

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Investigation of Conservation, Energy :
Efficiency Activities and Demand Side : Docket No. M-00061984
Response by Energy Utilities and Ratemaking :
Mechanisms to Promote Such Efforts :

**WRITTEN TESTIMONY OF
ROGER E. CLARK
OF THE REINVESTMENT FUND
PURSUANT TO THE SECRETARIAL LETTER
OF OCTOBER 29, 2008**

1 **INTRODUCTION**

2 My name is Roger E. Clark and I thank you for the opportunity to discuss a few of the many
3 different issues that the Commission must resolve as you begin the implementation of Act 129 of
4 2008. With this new legislation, the Commonwealth is firmly headed in a new energy direction
5 by including energy efficiency, energy conservation and demand response as a major element in
6 our energy future. These demand resources, if implemented effectively and at the appropriate
7 scale, will have a major, direct and immediate impact on energy prices and will help make
8 consumers' energy bills more affordable and less subject to the risk of fossil fuel price
9 escalation. These resources also have substantial local economic development impacts as well as
10 environmental benefits that can reduce consumers' exposure to utility environmental compliance
11 costs now and in the future.

12 I work for The Reinvestment Fund and I have attached resume as Appendix A of my testimony
13 to give you some background about my experience with energy issues. The Reinvestment Fund
14 ("TRF") is a nonprofit community development organization with headquarters in Philadelphia

1 that has provided over \$813 million in financing to over 2,300 local and regional projects.¹ TRF
2 was the entity selected by the parties in the PECO Energy restructuring proceeding (Docket No.
3 R-00973953) in 1998 to create and manage the Sustainable Development Fund (“SDF”).²

4 Through its work with SDF, TRF has accumulated considerable experience and expertise in
5 deploying capital through loans, investments and grants in support of energy efficiency and
6 conservation projects, renewable energy projects and other clean energy endeavors. Since its
7 formal beginning of operations in December, 1999, TRF, through the SDF, has:

- 8 • Approved 40 loans and investments in companies for renewable energy and energy
9 conservation projects for a total of \$20,951,495.
- 10 • Approved \$11,768,441 in wind energy production incentives for seven new utility-scale
11 wind projects, one community wind project and five small wind installations.
- 12 • Approved 86 core grants for green building design work, business planning,
13 demonstration of clean energy technologies and other related purposes for a total of
14 \$1,762,550.
- 15 • Approved 42 grants for renewable energy public education, including television and radio
16 spots, workshops, conferences, written materials, etc. for a total of \$2,427,659.
- 17 • Approved 253 solar photovoltaic grants for a total of \$4,276,129.

18 I have been involved in the legislative process that led up to the passage of Act 129 and I
19 recently submitted comments to the Commission in Docket No. M-2008-2069887, which I have
20 attached as Appendix B to my testimony. I am committed to working with the Commission, the
21 electric distribution companies (“EDCs”) and the other stakeholders on the complicated task of
22 implementing Act 129. I will provide whatever assistance I can to the Commission as you
23 develop and adopt the Act 129 Guidelines³ and I look forward to being part of the team working
24 to meet the challenges and realize the opportunities presented by Act 129.

¹ The TRF website is www.trfund.com.

² The SDF website is www.trfund.com/sdf.

³ I use the phrase “Guidelines” to describe the program and procedures document the Commission is to adopt by January 15, 2009 pursuant to §2806.1(a).

1 Before turning to the questions posed by CEEP in the Secretarial Letter of October 29, 2008
2 (updated), I would like to pose and answer several questions I feel are critical to the
3 implementation of Act 129.

4 **CLARK'S QUESTIONS**

5 1. How should the Commission interpret the goals described §2801(c)(1) and (c)(2)?
6 Are the goals absolute or are they relative?

7 I believe that the proper implementation of Act 129 begins with a proper understanding of
8 the reduction in consumption goals in §2806.1(c) and the peak demand reduction goal in
9 §2806.1(d). The scale of the EDC programs that are required by the Act and the cost of those
10 programs are shaped entirely by our understanding of the goals. I believe the most important
11 task of the Commission's Guidelines is to clearly and unequivocally define these goals.
12 There are two ways of interpreting the goals of Act 129, and I call them the reduction
13 approach and the savings approach.

