February 1, 1993, inserts were included in Illinois
17 phone bills soliciting contributions for UTAC. After the first nine months of the
18 program (September 1993), and every six months thereafter, UTAC files a petition
19 with the Illinois Commerce Commission asking the Commission to determine the
20 type and amount of assistance, if any, that can be provided to eligible consumers.
21 Depending on the amount of the fund, the Commission, after hearings, will order
22 that the fund be used to provide additional assistance on installation, assistance on
23 the customer's monthly bill, or both.

24 A third example of the type of public oversight possible for such a public
25 commission lies with the Oregon Oil Heat Commission. In 1989, the Oregon
26 General Assembly created the Oil Heat Commission (OHC). The purposes of the
27 OHC are, *inter alia*, to generate funds for low-income energy efficiency
28 improvements. More specifically, the legislature said the OHC could provide:

- 29
30 2. For programs to encourage energy conservation among oil heat users
31 through home weatherization and through developing and
32 disseminating educational materials regarding energy conservation.

- 1 3. For programs to encourage energy conservation among oil heat users
2 through the use of energy efficient oil heat equipment.
- 3 4. For programs to offer financial assistance to low-income oil heat
4 users to help defray the cost of fuel, modern equipment installation
5 and weatherization expenses.

6 The Oregon OHC is financed through an assessment on each "oil marketer" based
7 on the "gross revenue derived from the business of being an oil marketer." The
8 revenue collected is limited so that it "will not substantially exceed the amount of
9 the estimated expenditures stated in the final budget prepared by the commission."

10 **Q. CAN YOU SUMMARIZE?**

11 A. In sum, the administration of the Universal Service Program should occur through a
12 nonprofit entity. Oversight of this non-profit administrator should rest with the PUC.
13 The recommended oversight of the organization charged with administering
14 universal service funding, however, would *not* be designed to develop detailed work
15 plans for distribution of the universal service funds. Instead, the PUC would be
16 charged with accomplishing three tasks:

- 17 1. Providing direction on the general division of revenue between the uses
18 designated in the PUC's order establishing the universal service framework;
- 19 2. Approving, after hearing, a proposed annual work plan developed and
20 submitted by the private non-profit agency administering the funds; and
- 21 3. Providing oversight such that the revenue collected will not substantially
22 exceed the amount of the estimated expenditures stated in the final work
23 plan approved by the commission.

24 **5. The Use of a PECO Subsidiary for Universal Service Funding**

25 **Q. SHOULD PECO BE ALLOWED TO DELIVER UNIVERSAL SERVICE**
26 **PROGRAMS THROUGH A SUBSIDIARY COMPANY?**

27 A. No. One specific holding of the PUC in this universal service proceeding should be
28 that universal service programs may not be delivered through affiliated or
29 subsidiary corporations. This might occur by having PECO capitalize one or more

1 new for-profit subsidiaries. For example, PECO might create an ESCO to run
2 LIURP and/or a billing and collections company to run CAP.

3 **Q. WHY SHOULD SUCH AN APPROACH BY PECO NOT BE PERMITTED?**

4 A. Having a for-profit subsidiary operate the universal service programs (including
5 LIURP) would represent a fundamental conflict of interest. We know from the
6 results in other industries that a profit-maximizing competitive enterprise will not
7 aggressively pursue attaining and maintaining universal service, even if charged
8 with serving residual markets. In the property insurance industry, for example, FAIR
9 programs have allowed insurance companies to "dump" their ghetto area policies.
10 This has resulted in two separate insurance markets: a "normal" market, served by
11 private insurers, and a market consisting of the urban inner core, served by FAIR.
12 With the relegation of minorities to the state FAIR plans, a pervasive pattern of
13 segregated housing has developed and continued.

14 Similarly, the automobile insurance industry, quite simply, argues that their
15 decisions to price policies higher for certain geographic areas involve economically
16 rational decisionmaking. The defenders of "territorial rating" concede that
17 neighborhoods do not cause accidents. In making their case, proponents of
18 territorial rating have never denied that the practice adversely affects racial
19 minorities and the poor. Instead, they have based their defense exclusively on the
20 premise that territory is an accurate predictor of expected losses. A study issued by
21 the Rate Regulation Division of the California Department of Insurance in 1979
22 concluded that driving performance "appears to vary significantly by geographic
23 area." Territorial rating bases the prices paid for insurance policies on the
24 residence of the policyholder. The impact is dramatic. One analysis of territorial
25 rating in California revealed that in almost every instance, residents of areas of the
26 Los Angeles Basin and San Francisco Bay Area that are identifiably
27 African-American, Latino, Asian, and/or poor pay the highest rates for automobile
28 insurance in California. According to the automobile insurance industry, these
29 results do not reveal a pattern of discrimination. They merely reflect actual
30 differences in risks (and therefore of costs) that arise on a geographic basis.

1 In sum, a competitive market may frequently serve to exclude rather than to include
2 those who are unable to pay. Inclusiveness of customers through the pursuit of
3 universal service is not a goal which a competitive market recognizes. Exclusion is
4 not necessarily considered a market failure. Failure to pursue universal service is
5 based on decisionmaking considered to be not only rational by the industry, but
6 dictated by the economics of the industry and its consumers.

7 I conclude that based on these experiences with universal service, allowing PECO's
8 universal service programs to be operated by for-profit subsidiaries would place the
9 fundamental universal service goals at risk. The PECO universal service programs
10 should be contracted out to non-profit community-based organizations.

11 **B. PECO's Existing CAP, CAP Rate Pilot and LIURP Efforts.**

12 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

13 A. This section of my testimony assesses PECO's existing CAP, CAP Rate, and
14 LIURP efforts in light of required and recommended future universal service efforts.

15 **1. PECO's CAP and CAP Rate Pilot.**

16 **Q. WHAT ISSUES WILL YOU ADDRESS CONCERNING PECO'S CAP AND CAP**
17 **RATE PILOT PROJECTS?**

18 A. I will address the following issues:

- 19 ● Eligibility for the CAP program. (henceforth, whenever I refer to CAP or "the
20 CAP program," I intend it to refer to CAP and the CAP Rate both);
- 21 ● The payment terms of the CAP program; and
- 22 ● The non-payment terms of the CAP program, including, specifically, the use
23 of prepayment meters.

24 **Q. WHAT IS YOUR ASSESSMENT OF THE ELIGIBILITY REQUIREMENTS FOR**
25 **PECO's CAP?**

26 A. PECO's current CAP does not comply with the PUC's CAP eligibility requirements.
27 As a result, if PECO is to rely upon its CAP as its universal service program,

1 PECO's future commitment to CAP will have to change. In that sense, I make two
2 recommendations:

- 3
- 4 1. PECO should adopt the PUC definition of "payment-troubled" for purposes
5 of determining CAP eligibility. The PUC definition is more broadly-based
6 than the existing CAP program. Whatever the goals and objectives for
7 PECO's existing CAP, for CAP to become a "universal service program" as
8 defined by the PUC, it must reach the populations identified by the PUC.

 - 9 2. PECO's program design is an extension of its current CAP Rate Pilot
10 Program and does not reflect any lessons learned from the pilot experience
11 itself as the evaluation is not yet available, nor does it reflect any of the
12 external realities brought about by "welfare reform" both at the federal and
13 state levels. Given the fact that the majority of PECO's CAP participants are
14 currently on public assistance, and that the majority of them will lose their
15 major source of income within five years or less, it will be necessary for
16 successful CAP programs to be tied much more closely to other social
17 services and particularly to job training, development and placement
18 programs in the near future. These recommendations may be further
19 refined and modified based on the evaluation of the CAP Pilot program.

20 **Q. WHAT IS YOUR ASSESSMENT OF THE PAYMENT TERMS OF THE PECO CAP**
21 **PROGRAM?**

- 22 A. PECO's arbitrary limitation of providing CAP benefits only for consumption at or
23 below 500 kWh per month is not supported by the PUC's universal service order
24 and is contrary to the goal of preserving universal service. While, as indicated
25 earlier in my testimony, I support the concept of a consumption cap, the PECO
26 consumption cap is not appropriate. The PECO consumption cap is arbitrarily set
27 below the average PECO customer's usage level. PECO's system average for R
28 rate customers is approximately 550 kwh/month. Since the goal of a universal
29 service program is precisely that, to preserve universal service, no basis exists to
30 exclude consumption of eligible customers when that consumption is below the
31 system average.

1 As I recommend above, the level of consumption should be set at 120% of the
2 median residential usage for each rate class and, if appropriate as in the case of
3 heating customers, the size of dwelling. Experience with this type of methodology
4 has demonstrated that the number of bedrooms can successfully be used as a
5 proxy for the square footage of the building, thus reducing the administrative cost
6 entailed in calculating dwelling size. The maximum benefit is too low to meet our
7 test that it be sufficiently high to avoid screening out what could reasonably be
8 considered "ordinary," even if above-average, usage. We know that there is a
9 natural variation in household energy consumption from the average. We know,
10 also, that it is likely that the number of households who are *above average* will be
11 more than the number of households who are below average. We know that it is
12 households which are above average which cause concern, since they are the
13 families who will more likely have difficulty in paying their energy bills. The PECO
14 cap of 500 kWh has no rational basis as a mechanism to control consumption.
15 Moreover, it is contrary to the goal of promoting universal service.

16 **Q. IS THERE A SECOND ISSUE REGARDING CAP PAYMENT TERMS THAT YOU**
17 **WISH TO DISCUSS?**

18 A. Yes. PECO's existing CAP payment tiers should be modified to comply with the
19 CAP payment tiers set forth in the PUC's order. PECO's existing CAP payment
20 tiers assume that consumers with incomes of between 100 percent and 150
21 percent of the federal poverty level have substantially greater amounts of
22 disposable income than households with incomes of below 100 percent of Poverty.
23 The error in that assumption is empirically demonstrable. Measuring the ability-to-
24 pay by the "earnings and benefits" methodology and the "net available income"
25 methodology, I found that a working poor household with earnings substantially
26 higher than a household receiving benefits through the Aid to Families with
27 Dependent Children (AFDC) program does not necessarily have a higher ability-to-
28 pay home energy bills.

29 **Q. WHAT IS YOUR ULTIMATE CONCLUSION?**

30 A. The PECO CAP Rate tiers have no empirical support. Moreover, the PECO CAP
31 Rate tiers will not fulfill the Commonwealth's commitment to universal service. In
32 their place, the PUC's universal service tiers should be substituted.

1 **Q. DO YOU OPPOSE THE USE OF RATE DISCOUNTS AS A MECHANISM FOR**
2 **DELIVERING UNIVERSAL SERVICE BENEFITS?**

3 A. No. If PECO can demonstrate that there are rate discounts which deliver
4 substantially equivalent benefits as the PUC's CAP tiers, those discounts can be
5 supported. The existing CAP Rate tiers, however, do not do so.

6 **Q. TURNING TO THE NONPAYMENT TERMS OF THE PECO UNIVERSAL**
7 **SERVICE PROGRAM, DO YOU HAVE RECOMMENDATIONS ON ISSUES**
8 **OTHER THAN PREPAYMENT METERS?**

9 A. Yes. All CAP Customers should have a personal interview at least at the time of
10 intake. An in-person interview is absolutely necessary in order to:

- 11 ● provide a proper orientation to the program;
- 12 ● be able to leverage other non-Universal Service revenues to assist the
13 customer,
- 14 ● accomplish the income verification; and
- 15 ● provide consumer education.

16 The current CAP Rate pilot has eliminated this in-person interview, ostensibly as a
17 cost cutting measure. It seeks to determine income eligibility by checking the
18 client's social security number in one of two databases maintained by the
19 Commonwealth: the Department of Public Welfare's database of public assistance
20 recipients, or the Department of Revenue's list of taxpayers. These databases do
21 not currently capture all the low income customers in PECO's territory. In this age
22 of welfare "reform" in which tens of thousands of low income households are losing
23 their eligibility every year, and surviving by working "under the table," it is not
24 realistic to rely on these databases for eligibility determination.

25 Another casualty of the elimination of the in-person interview has been customer
26 education. Participants in the CAP Rate do not understand the program, let alone
27 have any idea how they can reduce their usage. They receive absolutely no
28 meaningful conservation education. This intake interview should take place at a
29 facility operated by a community based organization and should include all of the
30 following services:

- 1 1. income eligibility determination;
- 2 2. explanation of customer's responsibilities under the CAP program;
- 3 3. application to LIHEAP, Crisis and all other fuel assistance programs;
- 4 4. conservation education including a detailed usage analysis and customized
- 5 recommendations;
- 6 5. automatic referral to LIURP for all high users (those whose consumption
- 7 exceeds the average for their rate class).
- 8 6. written and highly pictorial literature describing CAP and reinforcing
- 9 conservation education;
- 10 7. comprehensive assessment of all energy problems in the home;
- 11 8. referral to all programs necessary to resolve energy and related housing
- 12 problems;
- 13 9. budget counseling;
- 14 10. referral to job development and placement for all who are employable, and
- 15 currently unemployed or underemployed;
- 16 11. follow up, particularly to insure that those de facto electric heating or water
- 17 heating cases are receiving the services they need in order to get their
- 18 central heating or water heating restored.

19 **Q. FINALLY, WHAT IS YOUR ANALYSIS OF THE USE OF PREPAYMENT METERS**
20 **AND SERVICE LIMITER ADAPTERS AS PART OF A UNIVERSAL SERVICE**
21 **PROGRAM?**

22 A. The use of prepayment meters and service limiter adapters in the CAP program is
23 at fundamental odds with notions of universal service. The Pennsylvania PUC
24 should reach the same conclusion recently articulated by the Federal-State Joint
25 Board, when it found: "... the overarching universal service goals may not be
26 accomplished if low-income universal service support is provided for service inferior
27 to those supported for other subscribers." A universal service program based on
28 prepayment meters, service limiter adapters, and the like, does not offer access to
29 service of the same type and quality as all other consumers.

30 **Q. PLEASE EXPLAIN WHY YOU OPPOSE THE USE OF PREPAYMENT METERS**
31 **IN ADDITION TO THOSE ALREADY OUTLINED.**

1 A. Prepayment meters as PECO currently proposes their use should not be approved.
2 PECO currently has the Commission's authorization to install 100 prepayment
3 meters in the context of their CAP Rate Pilot. To date, to our knowledge, they have
4 not installed a single one. There is insufficient experience with this technology at
5 this time to approve its use in a large scale program. If the Commission were to
6 renew the authorization to install prepayment meters on a pilot basis, it must be in
7 accordance with the current Commission guidelines on service limiters, prepayment
8 meters and other similar devices. The PUC has a five point criteria which must be
9 met by utilities in their proposals for service limiters. These guidelines were
10 established in 1985 as part of the Commission's *Recommendations for Dealing*
11 *With Payment Troubled Customers*. The third of these reads as follows: "Service
12 limiters should never be used until every reasonable alternative has been explored
13 for helping the customer to retain normal service." This guideline requires that in-
14 home conservation and education services be offered to every CAP customer,
15 particularly to the high users, prior to termination, and prior to offering them a
16 prepayment meter. Moreover, if PECO proceeds with a small pilot installation of
17 prepayment meters, it should be required to obtain the landlord's consent prior to
18 installing these devices in tenant-occupied dwellings.

19 **Q. ARE THERE OTHER SUBSTANTIVE REASONS WHY YOU OPPOSE THE USE**
20 **OF PREPAYMENT METERS?**

21 A. Yes. PECO has never set forth its goals and objectives for the use of prepayment
22 meters. On the one hand, PECO might be seeking such installation as a credit and
23 collection device. Under these circumstances, a prepayment meter will be posited
24 as a less intrusive alternative than the disconnection of service. On the other hand,
25 a prepayment meter might be posited as a new form of "limited service," similar to
26 Local Measured Service (LMS) within the telephone industry. Prepayment meters
27 should be opposed as a collection device. They represent an inadequate response
28 to low-income inability-to-pay. They tend to "hide" that inability-to-pay rather than
29 seeking to redress it.

30 **Q. ARE PREPAYMENT METERS LIKELY TO GENERATE THE BENEFITS THAT**
31 **PECO CLAIMS FOR IT?**

1 A. As I explain in Exhibit RDC-8, for low-income consumers in particular, the
2 assumptions underlying claims of benefits are unfounded and the beneficial
3 impacts are unlikely to arise.

4 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING**
5 **PREPAYMENT METERS.**

6 A. Despite the analysis included in Exhibit RDC-8, I do not unconditionally oppose the
7 use of prepayment meters. I *do* recommend, however, that the following conditions
8 be placed on the use of prepayment meters by PECO:

- 9 1. Prior to approving use of prepayment meters, PECO should present an
10 assessment of the previous prepayment meter pilots (none, which I am
11 familiar with, which have been considered a success) and explain why and
12 how PECO's proposal differs in ways that would "remedy" the failures of
13 those previous efforts.
- 14 2. The PUC should create a remedy for the "unknown disconnection." This
15 would probably need to take the form of a duty to inquire if a prepayment
16 meter household's monthly consumption varies from prior equivalent
17 consumption by more than a designated level. Given PECO's previous
18 inability to comply with requirements such as this, *substantial* civil penalties
19 must be automatically imposed in the event of non-compliance.
- 20 3. Rather than having prepayment meters be used in the event of an
21 unsuccessful participation in CAP, they should be targeted to those who
22 have demonstrated an ability to succeed. Perhaps CAP could provide an
23 additional discount to successful participants if they agree to *voluntarily*
24 accept prepayment meters as a means to help budget as well as a means of
25 reducing consumption.
- 26 4. Prepayment meters should be declared to be an inappropriate service for
27 households who live at or below 150 percent of the federal poverty level. It
28 should be recognized that for these customers, prepayment meters serve no
29 legitimate function and offer a risk of harm that is not outweighed by any

1 potential for gain. This type of exclusion would be rendered moot if the
2 prepayment meters were re-targeted based on the suggestion included in
3 recommendation 3 immediately above.

4 5. Prepayment meters should be declared to be an inappropriate service for
5 low-income households who have not received LIURP services. For all of
6 the reasons outlined above, these households can be presumed to be
7 unable to control their own energy consumption.

8 6. Finally, in the CAP Rate pilot project, prepayment meters are excluded from
9 heating households. *De facto* heating should be excluded as well. *De facto*
10 heating customers can be determined by excluding any residential customer
11 who experiences either: (a) annual electric consumption of 14,000 kWh; or
12 (b) a maximum winter monthly consumption of 200 percent or more of the
13 minimum non-winter consumption.

14 **Q. DO YOU HAVE ANY FINAL COMMENTS ABOUT THE PECO CAP PROGRAM?**

15 A. Yes. The evaluation of PECO's current CAP Pilot (or CAP Rate) Program should
16 be shared with the Commission and the parties in this case in order to have
17 adequate information to inform the design of PECO's bill payment assistance
18 programs in 1998. This evaluation was commissioned in 1995 and should at least
19 have preliminary findings by this time. This evaluation, even if in preliminary form,
20 would provide invaluable input into the design and assessment of the PECO
21 universal service program.

22 **2. PECO's LIURP Efforts.**

23 **Q. WHAT ISSUES WILL YOU ADDRESS CONCERNING PECO'S EXISTING LIURP**
24 **EFFORTS?**

25 A. In this part of my testimony, I will address two issues regarding LIURP:

- 26 1. The measures to be offered through PECO's LIURP initiative; and
27 2. The need to include a pilot program to promote renewables through LIURP.

1 I have addressed LIURP funding and outreach above, as well as the need to offer
2 consumer energy education as part of PECO's CAP efforts.

3 **Q. PLEASE EXPLAIN WHY PECO'S LIURP INITIATIVE SHOULD BE MODIFIED TO**
4 **EXPAND THE CAUSES OF HIGH USE AMONG LOW-INCOME CONSUMERS.**

5 A. As I discussed in detail above, a Universal Service Program should not be
6 *exclusively directed toward supporting consumption. If appropriately designed, it is*
7 *reasonable to place caps on the consumption that a Universal Service Program will*
8 *support. As I note above, however, these caps should only be enforced for*
9 *consumers who have been given the opportunity to participate in an energy*
10 *efficiency program. Without providing the opportunity to participate in an energy*
11 *efficiency program, a consumption cap is likely to harm those most in need, i.e.,*
12 *those consumers with the highest consumption and with the least ability to control*
13 *their consumption.*

14 In addition, directing energy efficiency toward high use consumers will help make
15 the Universal Service Program both more effective and more cost-effective by
16 reducing the financial burden created by the program.

17 **Q. PLEASE EXPLAIN HOW YOU WOULD MODIFY PECO'S LIURP EFFORTS.**

18 A. PECO's LIURP program should be redesigned in order to enable it to address all
19 the causes of high use, and to offer the LIURP program to all eligible high users.¹¹
20 The changes to the LIURP program which need to be made include:

- 21 1. Conducting a diagnostic audit, which determines the causes of high usage
22 and addresses each of them enabling the customer to bring their
23 consumption down to affordable levels;
- 24 2. *Providing high quality conservation education, focusing on the specific steps*
25 *the customer must take to get their usage down to the target level;*
- 26 3. Including refrigerator replacement in every case in which this would be cost
27 effective;

¹¹Our recommendation is that eligible high uses include all those consumers whose consumption exceeds 120% of median residential usage for the rate class, size and type of dwelling in which the service is provided.

1 4. Include air conditioning treatments. These treatments, in turn, would include
2 air conditioner/fan swaps, timers, off peak metering, or in the case of
3 customers with health problems, replacing a central air conditioning system
4 with a room air conditioner.¹²

5 **Q. IS THERE ANY ADDITIONAL CHANGE YOU WOULD MAKE TO PECO'S LIURP**
6 **EFFORTS?**

7 A. Yes. In cases in which the high use is caused by the use of electric space or water
8 heat due to a gas termination or a broken heating system, the LIURP program must
9 have a case management component through which the customer is assisted to
10 have their gas service restored and/or their heating system repaired or replaced. In
11 Philadelphia County there are publicly funded programs which can repair and
12 replace heating systems for low income homeowners and tenants. Thus the
13 Universal Service funds can leverage additional resources, making the PECO
14 program more cost effective.

15 Finally, we have found in the PSEG E-Team Partners program on which I am
16 working that one essential component to an energy efficiency effort is follow-up
17 education and treatments for those consumers who have participated in the
18 program but whose usage is *not* declining. This continuing follow-up has been
19 found to be important to the tremendous success of the Duquesne Power Smart
20 Comfort program as well.

21 **Q. PLEASE EXPLAIN THE RENEWABLES PILOT PROGRAM YOU PROPOSE AS**
22 **PART OF LIURP.**

23 A. PECO should implement a pilot program in renewable energy applications, in
24 retrofit or new construction or both, which is designed to cost effectively apply
25 existing, proven renewable technologies in homes which are already energy
26 efficient. This pilot should be designed to help close the affordability gap for low
27 income customers.

28 **Q. WHY SHOULD PECO PURSUE SUCH A PROGRAM?**

¹²With a room air conditioner, the customer automatically limits their usage, and still maintains a cool space necessary to insure their health and comfort.

1 A. The rationale for such a program is much the same as the rationale for delivering
2 energy efficiency in the first place. As I wrote more than fifteen years ago:

3 The conceptual basis for providing full energy services is quite easy to
4 grasp. The concept is simply that providing electricity and natural gas is not
5 an end in itself. Supply energy is rather a means to provide results such as
6 heat, light and motion. What a utility company does for its customers is to
7 wash the dishes and heat the house. Thus, providing hot water through a
8 solar collector or providing a warm house through insulation constitutes the
9 same utility service as providing the natural gas or electricity necessary to
10 accomplish the same end results ... As an energy service, financing a solar
11 water heater is no different from increasing the supply of natural gas or
12 electricity to accomplish the same result ... In this framework, utility
13 companies would evaluate the various alternative services and provide
14 whichever one was the least costly.¹³

15 This statement is as true today as it was in 1982. The goal of LIURP should be to
16 cost-effectively reduce low-income energy consumption. That goal might be
17 accomplished through the offer of energy efficiency or energy conservation
18 measures. Alternatively, that goal might be accomplished through the installation
19 of renewable technologies. The goal remains the same, and whether it is
20 accomplished through conservation measures or renewables should be irrelevant
21 to the purposes of the program.

22 C. Summary

23 **Q. CAN YOU SUMMARIZE YOUR RECOMMENDATIONS AS TO PECO'S**
24 **UNIVERSAL SERVICE PROGRAM?**

25 A. Yes. A summary of my recommendations on PECO's universal service program is
26 set forth as Exhibit RDC-9.

¹³Roger Colton, "Mandatory Utility Financing of Conservation and Solar Measures," 3 *Solar Law Reporter* 767 (1982).