14 The Reduction Approach

15 Under the reduction approach, Act 129 would require EDC retail sales in the year ending
16 May 31, 2011 to be 1% lower, or no greater than 99% of the forecasted sales of the base year
17 of June 1, 2009 through May 31, 2010. In the year ending May 31, 2013, the retail sales are
18 to be 3% lower, or no greater than 97% of the base year's forecasted sales. With the
19 reduction approach, the EDCs would be responsible for deploying energy efficiency and
20 conservation programs at the level needed to reduce retail sales to hit these sales targets.
21 This is an absolute measurement, since this approach set the goals to reduce sales irrespective
22 of other economic forces pushing electricity sales up or down.

23 The Savings Approach

24 The other approach to interpreting the goals is the savings approach, in which the 1% and 3%
25 goals describe the quantity of megawatt-hours ("MWHs") the EDC programs must save. The
26 savings approach sets the size of the two buckets which must be filled with saved MWHs.
27 This is a relative goal, because if consumption grows faster than 1% per year (as the

1 Commission currently predicts for the period 2007 – 2012), retail sales will continue to grow,
2 but at a slower rate relative to the business-as-usual forecast.

3 Act 129 Calls for Absolute Reductions

4 I believe the §2806.1(c) language “[t]he 1% [or 3%] load reduction in consumption shall be
5 measured against the electric distribution company's expected load as forecasted by the
6 commission for June 1, 2009, through May 31, 2010...” means an absolute reduction in
7 consumption from the base year levels. The goal of Act 129 is not to slow down the
8 increases in retail sales but to reduce those sales in an absolute sense.

9 Act 129 uses the words “reduction” or “reduce” a total of 34 times throughout the energy
10 efficiency and conservation program section of the legislation. Typical of these is
11 §2806.1(b)(1)(i)(a), which requires the EDC plans “to implement energy efficiency and
12 conservation measures to achieve or exceed the required reductions in consumption under
13 subsections (c) and (d)” [emphasis added].⁴

14 In contrast, the term “savings” appears only twice in the legislation and one of those
15 references (§2806.1(d)(2)) is to financial savings. The only reference to “savings” of energy
16 is §2806.1(i)(1)(ii), which requires the annual reports from the EDCs to the Commission to
17 include “[m]easurement and verification of energy savings under the plan” [emphasis added].

18 The most cogent argument that the General Assembly intended the reduction approach when
19 interpreting Act 129’s goals is the statement in §2806.1(c)(1) and (2) that the Commission is
20 to take into account “extraordinary loads that the electric distribution company must serve.”
21 This language is totally unnecessary under the savings approach since extraordinary loads
22 would not affect the amount of energy being saved by the energy efficiency and conservation
23 plans. The buckets would continue to fill regardless of changes in load by other customers.
24 For customers who receive energy measures, the savings resulting from improved building

⁴ The other 33 uses of the word “reduction” or “reduce are in §2806.1(a); §2806.1(a)(4); §2806.1(a)(6);
§2806.1(a)(8); §2806.1(a)(9); §2806.1(b)(1)(i)(a); §2806.1(b)(1)(i)(b); §2806.1(b)(1)(i)(d); §2806.1(b)(1)(ii);
§2806.1(b)(1)(i)(a); §2806.1(b)(2); §2806.1(b)(3); §2806.1(c); §2806.1(c)(1); §2806.1(c)(2); §2806.1(c)(3);
§2806.1(d); §2806.1(d)(1); §2806.1(e)(1); §2806.1(f)(2); §2806.1(f)(2)(i); §2806.1(f)(2)(ii); §2806.1(f)(2)(ii)(a);
§2806.1(k)(2); §2806.1(k)(3); §2806.1(m)’s definition of “Conservation service provider”; and §2806.1(m)’s
definition of “Energy efficiency and conservation measures.”

1 insulation, more efficient air conditioning systems or higher-performance lighting would not
2 be impacted by “extraordinary loads.” The “extraordinary load” adjustment language only
3 has meaning under the reduction approach in that an EDC who fails to meet its reduced sales
4 targets could nevertheless be found to have met its goals due to “extraordinary loads” that
5 had to be served by the EDC, thus increasing its sales above the goal in ways beyond the
6 control of the EDC.