1 **PART IV: SUMMARY AND RECOMMENDATIONS.**

2 **Q. CAN YOU BRIEFLY SUMMARIZE YOUR TESTIMONY?**

3 A. Yes. Consumer education and universal service programs are two of the most
4 important aspects of PECO's restructuring proposals. Consumer education and
5 universal service both stand as last bastions between residual customers who are
6 not likely to benefit greatly from competition and either the complete loss of electric
7 service or the imposition of unreasonable financial burdens on the consumer. In
8 addition, the development and implementation of both consumer education and
9 universal service programs have three primary stages: (1) the planning stages,
10 including consumer research and the establishment of goals, objectives, strategies
11 and tactics; (2) the implementation phase; and (3) the evaluation and modification
12 stage. A consumer education and universal service program must be
13 fundamentally sound in concept as well as practice.

14 For all of the reasons outlined above, PECO's consumer education and universal
15 service programs fail these tests of adequacy. As a result, the PECO consumer
16 education and universal service programs should be rejected by the PUC unless
17 modified to the extent, and in the fashion, detailed above.

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

19 A. Yes it does.

EVALUATION PROCESS

There are eleven steps that PECO should consciously follow in an evaluation process:

1. **Articulate expected/desired performance:** Within the context of consumer education, the desired performance is established by the program objectives. Objectives should be attainable and measurable.
2. **Measure actual performance:** Actual performance is an empirically demonstrable fact. Obtaining this measurement is key to establishing the baseline of information upon which to make decisions as to future program operation.
3. **Review expected performance in light of actual performance:** Rather than simply saying: "our performance goal was not met," it seems reasonable to interject a point where PECO asks: given what we know now, was our expectation reasonable in the first place? It is possible that the appropriate response to a shortfall between actual performance and desired performance is to modify the expectation rather than seeking to improve the performance.
4. **Determine the extent to which actual performance falls short of expected/desired performance:** This involves the development of information. If PECO does not know how "what is" differs from "what ought to be," it will be difficult, if not impossible, to make appropriate decisions as to policy.
5. **Determine the cause(s) of the shortfall between what "is" and what "ought to be":** Identifying what *causes* the shortfall between what "is" and what "ought to be" is important to the implementation of appropriate remedies.
6. **Develop remedies:** For each cause identified in Step 5 above, PECO should develop an appropriate remedy. A remedy removes or modifies the cause, thus eliminating or minimizing the shortfall in performance.
7. **Identify needed changes:** For each remedy proposed in Step 6, PECO needs to know what changes should be made to bring that remedy about. This step requires information. It would be difficult, if not impossible, to develop a remedy if PECO does not know what changes need to be made to implement that remedy.
8. **Determine the resources needed to make the change:** As a subset, determine whether those resources are both available and appropriate.

9. **Review expected performance in light of changes that have been proposed:** This step closes the loop. If the changes do not result in improved performance, they should not be made. This step differs from measuring the actual performance given the implementation of changes. This is not an implementation or evaluation step. It is a planning step. PECO should be able to say: "*if* this particular change, *then* this particular result." The result should be *an improvement in performance*.
10. **Adopt the appropriate changes:** One important aspect here is to retain the option of "make no changes."
11. **Begin the evaluation process anew:** Finally, the process should start over again by articulating the expected or desired performance given the changes that have been adopted. That takes PECO back to the top of the chart. The review should be an ongoing dynamic process.

SUMMARY OF CONSUMER EDUCATION RECOMMENDATIONS

- Step 1:** Commit \$50,000 to hire a consultant to do a market segmentation analysis.
- Step 2:** Commit \$50,000 to engage a consultant to develop a complete, adequate and appropriate set of consumer education goals, objectives, strategies and tactics.
- Step 3:** Commit \$25,000 to retain a consultant to develop a Community-Based Participation Plan consistent with the goals, objectives, strategies and tactics, and market research information. The use of community-based organizations has been explicitly endorsed by the PUC.
- Step 4:** To agree to a four phase substantive consumer education message consisting of the four phases described in the testimony.
- Step 5:** To develop a consumer education program specifically directed at educating consumers about how energy efficiency and consumer choice operate together.
- Step 6:** To allocate its budget of \$24.161 million to the tactical programs identified by the consultants in Steps 2 through 5, consistent with the market research information. This should involve: (a) a proactive plan of outreach; (b) a dedicated consumer education staff; (c) an outreach plan that is culturally appropriate.
- Step 7:** To commit \$1 million a year for 1998 through 2000 to capitalize a Consumer Education Trust Fund structured broadly as follows:
- a. An independent board of trustees, consisting of persons skilled in consumer education, community outreach, and community involvement, including at least two members from or representing the low-income community;
 - b. To provide funding on an application basis for specific projects that:
 - i. Demonstrably serve an identifiable population at risk of being underserved by the consumer education program;
 - ii. Present a unique approach to consumer education offering special benefits; or

- iii. Propose a new and/or innovative approach to consumer education that requires and merits testing on a pilot basis.

Step 8: To create a dedicated consumer education staff of not fewer than two professionals (along with necessary support staff) to provide community outreach, education and training.

Step 9: To commit \$50,000 a year for the years 1997 through 2000 to retain a consultant to develop and implement a monitoring, feedback and adjustment process for the Consumer Education Program.

Step 10: To create an independent Consumer Education Advisory Panel to advise PECO as to its ongoing Consumer Education Program and to provide advice and consent on the selection of the recommended consultants.

Step 11: To re-submit the final consumer education program to the PUC for review and approval.

**EXHIBIT RDC-4
Environmentalists Statement No. 1**

Part A:

Persons At or Below 150% of Poverty (Philadelphia County, Pennsylvania)				
Under 50%	50 - 74%	75 - 100%	100 - 124%	125 - 149%
165,325	69,868	78,181	76,434	72,677

Part B:

Number and Percent of LIHEAP Recipients by Income Range and Annual Electric Burdens									
	All Households	Under \$2000	\$2000 - \$3999	\$4000 - \$5999	\$6000 - \$7999	\$8000 - \$9999	\$10,000 - \$11,999	\$12,000 - \$14,999	\$15,000+
Percent	100%	1.6%	13.0%	27.7%	20.9%	16.4%	8.4%	6.8%	5.2%
Number	313,830	5,021	40,798	86,931	65,590	51,468	26,362	21,340	16,319
Burden	xxx	95%	32%	19%	14%	11%	9%	7%	6%

Part C:

Number and Percent of LIHEAP Recipients by Income Range and Annual Electric Burdens Given 10% Reduction in Electric Bills									
	All Households	Under \$2000	\$2000 - \$3999	\$4000 - \$5999	\$6000 - \$7999	\$8000 - \$9999	\$10,000 - \$11,999	\$12,000 - \$14,999	\$15,000+
Percent	100%	1.6%	13.0%	27.7%	20.9%	16.4%	8.4%	6.8%	5.2%
Number	313,830	5,021	40,798	86,931	65,590	51,468	26,362	21,340	16,319
Burden	xxx	86%	29%	17%	12%	10%	8%	6%	6%

TYPES OF UTILITY BILL NONPAYERS

1. Customers who do not pay because they have an absolute mismatch between household income and expenses. These are the very poor. They struggle to meet basic living needs. No amount of budget counseling, no type of deferred payment arrangement will help them. They need a break on their bills.
2. Customers who do not pay because they live on the edge of economic viability. With careful budgeting, so long as they experience no unusual expenses, they make do with current month-to-month expenses. The simplest problem, however, ranging from a broken appliance (such as a TV or refrigerator) or a disabled car, will push them over the brink into an inability-to-pay. These people find it hard to recover, when they are required to pay past-due bills along with current bills.
3. Customers who have marginal, but adequate, resources to meet all of their month-to-month expenses if they budget carefully. To the extent that these customers are non-payers, they may need skills training, such as budget counseling. This group has the desire to pay, and the ability-to-pay if given some assistance.
4. Customers who, for whatever reason, have become so far behind on their bills, they give up. While these folks may have the financial means to pay current bills today, they do *not* have the means to pay both their current bills and the significant arrears which they owe. Since, these customers properly reason, they will be treated no differently if they owe \$100 than if they owe \$500, they make no effort to pay their past due bills.
5. Customers who have "become poor." These customers might be marked by women who have been recently divorced, widowed or separated. This group might be marked by persons who have recently become unemployed, either through layoffs or retirement. They are not sophisticated users of public benefits and, indeed, do not perceive themselves as being eligible for public assistance. They do not know how to take advantage of fuel assistance programs. Their

standard of living is mismatched with their monthly income through no fault of their own. They may have house payments, car payments, college payments, and the like which, while consistent with their recent income and resources, places them in significant financial straits today.¹

6. Customers who have some "external" problem which inhibits their payment. Several types of such problems can be identified. These customers might be functionally illiterate. They may be "linguistically isolated," a term-of-art which, in the U.S., means that no person over the age of 14 in the household speaks English. They may be physically or mentally incapacitated or infirm. One extremely large group of such customers are those who lack telephone service, and who thus have a continuing inability to contact either the utility or the appropriate social service agencies to arrange help or to seek assistance
7. Customers who are simply poor money managers. This group is to be distinguished from Group 3 because the incomes of these customers are not necessarily marginal. The poor money management might be evidenced by high consumer debt, large credit card bills, and other imprudent expenditures which do not allow them to make their month-to-month payments.
8. Customers who *can* pay but will not. Within this final group of customers, there are two *sub*-classes of customers. On the one hand, there are the customers who are shrewd financial managers. Unless there are consequences with not paying their utility bills, they will devote their monthly incomes to uses which provide them a higher "return," whether it be paying off a credit card bill or placing their money in a savings account. These customers calculate the gain and make affirmative choices on where to use their money to maximize their gains. On the other hand, there are the customers who, for whatever reason, have an "attitude problem." Perhaps they refuse to pay so as to "punish" big business. Perhaps they refuse to pay because of some perceived "slight" that they have experienced in the past. In both cases, however, there is an ability, but an unwillingness, to pay.

¹Within Group 5, one should distinguish between long-term and short-term loss of income. Someone who has been temporarily laid off, for example, may need only short-term help while a recently widowed customer, or a recently retired person, may need longer term assistance. In addition, one spin-off of Group 5 involves the group of households who have "become poor" *not* through the loss of income, but rather through the imposition of significant extraordinary expenses. These expenses may involve short- or long-term medical expenses. They may involve the expenses associated with long-term health care. These consumers may, but need not, involve low-income households. *Many* people fear the debilitating financial consequences of fighting a long-term cancer, or the debilitating financial consequences of the need to vacate one's home for a long-term care facility.

EXHIBIT RDC-6
Environmentalists Statement No. 4

Part A:

PECO Universal Service Program Expenditures		
Program	1995	1996
CAP	\$39,465,000	\$29,619,000
CAP Rate	\$0	\$2,194,000
LIURP	\$2,100,000	\$2,772,000
LIHEAP Outreach	\$384,480	\$307,050
MEAF	\$572,828	\$403,099
Total	\$42,522,308	\$35,295,149

Part B:

Total PECO Universal Service Expenditures	
CAP	\$39,465,000
CAP Rate	\$0
LIURP (1996 funding)	\$2,772,000
LIHEAP Outreach	\$384,480
MEAF	\$572,828
Collection Costs	\$13,216,000
CAP Administrative Costs	\$2,675,000
Total	\$59,085,308

**Estimate of PECO Universal Service Program Costs
at 100 Per Cent CAP Participation**

It is possible to develop some estimates of long-term CAP funding levels. The PUC has indicated that a person who meets any one of the following criteria is to be eligible for the CAP program:

1. The consumer is at or below 150 percent of the federal poverty level;
2. The consumer is "payment-troubled" as defined by the PUC. The term "payment-troubled" is defined to include:
 - a. Consumers whose housing and utility costs exceed 45% of the household's total income;
 - b. A household who has \$100 or less in disposable income after subtracting all household expenses from all household income;
 - c. A household who has an arrearage;
 - d. A household who has received a termination notice or who has failed to maintain one payment arrangement.

I do not believe that it is necessary or beneficial to argue extensively about how many customers will meet one or more of these four criteria. It *is* necessary, however, to debunk the fabrication that simply because PECO estimates that there are roughly 250,000 electric consumers in its service territory at or below 150 percent of the federal poverty level, that figure represents any type of realistic estimate of the number of potential CAP customers. There is, in my opinion, zero possibility that PECO's CAP will ever be called upon to serve 250,000 low-income consumers.

Given this statement, I estimate a maximum participation rate of roughly 130,000 consumers in the PECO CAP. In 1994, PECO prepared an analysis of its "high risk" consumers. The Company defined "high risk" as being all consumers who met the following criteria:

1. currently active; *and*
2. made a payment arrangement since 1989; *and/or*
3. are sufficiently delinquent in May of 1991 to merit "hard core" treatment by OCCS (off cycle collections).

PECO calculated that there were 91,000 low-income/high risk account. I accept this calculation as a starting point based on the observation that, while not identical, the criteria used by PECO in this calculation are sufficiently analogous to the "payment-troubled" criteria of the PUC to make such acceptance reasonable.

I make one adjustment to the PECO calculation. The PECO criteria do not account for the 45 percent shelter burden criterion articulated by the PUC. Based on my experience with low-income programs in multiple states, I estimate that 50 - 60 percent of those consumers who have a shelter burden of 44% or more will already fall into the "payment-troubled" class of consumers based on the factors listed above. Conversely, 40 - 50 percent would thus fall into the payment-troubled class because of their high shelter burdens. HUD reports that roughly 40 percent of households with incomes of at or below 50 percent of median income have shelter burdens of 50 percent or more (84,257/223,703 = 37.7%). As a result, I estimate that roughly 40,000 customers will fall into the PUC's "payment troubled" class by virtue of a shelter burden that exceeds 45 percent. Combining these consumers with PECO's identified 91,000 "high risk" consumers yields a *maximum* CAP participation rate of 130,000 consumers. This calculation is set forth below:

PECO low-income "high risk" consumers	91,000
Potential CAP participants due to high shelter burdens ^{1a/}	40,000
Philadelphia households at 50% or less of median income with shelter burdens > 50%	37.7%
Low-income high shelter burden households not otherwise payment-troubled	40%
Maximum estimated CAP participation	130,000
NOTES:	
^{1a/} 250,000 x .40 x .40 = 40,000 customers	

Applying the PUC's percentage of income matrix set forth in its universal service order, an estimated cost for a 100 percent participation of this entire eligible population of 130,000 consumers would be roughly \$59.247 million. This calculation is set forth on the following page:

Exhibit RDC-7
Environmentalists Statement No. 1
Page 3 of 3

Cost of PECO CAP (General Use Customers)							
Poverty	1996 LI	Total LI	No. HHs by	CAP	CAP Bill	Annual CAP	Aggregate CAP
0-49	\$973	102,700	36,664	2%	\$59	\$552	\$20,238,473
50-100	\$973	102,700	32,864	4%	\$354	\$552	\$18,140,928
101-150	\$973	102,700	33,069	6%	\$884	\$89	\$2,939,119
Sub-Total General Use							\$41,318,520
NOTES: Maximum CAP credit for non-space heating customers set at \$46 per month.							

Cost of PECO CAP (Electric Space Heating Customers)							
Poverty Range	1996 LI Bill	LI Sp Htg Customers	No. HHs by Poverty	CAP Percent	CAP Bill	Annual CAP Credit	Aggregate CAP Credit
0-49	\$1,539	27300	9,746	7%	\$206	\$1,332	\$12,985,554
50-100	\$1,539	27300	8,736	11%	\$973	\$566	\$4,943,743
101-150	\$1,539	27300	8,791	15%	\$2,211	(\$672)	\$0
Sub-Total Space Heating							\$17,929,297
Total General Use and Space Heating							\$59,247,817
NOTES: Maximum CAP credit for space heating customers set at \$116 per month.							

Sub-Total General Use	\$41,318,520
Sub-Total Space Heating	\$17,929,297
Total General Use and Space Heating	\$59,247,817

PREPAYMENT METERS AND LOW-INCOME CONSUMERS

Proponents of prepayment meters have posited a variety of benefits to the use of such technology. These benefits tend to be variations on a common theme. Proponents assert that prepayment meters will allow consumers to gain control over their usage, will help impose discipline on consumer budgets, and will make consumers more aware of their energy consumption. While the theme is common, each of these claims makes unwarranted assumptions and will be examined separately.

Consumer Control of Energy Consumption

Prepayment meter proponents claim that such meters will allow consumers to gain control over their consumption. By allowing customers to monitor their consumption on a constant basis, these proponents assert, prepayment meters will thus provide the information necessary to make affirmative decisions as to which appliances and other consumption to pursue and which to forego. This claim assumes, of course, that consumers have control over their usage and can make affirmative adjustments in the extent of the energy they consume. In fact, that assumption is often in error. Low-income energy consumption can be divided into two different genres: (a) discretionary consumption; and (b) nondiscretionary consumption. Nondiscretionary consumption is by far the biggest block of the two. Consider, for example, the three largest uses of electric energy in a typical electric household: (a) space heating; (b) water heating; and (c) refrigeration. Each of these is largely beyond the ability of the household to control.

Space heating usage in low-income households is often driven by factors largely outside of the ability of the low-income household to control. The age and efficiency of the space heating equipment, the age and energy efficiency of the dwelling unit, the number of household members, and the extent to which household members are home during the day¹ are all factors that are beyond the household's ability to control. Moreover, the condition of the physical structure, including not only the structural integrity of the unit but factors such as the location of an apartment within the multifamily structure, the weatherization characteristics of the unit, the orientation of a home or apartment *vis a vis* direct sunlight, and the like, are all factors beyond a household's ability to control.

Water heating and refrigeration, too, depend largely on factors beyond a household's ability to control. The age and relative energy efficiency of the appliance, itself, is the

¹This might be a function of whether household members are employed outside the home or not.

primary driving factor in energy consumption of these household uses. In addition, high hot water consumption is often driven by leaks, particularly in low-income households.²

In sum, it may be easy to create the image of people turning off lights, turning down thermostats, and taking other affirmative steps to control consumption by behavioral changes. The savings potential through such steps is insufficient to predicate the introduction of an entirely new generation of meters based upon such savings. Moreover, it may be easy to create the image of a vast savings potential that would arise if low-income households only turned off "wasteful" appliances. However, it is not the number of new appliances, but rather the age, condition and energy efficiency of basic appliances, that drives low-income consumption levels.³

Assistance in Consumer Budgeting

Prepayment meter proponents posit that these meters will help consumers impose a "discipline" over their family budget process. Within the context of low-income households, however, this argument erroneously assumes that inability-to-pay is a budgeting problem. In fact, low-income households have an absolute mismatch between household income and household expenses. As my discussion in this testimony points out, even households with incomes approaching \$20,000 have inadequate incomes to cover all household expenses *before* taking home energy bills into account.

In spite of this lack of household resources --or perhaps because of it-- research finds that low-income households tend to be excellent at household budgeting. A late 1985 Pennsylvania State University (Penn State) study looking at payment-troubled households in Pennsylvania, for example, debunked the myth that nonpaying households are characterized by "deadbeats." The Penn State study found that

²According to the American Housing Survey, performed by the Census Bureau and the U.S. Department of Housing and Urban Development (HUD), while only 13 percent of all occupied units in the country were occupied by households living below the Poverty Level, nearly 20 percent of all households with leaking pipes were in low-income homes. *American Housing Survey for the United States in 1989*, at Table 2-7, p 46 (July 1991). In addition, the AHS reports, nearly one-quarter of all leaks that were "unreported" but discovered upon inspection of the housing being surveyed were in homes occupied by households living below the Poverty Level. *Id.* Overall, nearly one in six low-income households (16%) had water leaks. *Id.* The AHS reports that 22 percent of the occupied households experiencing "severe" physical problems with their plumbing were low-income households, while in addition, 34 percent of the occupied households experiencing "moderate" physical problems with their plumbing were low-income households. *Id.*

³Consider, for example, new refrigerators in 1990 would be 96 percent more efficient than a new model in 1972. *Housing Characteristics 1990, Residential Energy Consumption Survey*, at 23, 25. According to DOE/EIA, however, more than 35 percent of all households eligible for federal fuel assistance had the older refrigerators. *Id.*, at 114.

"payment-troubled households are experiencing considerable socioeconomic stress when compared to the pattern for the average (general) customer sample." The study noted that families encountering payment problems have a higher number of female heads of household, dependents, disabled members, nonmarried heads of households, and unemployed household members while also having lower levels of education, income and home ownership than households that do not experience difficulties. Ultimately, the study concluded: "thus, with regard to their socio-economic and demographic characteristics, the groups that encounter payment problems have higher proportions of the type of customers intended for protection by public policy."

The Penn State study found that six of ten customers who had utility payment problems indicated that some unusual condition hindered timely payment of their utility bill. Employment related problems (such as being laid off, having reduced working hours, or being unemployed) were most frequently cited as the cause for the receipt of a shutoff notice as well as for the actual termination of service (22% for shutoff notice; 18% for termination of service). Unusually high medical expenses (resulting from hospitalization or illness) and unusually high bills (resulting from seasonal usage variations) were the second and third most common reasons cited for the termination of service. (19% and 18% percent respectively). The Penn State study concluded: "in view of the lower-income levels and higher number of dependents in the payment-troubled households when compared to the general sample, it is not surprising that these difficulties readily manifest themselves in the form of overdue bills." Moreover, Penn State found that 20 percent of the households with payment troubles reported that they simply lacked adequate income.

Consumer Awareness of Energy Consumption

Proponents of prepayment meters claim that such meters will make consumers more aware of their energy consumption. These proponents assume, in other words, that customers can gain access to their meters, can accurately read their meters, and can translate the information provided by their meters into the operation of discrete home energy consumptive uses. These assumptions about consumer information are likely in error.

The first assumption made by proponents of prepayment meters is that households have ready access to their meter. Occasional access, of course, does not help since it would not permit the consumer to gauge the rate at which the meter was running as a function of different appliances operating at any given time. According to one study of prepayment meters, customers checked their meters for the dollar amount remaining as

many as 28 to 35 times a week. The most common type of meter provides a myriad of information, including: (a) present dollars remaining; (b) present use; (c) amount used in past 24 hours; (d) amount used in last month; and (e) amount of last purchase.

Few low-income customers, however, particularly tenants in multi-family dwellings, will have ready access to their meters. And tenancy is the norm within the low-income community. If one assumes a multifamily dwelling in which access to meters is restricted generally, let alone the unlimited access assumed by arguments holding that consumers will link the operation of their meters with the operation of specific energy consuming appliances, it becomes unlikely that prepayment meters will help make payment troubled low-income consumers more aware of their energy consumption.

SUMMARY OF UNIVERSAL SERVICE RECOMMENDATIONS

Basic Principles:

Four basic principles should govern a Universal Service Program:

1. There must be some pre-established definition of what "service" must be universal. Universal service should consist of the following four components:
 - a. Universal service includes access to the distribution system of the same type and quality as customers not being supported through Universal Service Program
 - b. A Universal Service Program should not be called upon to support unfettered consumption.
 - c. Universal service implies an affordability of service. "Affordability" includes both an "absolute" ("to have enough or the means for") and a "relative" ("to bear the cost of without serious detriment") component.
 - d. Universal service implies equal availability to consumer choice.
2. There must be some pre-established definition of what state of affairs represents "universal" service.
 - a. Affordability in terms of numbers of households with electricity burdens at or below the PUC-defined levels of affordability for CAPs.
 - b. Service penetration rates should be monitored to determine whether there is a "low or declining rate."
 - c. A universal service program should include a separate index for payment-troubles, including at least the following four components: (1) termination rate; (2) money at risk; (3) deferred payment agreement success; and (4) weighted arrears.
3. The program must recognize the diversity amongst consumers. PECO should, no less frequently than biannually, conduct a comprehensive study of nonpaying residential customers to develop a segmentation of nonpaying customers by reason for nonpayment. The results of this inquiry should be made available to interested parties and should include recommendations as to how, if at all,

PECO will separately address each reason for nonpayment through its Universal Service Program.

4. The program must be based on an appropriate planning process and should include a process for evaluation and program modification as set forth in Exhibit RDC-2.

General Program Structure:

5. A base rate of universal service funding of \$59.1 million.
6. An expansion of the CAP program to roughly 130,000 payment-troubled customers, using the PUC definition of "payment-troubled."
7. An allocation of universal service fund costs to all customer classes on a per kWh basis.
8. All geographic areas should receive their fair share of funds. Having said this, however, funds that are collected from any particular geographic area need not be earmarked for return to that area. Neither counties nor other geographic areas need to be self-supporting of the universal service program serving their area.
9. The universal service funds should be apportioned between the distribution company and the electric service provider (whomever that might be) in the same proportion that the distribution and electric service bills each are to the total bill.