7 It is obvious to me that the General Assembly intended Act 129 to reduce consumption and
8 peak demand. Only the reduction approach guarantees a reduction in total consumption. The
9 savings approach reduces consumption less than it might otherwise be under business-as-
10 usual, but an EDC could satisfy the 1% and 3% goals under the savings approach and still see
11 consumption grow during the years of its plan. That is inconsistent with a plain reading of
12 Act 129.

13 I addressed the issue of Act 129’s goals in greater depth in the comments I submitted on
14 November 3, 2008 in Docket No. M-2008-2069887 and that are included in this testimony as
15 Appendix B. I am also attaching to this testimony Appendix C, which is a set of slides I
16 prepared to quantify the difference between the two approaches. The numeric examples in
17 these slides are for illustrative purposes only. As I state on the first slide, there is no pretence
18 that the forecast or the other numbers presented on these slides are for any purpose other than
19 to highlight the implications of the reduction approach and the saving approach to
20 understanding the goals of Act 129. I will share the Excel spreadsheet I used to generate
21 these slides with anyone who requests a copy.

22 2. How should the Commission interpret the 4.5% peak demand reduction goal
23 contained in §2801(d)?

24 Many of the same issues discussed above about consumption reduction apply to the peak
25 demand reduction goals. I believe the goal of reducing peak demand 4.5% in the 100 hours
26 of highest demand by May 31, 2013 should be an absolute reduction and not a relative
27 reduction. For the same reasons discussed in the previous answer, the purpose of Act 129 is
28 to reduce peak demands, not just to nibble away at them a bit.

1 3. Should the Goals Apply to the EDC as a Whole or to Each Individual Customer
2 Class?

3 Act 129 is ambiguous about whether the goals must come proportionally from all customer
4 classes. §2806.1(a)(5) requires that the Commission's guidelines include standards "to
5 ensure that each plan includes a variety of energy efficiency and conservation measures and
6 will provide the measures equitably to all classes of customers." §2806.1(a)(11) prohibits
7 cross-class subsidization of program costs by requiring that measures "are financed by the
8 same customer class that will receive the direct energy and conservation benefits."
9 §2806.1(b)(1)(i)(i) requires that the EDC plans provide "a diverse cross section of
10 alternatives for customers of all rate classes."

11 I recommend that the Commission consider requiring that the EDCs achieve the consumption
12 reduction goals for each customer class rather than for the retail sales as a whole. This is the
13 most direct way to ensure that a "variety" of energy efficiency and conservation
14 opportunities are provided "equitably" to each customer class.

15 Because of the ease of obtaining demand reductions for large power consumers - and the
16 lower cost of those reductions - I do not recommend that the demand reduction goal should
17 be applied to each individual customer class. That said, the Guidelines will need to develop a
18 standard for assessing whether the EDC plans satisfy the §2806.1(a)(5) requirement that the
19 plans provides a "variety" of energy efficiency and conservation opportunities are provided
20 "equitably" to each customer class.

21 If the Commission does not support the concept of customer class goals, then the Guidelines
22 will need to address the standard for assessing whether the utility plan provides a "variety" of
23 energy efficiency and conservation opportunities are provided "equitably" to each customer
24 class. I believe it is not enough to offer a comparable number of programs, but the test also
25 needs to include whether the programs are being used by the customers in some proportional
26 numbers and whether consumption and peak demand reductions are being realized by
27 customer classes in some proportional fashion.

1 4. For purposes of setting the consumption reduction goals, how should the
2 Commission forecast consumption for June 1, 2009 through May 31, 2010?

3 Any analysis of Act 129's goals to reduce electric consumption begins with the
4 Commission's forecast of future retail consumption. §2806.1(c) states that the:

5 "… reduction in consumption shall be measured against the
6 electric distribution company's expected load as forecasted by the
7 commission for June 1, 2009, through May 31, 2010, with
8 provisions made for weather adjustments and extraordinary loads
9 that the electric distribution company must serve. [emphasis
10 added].

11 The Commission regularly prepares an annual report containing a forecast of future
12 electricity sales. The current report, *Electric Power Outlook for Pennsylvania 2007-2012*,
13 was issued in August 2008, and states the following about the forecast of future electricity
14 consumption for Pennsylvania's retail customers:

15 "[t]he current aggregate five-year projection of growth in energy
16 demand is 1.4 percent. This includes a residential growth rate of
17 1.5 percent, a commercial rate of 1.6 percent and an industrial rate
18 of 1.1 percent.⁵

19 I believe that given the importance of the base year forecast to Act 129, a new and expanded
20 forecasting effort is appropriate. The Guidelines should set forth the methodology the
21 Commission will use to forecast retail sales by the EDCs, including data collection and
22 analysis. Given the current economic situation, one of the important issues must be what
23 assumptions the Commission should make regarding an economic downturn lasting through
24 the base year period. A forecast that is too high or too low will distort the energy reduction
25 goals of Act 129.

26 The Guidelines should adopt a process that provides for a draft Commission forecast to be
27 issued by the Commission and for the EDCs and the public to have the opportunity to file
28 written comments and reply comments before the Commission issues the final forecast.

⁵ *Electric Power Outlook for Pennsylvania 2007-2012*, page 14. This report is available at www.puc.state.pa.us/General/publications_reports/pdf/EPO_2008.pdf.

1 The Guidelines should also address the methodology the Commission will use to make
2 weather adjustments as provided for in §2806.1(c)(1) and (c)(2). What weather data from
3 what cities will be used as the source of the Cooling Degree Day and the Heating Degree
4 Day data for each EDC? How much does a colder-than-normal winter increase electric usage
5 for each EDC, given that the EDCs have different penetration rates for electric heating? How
6 much does a hotter-than-normal summer increase electric usage for each EDC, given the
7 different penetration rates for air conditioning? This is a complex issue that the Commission
8 has wrestled with in previous cases and the Guidelines need to provide unambiguous
9 guidance about how the Commission will weather normalize the consumption data.

10 5. How should the Commission define the peak demand reduction goals?

11 The peak demand goal avoids the forecasting issues presented in §2801(c) since the peak
12 demand reductions are to be measured against historic demand levels for the period June 1,
13 2007 through May 31, 2008, but there are several issues involving the demand reduction goal
14 that the Commission's Guidelines should address to avoid confusion.

15 §2806.1(d)(1) requires a reduction of 4.5% of "annual system peak demand in the 100
16 highest hours of highest demand." Since Pennsylvania's EDCs experience their 100 hours of
17 highest demand at different dates and times, the question arises whether the 100 hours of
18 highest demand are to be calculated separately for each EDC or whether the 100 hours of
19 highest demand on the "system" are used to calculate the necessary demand reductions.

20 I suggest that the phrase "annual system peak demand" indicates that the 100 hours to be
21 examined should be the 100 hours when system peak was at its highest levels. For
22 Duquesne, Met-Ed, Penelec, PECO, PPL and West Penn, the system is PJM. For Penn
23 Power, the system is MISO. This makes sense as the hours when the peak is highest for the
24 system are the hours when prices are at their highest. An individual EDC peak for an hour
25 when the system was not experiencing a peak would not likely result in power costs as
26 expensive as during times of system peak.

1 The Commission's Guidelines should identify how it wants the 100 hours of highest system
2 peak demand to be defined and what those peaks were for each of the EDCs during the base
3 year period of June 1, 2007 through May 31, 2008.

4 6. How should the Commission's Guidelines address mid-course corrections in the
5 EDC plans?

6 Act 129 rightly establishes a multi-year planning cycle for energy efficiency and
7 conservation programs. If the funding commitment is too short, there can be significant
8 disruption in the energy efficiency marketplace that will undermine long-term transformation
9 in the market. This is particularly true if programs are initially under-funded, so that funding
10 runs out after only a short time. A five year planning cycle may provide a good balance of
11 program responsiveness and flexibility on one hand and market stability on the other.

12 While Act 129 calls for a five-year plan cycle, it also recognizes that mid-course corrections
13 may be required as the EDC plans are implemented and experience is gained. The EDC
14 plans must be able to adjust to changes and new opportunities. §2806.1(a)(6) requires the
15 Commission to establish "[p]rocedures to make recommendations as to additional measures
16 that will enable an electric distribution company to improve its plan and exceed the required
17 reductions in consumption under subsections (c) and (d)."

18 §2806.1(b)(2) gives the Commission authority to "direct an electric distribution company to
19 modify or terminate any part of a plan approved under this section if, after an adequate
20 period for implementation, the commission determines that an energy efficiency or
21 conservation measure included in the plan will not achieve the required reductions in
22 consumption in a cost-effective manner under subsections (c) and (d)."