Specific Program Components:

10. PECO should contract out the administration and delivery of universal service programs to an experienced non-profit, community based organization with both a strong track record in the provision of energy assistance, conservation and education programs, and the ability to leverage significant amounts of additional public and private resources to help resolve the energy problems of PECO's low income customers. These programs should include: budget counseling, home repair, heating system repair, job development and placement and related services.
 - a. This structure involves a private non-profit agency modelled after an institution such as the Colorado Energy Assistance Foundation. Such an institution is a private, non-profit agency with an independent Board of

Directors, who is subject to the additional oversight of a publicly accountable commission.

- b. Oversight of this non-profit administrator should rest with the state PUC. The PUC would be charged with accomplishing three tasks: (1) providing direction on the general division of revenue between the uses designated in the PUC's order establishing the universal service framework; (2) approving, after hearing, a proposed annual work plan developed and submitted by the private non-profit agency administering the funds; and (3) providing oversight such that the revenue collected will not substantially exceed the amount of the estimated expenditures stated in the final work plan approved by the commission.
11. One specific holding of the PUC in this universal service proceeding should be that universal service programs may not be delivered through affiliated or subsidiary corporations.
 12. PECO should adopt the PUC definition of "payment-troubled" for purposes of determining CAP eligibility.
 13. PECO's arbitrary limitation of providing CAP benefits only for consumption at or below 500 kWh per month is not supported by the PUC's universal service order, is contrary to the goal of preserving universal service, and should be disapproved as part of the Universal Service Program. Instead, the level of consumption should be set at 120% of the median residential usage for each rate class and, if appropriate as in the case of heating customers, the size of dwelling.
 14. PECO's existing CAP payment tiers should be modified to comply with the CAP payment tiers set forth in the PUC's order.
 15. All CAP Customers should have a personal interview at least at the time of intake. This intake interview should take place at a facility operated by a community based organization and should include all of the following services:
 - a. income eligibility determination;
 - b. explanation of customer's responsibilities under the CAP program;
 - c. application to LIHEAP, Crisis and all other fuel assistance programs;

- d. conservation education including a detailed usage analysis and customized recommendations;
 - e. automatic referral to LIURP for all high users (those whose consumption exceeds the average for their rate class).
 - f. written and highly pictorial literature describing CAP and reinforcing conservation education;
 - g. comprehensive assessment of all energy problems in the home;
 - h. referral to all programs necessary to resolve energy and related housing problems;
 - i. budget counseling;
 - j. referral to job development and placement for all who are employable, and currently unemployed or underemployed;
 - k. follow up, particularly to insure that those de facto electric heating or water heating cases are receiving the services they need in order to get their central heating or water heating restored.
16. Strict controls should be placed on the use of prepayment meters. *The following conditions be placed on the use of prepayment meters by PECO:*
- a. Prior to approving use of prepayment meters, PECO should present an assessment of the previous prepayment meter pilots (none, which I am familiar with, which have been considered a success) and explain why and how PECO's proposal differs in ways that would "remedy" the failures of those previous efforts.
 - b. The PUC should create a remedy for the "unknown disconnection." This would probably need to take the form of a duty to inquire if a prepayment meter household's monthly consumption varies from prior equivalent consumption by more than a designated level. Given PECO's previous inability to comply with requirements such as this, *substantial* civil penalties must be automatically imposed in the event of non-compliance.
 - c. Rather than having prepayment meters be used in the event of an unsuccessful participation in CAP, they should be targeted to those who

have demonstrated an ability to succeed. Perhaps CAP could provide an additional discount to successful participants if they agree to *voluntarily* accept prepayment meters as a means to help budget as well as a means of reducing consumption.

- d. Prepayment meters should be declared to be an inappropriate service for households who live at or below 150 percent of the federal poverty level. It should be recognized that for these customers, prepayment meters serve no legitimate function and offer a risk of harm that is not outweighed by any potential for gain. This type of exclusion would be rendered moot if the prepayment meters were re-targeted based on the suggestion included in recommendation 3 immediately above.
 - e. Prepayment meters should be declared to be an inappropriate service for low-income households who have not received LIURP services. For all of the reasons outlined above, these households can be presumed to be unable to control their own energy consumption.
 - f. Finally, in the CAP Rate pilot project, prepayment meters are excluded from heating households. *De facto* heating should be excluded as well. *De facto* heating customers can be determined by excluding any residential customer who experiences either: (a) annual electric consumption of 14,000 kWh; or (b) a maximum winter monthly consumption of 200 percent or more of the minimum non-winter consumption.
17. PECO's LIURP program should be redesigned in order to enable it to address all the causes of high use, and to offer the LIURP program to all eligible high users.¹ The changes to the LIURP program which need to be made include:
- a. Conducting a diagnostic audit, which determines the causes of high usage and addresses each of them enabling the customer to bring their consumption down to affordable levels;
 - b. Providing high quality conservation education, focusing on the specific steps the customer must take to get their usage down to the target level;

¹Our recommendation is that eligible high uses include all those consumers whose consumption exceeds 120% of median residential usage for the rate class, size and type of dwelling in which the service is provided.

- c. Including refrigerator replacement in every case in which this would be cost effective;
 - d. Include air conditioning treatments. These treatments, in turn, would include air conditioner/fan swaps, timers, off peak metering, or in the case of customers with health problems, replacing a central air conditioning system with a room air conditioner.
18. In cases in which the high use is caused by the use of electric space or water heat due to a gas termination or a broken heating system, the LIURP program must have a case management component through which the customer is assisted to have their gas service restored and/or their heating system repaired or replaced.
19. PECO should implement a pilot program in renewable energy applications, in retrofit or new construction or both, which is designed to cost effectively apply existing, proven renewable technologies in homes which are already energy efficient. This pilot should be designed to help close the affordability gap for low income customers.

ROGER D. COLTON

BUSINESS ADDRESS: Fisher Sheehan & Colton
Public Finance and General Economics
34 Warwick Road, Belmont, MA 02178
617-484-0597 *** 617-484-0594 (FAX)
rcolton101@aol.com (E-MAIL)

EDUCATION:

J.D. (Order of the Coif), University of Florida, 1981
M.A. (Economics), McGregor School, Antioch University (1993)
B.A., Iowa State University (1975)

PROFESSIONAL EXPERIENCE:

Fisher, Sheehan and Colton, Public Finance and General Economics: 1985 - present.

As a co-founder of this public interest economics consulting partnership, Colton provides services in a variety of areas, including: regulatory economics, poverty law and economics, public benefits, environmental and natural resource economics, fair housing, community development, energy efficiency, utility law and economics (energy, telecommunications, water/sewer), government budgeting, health care economics, and planning and zoning.

Colton has testified in state and federal courts in the United States and Canada, as well as before regulatory bodies in more than two dozen states. He is particularly noted for creative program design and implementation within tight budget constraints. Colton has published seven books and more than 50 journal articles on a wide range of legal and economic subjects.

National Consumer Law Center (NCLC): 1986 - 1994

As a staff attorney with NCLC, Colton worked on low-income energy and utility issues. He pioneered cost-justifications for low-income affordable energy rates, as well as developing models to quantify the non-energy benefits (*e.g.*, reduced credit and collection costs, reduced working capital) of low-income energy efficiency. He designed and implemented low-income affordable rate and fuel assistance programs across the country. Colton was charged with developing new practical and theoretical underpinnings for solutions to low-income energy problems.

Community Action Research Group (CARG): 1981 - 1985

As staff attorney for this non-profit research and consulting organization, Colton worked primarily on energy and utility issues. He provided legal representation to low-income persons on public utility issues; provide legal and technical assistance to consumer and labor organizations; and provided legal and technical assistance to a variety of state and local governments nationwide on natural gas, electric, and telecommunications issues. He routinely appeared as an expert witness before regulatory agencies and legislative committees regarding energy and telecommunications issues.

PROFESSIONAL AFFILIATIONS:

- Member: Board of Directors, Vermont Energy Investment Corporation.
- Member: Board of Directors, Affordable Comfort, Inc.
- Member: Editorial Advisory Board, International Library, *Public Utility Law Anthology*.
- Member: Fair Housing Commission (Belmont, MA).
- Member: ASHRAE Guidelines Committee, GPC-8, *Energy Cost Allocation of Comfort HVAC Systems for Multiple Occupancy Buildings*
- Member: National Advisory Committee, U.S. Department of Housing and Urban Development, Calculation of Utility Allowances for Public Housing.

PROFESSIONAL ASSOCIATIONS:

- National Association of Housing and Redevelopment Officials (NAHRO).
- Association for Enterprise Opportunity.
- Association of Energy Engineers, *Energy Marketing Section*.
- Iowa State Bar Association.
- Association for Institutional Thought.
- National Community Reinvestment Coalition.
- National Association of Human Rights Workers.

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COLTON TESTIMONY EXPERIENCE

1988 - PRESENT

CASE NAME	ROLE	CLIENT NAME	TOPIC	JURIS.	DATE
Re. IES Industries Merger	Witness	Iowa Community Action Association	Low-income issues	Iowa	97
Re. Natural Gas Competition in Wisconsin	Witness	Wisconsin Community Action Association	Universal service	Wisconsin	96
Re. Baltimore Gas and Electric Merger	Witness	Maryland Office of Peoples Counsel	Low-income issues	Maryland	96
Re. Northern States Power Merger	Witness	Energy Cents Coalition	Low-income issues	Minnesota	96
Re. Public Service Co. of Colorado Merger	Witness	Colorado Energy Assistance Foundation	Low-income issues	Colorado	96
Re. Massachusetts Restructuring Regulations	Witness	Fisher, Sheehan & Colton	Low-income issues/energy efficiency	Massachusetts	96
Re. FERC Merger Guidelines	Witness	National Coalition of Low-Income Groups	Low-income interests in mergers	Washington D.C.	96
Re. Joseph Kelikuli III	Witness	Joseph Kelikuli III	Damages from lack of homestead	Honolulu	96
Re. Theresa Malauba	Witness	Theresa Malauba	Damages from lack of homestead	Honolulu	95
Re. Joseph Ching, Sr.	Witness	Re. Joseph Ching, Sr.	Damages from lack of homestead	Honolulu	95
Joseph Keaulana, Jr.	Witness	Joseph Keaulana, Jr.	Damages from lack of homestead	Honolulu	95
Re. Utility Allowances for Section 8 Housing	Witness	National Coalition of Low-Income Groups	Fair Market Rent Setting	Washington D.C.	95
Re. PGW Customer Service Tariff Revisions	Witness	Philadelphia Public Advocate	Credit and collection	Philadelphia	95
Re. Customer Responsibility Program	Witness	Philadelphia Public Advocate	Low-income rates	Philadelphia	95
Re. Houston Lighting and Power Co.	Witness	Gulf Coast Legal Services	Low-Income Rates	Texas	95
Re. Request for Modification of Winter Moratorium	Witness	Philadelphia Public Advocate	Credit and collection	Philadelphia	95
Re. Dept of Hawaii Homelands Trust Homestead Production	Witness	Native Hawaiian Legal Corporation	Prudence of trust management	Honolulu	94
Re. SNEI Request for Modified Shutoff Procedures	Witness	Office of Consumer Counsel	Credit and collection	Connecticut	94
Re. Central Light and Power Co.	Witness	United Farm Workers	Low-income rates/DSM	Texas	94
Blackwell v. Philadelphia Electric Co.	Witness	Gloria Blackwell	Rule of shutoff regulations	Penn. courts	94
U.S. West Request for Waiver of Rules	Witness	Was't. Util. & Transp. Comm'n Staff	Telecommunications regulation	Washington	94

CASE NAME	ROLE	CLIENT NAME	TOPIC	JURIS	DATE
Re. IES Industries Merger	Witness	Iowa Community Action Association	Low-income issues	Iowa	97
Re. U.S. West Request for Full Toll Denial	Witness	Colorado Office of Consumer Council	Telecommunications regulation	Colorado	94
Washington Gas Light Company	Witness	Community Family Life Services	Low-income rates & energy efficiency	Washington D.C.	94
Clark v. Peterborough Electric Utility	Witness	Peterborough Community Legal Centre	Discrimination of tenant deposits	Ontario Canada	94
Jersey v. Housing Auth. of Baltimore	Witness	Baltimore Legal Aide	Public housing utility allowances	Federal district court	93
Penn Bell Telephone Co.	Witness	Penn. Utility Law Project	Low-income phone rates	Pennsylvania	95
Philadelphia Gas Works	Witness	Philadelphia Public Advocate	Low-income rates	Philadelphia	93
Central Maine Power Co.	Witness	Maine Assn Ind. Neighborhoods	Low-income rates	Maine	92
New England Telephone Company	Witness	Mass Attorney General	Low-income phone rates	Massachusetts	92
Philadelphia Gas Co.	Witness	Philadelphia Public Advocate	Low-income DSM	Philadelphia	92
Philadelphia Water Dept.	Witness	Philadelphia Public Advocate	Low-income rates	Philadelphia	92
Public Service Co. of Colorado	Witness	Land and Water Fund	Low-income DSM	Colorado	92
Sierra Pacific Power Co.	Witness	Washoe Legal Services	Low-income DSM	Nevada	92
Consumers Power Co.	Witness	Michigan Legal Services	Low-income rates	Michigan	92
Columbia Gas	Witness	Penn. State Office of Consumer Advocate (OCA)	Energy Assurance Program	Pennsylvania	91
Mass Elec. Co.	Witness	Mass Elec. Co.	Percentage of Income Plan	Massachusetts	91
T&T	Witness	TURN	Inter-LATA competition	California	91
Generic Investigation into Uncollectibles	Witness	Penn OCA	Controlling uncollectibles	Pennsylvania	91
Union Heat Light & Power	Witness	Kentucky Legal Services (KLS)	Energy Assurance Program	Kentucky	90
Philadelphia Water	Witness	Philadelphia Public Advocate (PPA)	Controlling accounts receivable	Philadelphia	90
Philadelphia Gas Works	Witness	PPA	Controlling accounts receivable	Philadelphia	90
Mississippi Power Co.	Witness	Southeast Mississippi Legal Services Corp.	Formula ratemaking	Mississippi	90
Kentucky Power & Light	Witness	KLS	Energy Assurance Program	Kentucky	90

CASE NAME	ROLE	CLIENT NAME	TOPIC	JURIS.	DATE
Re. IFS Industries Merger	Witness	Iowa Community Action Association	Low-income issues	Iowa	97
Philadelphia Electric Co.	Witness	PPA	Low-income rate program	Philadelphia	90
Montana Power Co.	Witness	Montana Ass'n of Human Res. Council Directors	Low-income rate proposals	Montana	90
Columbia Gas Co.	Witness	Penn. OCA	Energy Assurance Program	Pennsylvania	90
Philadelphia Gas Works	Witness	PPA	Energy Assurance Program	Philadelphia	89
Southwestern Bell Telephone Co.	Witness	SEMLSC	Formula rate-making	Mississippi	90
Generic Investigation into Low-income Programs	Witness	Vermont State Department of Public Service	Low-income rate proposals	Vermont	89
Generic Investigation into Demand Side Management Measures	Consultant	Vermont DPS	Low-income conservation programs	Vermont	89
National Fuel Gas	Witness	Penn OCA	Low-income fuel funds	Pennsylvania	89
Montana Power Co.	Witness	Human Resource Develop. Council District XI	Low-income conservation	Montana	88
Washington Water Power Co.	Witness	Idaho Legal Service Corp.	Rate base, rate design, cost-allocation	Idaho	88

ENVIRONMENTALISTS' STATEMENT 2

KJR

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

APPLICATION OF PECO ENERGY COMPANY FOR
APPROVAL OF ITS RESTRUCTURING PLAN
UNDER SECTION 2806 OF THE PUBLIC UTILITY CODE

DOCKET NO. R-00973953

PREPARED TESTIMONY AND
EXHIBITS OF
DAVID SCHOENGOLD

PROTHONOTARY'S OFFICE
97 OCT 21 PM 4:00

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Statement
ENVIRONMENTALISTS' EXHIBIT
DATE 10-14/5/97
MARY ELLEN WOLF, REPORTER
Philadelphia
R-00973953, etc.

1 **Q. Please state your name and business address.**

2 A. My name is David Schoengold. My business address is MSB Energy
3 Associates, 7507 Hubbard Avenue, Middleton, WI 53562.

4

5 **Q. On whose behalf are you testifying?**

6 A. I am testifying on behalf of the Environmentalists.

7

8 **Q. Please describe your background and experience in electric utility issues.**

9 A. I have worked in the electric utility field since 1974, first at the Wisconsin Public
10 Service Commission, and then as a consultant. A copy of my vita is attached as
11 Exhibit DS-1.

12

13 **Q. What is the purpose of your testimony today?**

14 A. I will present the Environmentalists' perspective on a number of issues related to
15 PECO's restructuring proposal. My testimony should be considered in
16 conjunction with that of Bruce Biewald and of Roger Colton who are presenting
17 the Environmentalists' perspective on other issues in this docket.

18

19

20 **INTRODUCTION**

21

22 **Q. Is there an overarching theme to your testimony?**

1 A. Yes. The Environmentalists have adopted a Vision for the New Electricity
2 Marketplace which has been presented in this case by Joseph O. Minott. My
3 testimony supports this Vision and proposes changes to the restructuring plan
4 which will make it fit in more closely with the Vision.

5
6 **Q. What areas will you cover in your testimony?**

7 A. I will address the following issues:

- 8 ● Stranded generating assets
 - 9 ● Market price of power
 - 10 ● Mitigation of stranded asset costs
 - 11 ● Allowed recovery of stranded generating assets
 - 12 ● Transfer of depreciation reserves from transmission and distribution to
13 generation
 - 14 ● Competitive Transition Charge (CTC) allocation and structure
 - 15 ● Securitization of stranded asset costs
 - 16 ● Regulation of the transmission and distribution functions
 - 17 ● Environmental implications of the restructuring proposal
 - 18 ● Unbundling of prices
- 19
20
21
22

1 **STRANDED GENERATING ASSETS**

2

3 **Q. You stated initially that you will be addressing the issue of stranded**
4 **generating assets. There are a number of other elements which PECO**
5 **proposes to include in the CTC such as regulatory assets,**
6 **decommissioning expenses, FASB related items, and other transition**
7 **costs. Do you intend to address these elements of the CTC in your**
8 **testimony?**

9 **A. No. I will focus my attention on stranded generating assets.**

10

11 **Q. Does that mean you are supporting the PECO determination of regulatory**
12 **assets, decommissioning expenses, FASB related items, and other**
13 **transition costs?**

14 **A. No. I just have not reviewed those costs. Bruce Biewald will be reviewing**
15 **decommissioning costs on behalf of the Environmentalists. The other transition**
16 **costs are not being addressed by the Environmentalists at this time.**

17

18 **Q. PECO uses an approach to calculating net stranded generating assets**
19 **which compares the revenues produced by the system as a result of**
20 **selling at market prices to the cost of running the system. What is your**
21 **view of the PECO approach?**

1 A. In theory it makes sense. However, in practice it has major problems. The key
2 problem is its sensitivity to the input parameters. While this might not be so
3 much of a problem if the method is used in a way that allows for regular
4 corrections, PECO is proposing a one-time use of the method to arrive at a CTC,
5 with no mechanism for adjusting the CTC if conditions change. For example, a
6 small difference in the estimate of market price can make a big difference in the
7 level of assumed stranded generating assets for which PECO's customers are
8 being asked to pay. PECO has presented three market price estimates – one by
9 Mr. Bustard, one by Dr. Venkateshwara, and one by Dr. Hieronymus. These
10 estimates vary (on a levelized basis) from 3.46 cents per kWh for Dr.
11 Hieronymus to 3.85 cents per kWh for Mr. Bustard, a variation of less than 0.4
12 cents per kWh (approximately ten percent).¹ Yet what appears on the face of it
13 to be a small difference in estimated market price leads to a difference in
14 stranded asset estimates of \$788 million.

15
16 **Q. Does this \$788 million difference in stranded asset costs make a**
17 **significant difference to the customers?**

18 A. Yes. PECO chose the estimate by Dr. Hieronymus, the lowest value, which
19 leads to the highest stranded asset cost. The result of this single choice of the
20 Hieronymus market price over the Bustard price and the resultant \$788 million

¹ PECO Exhibit TPH-6.

1 *stranded cost difference leads to an increase in the annual CTC of \$195 million,*
2 *or approximately 0.6 cents per kWh for every customer. For comparison*
3 *purposes, I note that \$195 million is more than twice the savings which PECO*
4 *suggested would occur from the securitization proposed in Docket R-00973877,*
5 *the recent securitization case.*

6
7 *Apart from market price, the method used by PECO for calculating stranded*
8 *costs is also extremely sensitive to assumptions regarding key input variables*
9 *such as the cost of future environmental regulations, future fuel price, nuclear*
10 *plant performance, etc. The impact of the decisions made in this case is too*
11 *momentous to be based on a method which has such wide variability, and which*
12 *rests so heavily on assumptions of conditions over 30 years into the future.*

13
14 **Q. Has it not always been necessary to predict input variables far into the**
15 **future while making long-range utility plans?**

16 **A. Yes it has. And the difficulty in accurately predicting the future is one of the**
17 **reasons that many utilities are in difficult positions today with respect to stranded**
18 **assets. However, has always been important to focus on the impact of variability**
19 **in important inputs. Successful planning values most highly those plans which**
20 **are amenable to adjustment to meet changing conditions. For example, some**
21 **states with long-range planning processes were able to recognize changes in the**
22 **need for new plants and the cost of building them in the 1970s and 1980s, and to**

1 cancel and/or defer plants. The savings from being able to adjust plans were
2 large. In contrast, the PECO method of calculating stranded asset costs relies
3 on detailed long-range projections without allowing for adjustments necessary to
4 reflect changed conditions.

5
6 **Q. How would you propose dealing with the sensitivity of stranded asset
7 costs to difficult to predict inputs?**

8 **A.** I will set forth my proposal in the next section of my testimony when I discuss
9 market price.

10
11
12 **MARKET PRICE OF POWER**

13
14 **Q. Why is the market price of power important in this case?**

15 **A.** Under the PECO method for calculating stranded generating asset costs, the
16 market price of power determines the value of the existing generating system. A
17 higher market price means that the existing system is more valuable, while a
18 lower market price means the opposite. Since the value of the existing
19 generating system is subtracted from the net book value of the plant to
20 determine the level of stranded generating assets in the PECO method, a higher
21 market price means lower stranded generating assets, and vice versa. As I

1 demonstrated above, the level of the CTC is very sensitive to the market price
2 assumed. PECO presented three estimates of market price in this docket.

3
4 **Q. Which estimate of market price did PECO choose to use in calculating the
5 stranded asset costs?**

6 A. PECO used the lowest estimate of market price, that proposed by Dr.
7 Hieronymus. This is the estimate which produces the highest level of stranded
8 *generating assets*.

9
10 **Q. Is this the same estimate that PECO chose for the securitization case?**

11 A. No. In that case PECO used the average of the three estimates. In the
12 securitization case the Environmentalists' witness argued that use of the higher
13 estimate of the market price would minimize the anti-competitive effects of the
14 Competitive Transition Charge. In its preliminary orders in the Restructuring Pilot
15 cases, the Commission recognized the implications that too low an estimate of
16 *the market price would have on the development of the competitive power*
17 market. In this case PECO has chosen to calculate stranded costs using the
18 lowest market price estimate of the three the company had prepared. The result
19 will be to enhance PECO's opportunities for market dominance.

20
21 **Q. What is the likelihood that the Hieronymus estimate of the market price of
22 power is accurate?**

1 A. The likelihood that the Hieronymus market price estimate is accurate is very low.
2 In the near-term (when one might expect more accurate forecasts), the problem
3 is that the basis for making projections is undergoing extreme changes. Most
4 current market price estimates are based on the transactions currently going on
5 in the limited marketplace that exists. These transactions are currently a fairly
6 small segment of the power being generated and sold, and represent the use of
7 the excess plant on the system at this time. As a result, there is a natural
8 tendency for these transactions to be priced low. While the amount of excess
9 capacity on the system may be large compared to the low level of transactions
10 taking place, this will not be the case when all (or most of) the power is going
11 through the market. For example, Wisconsin Electric Power Company (WEPCO)
12 is currently selling some of its excess power to customers in Illinois at a price
13 less than 2 cents per kWh (for firm power). But, when estimating the cost of
14 purchasing power in the marketplace to replace the failing Point Beach 2 Nuclear
15 Plant (a much larger transaction than the sale to the Illinois customers), WEPCO
16 estimated market prices at over 4 cents per kWh.

17
18 In other words, there is not now an existing large scale market, and nobody
19 really knows how the market will behave as it develops.