23 I recommend that the Commission's Guidelines provide for public review of the annual
24 independent evaluation reports prepared under §2806.1(b)(1)(i)(j) and to also provide a
25 process for determining whether mid-course adjustments are appropriate. This process
26 should include the Commission, the EDC, the Office of Consumer Advocate, the Office of
27 Small Business Advocate and the public. How plans are to be revised in these interim years
28 should be a very important element of the Guidelines.

1 7. How should the Commission interpret the limitation on costs language of
2 §2806.1(g)?

3 In my opinion, the most problematic section of Act 129 is §2806.1(g), which reads:

4 (g) Limitation on costs.--The total cost of any plan required
5 under this section shall not exceed 2% of the electric distribution
6 company's total annual revenue as of December 31, 2006. The
7 provisions of this paragraph shall not apply to the cost of low-
8 income usage reduction programs established under 52 Pa. Code Ch.
9 58 (relating to residential low income usage reduction programs).

10 I say problematic because it makes no sense to me why there should be an artificial ceiling to
11 the energy efficiency and conservation programs since they are by definition less expensive
12 than the supply alternative. Act 129 requires the Commission by 2013 and every five years
13 thereafter to “adopt additional required incremental reductions in consumption” when it
14 determines that “the benefits of the program exceed the costs” (§2806.1(c)(3)). At some
15 point, the cost ceiling in §2806.1(g) will prevent the Commission from expanding the size of
16 the EDC programs unless the reference to “total cost of any plan” in §2806.1(g) is interpreted
17 to mean “total costs net of total savings.” So long as the demand resource is less expensive
18 as the supply resource, the Commission should direct the EDCs to expand their energy
19 efficiency and conservation programs. Why would the General Assembly want ratepayers to
20 pay more for supply if there are less costly demand resources available? Interpreting
21 §2806.1(g)’s limitation on costs to mean “total costs net of total savings” is the reasonable
22 and appropriate way to avoid this illogical result.

23 8. How can the Commission ensure the EDC energy efficiency and conservation
24 programs have a lasting impact on energy usage?

25 I urge the Commission and the EDCs to include lending in the program designs, especially
26 for the government, education and nonprofit sectors that must account for 10% of the energy
27 reductions according §2806.1(b)(1)(i)(b). For some customers, rebates that cover part of the
28 cost of high-performance lighting, ENERGY STAR air conditioning systems and other
29 energy measures have been effective. In its work since 1993, TRF has shown that one of the
30 most effective ways to help government, education facilities and nonprofit organizations
31 improve the energy efficiency of their buildings is to the form of below-market financing that

1 provides incentives for the energy measures but also finances the balance of the facility
2 project costs. The advantage of lending is that the funding is paid back and can go out to
3 other customers over and over again. The incentives do not all need to be grants or rebates.

4 **CEEP'S QUESTIONS**

5 1. Conservation Service Providers

6 a. Should the EDCs collaborate/coordinate on contracting with conservation service
7 providers?

8 I believe it is important that the Commission's Guidelines direct the EDCs to collaborate
9 with each other in proposing programs that span the service territories of multiple EDCs.
10 For example, proven and respected programs such as *Home Performance with ENERGY*
11 *STAR* (for existing homes) and *ENERGY STAR Homes* (for new construction) can be
12 expected in every EDC plan, but it makes no sense for all seven EDCs to be individually
13 administering separate programs and creating multiple brands that confuse the public. In
14 such a case, the Guidelines should propose some process for the EDCs to jointly propose
15 programs that are administered state-wide by a single conservation service provider.

16 To facilitate the program design, I recommend that the Commission host several
17 extended meetings beginning in late January after the Guidelines have been issued.
18 These meeting could be an opportunity for the EDCs, conservation service providers,
19 conservation advocates and representatives of utilities in neighboring states with demand
20 response programs to comer together and to learn about the best practices of existing
21 programs. Pennsylvania needs to get up to speed very quickly if we are to meet the goals
22 and we should not be shy about learning from others about what works and what does not
23 work. These meetings could also be an opportunity for the EDCs to discuss which
24 programs would make sense to offer collectively on a state-wide basis.

1 b. Are there enough common programs for the conservation service providers to
2 provide effective measures across Pennsylvania?

3 If this question is asking should the only EDC programs be statewide programs, my
4 response is no. I believe that EDCs should be able to develop and deploy some
5 individual programs for their service territory because I do not want to stifle the
6 development of new and creative programs by EDCs that are committed to higher levels
7 of performance. However, I think a large part of each EDCs plan will be programs that
8 have been tried and proven before in other states and will be equally applicable across
9 Pennsylvania. For these, the EDCs should be encouraged to work together to design a
10 consistent program and to have it administered by a single conservation service provider
11 for all EDCs.

12 c. Does the provision providing for competitive bidding for all contracts with CSPs
13 require the utility to competitively bid all energy efficiency and conservation
14 services? If not, what energy efficiency and demand services should not be
15 competitively bid?

16 §2806.1(a)((7) requires the Commission's program to include "[p]rocedures to require
17 that electric distribution companies competitively bid all contracts with conservation
18 service providers." The Act does not seem to require competitive bidding in instances
19 where the EDC will be using its own employees to provide energy efficiency,
20 conservation and peak demand programs, only where it will be using outside contractors.
21 I would also suggest that an EDC may extend a contract with a conservation service
22 provider ("CSP") that is performing well without putting the contract extension out to
23 bid.

24 I think it is important to distinguish between conservation service providers and the
25 various subcontractors and service providers that a CSP would use. I support the idea of
26 using the Registry to list qualified energy auditors, quality control inspectors and others
27 and having these listed individuals eligible for subcontracts from CSPs without additional
28 competitive bidding requirements.

1 d. Under definitions, a CSP is an unaffiliated entity providing information and
2 technical assistance. Under 2806.1(a), however, a CSP is said to provide
3 conservation services. How should this Commission interpret this apparent
4 inconsistency?

5 I do not see any internal inconsistency in Act 129's treatment of CSPs. The definition of
6 a CSP is "[a]n entity that provides information and technical assistance on measures to
7 enable a person to increase energy efficiency or reduce energy consumption ..." Energy
8 conservation services typically include both information and/or more hands-on technical
9 assistance, including the actual installations of energy measures.

10 I urge the Commission to address a limitation in the definition of CSP that is in the
11 provision that the CSP can have "no direct or indirect ownership, partnership or other
12 affiliated interest with an electric distribution company." It is clearly a conflict of interest
13 for an EDC to contract with its own affiliated interest, but I see no problem with an EDC
14 contracting with an affiliated interest of a different EDC. We do not want to restrict the
15 pool of eligible CSPs more than necessary. For example, in southeastern Pennsylvania,
16 one of the more effective energy service providers is PPL Energy Services Corporation. I
17 do not see the conflict if PECO were to contract with PPL Energy Services Corporation
18 since there is no corporate relationship between the two. I urge the Commission to
19 interpret the phrase "with an electric distribution company: to mean "with the electric
20 distribution company managing the energy efficiency and conservation plan." This will
21 expand the pool of eligible and qualified CSPs.

22 e. Under 2806.2, the Commission must establish a registry of approved CSPs.
23 What basic business elements (better business bureau rating, bonding, for
24 example) should be required to be registered?

25 First, I recommend that the Commission undertake a thorough search for all of the
26 existing registry-like efforts, both by the Federal government, Commonwealth agencies
27 and reputable professional organizations. The Commission should learn from these
28 earlier efforts. To the extent possible, the Commission should rely on national standards
29 and national credentialing organizations, where they exist. For example, the *Home*
30 *Performance with ENERGY STAR* program requires the building auditors to be certified

1 by Building Performance Institute and the *ENERGY STAR Home* program requires the
2 building inspectors to be certified as a the Home Energy Rating System (HERS) rater.
3 The Pennsylvania Department of Environment Protection will be creating a participating
4 contractor list of solar installers able to participate in the solar photovoltaic and solar
5 water heating rebate program that DEP is creating with funding from the Pennsylvania
6 Alternative Energy Investment Act. Where possible, the qualifications requirements of
7 the Registry should match a national or regional standard that is already used by the
8 industry.

9 The basic business elements that are appropriate for the contractors in the CSP registry
10 will be different for the various categories of contractors. I think we need to begin with
11 the question of what types of contractors should be listed in the registry.