20
21 Over the long-term one might expect some of the uncertainties to balance
22 against each other giving a more predictable market price. However, there are

1 some very important uncertainties which make predictions difficult. Of key
2 importance is the uncertainty of air regulations. There are likely to be new EPA
3 regulations concerning NO_x and fine particulates, the impact of which is not yet
4 known. There is also a reasonable probability of CO₂ regulations which will
5 affect market prices.
6

7 **Q. How good are track records when it comes to estimating electricity market**
8 **prices?**

9 A. There are not really any historical estimates of market prices, since there have
10 not been power markets of any significant size. However, it is to a large extent
11 serious mis-estimates of the cost of new power plants and the need for those
12 plants that have led us to the current problems with regards to stranded
13 generating assets. These failures of projections do not bode well for the
14 likelihood of the market price estimates being accurate.
15

16 If we look back 32 years to 1965 (the same 32 years that the PECO estimate of
17 the market price goes forward in time), we find utilities forecasting that nuclear
18 power will be providing low cost power for the future.
19

20 **Q. Are you suggesting that relying on the Hieronymus market price estimate**
21 **as PECO did will likely lead to an over-estimate of the level of stranded**
22 **generating assets?**

1 A. Yes. The result will be subsidization of PECO's own power plants and a serious
2 undercutting of the development of the competitive market.

3

4 **Q. Do you have a specific recommendation as to what the PUC should do to**
5 **deal with the problem of estimating market price?**

6 A. I think there are several possible approaches the PUC could use. One approach
7 would be to develop a better market price estimate than the one used by PECO.
8 However, *any* market price estimate will suffer from the problems I discussed
9 above – the market is not well enough developed to accurately estimate the
10 near-term market price, and that the uncertainties in future fuel prices and
11 technology render a long-term forecast very unlikely to be accurate. Therefore, I
12 am proposing two alternative approaches which will minimize the need to
13 forecast market prices.

14

15 **Q. Please describe these approaches.**

16 A. The first approach is for the PUC to accept that an administratively determined
17 market price is neither meaningful nor likely to be accurate, and to instead allow
18 the marketplace to determine its own estimate of the market price. Under this
19 approach, the utilities would sell their generation under an open auction to the
20 highest bidders. The resulting sale prices would be, by definition, the market
21 value of the power plants. The Commission could then net that market-
22 determined value against the book value of the plants in order to determine the

1 stranded asset cost. This approach has the advantage that the PUC does not
2 have to try to administratively determine a market price. Since the purpose of
3 estimating the market price is to determine the value of the existing plants, use of
4 an auction to determine the actual market value of the power plants renders the
5 market price superfluous.

6
7 **Q. Are there any problems with this approach?**

8 A. There are several. One is the potential for the utilities themselves to dominate
9 the auction of the power plants and artificially depress the prices. However, this
10 problem should be mitigated through the use of an open auction in which a large
11 number of potential buyers are allowed to participate. A bigger problem is that
12 the newness of the marketplace for power may cause potential buyers the same
13 problem as faced by the Commission in trying to determine the market prices,
14 and thus the value of the plants. Given the uncertainties surrounding the market
15 (how it will be organized, who if anyone will run the market, how it will interface
16 with the ISO, etc), I expect there is a good chance that buyers will bid less than
17 the true value of the plants because of perceived risks.

18
19 **Q. How would you suggest dealing with the latter problem?**

20 A. I think the best approach would to delay the sale of the plants in an open auction
21 for several years until the marketplace has a chance to develop and potential
22 buyers have the opportunity to observe how market prices actually behave. At

1 that time potential buyers would be able to bid on the power plants with a much
2 better knowledge of the likely value of those plants.

3
4 **Q. Under this alternative approach, would there not still be a stranded asset**
5 **cost problem prior to the sale of the power plants which would require**
6 **some sort of estimate of market price?**

7 A. Yes. I am not suggesting that the Commission wait several years before taking
8 any steps to address the stranded generating asset cost problem. I would
9 suggest that the Commission address the problem now by adopting an
10 administratively determined market price which is recognized to be a temporary,
11 *pro forma* estimate for short-term use only. Rather than try to achieve a precise
12 market price (since that will be done by the auction later on), the Commission
13 would essentially adopt an approximate, short-term *pro forma* place holder. The
14 CTC would be developed based on the *pro forma* market price. Since this price
15 would be acknowledged to be temporary and of limited accuracy, a tracking
16 account would be developed to monitor shortfalls or overcollections of revenue
17 by the utility resulting from the actual market price being below or above the *pro*
18 *forma* value. Then, when the plants are finally sold at the open auction, a final
19 CTC will be determined which reflects the difference between the sale price and
20 the book value and also the tracking account balance.

21
22 **Q. Are you proposing a schedule for selling the plants at this time?**

1 A. The schedule should be keyed to the development of the power market which is
2 best indicated by the amount of transactions actually taking place. A schedule
3 for selling the plants should be related to the percentage of power in the open
4 market.

5
6 **Q. Under the Competition Act does the Commission have the authority to
7 order PECO to sell its generating plants?**

8 A. While I am not a lawyer and thus hesitate to render a legal opinion, I do not
9 believe the *Act specifically* grants the Commission this authority. However, the
10 Act does allow for commission discretion on the development and application of
11 the CTC. I believe it would be relatively straightforward for the Commission to
12 give the utility the option of choosing several alternative approaches, one of
13 which might include divestiture of generating plants.

14
15 **Q. You suggest the use of a tracking account to adjust for the situation of the
16 actual market price being different than the estimated market price. Could
17 such an approach work on its own -- that is, without the open auction of the
18 power plants to determine a final market value of those plants?**

19 A. Yes. If the Commission does not want to include a sale of power plants in its
20 approach to restructuring, it could consider an approach that combines a *pro*
21 *forma* estimate of the market price with a tracking account and without the
22 required sale of the generating plants.

1 Q. Under any of the approaches which utilize a *pro forma* market price for
2 power, the Commission would still have to adopt such a value. Do you
3 have a recommendation as to the *pro forma* market price which the
4 Commission should adopt?

5 A. Yes. First I want to make clear that the selection of a *pro forma* market price will
6 not have a direct financial impact on PECO because the use of the tracking
7 account will make it whole for any mis-estimation in that market price. However,
8 the selection of the market price *will* affect the development of the market. A *pro*
9 *forma* market price which is too low will artificially boost the CTC, allowing the
10 utility to sell power to the wholesale market at an artificially low price. This will
11 undercut other providers and hinder the development of a robust and thriving
12 market. A *pro forma* market price which is on the high side will reduce the
13 fraction of its costs which the utility collects through the CTC and require it to use
14 a more realistic price in its market sales. Therefore, I would recommend that the
15 Commission select a *pro forma* market price on the higher rather than lower side.
16 This is the approach the Commission adopted in its draft orders in the Pilot
17 Program dockets. As the Commission noted in those orders, this approach will
18 serve to encourage the development of the wholesale power market.

19
20 To reiterate, the impact of using too high or too low an estimate of market price is
21 not symmetrical. Using too low a market price estimate will lead to a CTC which
22 is too high, subsidizing existing generation and squelching the development of

1 the market. Using too high a market price estimate will encourage the
2 development of the market, but will not hurt the utilities financially since they will
3 be able to recover shortfalls in stranded cost recovery through true-ups.
4

5 **Q. Won't using too high a market price estimate lead to customers paying too**
6 **high prices for power?**

7 A. No. The customers will, in the end, pay a price based on what the actual market
8 price turns out to be. The use of a higher market price estimate for calculating
9 the CTC, by encouraging the development of the market, may lead to lower
10 customer prices in the end.
11

12 **Q. Given these considerations, do you have a recommended market price**
13 **estimate for the Commission to use?**
14

15 A. Yes. Given all of these considerations, I would recommend that the Commission
16 adopt a *pro forma* market price of 3.25 Cents per kwh beginning in 1998, that
17 amount to be increased at the rate of inflation. A market price of 3.25 Cents per
18 kwh reflects the cost of power from a new natural gas-fired combined cycle plant.
19 These plants are expected to make up the bulk of new generation and can thus
20 be expected to have a major influence on the market price. This price is slightly
21 lower than the Bustard estimate on a levelized basis (1999-2008), though it is a
22 little higher in the earlier years.

1
2 **JURISDICTIONAL ALLOCATION AND MITIGATION OF STRANDED GENERATING**
3 **ASSET COSTS**
4

5 **Q. What does the Pennsylvania Electricity Generation Customer Choice and**
6 **Competition Act (Competition Act) say in terms of mitigation of stranded**
7 **generating asset costs?**

8 A. The Competition Act calls for utilities to take actions to mitigate the impact of
9 stranded generating asset costs on customers. Among the proposed mitigation
10 actions set forth in the Act are accelerated depreciation, minimization of capital
11 expenditures, sale of underutilized assets, securitization, and maximization of
12 market revenues. The Commission is directed to take utility mitigation actions
13 into consideration when determining stranded generating asset cost recovery.
14

15 **Q. Has PECO taken steps to mitigate stranded asset costs?**

16 A. PECO has taken some steps, but there are many which the utility has not taken.
17 In addition, PECO is cutting back on certain actions which, if continued, would
18 reduce the level of stranded asset costs assigned to retail customers. Among
19 these are such things as continuing demand-side management programs (DSM)
20 and the current level of the interruptible load program. These are areas where
21 PECO appears to have cut back with the approach of restructuring and

1 competition. Each of these programs would serve to reduce the level of
2 stranded generating asset costs allocated to retail customers.

3
4 **Q. How will these DSM and interruptible load program reduce the level of**
5 **retail stranded asset costs?**

6 A. PECO divides the stranded costs between wholesale and retail jurisdictions
7 based on the available capacity and the net retail peak loads. If the net retail
8 peak load (including DSM and interruptibles) goes down, the retail share of the
9 stranded asset costs goes down, and the wholesale share goes up.

10
11 **Q. What is the current split which PECO is using?**

12 A. PECO is allocating 100 percent of the stranded asset costs to the retail
13 jurisdiction.

14
15 **Q. Do you agree with PECO's method for calculating the wholesale/retail split**
16 **for stranded generating assets?**

17 A. No. PECO has incorrectly calculated the wholesale/retail split even under its
18 own assumptions. As a result, the calculation allocates too much of the stranded
19 generating assets to retail, *even without* consideration of the mitigation impacts
20 of DSM and interruptible loads.

21
22 **Q. What errors has PECO made?**

1 A. PECO has made three key calculational errors in Exhibit GAC-3 where the
2 wholesale/retail split is calculated.

3 ● PECO calculates average peak and average capacity and uses those to
4 calculate the retail responsibility fraction without adjusting for those years
5 when the responsibility fraction as the company has calculated it comes
6 out to be greater than 100 percent. It is an absurdity to assign *more* than
7 100 percent responsibility for the stranded assets in any year, and to then
8 include the greater than 100 percent figure in the average. The
9 responsibility fraction in any year should never be set higher than 100
10 percent.

11
12 ● PECO uses a simple average approach. The responsibility fractions
13 represent responsibility for dollars and therefore should be treated in the
14 same way that dollars are when analyzed over a time period. Time series
15 of dollars are always analyzed using discounting. The responsibility
16 fractions should also be discounted so that dollar amounts they represent
17 are weighted more heavily in the near term than in years farther out.

18
19 ● PECO has ignored scheduled exports which vary from 185 MW to 221
20 MW in the 1999 to 2005 period.

21
22 Q. Have you recalculated the wholesale/retail split for PECO?

1 A. Yes. My corrections appear in Exhibit DS-2, Schedule 1. Schedule 1 shows that
2 simply correcting PECO's errors reduces the retail responsibility from 100
3 percent to 94.5 percent. On a stranded asset base of \$6.805 billion (from PECO
4 Exhibit TPH-7), this represents a savings to retail customers of \$374 million.
5 This does not include savings from additional mitigation factors which I describe.
6

7 **Q. What role do mitigation efforts play in the restructuring docket?**

8 A. In accordance with § 2808(C)(4) and (5), the Commission shall consider the
9 efforts PECO plans to take and has taken to mitigate generation-related
10 stranded costs when establishing the level of generation-related transition or
11 stranded costs. The magnitude of the mitigation effort should be commensurate
12 with the magnitude of stranded costs. PECO's mitigation efforts, or the failure to
13 pursue them, must be a factor in the Commission's decision about which
14 stranded or transition costs related to generation will be recovered from the
15 ratepayers through the CTC/ITC mechanism.
16

17 **Q. What mitigation measure has PECO failed to undertake that would be
18 important to the request in this case?**

19 A. End use energy efficiency and load management could mitigate retail stranded
20 asset costs by as much as \$1 billion.
21

1 **Q. Why do you believe energy efficiency and load management can mitigate**
2 **PECO's stranded and transition costs?**

3 A. Increased energy efficiency and load management will reduce the fraction of
4 stranded generating asset costs allocated to retail customers. PECO itself
5 shows in its filing that DSM (energy conservation and load management) can be
6 used as a mitigation strategy.

7
8 **Q. Where does PECO itself present this mitigation strategy?**

9 A. PECO's Witness Cucchi calculates the jurisdictional allocation of the stranded
10 and transitional costs in Exhibit GAC-3. The potential mitigation impacts of DSM
11 can be seen in this exhibit. Mr. Cucchi includes 148 MW of interruptible loads (a
12 form of DSM) in his calculation. This is a reduction of the interruptible load
13 currently on the PECO system which is 204 MW. In the calculations shown in
14 Exhibit GAC-3, if interruptible load were higher, the retail allocation fraction for
15 stranded generating assets would be smaller.

16
17 **Q. How would additional conservation and interruptible loads affect the retail**
18 **stranded cost?**

19 A. Additional conservation and interruptible loads would decrease the retail
20 stranded cost because the jurisdictional allocator would decrease, i.e., not as
21 much of PECO's capacity would be required to support PECO's retail electric
22 service.

1 **Q. Is the Commission required to consider energy conservation in the context**
2 **of the restructuring plan?**

3 A. Yes. According to §2804 (9) the Commission is to ensure that energy
4 conservation policies, activities and services are appropriately funded and
5 available to low-income customers in each service territory. Each utility is
6 required to file a plan that sets forth how it will meet its energy conservation
7 obligations with its restructuring plan, in accordance with §2804(15). Thus, to be
8 in compliance with the statute, PECO will have to develop an energy
9 conservation plan, and that energy conservation plan will decrease the
10 *jurisdictional allocation of the generation-related stranded and transition costs.*
11 PECO's energy conservation activities in accordance with this requirement have
12 not been included in its calculation of stranded cost.

13
14 **Q. Does PECO have significant DSM potential which is not being tapped?**

15 A. While I have not studied DSM potential in the PECO service territory, I believe
16 that, based on studies done in Wisconsin, there is significant untapped potential.

17
18 **Q. Please describe the Wisconsin data to which you referred.**

19 A. As part of Wisconsin's integrated resource planning process, a collaborative
20 project headed by the Wisconsin Center for Demand Side Resources prepared
21 an analysis of the state's technical and economic demand side resource
22 potential. The report, published in 1994, identified a remaining economic peak

1 demand reduction potential of 18.3 percent due to additional energy efficiency
2 and 1.5 percent due to additional load management. These figures lead me to
3 analyze the mitigation effects of an additional 18.3 percent peak reduction due to
4 energy efficiency.

5
6 **Q. Why should the Pennsylvania Commission find the Wisconsin data**
7 **relevant?**

8 A. The Wisconsin data shows that the magnitude of energy efficiency and load
9 management potential which is likely to be available, even for utilities which have
10 done quite a bit of DSM already. PECO has not proposed to mitigate stranded
11 costs with a level of energy efficiency and load management commensurate with
12 the size of its stranded cost, nor commensurate with the likely size of the energy
13 efficiency and load management resource available.

14
15 **Q. Are there other mitigation strategies which PECO is not pursuing?**

16 A. Yes. There are currently firm sales reported by PECO which do not factor into
17 the company's calculation of the wholesale/retail split. Firm sales require the
18 dedication of certain amounts of generating capacity, which should be allocated
19 to those sales.

20
21 **Q. What is the potential overall impact of all these items on the**
22 **wholesale/retail split?**

1 A. Exhibit DS-2, Schedule 2 combines the correction of the calculational errors with
2 the mitigation factors. The retail responsibility factor is further reduced to 79.3
3 percent. Based on a stranded asset cost of \$6.805 billion (from PECO Exhibit
4 TPH-7), the total reduction in retail stranded asset costs could be \$1.4 billion. Of
5 this reduction, \$374 million comes from corrections to the PECO method, while
6 the rest comes from additional energy efficiency.

7
8
9 **STRANDED GENERATING ASSET RECOVERY FRACTION**

10
11 **Q. PECO is calling for 100 percent recovery of stranded generating asset**
12 **costs. Is this appropriate?**

13 A. No. The amount of stranded generating assets represents a huge economic
14 loss. There are billions of wasted dollars which will not produce anything of
15 value, but must be dealt with. I do not believe it is correct to hold the customers
16 entirely responsible for this loss. To do so would be to treat the PECO
17 stockholders as if there were no economic loss at all. I believe a sharing of the
18 economic loss is appropriate.

19
20 **Q. How should the economic loss be shared?**

21 A. The first thing to remember is that the customers have been paying returns to
22 PECO's stockholders for many years already. The stockholders have already

1 received a fairly decent return on their investment in the generating assets, even
2 *though much of that investment has turned out to be valueless to the customers.*
3 It is necessary to take this into consideration when determining how to share the
4 economic loss.

5
6 **Q. How much money have the PECO stockholders already received in
7 payment for their investment in the stranded assets?**

8 A. This question is difficult to answer precisely, since a detailed answer would
9 require an extremely intensive review of PECO's books over the past decades.
10 *However, we can approximate the answer in a fairly straightforward way.*

11
12 The first point is that PECO's stockholders have already received a significant
13 portion of their investment back through already booked depreciation. Out of a
14 \$5.251 billion investment in generating plant (\$10.377 billion of production plant²
15 times an equity fraction of 50.6 percent³), the stockholders have already
16 collected \$1.867 billion in depreciation (50.6 percent of the difference between
17 the \$10.377 billion invested and the \$6.688 billion of remaining unamortized
18 production plant⁴). This is 35.5 percent of their initial investment. In addition,

² PECO Exhibit TPH-1, B-5.

³ PECO Exhibit JFBr-1, Schedule 1.

⁴ PECO Exhibit TPH-7.

1 PECO stockholders have earned returns on their investment since it was put into
2 the rate base.

3
4 **Q. How much have the stockholders been authorized to receive in return for**
5 **their investment in production plant?**

6 A. I have developed a model to estimate their returns. This is shown in Exhibit DS-
7 3. *This model looks at the depreciation, remaining rate base, and returns on rate*
8 *base year by year. Exhibit DS-2 shows that by the time accumulated*
9 *depreciation has reached 35.5 percent of the initial investment, the returns on*
10 *investment authorized to the stockholders have totaled 113.3 percent of their*
11 *initial investment. In this case 113.3 percent of the stockholders' initial*
12 *investment is \$5.952 billion. (This is a slight underestimate, since it ignores the*
13 *last partial year needed to bring accumulated depreciation up to 35.5 percent.*
14 *We will ignore this slight difference.) Thus the stockholders have been allowed a*
15 *total recovery (returns plus depreciation) of \$7.818 billion on an initial investment*
16 *of \$5.251 billion, or 149 percent of investment. As Exhibit DS-4 shows, the*
17 *stockholder internal rate of return on their investment to date has been*
18 *approximately 8.1 percent.*

19
20 **Q. Does this mean that, even if the Commission allows no recovery of**
21 **stranded generating asset costs, the stockholders will end up with a return**
22 **on their investment of 8.1 percent?**

1 A. No. It is important to remember that the debt holders will receive their full debt
 2 amortization and interest, no matter what fraction of stranded generating asset
 3 costs the Commission allows to be recovered. If the Commission allows no
 4 recovery from ratepayers, the stockholders will have to generate the money to
 5 pay off the debt holders. Thus, if the Commission allows for zero recovery, the
 6 stockholders overall return, rather than holding constant at 8.1 percent, will go
 7 down.

8
 9 **Q. How does the stockholder return on investment vary with different levels of**
 10 **allowed stranded generating asset cost recovery?**

11 A. The following table shows the impact on stockholders of various levels of allowed
 12 recovery of stranded generating asset costs. The details of the calculations are
 13 shown in Exhibit DS-5, Schedules 1-9. The values in the table are calculated
 14 using the PECO/Hieronymus estimate of the market revenue for PECO power.
 15 A higher market revenue will increase the stockholder return for partial recovery
 16 cases, since the market revenues go directly to the stockholders.

17
 18
 19 PECO Stockholder Return on Investment

20
 21 Total Dollars
 22 Allowed Recovered and Future Dollars Return on

1	Recovery	to be Recovered	to be Recovered	Stockholder
2	<u>Fraction</u>	<u>by Stockholders</u>	<u>by Stockholders</u>	<u>Investment</u>
3				
4	100%	\$11.52 billion	\$3.70 billion	11.6 percent
5	75%	\$10.27 billion	\$2.45 billion	10.7 percent
6	50%	\$9.03 billion	\$1.21 billion	9.5 percent
7	25.7% ⁵	\$7.82 billion	\$0	8.1 percent
8	0%	\$6.54 billion	(\$1.28 billion)	6.0 percent
9				

10 In this table, *Total Dollars Recovered and to be Recovered by Stockholders*
11 includes depreciation and returns already collected, depreciation and returns to
12 be collected through the CTC, and the market revenue from power sold from the
13 existing system. *Future Dollars to be Recovered by Stockholders* is the amount
14 of those dollars not yet collected -- in other words, the amount to be collected
15 through the CTC plus the market revenue.

16
17 **Q. So the Commission does not have to allow 100 percent recovery of**
18 **stranded generating asset costs for the stockholders to both recoup their**
19 **money back and earn a return on their investment?**

⁵ This is the recovery fraction which leaves the stockholders unchanged from their current level of cost recovery.

1 A. That is correct. Even if the Commission allows zero recovery, the stockholders
2 will end up recouping all their money plus some return on their investment. This
3 is so, even though there is approximately \$3.384 billion of stockholder share of
4 unrecovered depreciation at this time.

5
6 **Q. You speak in your testimony of returns that the stockholders have been**
7 **authorized to earn. Have the stockholders actually earned the authorized**
8 **return over the years?**

9 A. Whether or not the stockholders have earned the authorized return is not
10 relevant, and I have therefore not investigated whether or not they have. It is not
11 relevant because the Commission does not guarantee a rate of return. Rather, it
12 sets tariffs in rate cases under which the utility and its stockholders have the
13 opportunity to earn the authorized return if the management runs the company
14 properly. If the management does not run the company properly, the
15 stockholders may not earn the authorized return. That, however, is not the fault
16 of the Commission and the customers, and they should bear no responsibility for
17 *such mismanagement.*

18
19 **Q. Is it not the case that only 100 percent recovery will provide the**
20 **stockholders with the full authorized return on their investment?**

21 A. Yes. However, as I explained earlier, I believe that in a situation such as
22 PECO's where there is a huge economic loss to address, it is not appropriate for

1 the customers to have to bear the full responsibility for that loss and for the
2 stockholders to receive a full return *on* their investment as well as return *of* their
3 investment. 100 percent recovery of the stranded generating asset costs puts
4 100 percent of the responsibility for the economic losses on the customers and 0
5 percent on the stockholders.

6
7 **Q. What level of stranded generating asset cost recovery are you**
8 **recommending?**

9 A. I believe that the 25.7 percent recovery is a reasonable level which maintains the
10 stockholders currently achieved return on investment. The stockholders will end
11 up having made a reasonable return (8.1 percent return on a bad investment
12 seems quite reasonable), but will not have to generate their own funds to pay the
13 debt holders. Two key results of this level of stranded generating asset cost
14 recovery are, 1) customers will have the opportunity to see real reductions in
15 their cost of electricity, and 2) the opportunity of PECO to use stranded asset
16 recovery to subsidize its plants in the marketplace will be minimized, allowing for
17 the development of a robust wholesale power market. These results are in line
18 with the intent of the Competition Act.

19
20
21 **SHIFT OF DEPRECIATION RESERVES FROM TRANSMISSION AND**
22 **DISTRIBUTION TO GENERATION**

1 **Q. PECO has proposed transferring depreciation reserves from transmission**
2 **and distribution (T&D) to generation as a means of mitigating stranded**
3 **generating assets. What are the implications of such a transfer?**

4 A. I will focus on the proposed transfer of distribution depreciation reserves since
5 transfer of transmission depreciation involves FERC and is thus much more
6 complicated procedurally. Transferring depreciation from distribution to
7 generation has the effect of decreasing the generation rate base and increasing
8 the distribution rate base. Industrial and wholesale customers are allocated only
9 a small portion of distribution costs – much less than their share of generation
10 costs. The end result of the transfer is to increase the overall allocation of costs
11 to the residential and commercial classes and reduce the overall allocation of
12 costs to the industrial and wholesale classes. This goes counter to the intention
13 of the Competition Act that cost shifting not occur.

14
15 **Q. Does PECO claim that the reason for the transfer is to adjust for incorrect**
16 **depreciation balances?**

17 A. PECO does make that claim, but also states that one purpose of the transfer is
18 to serve as a mitigation measure. While I have not reviewed the depreciation
19 studies in detail, I would ask the Commission to study them carefully and
20 consider very carefully the cost shifting which appears to result from the change
21 before deciding whether or not to approve the transfer.

1 COMPETITIVE TRANSITION CHARGE (CTC) ALLOCATION AND STRUCTURE

2

3 **Q. How does PECO intend to allocate the CTC to different customer classes?**

4 A. PECO intends to allocate that portion of the CTC which represents stranded
5 capacity costs in the same way that capacity costs are currently allocated. That
6 portion which represents stranded energy costs will be allocated in the same way
7 that energy costs are now allocated. Since the overwhelming portion of the
8 stranded costs are capacity related, the CTC will be mostly allocated on a
9 capacity basis.

10

11 **Q. Is this an appropriate way to allocate the CTC?**

12 A. I do not believe that it is. Capacity costs are allocated in a way which is
13 supposed to reflect the way different customer classes are responsible for the
14 need for that capacity. While the CTC comes mostly from stranded *capital*
15 investments, one can no longer say that they represent *capacity* costs. The CTC
16 represents economic losses, not real capacity. These economic losses have, by
17 definition, no value. If they had value, they would not be in the stranded asset
18 cost category. The CTC represents money, not capacity. Therefore, there is no
19 inherent reason to allocate the CTC in the same way as capacity costs are
20 allocated. Since there is no sound basis for allocating the CTC as if it were
21 capacity, it is necessary to step back and determine an independent, reasonable
22 basis for allocation. Since, for the most part, the stranded generating asset

1 costs come from large base load plants which were built to provide inexpensive
2 energy to the system at the trade-off of expensive capacity, I would recommend
3 allocating the CTC on an energy basis.

4
5 I understand that the Competition Act is quite clear on how the CTC should be
6 allocated to different rate classes, calling for allocation which matches the
7 allocation of production plant determined in the most recent base rate case.
8 Nevertheless, I believe that the most appropriate way to allocate the CTC costs
9 would be on an energy basis.

10
11 **Q. Should any of the CTC be collected as part of the customer charge (or in
12 any other fixed manner)?**

13 **A.** No. The CTC should be collected based on customer usage, not as a fixed
14 charge.

15
16 **Q. Why?**

17 **A.** Collecting all or part of the CTC on a fixed basis will artificially reduce the
18 variable cost of electricity to customers, acting as an incentive to the customers
19 to buy more electricity and as a disincentive for conservation. This will lead to
20 negative environmental impacts. Also, shifting costs from a variable to a fixed
21 basis will most likely lead to increases in costs for low-income and low-usage
22 customers.

1 **Q. Would collecting all of the CTC on a variable basis create an incentive for**
2 **PECO to promote sales, which would also result in negative environmental**
3 **implications?**

4 **A. No. Under the Competition Act the CTC recovery will be reconciled for higher or**
5 **lower sales volumes which removes the incentive to promote sales.**
6
7

8 **SECURITIZATION OF STRANDED ASSET COSTS**

9

10 **Q. Is securitization of stranded asset costs an issue in this case?**

11 **A. It is not clear whether the Commission will be treating securitization as an issue**
12 **in this case or not. While securitization is not specifically being proposed at this**
13 **time, it is discussed in the utility testimony. I assume that before the**
14 **Commission adopts a securitization program it will need to have another case to**
15 **approve the Qualified Rate Orders. Just what type of case will be held is not**
16 **clear at this time. Therefore, I will address a number of issues related to**
17 **securitization in this testimony.**
18

19 **Q. Is securitization related to restructuring?**

20 **A. No. Securitization is a financial strategy to reduce financing costs by replacing**
21 **the current capital structure (for whatever portion of plant which is being**
22 **securitized) with guaranteed debt. While it has been proposed as a way to**

1 reduce the cost of stranded assets, it is not inherently related to stranded assets
2 or any other element of restructuring. There is no reason why the method could
3 not be used for any other assets which the legislature decided to apply
4 equivalent debt guarantees to.

5
6 **Q. Whether or not securitization is related to restructuring, is it a good
7 method for reducing costs?**

8 A. That needs to be examined closely. In the near-term (the first few years),
9 securitization will most likely reduce rates slightly. However, securitization
10 replaces a decreasing cost stream (under traditional regulation the revenue
11 requirement goes down as depreciation reduces the rate base on which a return
12 is being paid) with a level debt amortization payment. At some future point it is
13 highly likely that the securitization payments will be higher than the revenue
14 requirement under traditional regulation.

15
16 **Q. What affects the timing of the crossover point?**

17 A. The timing of the crossover point is very sensitive to the relationship between the
18 interest rate on securitization bonds and the cost of capital which is being
19 replaced. Also, the cost of setting up the securitization refinancing is a major
20 factor in determining the overall cost-effectiveness of the approach. All of these
21 elements will need to be investigated closely at the time when a specific
22 securitization proposal is brought to the Commission.

1 **Q. Are there ways to improve the cost-effectiveness of securitization?**

2 A. Yes. The PECO capital structure is made up of a mixture of debt and equity.
3 The cost of equity to the customers is significantly higher than the cost of debt. If
4 the proceeds of the sale of securitization bonds were used to retire equity rather
5 than a mix of debt and equity, it is likely that the result would be more savings.
6 Focusing on the most expensive bonds rather than the average cost bonds
7 would also produce more savings.

8

9 **Q. Is there any reason why securitization should be used only for reducing the**
10 **cost of stranded assets?**

11 A. Purely on a financial basis it might make sense to securitize all capital
12 investment (assuming that analysis of the interest rate and securitization terms
13 turns out to be favorable). However, the irrevocable nature of the securitization
14 approach eliminates the possibility of future Commission oversight.

15

16

17 **REGULATION OF THE TRANSMISSION AND DISTRIBUTION UTILITIES**

18

19 **Q. Will transmission and distribution (T&D) remain a regulated monopoly after**
20 **restructuring?**

21 A. Yes. These functions will remain as natural monopolies best served by single
22 suppliers under continued regulation.

1 **Q. Most of the attention in this docket seems to be on the generation side of**
2 **PECO's business. Are there important aspects of T&D which should be**
3 **addressed here?**

4 A. Yes. I will address two T&D issues; one, the need for an integrated approach to
5 T&D planning to minimize the cost of providing T&D services; and two, the
6 appropriate way to recover T&D costs from customers.

7
8 **Q. With respect to the first issue, what is an integrated approach to T&D**
9 **planning?**

10 A. An integrated approach to T&D planning means focusing on finding the least-
11 cost solution to T&D problems, whether that solution is a reinforcement of the
12 T&D system, localized generation, demand-side management approaches, or
13 renewable resources. The principle behind targeted area planning is that an
14 automatic assumption that T&D reinforcement is the appropriate solution to T&D
15 problems may well lead to higher costs to the customers plus the environmental
16 impacts of increased T&D construction.

17
18 **Q. How can localized generation, demand-side management, and renewable**
19 **resources reduce the need for T&D investments?**

20 A. The level of required T&D capability is what is needed to reliably bring needed
21 power to an area from outside that area. The localized resources reduce the

1 need for outside power supplies (by increasing the locally supplied total) and
2 thus reduce the overall need for T&D capability to that area.

3
4 **Q. Are localized resources less expensive than T&D reinforcements?**

5 A. Sometimes they are, and sometimes they aren't. It is not possible to prejudge
6 the situation. That is why it is necessary to use a planning approach which
7 investigates the full range of options rather than just assuming the T&D solution
8 is best.

9
10 **Q. What will be required for PECO to do targeted area planning?**

11 A. Targeted area planning requires that the utility collect local load data, detailed
12 information on the condition and capability of local feeders, etc. It also requires
13 that PECO develop area specific avoided costs. If these things are not now
14 being done, PECO will need to begin them.

15
16 **Q. With respect to the second issue, the appropriate way to collect T&D costs,
17 what is the issue here?**

18 A. As part of the move towards restructuring, many utilities have begun to talk about
19 collecting more of the distribution costs on a fixed basis through customer
20 charges. Fixed costs go up, and variable costs go down. There are negative
21 impacts of this change in pricing structure including likely cost increases for low-
22 income and low-usage customers, incentives for additional sales and

1 disincentives for energy conservation, and the environmental impacts of those
2 additional sales.

3
4 **Q. Is PECO recommending such a change at this time?**

5 A. No. However, I believe it is still an important issue since it may arise in the
6 future, and thus I am addressing it here. The Competition Act calls for the
7 development of unbundled rates. While PECO is not proposing a shift of costs
8 from variable to fixed at this time, there are other parties in this case, and we do
9 not know if any of them will come forward with such a proposal. The
10 Environmentalists are opposed to such a shift no matter who may propose it.

11
12 **Q. What are the negative impacts of a shift to higher fixed costs and lower
13 variable costs?**

14 A. There are both environmental and socioeconomic impacts. The environmental
15 impacts come from the fact that reducing variable costs will tend to encourage
16 sales growth and discourage investment in conservation. The result will be
17 greater levels of air pollution and more construction of facilities with their
18 concomitant environmental impacts. The socioeconomic impacts relate to low-
19 income and low-usage customers. These customers will most likely see an
20 increase in their cost of power under this approach.

1 **Q. Will collecting T&D costs on a variable basis (as is now done) cause PECO**
2 **to promote sales in order to increase profits from the monopoly side of its**
3 **business?**

4 **A.** There is some potential for this, and it would all-in-all be better if the T&D utilities
5 were regulated in a way that allowed for trueing-up for sales variability.

6 However, it does not appear that the use of true-ups in this manner would be
7 allowed under the Competition Act. I believe that the likely impacts of any sales
8 promotion which PECO would undertake in order to increase its T&D profits
9 would be less than the promotional impacts of a shift to a fixed cost basis for
10 T&D pricing.

11

12

13 **ENVIRONMENTAL IMPLICATIONS OF THE PECO RESTRUCTURING PROPOSAL**

14

15 **Q. Are there environmental implications of the PECO restructuring proposal?**

16 **A.** Yes. There are a number of negative environmental implications of the PECO
17 proposal as it has been presented. First, and most important, if the CTC is
18 calculated as proposed by PECO, with PECO's low-ball assumptions with
19 respect to market price, there will be little opportunity for customers to obtain any
20 savings by purchasing from other power suppliers. This will slow down the
21 introduction of new, clean generating options (both fossil fueled options and
22 renewable resource options). Such a CTC will indirectly subsidize existing

1 generation (both PECO's and other utilities', both in and out of Pennsylvania)
2 including older inefficient, polluting units. The PECO proposed CTC will also
3 directly subsidize PECO's existing generating plants.
4

5 **Q. Please describe PECO's strategy regarding plant refurbishment.**

6 A. PECO has indicated that it will refurbish plants as long as they continue to
7 produce a positive margin.⁶ The modeling suggested that several older plants
8 will be refurbished.⁷
9

10 **Q. What are the air pollution implications of the implementation of these life
11 extension plans?**

12 A. The PECO life extensions will lead to increases in the emissions of NO_x, SO₂,
13 CO₂, and other pollutants compared to emissions if these older plants were
14 retired at their original retirement dates and replaced with combined cycle natural
15 gas fired combustion turbines or some other advanced combustion turbine based
16 technology.
17

18 **Q. Why should the Commission be concerned about air pollution effects?**

⁶ PECO Exhibit TPH-2, page 2.

⁷ PECO Exhibits TPH-3, TPH-4, and TPH-5.

1 A. Higher emissions will make it more difficult to maintain air quality at levels
2 sufficient to protect human health and property. This may impose restrictions on
3 economic development, constraining the siting of manufacturing operations or
4 *competitive power producers.*

5
6 These impacts could be mitigated by requiring more stringent emission controls
7 at the dirtier plants, and in fact may be required by federal or state environmental
8 regulators. That would increase the future costs of keeping these plants
9 operating, and may affect the economics of PECO's plant retirement decisions.

10

11 **Q. Has PECO included any significant improvement of environmental**
12 **performance of existing plants in its system plans?**

13 A. It appears not. The lack of strategic plans to bring PECO's plants up to the
14 current environmental standards allows these plants to compete unfairly in the
15 power market. Builders of new power plants are required to invest money to
16 meet very stringent emission standards. These investment requirements push
17 *up the price of power from new plants compared to what it would be if the plants*
18 *only had to meet the same standards as existing plants.*

19

20 **Q. Are only PECO's plants given this market advantage resulting from**
21 **differential environmental regulations?**

22 A. No. All existing power plants have this market advantage.

1 **Q. What do you propose to do about this problem?**

2 A. I propose two things. First, adopting my proposal for dealing with stranded
3 generating asset costs would both reduce the subsidy of PECO's plants and, by
4 encouraging the development of the competitive market, provide a greater
5 opportunity for customers to save money by purchasing power from newer,
6 cleaner plants. Second, I propose that the Commission adopt a plan under
7 *which all power purchased in Pennsylvania would have to come from plants*
8 *meeting the latest environmental standards. This would level the environmental*
9 *playing field and result in cleaner air in Pennsylvania. The Competition Act at*
10 *Section 2802 (21) notes the problems related to uneven environmental*
11 *standards.*

12
13 I would definitely *not* propose easing the environmental standards on new plants.

14
15 While some have raised questions as to whether the Commerce Clause of the
16 U.S. Constitution would allow Pennsylvania to regulate the environmental
17 standards for power bought and sold in an interstate marketplace, other states
18 have enacted similar regulations based on their right to protect the health and
19 welfare of their citizens.

20
21 **Q. What other environmental implications are there from the PECO proposal?**

1 A. Another element with environmental implications is PECO's proposal to transfer
2 depreciation reserves from T&D to generation. This will increase the T&D
3 fraction of costs and reduce the generation fraction. Since residential and
4 *commercial customers are allocated a higher fraction of the T&D investment, the*
5 result will be higher residential and commercial rates and lower industrial rates.
6 Industrial customers are generally believed to have a higher price elasticity for
7 electricity than residential and commercial customers. As a result, the
8 depreciation reserve transfer will probably lead to greater load growth, with
9 concomitant environmental impacts.

10
11
12 **UNBUNDLING OF PRICES**

13
14
15 **Q. Have you examined the unbundling of PECO rates as proposed in the**
16 **testimony of William F. Sundermeier?**

17 A. Yes. In general, the method he uses appears to keep the current relative
18 balance between fixed and variable costs which I believe is an important element
19 of unbundling. An unbundling approach which converts variable costs to fixed
20 costs would have serious promotional and environmental impacts which I
21 oppose. There appear to be, however, certain problems with the Sundermeier
22 unbundled rates.

1 **Q. What are those problems?**

2 A. Mr. Sundermeier uses the customer class specific costs developed by Robert
3 Clemmer to prepare unbundled rates. In my review there appeared to be
4 discrepancies between numbers developed by Mr. Clemmer and those used in
5 the Sundermeier calculations. I have submitted a data request to PECO asking
6 that these apparent discrepancies be explained, but have not at this time
7 received a response.

8
9 **Q. Are the discrepancies major ones?**

10 A. They do not appear to be. However, if discrepancies exist, I am concerned that
11 they may reflect underlying problems in the way in which the unbundled prices
12 are calculated.

13
14 **Q. Would the unbundled prices need to be recalculated to reflect the
15 recommendations you have made on dealing with stranded generating
16 asset costs?**

17 A. Yes. However, I have not recalculated the CTC and the resulting unbundled
18 rates at this time.

19

20

21 **CONCLUSIONS**

22

1 **Q. Can you summarize your conclusions and recommendations?**

2 **A. Yes. I have reached the following conclusions:**

3

4 ● The market price of power used by PECO in calculating the net stranded
5 generating assets is both too low and highly unlikely to be accurate.

6

7 ● The Commission would be better off using a *pro forma* market price
8 designed to encourage the formation of a robust market, with true ups to
9 correct the CTC collection if the *pro forma* market price turns out to be
10 incorrect.

11

12 ● The Commission should give the power market several years to develop,
13 and then should determine the true market value of the PECO production
14 plant by having the company auction it off to the highest bidders (taking
15 care to avoid selling all the generation to a single or a small number of
16 entities in order to prevent the development of market power) in an open
17 auction. After the open auction has determined the true market value of
18 the generating plants, the PECO CTC can be adjusted to true up the
19 collection of allowed stranded costs.

20

21 ● PECO has not pursued certain actions which would reduce the fraction of
22 stranded generating assets allocated to retail customers. These include

1 continued and expanded investment in DSM, continuation of interruptible
2 load programs, and continued firm wholesale sales.

- 3
- 4 ● Even ignoring its failure to pursue all the mitigation tactics listed above,
5 PECO has incorrectly calculated the wholesale/retail split.

6

 - 7 ● The Commission should use the recalculated wholesale/retail split of
8 stranded generating assets provided in my testimony. This should include
9 both correction of PECO's calculational errors and the imputed impact of
10 mitigation measures not undertaken by PECO.

11

 - 12 ● PECO stockholders have already received a fairly reasonable return on
13 their bad investment in stranded generating assets. Providing for 100
14 percent recovery of both investment and future return on that investment
15 is unfair to the customers, since it puts the entire responsibility for the bad
16 investment on their shoulders.

17

 - 18 ● Allowing a 25.7 percent recovery of stranded generating assets will
19 provide enough revenue to fully pay off the debt holders without
20 decreasing the return the stockholders have already earned. This would
21 be a reasonable allowed level of recovery for stranded generating assets.

22

- 1 ● The Commission should not approve the proposed depreciation reserve
2 transfer from T&D to generation because of the cost shifting and
3 environmental implications of such a shift.
- 4
- 5 ● The T&D portion of the utility should be required to utilize targeted area
6 planning in order to minimize the cost and environmental impacts of
7 providing T&D services. As part of this process PECO should begin to
8 collect the information discussed in my testimony which will enable it to do
9 targeted area planning.
- 10
- 11 ● The Commission should require that all power sold in Pennsylvania come
12 from power plants which, at a minimum, meet the emission standards for
13 new power plants.
- 14

15 **Q. Does this complete your testimony?**

16 **A. Yes.**

Exhibit DS-1

to Environmentalists' Statement No. 2

Resume of David Schoengold

Docket No. R-00973953

Application of PECO Energy Company
for Approval of its Restructuring Plan
under Section 2806 of the Public Utility Code

DAVID SCHOENGOLD

Principal

MSB Energy Associates

EXPERIENCE

MSB Energy Associates, 1988 to present.

Consultant to the Government of Tunisia, 1985.

Wisconsin Public Service Commission, 1974 to 1990.

University of Wisconsin, Institute for Environmental Studies, 1973 to 1974.

United States Peace Corps, Philippines, 1970 to 1972.

Argonne National Laboratories, Applied Mathematics Division, 1968 to 1970.

EDUCATION

BA in Physics, Rutgers University, 1966.

Graduate Study in Physics and Computer Science, University of Chicago, 1966-68.

UTILITY PLANNING AND REGULATORY EXPERIENCE

David Schoengold co-founded MSB Energy Associates in 1988 to provide planning and analytical services to public utility commissions, state energy offices, public interest groups, and others with an interest in public utility policy. Since co-founding MSB Energy Associates Mr. Schoengold has served clients in Arizona, California, Connecticut, the District of Columbia, Georgia, Hawaii, Illinois, Indiana, Iowa, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Vermont, West Virginia, and Wisconsin. Recently he has analyzed the impact of utility restructuring proposals in California, Illinois, Iowa, Michigan, New York, and Ohio. He has provided technical expertise to planning collaboratives, reviewed utility integrated resource plans and supply-side plans, developed independent integrated resource plans, analyzed sales promotion practices, reviewed and developed avoided costs, analyzed the impact of resource alternatives on emissions of pollutants, reviewed utility transmission planning studies, and developed alternative transmission plans including distributed resources as an option. He has presented testimony in the District of Columbia, Georgia, Illinois, Iowa, Michigan, Minnesota, New York, Ohio, West Virginia, and Wisconsin. In addition he has presented workshops and seminars on various aspects of utility planning for numerous groups.

Mr. Schoengold has testified in cases involving rates, resource planning, facility certification, administrative rules, externalities, independent power projects, public policy, and civil damages. He has testified on the need for, alternatives to, and system planning implications of utility plans and proposals, rate design, buy-back rates for cogenerators, energy forecasts, fuel costs, planning budgets, and power plant prudence.

Mr. Schoengold has been involved in utility planning and regulation since 1974 when he joined the Wisconsin Public Service Commission staff. He spent sixteen years at the Wisconsin Commission, including nine years as the Director of the Systems Analysis Bureau which was responsible for electricity forecasting, generation and transmission planning, demand-side analysis, system modeling, fuel costs, renewable and alternative energy resources, natural gas planning, and emission reduction strategies. At the Wisconsin Commission Mr. Schoengold played a major role in the development of the Wisconsin advance planning process, integrated resource planning, statewide integrated transmission planning and access, and the inclusion of externalities in resource planning. He directed one of the first studies of conservation and renewable resources as least-cost alternatives to traditional utility generation. He performed the analytical work which resulted in Wisconsin abandoning its plans for a heavily nuclear dependent future, enabling the state to avoid the nuclear financial problems common to many states.

TESTIMONY

- New York State Public Service Commission (1997)
Dockets 96-E-0909, 96-E-0897, 96-E-0891, 96-E-0900, 96-E-0898
Regulatory principles for distribution utilities under restructuring for five major New York utilities
- Michigan Public Service Commission (1997)
Docket U-11290
Testimony before the Commission on the impact of different restructuring approaches on electricity utility customers. Comments on staff restructuring report.
- Public Service Commission of Wisconsin (1996)
Docket 6630-UR-109
Appropriate rates for industrial interruptible customers
- Public Service Commission of Wisconsin (1996)
Docket 6690-UR-110
Appropriate buyback rates for power from a small hydroelectric facility
- Minnesota Legislature (1996)
Testimony before the Senate Taxation Committee
Cost and environmental impacts of a proposed cogeneration facility
- Public Service Commission of Wisconsin (1996)
Dockets 6630-CE-197/209 (Point Beach Projects)
Cost-benefit analysis of nuclear plant steam generator repairs
- Minnesota Legislature (1995)

Testimony before the House Energy Committee
Cost and environmental impacts of a proposed cogeneration facility

- Public Service Commission of Wisconsin (1995)
Docket 05-EP-7 (Advance Plans for Electric Utilities)
Cost-benefit analysis of nuclear plant repairs
- Public Service Commission of Wisconsin (1994)
Docket 6690-UR-109
Appropriate buyback rates for power from a small hydroelectric facility
- Illinois Commerce Commission (1994)
Docket 92-0121
Need for and alternatives to a proposed 138 kV transmission line
- Illinois Commerce Commission (1993, 1994)
Docket 92-0221
Need for and alternatives to a proposed 138 kV transmission line
- Public Service Commission of Wisconsin (1992, 1993)
Docket 05-EP-6 (Advance Plans for Electric Utilities)
Cogeneration policies, buy-back rates, and avoided cost methods
- Minnesota Legislature (1992)
Testimony before the Joint Energy Committee
Savings from joint or shared planning among Minnesota utilities
- Georgia Public Service Commission (1992)
Dockets 4031-U and 4034-U
Review of the integrated resource plans of Georgia Power and Savannah Electric Power and development of alternative long-range expansion plans
- Georgia Public Service Commission (1991)
Docket 4047-U
Rules for the preparation and filing of integrated resource plans
- Civil Court, Iron County, Michigan (1991)
AGA Connor Forest Products vs Indeck Energy
Civil damages related to a canceled cogeneration plant
- Minnesota Public Service Commission (1991)
Docket E-002/CN-91-19
Economics analysis of dry-cask storage for spent nuclear fuel at the Prairie Island Nuclear Power Plant and alternative power sources

- District of Columbia Public Service Commission (1991)
Case 905
Cost allocation for a large customer of Potomac Electric Power Company
- Public Service Commission of Wisconsin (1990)
Docket 9990-EP-100
Load management practices of Wisconsin utilities
- Illinois Commerce Commission (1990)
Docket 90-0041
Review of the least-cost plans and planning policies of Central Illinois Light Company
- Illinois Commerce Commission (1990)
Docket 88-0139
Proper use of economic dispatch on the Commonwealth Edison system in the face of complex coal contracts. Testimony, while prepared, was not given due to a settlement in the case.
- West Virginia Public Service Commission (1990)
Docket 89-239-G-PW, et al
Analysis of the conditions under which sales promotion activities should be allowed for gas and electric utilities
- Public Utilities Commission of Ohio (1990)
Dockets 90-659-EL-FOR and 90-660-EL-FOR
Analysis of forecasts and long range plans for Ohio Power and Columbus Southern, including alternative long-range expansion plans for the companies. Testimony, while prepared, was not given due to a settlement of the case.

Mr. Schoengold also testified in numerous cases as a senior staff witness at the Wisconsin Public Service Commission.

- Advance Plans 1 through 5 (Dockets 05-EP-1 through 05-EP-5 -- on numerous occasions between 1977 and 1990)
A wide variety of planning issues including forecasts, nuclear vs coal power, alternative energy, load management, transmission planning, demand-side management resources, cost allocation, cogeneration, avoided costs, demand-side vs supply-side resources, principles and methods of integrated resource planning, and principles and impacts of sales promotion
- Rate Cases (numerous occasions between 1975 and 1990)
Wisconsin Electric Power
Wisconsin Power and Light
Madison Gas and Electric

Wisconsin Public Service
Northern States Power
Proctor and Gamble Cogeneration Buyback rates
Fuel costs, cost allocations, sales promotion, demand-side management, time-of-use pricing, avoided costs, and incentive regulation

- **Construction Cases**

- Germantown Combustion Turbines (1976-1977)
 - Pleasant Prairie Power Plant (1978)
 - Tyrone Nuclear Power Plant (1978)
 - Weston 3 (1979)
 - Edgewater 5 (1980)
 - Prairie Island – Eau Claire Transmission Line (1981-1982)
 - Point Beach Nuclear Plant Steam Generator Replacement (1982)

Need for power, appropriateness of the utility proposals, and the comparative economics of alternatives

- **Generic Investigations**

- Time-of-Use Rates (1978)
 - Load Management (1980)
 - Avoided Cost Methodology (1980)
 - Electric Sales Promotion (1983)
 - Interruptible Rates (1988)

Costs and benefits of various proposals, system planning impacts of load management, and the impacts of resource alternatives

SELECTED REPORTS AND MANUSCRIPTS

"Electric Industry Restructuring in Iowa: Residential and Low Income Customer Impacts," 1996.

"Integrating Clean Air Policy to Improve Air Quality and Reduce Pollution Control Costs for the Electric Power Industry," Report to the Boston Edison DSM Settlement Board, 1996 (co-author).

"Regulation of Distribution Monopolies," Report from the California Regulatory Research Project of the Center for Energy Efficiency and Renewable Technologies, August 1996 (co-author).

"Major Tax Subsidies to Investor-Owned Electric Utilities and the Cost to the U.S. Treasury – 1994," Report to the American Public Power Association, 1996.

"Explaining Public Power's Low Rates: A Critical Review of the EEI-Sponsored Report: 'Subsidies and Unfair Competitive Advantages Available to Publicly Owned and Cooperative Utilities'," Report to the American Public Power Association, 1996.

"Application of the Distributed Utility Concept to the Boston Edison Company: Creating Additional Value for the Customer," 1995.

"Major Tax Subsidies to Investor-Owned Electric Utilities and the Cost to the U.S. Treasury," Report to the American Public Power Association, 1995.

"The Impact of Nuclear Retirements on Commonwealth Edison and the Eastern Wisconsin Utilities," Report to the Environmental Law and Policy Center of the Midwest, 1995.

"Allocating the Cost of Generating Capacity -- a Discussion Paper of Interclass Subsidies," 1994.

"Energy Efficiency and Renewable Energy -- Opportunities from Title IV of the Clean Air Act," United States Environmental Protection Agency, 1994.

"Planning for Environmental Constraints on the PJM System," 1993.

"Avoided Costs for Electric Utilities -- a Theoretical and Practical Handbook," 1993.

"Spare the Stick and Spoil the Carrot: Why DSM Incentives for Shareholders Aren't Necessary," invited chapter in, Regulatory Incentives for Demand-Side Management, Steven Nadel, Michael Reid, and David Walcott, editors, American Council for an Energy Efficient Economy, 1992 (with Steven Kihm and Paul Newman).

"Final Report on the New Orleans Integrated Resource Planning Project," 1992.

"Assessment of Tradeable Sulfur Dioxide Allowances Generated by Selected Energy Conservation Initiatives," 1991.

"Tertiary Sector Energy Use Model for the Tunisian Energy Planning Project," Resource Management Associates, 1985.

"Alternative Electric Power Supply Study -- Update 1985," Wisconsin Public Service Commission, 1985.

"Alternative Electric Power Supply Study for the Year 2000," Wisconsin Public Service Commission, 1982.

PRESENTATIONS

"Distributed Generation on the Boston Edison System," presentation to the Boston Edison Settlement Board Distributed Utility Workshop, 1995.

"Major Tax Subsidies to Investor-Owned Electric Utilities," presentation to the American Public Power Association, 1995.

"Planning in the Face of Environmental Constraints," presentation to the Public Utilities Institute of the University of Wisconsin, 1994.

"Avoided Cost Methods," presentation to the Pennsylvania Public Utility Commission, 1993.

"Avoided Cost Methods," presentation to the Public Utilities Institute of the University of Wisconsin, 1993.

"Modeling Methods for Least-Cost Planning," presentation at the NARUC Least-Cost Planning Training Seminars, 1990.

"Principles of Electric Utility Planning," presentation at the University of Wisconsin – Eau Claire, 1985.

Exhibit DS-2

to Environmentalists' Statement No. 2

**Wholesale/Retail Allocation of
Stranded Generating Asset Costs**

Docket No. R-00973953

Application of PECO Energy Company
for Approval of its Restructuring Plan
under Section 2806 of the Public Utility Code

Jurisdictional Responsibility for Capacity -- PECO Retail
Correction of PECO Calculational Errors

	Installed Capacity	Peak Demand	Interr Load	Net Peak	Net Peak Plus 18% Reserves	Scheduled Exports ⁸	Retail Share	Discounted Weighting Factor	Weighted Retail Share
1997	9164	7074	204	6870	8107	212	0.885	1.000	0.885
1998	9214	7188	204	6984	8241	179	0.894	0.923	0.825
1999	9214	7277	148	7129	8412	185	0.913	0.851	0.777
2000	8597	7354	148	7206	8503	191	0.974	0.785	0.765
2001	8597	7458	148	7310	8626	197	0.974	0.724	0.705
2002	8597	7536	148	7388	8718	203	0.973	0.668	0.650
2003	8597	7615	148	7467	8811	209	0.973	0.616	0.600
2004	8597	7694	148	7546	8904	215	0.972	0.569	0.553
2005	8453	7775	148	7627	9000	221	0.972	0.525	0.510
2006	8453	7856	148	7708	9095		1.000	0.484	0.484
							0.953	7.144	6.753
									0.945

⁸ Source -- PECO 1996 Annual Resource Planning Report, May 1, 1996, Page A-10.

Jurisdictional Responsibility for Capacity -- PECO Retail
Correction of PECO Calculational Errors Plus Mitigation Factors

	Installed Capacity	Peak Demand	Energy Consrv	Interr Load	Net Peak	Net Peak Plus 18% Reserves	Scheduled Exports	Retail Share	Discounted Weighting Factor	Weighted Retail Share
1997	9164	7074	1295	204	6870	8107	212	0.718	1.000	0.718
1998	9214	7188	1315	204	6984	8241	179	0.726	0.923	0.670
1999	9214	7277	1332	148	7129	8412	185	0.742	0.851	0.632
2000	8597	7354	1346	148	7206	8503	191	0.804	0.785	0.631
2001	8597	7458	1365	148	7310	8626	197	0.816	0.724	0.591
2002	8597	7536	1379	148	7388	8718	203	0.825	0.668	0.551
2003	8597	7615	1394	148	7467	8811	209	0.834	0.616	0.514
2004	8597	7694	1408	148	7546	8904	215	0.842	0.569	0.479
2005	8453	7775	1423	148	7627	9000	221	0.866	0.525	0.454
2006	8453	7856	1438	148	7708	9095	0	0.875	0.484	0.424
								0.805	7.144	5.664
										0.793

Exhibit DS-3

to Environmentalists' Statement No. 2

**Return on Investment to-Date
for Stockholders**

Docket No. R-00973953

Application of PECO Energy Company
for Approval of its Restructuring Plan
under Section 2806 of the Public Utility Code

Table 1. Simple Return Model
(per unit of investment)

Plant Life = 35
Return on Equity = 11.6%

	Accumulated Depreciation	Rate Base	Return	Cumulative Return
1	0.029	0.971	0.113	0.113
2	0.057	0.943	0.109	0.222
3	0.086	0.914	0.106	0.328
4	0.114	0.886	0.103	0.431
5	0.143	0.857	0.099	0.530
6	0.171	0.829	0.096	0.626
7	0.200	0.800	0.093	0.719
8	0.229	0.771	0.089	0.809
9	0.257	0.743	0.086	0.895
10	0.286	0.714	0.083	0.978
11	0.314	0.686	0.080	1.057
12	0.343	0.657	0.076	1.133
13	0.371	0.629	0.073	1.206
14	0.400	0.600	0.070	1.276
15	0.429	0.571	0.066	1.342
16	0.457	0.543	0.063	1.405
17	0.486	0.514	0.060	1.465
18	0.514	0.486	0.056	1.521
19	0.543	0.457	0.053	1.574
20	0.571	0.429	0.050	1.624
21	0.600	0.400	0.046	1.670
22	0.629	0.371	0.043	1.713
23	0.657	0.343	0.040	1.753
24	0.686	0.314	0.036	1.790
25	0.714	0.286	0.033	1.823
26	0.743	0.257	0.030	1.853
27	0.771	0.229	0.027	1.879
28	0.800	0.200	0.023	1.902
29	0.829	0.171	0.020	1.922
30	0.857	0.143	0.017	1.939
31	0.886	0.114	0.013	1.952
32	0.914	0.086	0.010	1.962
33	0.943	0.057	0.007	1.969
34	0.971	0.029	0.003	1.972
35	1.000	-0.000	-0.000	1.972

Exhibit DS-4

to Environmentalists' Statement No. 2

**Total Return to-Date
for Stockholders**

Docket No. R-00973953

Application of PECO Energy Company
for Approval of its Restructuring Plan
under Section 2806 of the Public Utility Code

Table 4. Internal Rate of Return to-Date
(costs in \$billions)

Year	Initial Investment	Cumulative Depreciation	Rate Base	Return	Return Plus Depreciation	Total To-Date	Equity Holders Cash Flow	
1	-5.251	0.150	5.101	0.296	0.446	0.446	-4.805	IRR To-Date
2		0.150	4.951	0.574	0.724	1.170	0.724	8.1%
3		0.150	4.801	0.557	0.707	1.877	0.707	
4		0.150	4.651	0.539	0.690	2.567	0.690	
5		0.150	4.501	0.522	0.672	3.239	0.672	
6		0.150	4.351	0.505	0.655	3.893	0.655	
7		0.150	4.201	0.487	0.637	4.531	0.637	
8		0.150	4.051	0.470	0.620	5.151	0.620	
9		0.150	3.901	0.452	0.602	5.753	0.602	
10		0.150	3.751	0.435	0.585	6.338	0.585	
11		0.150	3.601	0.418	0.568	6.906	0.568	
12		0.150	3.451	0.400	0.550	7.456	0.550	
13		0.067	3.384	0.393	0.459	7.915	0.459	

Exhibit DS-5

to Environmentalists' Statement No. 2

**Total Return of and on Investment
for Stockholders
Through End of Transition Period**

Docket No. R-00973953

Application of PECO Energy Company
for Approval of its Restructuring Plan
under Section 2806 of the Public Utility Code

Table 1. Total Return of and on Investment to PECO Stockholders
Allowed Recovery Fraction: 100.0%

Costs in Billions

Production plant in service (1)	10.377
Equity fraction (2)	50.6%
Equity cost (3)	5.251
Debt fraction (includes pref) (4)	49.4%
Depreciation fraction (to date) (5)	35.5%
Depreciation to-date (6)	3.689
Equity share to-date (7)	1.867
Net Production Plant (current) (8)	6.688
Market value (current) (9)	2.863
Net stranded cost (current) (10)	3.825
Cumulative return to-date fraction (11)	113.3%
Cumulative return to-date (12)	5.952
Total to equity holders to date (13)	7.818
Fraction returned to date (14)	148.9%
Equity holder IRR to-date (15)	8.1%

Stranded asset allowed fraction (16)	100.0%
Allowed future depreciation (17)	3.825
Allowed future return on capital (18)	1.154
Total to be collected in the CTC (19)	4.979
Total CTC collection plus market value (20)	7.842
To be paid to retire debt principal (21)	3.304
To be paid to interest (22)	0.840
Total to be paid to debt holders (23)	4.143
Residual for equity holders (24)	3.698
Overall total to equity holders (25)	11.517
Total recovery fraction (26)	219.3%
Equity holder IRR after transition (27)	11.6%

Table 2. Total Return of and on Investment to PECO Stockholders
Allowed Recovery Fraction: **75.0%**

Costs in Billions	
-----	-----
Production plant in service (1)	10.377
Equity fraction (2)	50.6%
Equity cost (3)	5.251
Debt fraction (includes pref) (4)	49.4%
Depreciation fraction (to date) (5)	35.5%
Depreciation to-date (6)	3.689
Equity share to-date (7)	1.867
Net Production Plant (current) (8)	6.688
Market value (current) (9)	2.863
Net stranded cost (current) (10)	3.825
Cumulative return to-date fraction (11)	113.3%
Cumulative return to-date (12)	5.952
Total to equity holders to date (13)	7.818
Fraction returned to date (14)	148.9%
Equity holder IRR to-date (15)	8.1%
-----	-----
Stranded asset allowed fraction (16)	75.0%
Allowed future depreciation (17)	2.869
Allowed future return on capital (18)	0.865
Total to be collected in the CTC (19)	3.734
Total CTC collection plus market value (20)	6.597
To be paid to retire debt principal (21)	3.304
To be paid to interest (22)	0.840
Total to be paid to debt holders (23)	4.143
Residual for equity holders (24)	2.454
Overall total to equity holders (25)	10.272
Total recovery fraction (26)	195.6%
Equity holder IRR after transition (27)	10.7%

Table 3. Total Return of and on Investment to PECO Stockholders
Allowed Recovery Fraction: **50.0%**

Costs in Billions	
-----	-----
Production plant in service (1)	10.377
Equity fraction (2)	50.6%
Equity cost (3)	5.251
Debt fraction (includes pref) (4)	49.4%
Depreciation fraction (to date) (5)	35.5%
Depreciation to-date (6)	3.689
Equity share to-date (7)	1.867
Net Production Plant (current) (8)	6.688
Market value (current) (9)	2.863
Net stranded cost (current) (10)	3.825
Cumulative return to-date fraction (11)	113.3%
Cumulative return to-date (12)	5.952
Total to equity holders to date (13)	7.818
Fraction returned to date (14)	148.9%
Equity holder IRR to-date (15)	8.1%
-----	-----
Stranded asset allowed fraction (16)	50.0%
Allowed future depreciation (17)	1.913
Allowed future return on capital (18)	0.577
Total to be collected in the CTC (19)	2.489
Total CTC collection plus market value (20)	5.352
To be paid to retire debt principal (21)	3.304
To be paid to interest (22)	0.840
Total to be paid to debt holders (23)	4.143
Residual for equity holders (24)	1.209
Overall total to equity holders (25)	9.027
Total recovery fraction (26)	171.9%
Equity holder IRR after transition (27)	9.5%

Table 4. Total Return of and on Investment to PECO Stockholders
Allowed Recovery Fraction: **25.7%**

Costs in Billions	
-----	-----
Production plant in service (1)	10.377
Equity fraction (2)	50.6%
Equity cost (3)	5.251
Debt fraction (includes pref) (4)	49.4%
Depreciation fraction (to date) (5)	35.5%
Depreciation to-date (6)	3.689
Equity share to-date (7)	1.867
Net Production Plant (current) (8)	6.688
Market value (current) (9)	2.863
Net stranded cost (current) (10)	3.825
Cumulative return to-date fraction (11)	113.3%
Cumulative return to-date (12)	5.952
Total to equity holders to date (13)	7.818
Fraction returned to date (14)	148.9%
Equity holder IRR to-date (15)	8.1%
-----	-----
Stranded asset allowed fraction (16)	25.7%
Allowed future depreciation (17)	0.984
Allowed future return on capital (18)	0.297
Total to be collected in the CTC (19)	1.281
Total CTC collection plus market value (20)	4.144
To be paid to retire debt principal (21)	3.304
To be paid to interest (22)	0.840
Total to be paid to debt holders (23)	4.143
Residual for equity holders (24)	0.000
Overall total to equity holders (25)	7.818
Total recovery fraction (26)	148.9%
Equity holder IRR after transition (27)	8.1%

Table 5. Total Return of and on Investment to PECO Stockholders
Allowed Recovery Fraction: 0.0%

Costs in Billions

-----	-----
Production plant in service (1)	10.377
Equity fraction (2)	50.6%
Equity cost (3)	5.251
Debt fraction (includes pref) (4)	49.4%
Depreciation fraction (to date) (5)	35.5%
Depreciation to-date (6)	3.689
Equity share to-date (7)	1.867
Net Production Plant (current) (8)	6.688
Market value (current) (9)	2.863
Net stranded cost (current) (10)	3.825
Cumulative return to-date fraction (11)	113.3%
Cumulative return to-date (12)	5.952
Total to equity holders to date (13)	7.818
Fraction returned to date (14)	148.9%
Equity holder IRR to-date (15)	8.1%
-----	-----
Stranded asset allowed fraction (16)	0.0%
Allowed future depreciation (17)	0.000
Allowed future return on capital (18)	0.000
Total to be collected in the CTC (19)	0.000
Total CTC collection plus market value (20)	2.863
To be paid to retire debt principal (21)	3.304
To be paid to interest (22)	0.840
Total to be paid to debt holders (23)	4.143
Residual for equity holders (24)	-1.280
Overall total to equity holders (25)	6.538
Total recovery fraction (26)	124.5%
Equity holder IRR after transition (27)	6.0%

Definition of Entries in Tables 1-5.

- (1) 10.377 from Exhibit TPH-1/B-5
- (2) from Brennan/Exhibit JFBr-1, Schedule 1
- (3) $(1) * (2)$
- (4) $1.0 - (2)$
- (5) $[(1) - (8)] / (1)$
- (6) $(5) * (1)$
- (7) $(6) * (2)$
- (8) from Exhibit TPH-7
- (9) Hieronomus market price, Exhibit TPH-5, page 1
- (10) $(8) - (9)$
- (11) From depreciation tables -- Exhibit DS-3
- (12) $(11) * (3)$
- (13) $(12) + (7)$
- (14) $(13) / (3)$
- (15) From Exhibit DS-4
- (16) Assumption
- (17) $(10) + (16)$
- (18) From 7 year depreciation schedule @ WCC, Table 7
WCC based on 8.47 % debt (Exhibit JFBr-1/Schedule 1)
11.6% equity (Exhibit JFBr-1/Schedule 1)
- (19) $(17) + (18)$
- (20) $(19) + (9)$
- (21) $(8) * (4)$
- (22) From 7 year depreciation schedule at debt cost, Table 8
- (23) $(21) + (22)$
- (24) $(20) - (23)$
- (25) $(24) + (13)$
- (26) $(25) / (3)$
- (27) From Table 9, Exhibit DS-5/Schedule 9

Table 7. Allowed Return at Weighted Cost of Capital
 Costs in Billions of Dollars
 Life of CTC = 7 Years
 Weighted Cost of Capital = 10.05%
 100 Percent Recovery (lesser allowed recovery
 leads to a directly proportionally reduction
 in the dollar figure)

	Accumulated Depreciation	Rate Base	Return	Cumulative Return	Total
1	0.546	3.279	0.330	0.330	0.876
2	1.093	2.732	0.275	0.604	1.697
3	1.639	2.186	0.220	0.824	2.463
4	2.186	1.639	0.165	0.989	3.175
5	2.732	1.093	0.110	1.099	3.831
6	3.279	0.546	0.055	1.154	4.432
7	3.825	0.000	0.000	1.154	4.979

Table 8. Payments to Debt Holders
Costs in Billions of Dollars
Life of CTC = 7 Years
Cost of Debt = 8.47%

	Cumulative Amortization	Balance	Interest	Cumulative Interest	Total
1	0.472	2.832	0.240	0.240	0.712
2	0.944	2.360	0.200	0.440	1.384
3	1.416	1.888	0.160	0.600	2.016
4	1.888	1.416	0.120	0.720	2.608
5	2.360	0.944	0.080	0.800	3.159
6	2.832	0.472	0.040	0.840	3.671
7	3.304	0.000	0.000	0.840	4.143

Table 9. Internal Rate of Return (costs in billions of dollars)
Through End of Transition Period

Year	Initial Investment	Cumulative Depreciation	Rate Base	11.6% Return	Return Plus Depreciation	Future Return Plus Depreciation	Equity Holders Cash Flow	
1	-5.251	0.150	5.101	0.296	0.446	0	-4.805	Total
IRR								
2		0.150	4.951	0.574	0.724	0	0.724	
11.6%								
3		0.150	4.801	0.557	0.707	0	0.707	
4		0.150	4.651	0.539	0.690	0	0.690	IRR
To-Date								
5		0.150	4.501	0.522	0.672	0	0.672	
8.1%								
6		0.150	4.351	0.505	0.655	0	0.655	
7		0.150	4.201	0.487	0.637	0	0.637	
8		0.150	4.051	0.470	0.620	0	0.620	
9		0.150	3.901	0.452	0.602	0	0.602	
10		0.150	3.751	0.435	0.585	0	0.585	
11		0.150	3.601	0.418	0.568	0	0.568	
12		0.150	3.451	0.400	0.550	0	0.550	
13		0.067	3.384	0.393	0.459	0.528	0.988	
14						0.528	0.528	
15						0.528	0.528	
16						0.528	0.528	
17						0.528	0.528	
18						0.528	0.528	
19						0.528	0.528	
20						0.000	0.000	

ENVIRONMENTALISTS' STATEMENT 2-S

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

KJR

JOINT PETITION FOR PARTIAL SETTLEMENT
OF PECO ENERGY COMPANY'S
PROPOSED RESTRUCTURING PLAN
AND APPLICATION FOR A QUALIFIED RATE ORDER

DOCKET NO. R-00973953

DOCUMENT
FOLDER

PREPARED TESTIMONY AND
EXHIBITS OF
BRUCE EDWARD BIEWALD

PROTHONOTARY'S OFFICE
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NOV 04 1997

Statement
Environmentalists' EXHIBIT
DATE 10-14/15/16-97 2-5
MARY ELLEN WOLF, REPORTER

Philadelphia
R-00973953, etc.

September 29, 1997

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Exhibit BEB-1 Resume of Bruce Edward Biewald

Exhibit BEB-2 *Graph of TLG Decommissioning Estimates: 1977 to 1995.*

Exhibit BEB-3 *Full Environmental Disclosure for Electricity: Tracking and Reporting Key Information, March 1997.*

1 **1. QUALIFICATIONS**

2 **Q: State your name, occupation and business address.**

3 A: My name is Bruce Edward Biewald. My address is Synapse Energy Economics,
4 Inc., 22 Crescent Street, Cambridge, Massachusetts, 01238.

5 **Q. Please describe your current employment.**

6 A. I am President of Synapse Energy Economics, Inc., a consulting company
7 specializing in economic and policy analysis of electricity restructuring,
8 particularly issues of consumer protection, market power, stranded costs,
9 renewables, efficiency, environmental quality, and nuclear power.

10 **Q. What are your qualifications with regard to energy policy?**

11 A. I graduated from the Massachusetts Institute of Technology in 1981, where I
12 studied energy use in buildings. I was employed for 15 years at the Tellus
13 Institute, where I was Manager of the Electricity Program, responsible for studies
14 of electric system operation and planning, regulatory policy and industry
15 restructuring, stranded costs, system benefits, market power, nuclear and fossil
16 power plant costs and performance, renewable resources, power supply
17 contracts and performance standards, nuclear plant decommissioning and
18 radioactive waste issues, climate change policy, environmental externalities
19 valuation, energy conservation and demand-side management, rates and fuel
20 adjustment clause analysis, electric power system reliability, avoided costs, fuel
21 prices, purchased power availability and cost, production costing modeling,
22 economic analysis of power plants and resource plans, and risk analysis.

1 I have testified on these issues in more than thirty five cases in regulatory
2 proceedings in eighteen states and two Canadian provinces.

3 I have co-authored approximately 80 reports including studies for the Electric
4 Power Research Institute, the U.S. Department of Energy, U.S. Environmental
5 Protection Agency, the Office of Technology Assessment, the New England
6 Governors' Conference, the New England Conference of Public Utility
7 Commissioners, and the National Association of Regulatory Utility
8 Commissioners. My papers have been published in the *Electricity Journal*,
9 *Energy Journal*, *Energy Policy*, *Public Utilities Fortnightly* and numerous
10 conference proceedings, and I have made presentations on the economic and
11 environmental dimensions of energy throughout the U.S. and internationally. My
12 resume is provided here as Exhibit BEB-1.

13 **Q. What is your experience with regard to environmental disclosure for**
14 **electricity?**

15 A. I have analyzed the issue on behalf of the Vermont Department of Public Service
16 and the Regulatory Assistance Project. The paper that I coauthored for RAP on
17 environmental disclosure is provided here as Exhibit BEB-3. I have also made
18 presentations on this issue at workshops sponsored by the Center for Clean Air
19 Policy, the Energy Foundation, and the American Wind Energy Association.

20 **Q. What was your role in preparing the report provided as Exhibit BEB-3?**

21 A. Synapse Energy Economics worked as a contractor to the Regulatory Assistance
22 Project. I was involved in conceptualizing the issues, preparing drafts, editing

1 the entire report, and finalizing it. I am prepared to answer questions about any
2 aspect of the report.

3 **Q. What is your experience specifically with regard to nuclear**
4 **decommissioning costs?**

5 A. I have been involved with the topic of nuclear power plant economics and
6 decommissioning costs since 1982. I have testified on the projected costs and
7 funding of nuclear plant decommissioning in state regulatory proceedings in
8 Arizona, California, New Hampshire, and Wisconsin. I have been invited to
9 speak on decommissioning by the National Association of State Utility Consumer
10 Advocates (NASUCA), and my papers on the subject have been published in the
11 *Energy Journal* and *Public Utilities Fortnightly*. I have compiled and analyzed a
12 database of nuclear plant decommissioning cost estimates that were prepared
13 by TLG Engineering, PECO's decommissioning consultant in this case. A graph
14 of that data is presented in Exhibit BEB-2.

15 **Q. Has your testimony served as the basis for regulatory commission**
16 **decisions?**

17 A. Yes. The Michigan Public Service Commission has adjusted Consumers Power
18 Company and Detroit Edison Company projections of power costs based upon
19 my projections of fuel costs, purchased power costs and sales revenues. The
20 Massachusetts Department of Public Utilities adopted the set of monetary values
21 for air pollutants recommended in my testimony. The California Public Utilities
22 Commission adjusted a TLG Engineering, Inc. estimate of nuclear
23 decommissioning costs by approximately \$100 million, based upon my
24 testimony. In addition, my recommendations have been reflected in several

1 settlement agreements in cases on excess capacity, avoided costs and power
2 plant performance.

3 **2. SUMMARY AND RECOMMENDATIONS**

4 **Q. What is the purpose of your testimony in this case?**

5 A. This testimony, on behalf of the parties to this case collectively known as "The
6 Environmentalists", addresses two key electricity restructuring issues in the Joint
7 Petition for a Partial Settlement ("the Partial Settlement"): (1) nuclear plant
8 decommissioning and spent fuel costs and (2) environmental disclosure. These
9 specific issues represent a portion of *The Environmentalists' Vision for the New*
10 *Electricity Marketplace*, an Exhibit to the Environmentalists' Statement No. 1-S,
11 the testimony of David Schoengold. My testimony should also be considered in
12 conjunction with that of Mr. Schoengold, who is presenting the Environmentalists'
13 perspective on other issues in this docket's consideration of the proposed Partial
14 Settlement.

15 **Q. Please summarize your recommendations with regard to nuclear**
16 **decommissioning and spent nuclear fuel.**

17 A. My recommendations with regard to the Partial Settlement's treatment of nuclear
18 decommissioning and spent fuel are the following:

- 19 1. A process for addressing possible **decreases** in the funding amount and
20 refunds to customers should be explicit.
- 21 2. Any proposed increases in customer payments should trigger a cost-
22 benefit analysis justifying the cost increase.
- 23 3. Restrictions should be placed upon the use of the decommissioning
24 funds, and PUC jurisdiction should be ensured.

- 1 4. The treatment of spent nuclear fuel should be clarified and adjusted.
2 5. Low level nuclear wastes, which may prove excessively expensive, should
3 be read out of the Partial Settlement's T&D rate increase provisions,
4 absent persuasive evidence to the contrary.
5
6 6. Provisions should be made for the Commission and interested parties to
7 obtain information relevant to the decommissioning of PECO's nuclear
8 units.

9 Nuclear decommissioning issues are discussed in Section 3 of my testimony.

10 **Q. Please summarize your recommendations with regard to environmental
11 disclosure for electricity.**

12 **A. To the extent that the Partial Settlement fails to set out the details of fuel/plant
13 disclosure and consumer education it must be found inadequate. The following
14 provisions must be specified:**

15 ***Disclosures:*** The Commission should require all retail electricity suppliers
16 selling in PECO service territory to disclose their fuel mix and key air and other
17 waste emissions to consumers in a standard and easy-to-comprehend label.
18 Disclosure should be mandatory for all suppliers. These requirements should be
19 applied to the balance of Pennsylvania. The tracking of transactions to support
20 disclosure and labeling should be done by the Independent System Operator
21 (ISO).

22 ***Adoption of Objectives:*** I recommend that a set of objectives be adopted to
23 guide the design and implementation of a fuel mix and environmental disclosure
24 system. Specifically, the system should be effective, accurate, comprehensive,
25 flexible, simple, expandable, inclusive and credible. It is essential that the
26 system be created in such a way that customers who pay more for clean
27 electricity actually make a difference to the resource mix.

28 ***Consumer Education:*** A comprehensive program of consumer education on
29 the environmental effects of electricity production and use should be
30 implemented to complement disclosure. The Company and the Commission
31 should include the Environmentalists and other interested parties in the process
32 of developing and reviewing consumer education plans and materials.

1 Disclosure and consumer education issues are discussed in Section 3 of my
2 testimony, below.

3 **3. NUCLEAR DECOMMISSIONING IN THE PARTIAL SETTLEMENT**

4 ***Findings and recommendations with regard to nuclear decommissioning costs***

5 **Q. What are your key points with regard to nuclear decommissioning costs?**

6 A. The Environmentalists' vision is that "Decommissioning costs will be adequately
7 funded in a manner that is fair and efficient. Nuclear plant operators will be
8 responsible for some portion of the decommissioning costs and will have an
9 interest in controlling those costs" (Exhibit to Environmentalists' Statement No.
10 1-S). In my view the Settlement represents good progress toward a treatment of
11 nuclear decommissioning costs that is in the public interest. Specifically, I
12 understand the Partial Settlement to share the cost responsibility for
13 decommissioning by allocating responsibility as follows: (1) the costs to bring the
14 fund up to date are allocated to customers in the CTC charge, (2) the "currently
15 expected" ongoing costs are to be collected by the PECO generation entity in its
16 market prices and put into the external fund, and (3) changes in the expected
17 funding requirement may be made through a process in which PECO must
18 demonstrate that the increase is "just and reasonable."

19 This general structure seems reasonable, but there are some modifications and
20 clarifications to the Partial Settlement language which would serve the public
21 interest. Without them the proposal is less than optimal. Specifically, it is

1 important to recognize that decommissioning costs are very uncertain, that
2 categorization of costs can present special problems, and that restrictions and
3 oversight with regard to the use of the funds are needed. Also, the customers
4 should not be forced to pay decommissioning cost increases in the future if the
5 net costs to customers would be cheaper if the facility were simply shut down
6 earlier than anticipated. My recommendations are to add the following
7 provisions to the nuclear decommissioning language of the Partial Settlement:

- 8 1. A process for addressing possible **decreases** in the funding amount and
9 refunds to customers should be explicit.
- 10 2. Any proposed increases in customer payments should trigger a cost-
11 benefit analysis of the power source justifying the cost increase.
- 12 3. Restrictions should be placed upon the use of the decommissioning
13 funds, and PUC jurisdiction should be ensured.
- 14 4. The treatment of spent nuclear fuel should be clarified and adjusted.
- 15 5. Provisions should be made for the Commission and interested parties to
16 obtain information relevant to the decommissioning of PECO's nuclear
17 units.

18 ***Decreases in Funding***

1 **Q. Please explain your first recommendation regarding the process for**
2 **handling decreases in the decommissioning funding.**

3 A. The Partial Settlement describes a process for possible future increases in the
4 decommissioning funding requirements (page 18). It requires provides for
5 hearings in which "The Company shall have the burden of proving the justness
6 and reasonableness of any such increase" (page 18). The Settlement also
7 mentions the possibility that "decreases" to the decommissioning fund will be
8 appropriate in the future -- but does not provide guidance as to how these would
9 be effected. A process for initiating and carrying out hearings at the request of
10 the Commission itself, the Consumer Advocate, or other intervenors should be
11 made explicit.

12 ***Cost-benefit analysis***

13 **Q. Please explain your second recommendation regarding cost-benefit**
14 **analysis.**

15 A. I recommend that an additional economic condition be placed upon PECO in the
16 event that it requests an increase in decommissioning funding. Specifically, the
17 Company should be required to demonstrate that the increase is consistent with
18 an overall economic plan for the unit. For example, if the Company plans to
19 continue operating the unit for which the funding increase is requested, then it
20 should present a cost-benefit analysis that shows that continued operation, with
21 the increased decommissioning funding levels, is the economic course of action.

22 ***Restrictions on the use of decommissioning funds***

1 **Q. Please explain your recommendation with regard to restricting the use of**
2 **decommissioning funds.**

3 A. *The Settlement calls for PECO to prepare an agreement "setting forth*
4 *procedures by which... its interest in the nuclear decommissioning trust fund*
5 *would be transferred to the generation company..." (Page 19). This raises the*
6 *issue of oversight of the funds. Other utilities have recently requested that*
7 *money in their decommissioning trust funds be used for activities other than*
8 *decommissioning. PECO's use of the decommissioning trust fund should be*
9 *strictly limited to decommissioning. This should be specified clearly in the*
10 *Settlement agreement or in any Commission approval of the agreement. Also,*
11 *there should be a process in place that ensures that the Pennsylvania PUC and*
12 *the NRC retain authority over the use of the funds -- with appropriate hearings*
13 *and opportunity for public input.*

14 ***Spent nuclear fuel***

15 **Q. Please explain your recommendation with regard to spent nuclear fuel.**

16 A. The case of spent nuclear fuel is one very important example of allocation of
17 costs presenting a challenge. The *Partial Settlement* states that "Costs
18 associated with temporary and permanent disposal of spent nuclear fuel are not
19 included as a cost of decommissioning." This leaves the question of how these
20 costs will be handled. I believe that these costs should be borne by the Company
21 and recovered from customers only to the extent that they can be recovered in
22 the market revenues from electricity generated from the plants. Perhaps this is
23 what the Settlement envisioned.

1 There is also the issue of "temporary" storage of spent nuclear fuel on site. This
2 should not be included in decommissioning cost. Nor should it be paid for with
3 money from the decommissioning fund. These costs of spent fuel storage are
4 included in the decommissioning cost figures in the Partial Settlement.

5 **Q. Why do you say that the costs of spent nuclear fuel on-site storage are**
6 **included in the Settlement?**

7 A. The decommissioning cost figures in Appendix F of the Partial Settlement are
8 based upon studies prepared by TLG Engineering and attached to the
9 *Testimony of Thomas LaGuardia in this case. The studies anticipate on-site dry*
10 *cask storage of spent nuclear through the year 2041 at Peach Bottom (see*
11 *Section 4, page 14 of 16, of Exhibit TLG-3), through the year 2043 at Salem (see*
12 *Section 4, page 16 of 18, of Exhibit TLG-2), and through the year 2046 at*
13 *Limerick (see Section 4, page 19 of 21, of Exhibit TLG-1). The table for Limerick*
14 *actually lists the year as 2146 -- but presumably this is an error.*

15 **Q. Are the costs of storing spent nuclear fuel on site reasonably predictable?**

16 A. The spent nuclear fuel from operation of a nuclear power plant is much more
17 radioactive than the plant components themselves. The problem of storing and
18 disposing of this waste is a particularly difficult one. The costs are very
19 unpredictable, and depend upon the performance of the Department of Energy.
20 The DOE has been extremely unreliable about keeping to a schedule for
21 removing spent nuclear fuel from plant sites, and even an Act of Congress would
22 leave questions about the ability of DOE to accept the fuel on a particular
23 schedule.

1 **Q. How then should spent nuclear fuel be handled?**

2 A. Spent fuel presents special problems, and is distinct from plant
3 decommissioning. The money for spent nuclear fuel storage and disposal
4 should not be lumped together with the decommissioning funds. Rather, a
5 separate fund should be created for spent fuel. The Company should be
6 required to place money into the fund for taking care of its spent fuel responsibly.

7 ***Information and process***

8 **Q. Please explain your recommendation about information and process with
9 regard to nuclear decommissioning.**

10 A. The implementation of the Partial Settlement depends upon information. This is
11 true of the Settlement as written, or as modified per my recommendations above.
12 In either case, there is a need for the Commission, intervenors, and the public to
13 have information about activities at the nuclear plants. For example, the
14 Settlement states that "Consistent with and subject to NRC regulations, low-level
15 radioactive waste disposal must occur in a timely manner such that it does not
16 become a significant addition to the ultimate costs of decommissioning..." (page
17 19). In order to determine whether this is the case, information will be required
18 about the low-level waste storage practices at the plants and about the costs of
19 disposal. Similarly, in order to judge the adequacy of the funding amounts
20 relative to the expected cost of decommissioning, information about the status of
21 the plants (radioactivity inventory, materials and equipment, etc.) will be required.
22 The processes by which this information would be made available should be
23 included in the Partial Settlement or in the Commission's ruling on the
24 Settlement.

1 ***Low level nuclear wastes***

2 **Q. What is the relationship of low level nuclear waste to the Partial**
3 **Settlement's treatment of nuclear decommissioning costs?**

4 A. I am afraid that one cannot clearly tell from the text of the document. The page
5 19 quotation, just above, seems to classify these wastes as part of
6 decommissioning costs. This is an important ambiguity.

7 **Q. Why is this ambiguity important?**

8 A. It is quite possible that the cost of storing, handling and disposing of low level
9 nuclear wastes can approach the cost of what many people may believe is strict
10 decommissioning -- a deconstruction or in-place storage job for the hardware of
11 a nuclear plant. Such wastes are complex and growing in quantity. Not merely
12 soiled rags, they may include otherwise toxic materials that have become
13 radioactive, thereby posing two difficult disposal problems, related to two
14 different sets of laws.

15 It appears that the Partial Settlement may provide an open door for PECO to
16 pass through to the T&D rates the future cost escalations in the treatment of low
17 level nuclear wastes. I believe that only a proper sharing of responsibility for
18 such costs will cause the nuclear plant's management to effectively and
19 efficiently handle such materials, and minimize their creation. The time to
20 identify their treatment is now, not at some unspecified date after the year 2004,
21 when parties will argue about the meaning of a Commission order.

22 **Q. How should the Commission treat low level nuclear wastes?**

1 A. Unless there is persuasive evidence to the contrary I recommend that the
2 Commission resolve the Partial Settlement as treating the classification "low level
3 nuclear wastes" as excluded from future T&D costs. The effect of this will be to
4 work a sharing, with presently-determined ratepayer contributions to the
5 decommissioning fund covering an overall budget that a future decommissioning
6 team would have to allocate. Because it is not in the public interest to eliminate
7 budgetary incentives for prudent management, this will give an appropriate
8 incentive to plant operators to prudently manage their waste stream.

9 ***Nuclear decommissioning costs and funding adequacy***

10 **Q. What is the estimated magnitude of PECO's nuclear decommissioning**
11 **costs?**

12 A. PECO has estimated its nuclear decommissioning cost to be \$1.5 billion as of
13 year-end 1998 (Cohn direct testimony, page 11, line 3).

14 **Q. Do you believe this to be an accurate estimate of nuclear decommissioning**
15 **cost?**

16 A. No. PECO's nuclear units have operating licenses that expire between the years
17 2014 and 2029. Dismantling a large, highly radioactive nuclear unit is a large,
18 complex undertaking for which experience is currently quite limited, and
19 regulations continue to evolve. It is not possible now to produce an "accurate"
20 estimate at for the cost of decommissioning PECO's nuclear units. This implies
21 that the Partial Settlement may present future T&D customers with
22 unanticipated, high, levels of decommissioning costs.

1 **Q. Please describe the basis for this conclusion.**

2 A. I have reviewed many engineering estimates of nuclear decommissioning cost
3 over the past 15 years. While the state of the art of nuclear decommissioning
4 cost estimation has improved over the past 15 years, there are still important
5 deficiencies. I have found that even the more recent cost estimates are
6 inherently based upon a number of uncertain or unsupported assumptions. For
7 example, it is typical to assume a hypothetical facility will be available for the
8 acceptance of low level radioactive waste. Transportation costs are then
9 *estimated based upon an assumed distance to the non-existent facility.* Disposal
10 fees for the non-existent facility are typically based upon either the current fees
11 at existing facilities unlikely to accept the waste from the nuclear power plant at
12 issue, or the results of studies that estimate the prices that the un-sited, non-
13 existent facility will charge for radioactive waste disposal.

14 The method and timing of decommissioning are also major sources of
15 uncertainty. Even if one could say for certain that Limerick will operate to the
16 *end of its current license expiration date in 2029*, it is not possible to say with
17 confidence whether the plant will be dismantled five years or fifty years after that
18 date.

19 The dismantlement process itself involves considerable uncertainty, as
20 experience dismantling commercial nuclear reactors is limited to smaller units or
21 special cases such as the Shoreham unit in Long Island, which operated only at
22 low power for a short period of time. Dismantling a full-scale nuclear unit that
23 *has operated for many years will present new challenges.*

1 **Q. Have U.S. utility industry nuclear decommissioning cost estimates been**
2 **accurate in the past?**

3 A. No. Engineering estimates of nuclear power plant decommissioning costs
4 emanating from American utilities have a poor track record. The Company's
5 decommissioning consultant, on whose judgment they rely for their estimates of
6 nuclear decommissioning costs, is Mr. Tom LaGuardia, of TLG Engineering. Mr.
7 LaGuardia has prepared dozens of nuclear power plant decommissioning cost
8 estimates over the past 20 years.

9 **Q. How do Mr. LaGuardia's estimates from 20 years ago compare with his**
10 **estimates today?**

11 A. Mr. LaGuardia's current decommissioning cost estimates are in the range of 15
12 times greater than his 1976 estimate for dismantling a large pressurized water
13 reactor. Adjusted for inflation, the recent cost estimates are approximately 6
14 times higher than the older estimate. This is an escalation in cost of 600
15 percent.

16 The 1976 study that I refer to is an engineering analysis of the decommissioning
17 cost of a large nuclear power plant for the Atomic Industrial Forum (*An*
18 *Engineering Evaluation of Nuclear Power Reactor Decommissioning*
19 *Alternatives*, AIF/NESP-009) in which Mr. LaGuardia estimated the cost to be
20 \$26.9 million (in 1975 dollars for immediate dismantlement of a generic 1160
21 MW pressurized water reactor). In today's dollars that would amount to about
22 \$70 million. In contrast, Mr. LaGuardia's recent site-specific estimates filed by
23 PECO in this case average about \$400 million.

1 **Q. What has the trend been in Mr. LaGuardia's estimates between 1976 and**
2 **the present?**

3 A. The trend is for continually increasing decommissioning cost estimates, at an
4 alarming rate of escalation. I have compiled a database of about 180 of Mr.
5 LaGuardia's site-specific estimates done between 1977 and 1995, all for the
6 "immediate dismantlement" method of decommissioning. I have adjusted these
7 for inflation, and have plotted them in Exhibit BEB-2. As the graph shows, the
8 engineering estimates have been increasing rapidly over time. The two lines in
9 the graph are linear and log-linear fits to the data. The average annual rate of
10 increase is roughly 10% faster than inflation over this period. This amounts to a
11 doubling of the estimates every 7 or 8 years.

12 **Q. Why is the growth in Mr. LaGuardia's estimates relevant to his current**
13 **decommissioning cost estimates for PECO's nuclear capacity?**

14 A. The escalation in Mr. LaGuardia's estimates is important for at least two reasons.
15 First, it shows that decommissioning cost estimation is not a mature, stable
16 undertaking. While progress has been made over the last 20 years, and
17 decommissioning estimates are now generally presented in a standardized
18 format, the alarming rate of change in the estimates indicates considerable
19 uncertainty in the current estimates. Second, the decommissioning cost
20 estimates do not simply show volatility -- there has been a clear upward trend.
21 Decommissioning policy and stranded cost policy should not ignore this trend. A
22 head-in-the-sand approach will not be productive. Rather, understanding the
23 past trends, the driving factors, and the implications for the future
24 decommissioning costs is essential to making sound policy decisions.

1 **Q. Does Mr. LaGuardia agree with your assessment of the uncertainty in**
2 **nuclear decommissioning cost estimates?**

3 A. Apparently not. According to Mr. LaGuardia the large increases in
4 decommissioning cost estimates do not indicate uncertainty in the current
5 estimates. Rather, he points out that some of the increases in the estimates
6 since 1975 have been due to increases in low-level waste disposal costs from \$2
7 per cubic foot to more than \$300 per cubic foot (page 14, PECO Statement No.
8 8-R). He goes on to conclude that:

9 "The large increases reflect changes in scope or inflationary factors
10 which are accounted for in periodic updates to the estimates(s).
11 They are are not necessarily indicative of uncertainties in the
12 estimate" (page 15, PECO Statement No. 8-R).

13 There are several problems with Mr. LaGuardia's logic. First, radioactive waste
14 disposal cost escalation can explain only a small fraction of the escalation in his
15 decommissioning cost estimates. For example, in his current estimates for
16 Limerick, radioactive waste burial costs account for less than one quarter of the
17 total cost estimate for decommissioning (see Section 8, pages 2 and 3, of Exhibit
18 TLG-1). This amount represents only a few years of escalation at the rate that
19 the estimates have historically increased at.

20
21 More fundamentally, I disagree with Mr. LaGuardia's position that "political
22 concerns" and "changes in scope" are not a part of decommissioning costs. The
23 fact is that while his estimates can choose to ignore them, political and
24 institutional factors will have a tremendous impact upon the ultimate cost to
25 decommission any nuclear power plant.

1 Q. In addition to escalation of the cost estimates, are there other reasons to
2 be concerned about the adequacy of nuclear decommissioning funding?

3 A. Yes. The possibility of nuclear plant shutdown prior to the license termination
4 date is a major concern. Several units have shut down already, and further
5 shutdowns are likely as nuclear plants are increasingly subjected to market
6 forces. I have analyzed the operating economics of nuclear power plants in
7 many regulatory proceedings over the last fifteen years. While on average,
8 capacity factors have improved, the low market prices for electricity render some
9 existing power plants uneconomic on an operating cost basis. This is true
10 particularly for some nuclear plants. In a paper authored for the
11 January/February 1997 *Electricity Journal*, I concluded that there are about ten
12 nuclear plants in the U.S. that may be uneconomical to operate, based upon
13 1995 data. Other observers of the utility industry have reported similar
14 conclusions. For example, a 1995 report by Moody's Investors Service stated
15 that "there are at least 10 nuclear plants (out of 109 in the U.S.) that might be
16 closed in the event of deregulation." (*Stranded Costs Will Threaten Credit Quality*
17 *of U.S. Electrics*, August, 1995). More recently, Moody's found that "The
18 propensity for certain nuclear plants to require expensive capital additions to
19 comply with the standards of their Nuclear Regulatory Commission (NRC)
20 operating license increases the likelihood that the number of early shutdowns
21 might be even greater than those 10 originally identified." (*Moody's Assesses*
22 *Nuclear Power Risks in A More Competitive Market*, November, 1996). Similarly,
23 a report by the INGAA Foundation found that 40 percent of the nation's nuclear
24 capacity is "vulnerable to shutdown" with increasing competition in the electric
25 industry. (*Nuclear Power Plants and Implications of Early Shutdown for Future*
26 *Natural Gas Demand*, 1997).

1 With decommissioning funding based upon the full license period, if a nuclear
2 unit is retired prior to the license termination date, there will be a funding
3 deficiency, in some cases of considerable magnitude. In particular, if PECO's
4 units shut down early there will likely be a net deficit in the funding available to
5 decommission the units.

6 **Q. How do PECO's nuclear units compare in terms of operating economics?**

7 A. In my *Electricity Journal* paper, I identified Salem as one of the 10 at-risk plants.
8 Similarly, an assessment by Donaldson, Lufkin & Jenrette based upon
9 Systematic Assessment of Licensee Performance (SALP) reviews, production
10 costs, and capacity factors put Limerick in the top quartile, Peach Bottom slightly
11 below the middle, and Salem at the bottom with the lowest possible overall score
12 (*From Top to Bottom - III: A Study Benchmarking Performance of U.S. Nuclear*
13 *Power Plants*, July, 1996). The INGAA report put Limerick in the group of "sites
14 that are cost competitive with regional price" and Peach Bottom and Salem in the
15 group of "sites that are vulnerable to shutdown."

16 **Q. Is it conceivable that a nuclear plant operator might find itself bankrupt or**
17 **otherwise unable to carry out decommissioning for lack of funds?**

18 A. It is possible that a nuclear plant owner could, after the shutdown of the plant,
19 find that the funds set aside for decommissioning are inadequate for the task --
20 as a result of premature shutdown and/or higher than expected decommissioning
21 cost. This may come at a time when the Company is financially stressed as a
22 result of the loss of generating capacity and the associated income stream. The
23 Nuclear Regulatory Commission has taken this possibility seriously, and has set

1 up external funding requirements to avoid such a situation. The NRC is also
2 currently considering the implications of electric industry restructuring upon the
3 adequacy of nuclear decommissioning funding.

4 Bankruptcy of a utility is a serious possibility. Mr. J. Barry Mitchell discusses
5 securitization and the "steps ... taken to isolate the asset and its revenue stream
6 from the credit risks of the original owner of the asset, such as the risk that the
7 owner will go bankrupt." (Mitchell direct testimony in PECO's securitization case,
8 page 4) *This same notion applies in the case of nuclear decommissioning*
9 *funding. That is, it is important to isolate the decommissioning funds from the*
10 *Company itself, to ensure that the funds will be available for decommissioning.*
11 *The same is true of funds for spent nuclear fuel storage and disposal.*

12 **Q. What do you recommend with regard to the responsibility for nuclear**
13 **obligations such as nuclear decommissioning and spent fuel?**

14 **A.** My recommendations are presented in the beginning of Section 3, above.

15 **4. ENVIRONMENTAL DISCLOSURE AND CONSUMER EDUCATION**

16 **Q. Does the Partial Settlement address the topic of environmental disclosure?**

17 **A.** The Partial Settlement addresses consumer information and education, but it
18 fails to establish a useful and meaningful system of environmental disclosure. In
19 the next 15 or so pages of my testimony I will describe the features of a system
20 that the Partial Settlement should provide in order to present a program that is in
21 the public interest. Without these features I find the proposal incomplete.

1 **Q. What is disclosure and how would it apply in the case of electricity and its**
2 **environmental attributes?**

3 A. Disclosure is the process by which consumers are informed about their
4 electricity suppliers' sources of electricity. With environmental disclosure
5 requirements for electricity, retail suppliers in the state would report their
6 resource mix and key environmental attributes of their resource portfolio to their
7 customers. Customer education is also very important -- and should be
8 coordinated with disclosure so that consumers have the information they need to
9 make decisions and the knowledge to understand that information.

10 **Q. Why do you believe that environmental disclosure should be included in**
11 **the Partial Settlement?**

12 A. There are a number of reasons.

13 ***Environmental Impacts***

14 First, electricity generation has extraordinary impacts on the environment. In the
15 U.S. electricity generation is responsible for roughly two thirds of the total SO₂
16 emissions, nearly one third of total NO_x emissions, and more than one third of
17 total CO₂ emissions. Fossil fueled electricity generating plants also emit heavy
18 metals, and fine particulates, and have a number of impacts associated with
19 mining and the creation of waste in the fuel cycle. Nuclear plants present
20 different environmental and health risks, associated with accidents, nuclear fuel
21 mining, fabrication and enrichment, spent nuclear fuel transportation and
22 storage, and decommissioning. Land and water use of power plants can be
23 substantial.

1 These and other impacts of electric power have been well studied. For example,
2 I managed a large project for the Boston Edison Company Settlement Board that
3 surveyed these impacts and quantified them where possible, for power plants in
4 New England (*Non-Price Benefits of BECo Demand-Side Management*
5 *Programs*). I also participated in a major study of the environmental externalities
6 of electric power plants in New York (*New York State Environmental Externalities*
7 *Cost Study*, for the Empire State Electric Energy Research Corporation and the
8 New York State Energy Research and Development Authority). The U.S.
9 Department of Energy conducted a major study of the environmental damages
10 from electricity generation (*Estimating Fuel Cycle Externalities: Analytical*
11 *Methods and Issues, Report Number 2 on the External Costs and Benefits of*
12 *Fuel Cycles: A Study by the U.S. Department of Energy and the Commission of*
13 *the European Communities*). In addition to such overview studies, many specific
14 research projects have focused on particular impacts of power generation.

15 ***Evidence of Public Concern***

16 The second reason to implement disclosure for electricity is that many
17 consumers are interested in the environmental implications of their purchasing
18 decisions. Surveys repeatedly show a high degree of public support for and
19 interest in clean energy sources. For example, a 1996 report by Farhar and
20 Houston reviews data from more than 700 polls and concludes that the public
21 supports renewable energy, backed by a willingness to pay \$6 to \$25 per month
22 more for electricity from less harmful sources by 76 percent of those surveyed.
23 The Sustainable Energy Coalition survey revealed bipartisan support for
24 renewables, stating that 57 percent of the 1200 registered voters surveyed would
25 like congress to require a renewable portfolio standard. National consumer

1 surveys conducted for the Edison Electric Institute concluded that 77 percent of
2 consumers surveyed in 1993 stated that they make "changes in daily consumer
3 behavior because of environmental concerns."

4 ***Environmentally Superior Alternatives***

5 Third, many electricity suppliers are interested in marketing a "clean product" or
6 portraying themselves as a "green company." For example, in the New
7 Hampshire pilot program, many suppliers used environmental language in their
8 marketing. A list of the environmental claims made by suppliers in the
9 Massachusetts and New Hampshire pilot programs is provided in Table 1 on
10 page 6 of Exhibit BEB-3. These range from specific information about the power
11 supply sources (e.g., "more than 90 percent of the electricity in Green Mountain
12 Energy Partners' supply comes from hydropower sources") to general
13 statements (e.g., "its the beginning of our long-term commitment to you and the
14 earth").

15 ***Meaningful Customer Choice***

16 Fourth, with competition in electricity customers have an opportunity to choose
17 their supplier. In order for this choice to be most meaningful the customers
18 should have basic information about the suppliers in a standardized, easy-to-
19 understand format. Fuel mix and environmental information can be disclosed
20 along with standardized information on price and price volatility.

21 **Q. What position has the Commission taken with regard to disclosure for**
22 **electricity?**

1 A. The Pennsylvania Commission articulated an interim policy on disclosure in its
2 July 10, 1997 "Interim Requirements for Customer Information" (Docket No. M-
3 00960890F0008). This policy includes mandatory disclosure of the supply mix
4 (page 43) and verification of specific environmental claims.

5 **Q. In your opinion, is the policy for disclosure put forward by the Commission**
6 **in its interim requirements sound public policy ?**

7 A. Yes, I believe that the Commission has taken an important and necessary step
8 toward ensuring that customers receive basic information about the sources of
9 their supplier's electricity.

10 **Q. In your opinion, should PECO Energy and the Partial Settlement go**
11 **further?**

12 A. Yes. In its restructuring, PECO Energy should extend the disclosure policy
13 beyond fuel mix to key environmental attributes. It is a relatively simple matter to
14 extend the fuel mix disclosure system to key environmental attributes, since the
15 basic protocols for tracking will be in place. That is, the Commission's fuel mix
16 disclosure requirement will require a system of tracking transactions to attribute
17 generation at power plants to sales at retail. The same tracking system can be
18 used for environmental attributes. The mandatory disclosure requirement can
19 and should be extended to include key impacts of fossil, nuclear, and hydro
20 generation.

21
22 **Q. Are regulators in other states requiring disclosure for electricity suppliers?**

23 A. Yes. Other state regulatory commissions are requiring disclosure of for
24 electricity suppliers. These include fuel mix, as has been required by the

1 Pennsylvania Commission. In many cases regulators increasingly go beyond
2 fuel mix to include environmental attributes of the sources of generation.

3 State regulatory commissions in Vermont and Massachusetts have included
4 mandatory disclosure provisions in their December 1996 electric industry
5 restructuring orders. The Vermont Public Service Board's order calls for
6 disclosure of "resource mix and **environmental characteristics**" (pages 120
7 and 121 of Vermont PSB Order in Docket No. 5854). The Massachusetts
8 Department of Public Utilities called for disclosure of "fuel mix" and "**air**
9 **pollutants**" (page 128 of Massachusetts DPU Model Rules and Legislative
10 Proposal in D.P.U. 96-100).

11 The National Association of Regulatory Utility Commissioners (NARUC) passed
12 a "resolution in support of customer 'right-to-know' and product labeling
13 standards for retail marketing of electricity." NARUC "urges states adopting retail
14 direct access programs to include enforceable standards of disclosure and
15 labeling that would allow retail consumers easily to compare the price, price
16 variability, resource mix, **and environmental characteristics** of their electricity
17 purchases." (emphasis added) NARUC's resolution is provided in full in
18 Appendix A on page 26 of the report provided as Exhibit BEB-3.

19 On June 3, 1997, the New England Governors' Conference adopted a similar
20 "resolution in support of customer 'right-to-know' and product labeling standards
21 for the retail marketing of electricity in New England." This resolution calls for
22 uniform disclosure standards for "price, fuel **and emissions**."

1 **Q. What should be the objectives of the PECO Energy environmental**
2 **disclosure system?**

3 **A. I recommend that the following set of objectives be used in designing an**
4 **environmental disclosure and tracking system for PECO:**

- 5 ● *Effective:* It should make a difference in the actual mix of electricity
6 resources.
- 7 ● *Accurate:* It should provide consumers good, objective, and quantitative
8 information about their supplier's sources of electricity.
- 9 ● *Comprehensive:* It should allow for the disclosure of a wide range of
10 environmental impacts, and fuel-type information.
- 11 ● *Flexible:* It should encourage innovation in technology, contracting and
12 marketing.
- 13 ● *Simple:* It should be straightforward and readily understandable.
- 14 ● *Expandable:* It should be adaptable to various scales so that it can start
15 small and grow geographically.
- 16 ● *Inclusive:* It should provide opportunities for both existing utilities and new
17 players to offer renewable resources.
- 18 ● *Credible:* It must be trustworthy both initially and over time. To the extent
19 that the system embodies subjective value judgments, they must be made
20 by an independent entity with individuals who have a proven track record
21 for objectivity.

22 These criteria depend on each other and in some ways conflict with each other.
23 They should be seen as design objectives for the system, and the inevitable
24 tradeoffs among them should be made carefully.

1 **Q. Which of the objectives do you consider to be most important?**

2 A. In my view the first (effective) and the last (credible) objectives listed are the
3 most important. If the system is not effective at “making a difference”, then it is a
4 waste of time—or worse. That is, if a customer pays more for “clean electricity”
5 thinking that this is influencing the resource mix, then the transaction should
6 actually influence the resource mix in a manner that is reasonably similar to what
7 the customer believes to be the case.

8 The objective of “credibility” is related to this. The system must be credible in
9 order to work. It must “make a difference” in order to be credible.

10 **Q. Why should environmental disclosure be mandatory?**

11 A. Disclosure should be mandatory for electricity because: (1) the environmental
12 impacts of electricity are so large, (2) consumers have no experience making
13 electricity purchasing decisions, (3) there is no word-of-mouth experience to
14 glean information from friends and no published comparative guides, (4) some
15 suppliers are so new that they have little or no track record, and (5) the existence
16 of mandatory, uniform disclosures can act as a deterrent to false and misleading
17 claims.

18 If disclosure is “voluntary” then the information provided to consumers will be
19 incomplete and non-standardized – and much less useful than full information
20 presented in a standard format.

21 This is analogous to food labeling: the front of the box typically has claims such
22 as “low fat” while the back of the box has the standard mandatory label with

1 ingredients and nutritional information. For electricity we will need to address
2 both. The voluntary claims ("front of the box") will need some rules and
3 guidelines. *The mandatory and comprehensive information ("back of the box") is*
4 what disclosure addresses.

5 **Q. What should be disclosed?**

6 A. In general, and for PECO specifically, the basic information that should be
7 disclosed is the fuel mix, key air emissions, and waste creation. A standardized
8 point of comparison, such as the regional average level of pollution per kWh,
9 should be indicated for reference.

10 **Q. How would air emissions disclosure work?**

11 A. Disclosure of air emissions is straightforward, and can be based upon the
12 information currently reported to state air quality regulators and the U.S.
13 Environmental Protection Agency. The procedures for air emissions disclosure
14 have been developed and discussed widely, and are addressed in the report
15 provided here as Exhibit BEB-3. I propose that air emissions disclosure include
16 at least SO₂, NO_x, and CO₂, since reliable information on these is readily
17 available.

18 **Q. How might disclosure of waste creation work?**

19 A. Perhaps the most important type of waste from electricity generation is high-level
20 radioactive waste, or spent nuclear fuel. It would be a reasonably
21 straightforward matter to include high-level radioactive waste in an electricity
22 disclosure system. One way to do this would be to use a generic figure for the
23 average "burnup" (the amount of energy obtained from the fuel) and allow

1 companies to claim lower figures for high-level radioactive waste produced if they
2 can document that their facility is better than the default figure. In 1994, the
3 average burnup was 41 gigawatt days thermal per metric ton of uranium for
4 pressurized water reactors and 33 gigawatt days thermal per metric ton of
5 uranium for boiling water reactors (source: page 21, Energy Information
6 Administration "Spent Nuclear Fuel Discharges from U.S. Reactors 1994,"
7 February, 1996).

8 **Q. What mechanisms should be used for communicating information to**
9 **consumers?**

10 **A.** The information can be disclosed in various formats and through various
11 channels. The format for disclosure should probably follow the example of
12 nutritional labeling: a straightforward standardized layout using percentages and
13 relating technical information to commonly understood benchmarks. Research is
14 currently underway to determine what information electricity consumers will want
15 and be able to process. This is funded by the National Council on Competition
16 and the Electric Industry, and is being coordinated by the Regulatory Assistance
17 Project.

18 A sample label for electricity is provided on page 9 of Exhibit BEB-3. This is
19 provided as a suggestion of what information might be included and how it might
20 be presented. The specific design, format, and content should be developed
21 with some input from Pennsylvania consumers. The label must balance the
22 desire of some consumers for a great deal of detailed information with the desire
23 of many for simple and quick summary information.

1 The appropriate level of detail would also vary with the different communication
2 formats . For example, the information disclosed on a bill might differ from the
3 information required to be disclosed in marketing materials. It would also be
4 appropriate to have a very detailed set of information provided to regulators on a
5 periodic basis, to help in verifying claims, to ensure timeliness of the information
6 being used to make marketplace decisions, and to provide to those consumers
7 and consumer agencies that request detailed information.

8 The mechanism for disclosure should include the bills that are sent to customers
9 and the promotional materials that suppliers develop for marketing. The roles for
10 industry, government and others need to be formulated . At one extreme, a
11 disclosure system could conceivably be entirely voluntary, designed and
12 implemented by the market participants. At the other extreme, government
13 agencies could undertake the bulk of the activities themselves -- collecting data,
14 calculating attributes, verifying and enforcing the system. Another model would
15 rely upon independent parties to rate suppliers -- along the lines of "Consumer
16 Reports."

17 The most successful approaches will probably draw upon all of these actors.
18 The minimum role for suppliers would involve making the essential data
19 (primarily quantities of energy transactions) available. Independent third-party
20 rating systems are likely to develop in one form or another on their own accord.
21 Government should assume the role of outlining information requirements for
22 industry to comply with, and then to spot check on disclosure accuracy and
23 timeliness.

1 **Q. Is the tracking of transactions to support disclosure feasible?**

2 A. Yes. Electricity markets already involve numerous transactions among
3 numerous market participants. These numbers and the overall complexity of the
4 market are increasing. Nonetheless, it is entirely possible to track these
5 transactions. Indeed, tracking is and must be done in order to resolve the
6 *financial obligations. The fuel mix and environmental attributes can be tracked*
7 *using a system that builds upon the existing information systems.*

8 **Q. How would a system of tracking and disclosure work in an electricity**
9 **market with a spot market or power exchange?**

10 A. *Electric power pools have FERC-approved system agreements that lay out*
11 *protocols for dispatching power plants and for billing. A typical arrangement has*
12 *the actual dispatch optimized on a combined basis; that is, all of the available*
13 *generators are used in a least-cost manner to serve total pool hourly loads.*
14 *Then, for accounting purposes, each company is assigned its own units first*
15 *toward its own load. The result will be that some companies generate more than*
16 *their own load and some companies generate less. Energy transactions are*
17 *then assumed in order to balance the system, and buyers compensate sellers*
18 *according to the pricing provisions in the system agreement (marginal cost plus*
19 *ten percent and "split-savings" are two pricing schemes).*

20 The pooling agreement and accounting systems could be modified for
21 disclosure/tracking system to unambiguously allocate generation from each
22 company's owned units, either to its own load or to sales. In situations where a
23 number of companies sell in the pool (perhaps to several buyers) the sources of
24 generation would be known, and attributed to the buyers, perhaps on a *pro rata*

1 basis. With restructuring, much of this will remain the same, but dispatch will in
2 many cases be based on bids rather than costs.

3 In effect, the tracking system can work by "following the dollars". For any time
4 period, there is a known amount of electricity generated, and a known amount of
5 electricity consumed. These should be equal, after accounting for losses in the
6 transmission and distribution systems. Retail buyers compensate the
7 generators, perhaps in some cases with several intermediaries. By following the
8 contracts and the flow of money from retail consumers to generators, one can
9 develop a reasonable measure of accountability.

10 **Q. What approach to disclosure and tracking do you recommend be included**
11 **in the PECO Energy restructuring?**

12 A. I recommend that for PECO (and the state) the Commission require a company-
13 based tracking system in which wholesale sales are allocated before retail sales.
14 I believe that this is the most readily implementable approach.

15 **Q. Why do you recommend a company approach?**

16 A. A system that requires disclosure of provider companies is preferable to one
17 that discloses individual "products" (or contracts). First, the company approach
18 will be easier to implement. It will have a smaller number of "entities" for which
19 information must be tracked, and hence a more manageable amount of data and
20 computation requirements.

21 More importantly, company-based disclosure is more meaningful than product
22 disclosure. A statement that the supplier has a certain resource mix is

1 meaningful and reasonably straightforward. With product-based disclosure
2 suppliers can simply allocate on paper their clean generation to a "clean product"
3 and their dirty generation to a "cheap product." Customers paying more for the
4 clean product may be just receiving reallocated existing resources, and hence
5 are not making a difference (See Objective Number 1, above).

6 **Q. What do you mean by a tracking system that allocates wholesale sales**
7 **first?**

8 A. There are a variety of ways to approach the treatment of transactions in an
9 environmental disclosure system for electricity. The most straightforward, and
10 ultimately perhaps the best, approach is described below -- a company-based
11 system with generation allocated to wholesale sales first. With this system each
12 company would allocate its generation to its wholesale sales, and then allocate
13 its remaining resource mix (generation and wholesale purchases) to its retail
14 sales.

15 This simple system divides electric companies into their production and retail
16 functions. Wholesale sales are assumed to be from the producer's own
17 generation, unless the producer sells more at wholesale than it produces. If
18 wholesale sales exceed one's own generation, then the extra is assumed to
19 correspond proportionately to the companies from which the producer
20 purchases. This approach allows the complex web of electricity transactions to
21 be dealt with in a straightforward manner, thus avoiding the difficulties and
22 ambiguities of tracing power transactions back through several companies.

1 By separating the production and retail functions, this simple system provides
2 great flexibility in representing the many types of entities and transactions that
3 will occur in the market. Transactions from outside of the system might be
4 treated differently than transactions within the system. For example, it may be
5 appropriate to attribute marginal emissions and fuel mix to imports.

6 **Q. What data are required to implement a tracking system?**

7 A. The essential data for a disclosure system include generation (by plant), the
8 buyer, seller, and quantity of energy for each transaction. These data are, in
9 general, currently made available to government agencies. There are, however,
10 some gaps in what is reported, and there is an unacceptably long time lag before
11 some data are publicly available.

12 Moreover, electricity market participants are becoming increasingly sensitive
13 about making information available. Procedures should be implemented that
14 respect the legitimate confidentiality concerns of market participants while
15 ensuring that sufficient data are available to implement an environmental
16 tracking system— and to allow regulatory oversight of market power and electric
17 system reliability.

18 Relevant data are currently provided to the Energy Information Administration,
19 the Environmental Protection Agency, the Federal Energy Regulatory
20 Commission, and various state agencies. Data sources and issues are
21 discussed in Exhibit BEB-3 on pages 17 to 19, and Appendix C.

1 **Q. Who should be responsible for implementing the tracking system to support**
2 **disclosure?**

3 A. *The Independent System Operator should play the key role in implementing the*
4 *tracking aspect of environmental disclosure. ISOs have the technical expertise,*
5 *the necessary information on generation and transactions, procedures for*
6 *handling sensitive data appropriately, and the independent status for credibility.*
7 *It is important that PECO, other PJM Pennsylvania utilities and the Commission*
8 *encourage that the tracking function be included in the mandate of the PJM ISO,*
9 *and that provisions for tracking fuel mix and key environmental attributes be*
10 *included in current PJM software upgrades. If the Commission can clearly and*
11 *satisfactorily delegate the tracking and reporting function to the ISO, it can*
12 *essentially assure that good information flows automatically to retail sellers and*
13 *aggregators, which would report the information to customers.*

14 **Q. Do you agree with Ms. King's statement (page 7, Rebuttal Testimony, PECO**
15 **Statement 17-R) that "customer education should eliminate barriers to**
16 **participation?"**

17 A. Yes. Ms. King also points out that accurate information "should be presented in
18 a manner intended to capture consumers' interest" (page 7, Rebuttal Testimony).
19 A customer education program that presents clear and unbiased information to
20 consumers is essential for meaningful choice.

21 **Q. What requirements in the Act relate to disclosure and consumer**
22 **education?**

23 A. The Act includes several requirements that should be addressed through an
24 education program. First, the Act requires

1 each distribution company, electricity supplier, marketer,
2 aggregator and broker to provide adequate and accurate
3 customer information to enable customers to make informed
4 choices regarding the purchase of all electricity services
5 offered by that provider. Information shall be provided to
6 consumers in an understandable format that enables
7 consumers to compare prices and services on a uniform
8 basis. (Section 2807 (d) (2))

9 Second, energy conservation services must be available in all distribution service
10 territories (Section 2804 (9)).

11 Third, customers must be informed of the changes in the electric industry
12 (Section 2807 (d)(3)).

13 **Q. What criteria should the Commission use to evaluate the appropriateness**
14 **of PECO's education program?**

15 A. In order to be worthy of Commission approval, an education program must be
16 effective, accurate, accessible, comprehensive and unbiased. Therefore,
17 PECO's education program should cover a broad range of options and issues,
18 from pricing, billing and metering options to consumer protection and
19 environmental impact information. In addition, the program should make
20 educational materials accessible to all consumers, which will require information
21 in multiple languages. Finally, the information that PECO uses for consumer
22 education must not include language that could inappropriately influence
23 customers to choose to remain with their incumbent utility. I recommend that the
24 Commission take strong leadership in this area, setting precise protocols and
25 content requirements to prevent PECO, and other utilities, from charging captive

1 customers for tens of millions of dollars of "customer information" that may turn
2 out to be little more than marketing.

3 **Q. How does consumer education relate to disclosure for electricity?**

4 A. Pennsylvania consumers will, for the first time, be presented with a choice of
5 electricity supplier, and -- through a disclosure requirement -- be presented with
6 information about the fuel mix and environmental impacts of electricity
7 generation. A comprehensive program of consumer education should be
8 developed to assist buyers in comprehending electricity restructuring, comparing
9 offers, and understanding the environmental impacts of their choices. The
10 consumer education initiative should be coordinated with and complementary to
11 the disclosure and labeling requirement.

12 **Q. Does PECO plan to include fuel mix and environmental information in its**
13 **customer choice education materials?**

14 A. Apparently not. Ms. King states that "dissemination of information about
15 generation source and fuel mix constitutes marketing" (page 12, Rebuttal
16 Testimony). However, as discussed above, the Commission specifically requires
17 disclosure of fuel mix -- and in order for customers to understand and make use
18 of this new information it is essential that a complementary consumer education
19 effort be implemented simultaneously. This should be part of the "Statewide
20 Consumer Education Program" called for in the Settlement (page 25).

21 **Q. Please comment on Appendix G to the Settlement, describing the**
22 **"Statewide Consumer Education Program."**

1 A. Appendix G calls for the establishment of a "Statewide Education Advisory
2 Group with balanced representation from all interested parties." My clients in this
3 case – the Environmentalists – should be included in this group, since their
4 perspective and expertise on environmental issues and communication will be
5 valuable.

6 **Q. Is environmental disclosure for electricity a substitute for other
7 environmental policies?**

8 A. Absolutely not. Environmental disclosure for electricity is an important policy that
9 can provide useful information to consumers about their electricity purchasing
10 decisions. Other regulations such as portfolio standards and emission caps are
11 necessary and appropriate, and in no way in conflict with disclosure specifically
12 or electricity markets generally. Restructuring of the electricity industry can and
13 should be implemented in a way that improves environmental quality for
14 Pennsylvanians.

15 **Q. Does this conclude your testimony?**

16 A. Yes.