12 The definition of “energy efficiency and conservation measures” contained in
13 §2806.1(m) contains a long list of measures, including:

14 “... solar or solar photovoltaic panels, energy efficient windows and
15 doors, energy efficient lighting, including exit sign retrofit, high bay
16 fluorescent retrofit and pedestrian and traffic signal conversion,
17 geothermal heating, insulation, air sealing, reflective roof coatings, energy
18 efficient heating and cooling equipment or systems and energy efficient
19 appliances and other technologies, practices or measures approved by the
20 commission.”

21 I believe the CSP registry needs to include contractors that install or provide all of these
22 technologies and services.

23 For each of these categories, there will be different standards for the basic business
24 elements such as Better Business Bureau ratings, insurance and bonding requirements,
25 licensing, etc. Once the categories of contractors are determined, I recommend the
26 Commission research all existing contractor certification and referral efforts to determine
27 the extent to which the Commission could use existing listing efforts.

28 Another issue about the Registry is whether it should list individuals or companies. If a
29 company is listed, the customer does not know if the person working on his job is the one

1 who met the listing criteria or was it someone back in the office. I support the listing of
2 both companies and the individuals within the company that satisfy the listing criteria.

3 The Guidelines will also need to develop criteria for removing contractors from the
4 Registry who fail to meet basic standards of proficiency or who commit criminal or
5 tortuous acts against their customers or clients. As with the listing criteria, these de-
6 listing criteria will vary to some extent for each type of contractor.

7 The final issue I want to address about the Registry is its format. I recommend that the
8 Registry be web-based, allowing users to search for contractors by name, category and
9 distance. The Registry website should also be where contractors can apply for listing,
10 where EDCs and customers can find contractors and where customers can submit
11 complaints against contractors.

12 f. What experience and qualifications should be required of registered CSPs?

13 § 2806.2(a) states that “[i]n order to be included in the registry, a conservation service
14 provider must meet experience and other qualifications determined by the commission.”
15 The experience and qualification criteria for listing will vary for each different type of
16 contractor that is included in the Registry.

17 TRF has experience with creating a list of “participating contractors” for the Sustainable
18 Development Fund’s Solar PV Grant Program and it was not a simple matter. That is
19 why in my answer to question 1(e), I recommended that the Commission rely on existing
20 registry efforts by national standards and national credentialing organizations, where they
21 exist.

22 2. Measurement of Meeting Statutory Requirements:

23 a. How would the *addition* of new load in an EDC territory (i.e. RCI new
24 development/construction) be measured, and at what point do these additions
25 meet the “extraordinary load” exceptions?

26 §§2806.1(c)(1) and (c)(2) direct the Commission to adjust for “extraordinary loads that
27 the electric distribution companies must serve.” I do not believe the EDC’s obligation to

1 serve default service customers or new customers in the normal course of events
2 constitutes “extraordinary load.” I disagree with the Energy Association of
3 Pennsylvania’s long list of normal business changes that they believe should qualify as
4 extraordinary loads.⁶ Those are ordinary changes, not extraordinary ones. But just what
5 is included in this ambiguous term besides a declared state emergency? The Guidelines
6 need to define an extraordinary load, make clear how it is to be measured and how the
7 forecast and the future consumption data are to be adjusted to account for any
8 extraordinary loads. Because the concept of “extraordinary load” is a potential loophole
9 to the reduction goals, it needs to be tightly and narrowly defined so as to remove all
10 uncertainty about its meaning.

11 Allow me to repeat again that the concept of “extraordinary loads” is compelling
12 evidence of a legislative intent that the reduction goals are absolute reduction goals rather
13 than savings goals.

- 14 b. How would one distinguish between *reductions* in consumption as a result of
15 customer participation in technology programs in an EDC territory, implemented
16 as part of an EDC’s Energy Efficiency and Conservation Plan, as opposed to
17 unrelated and independent consumer actions (i.e. manually adjust thermostat
18 heat/cooling settings, turn lights off, etc.)?

19 I believe Act 129 creates two separate and distinct ways of evaluating the performance of
20 the programs. The first is the reduction goals. As I stated earlier, I support the reductions
21 approach to the goals in Act 129. That means that the task of determining whether an
22 EDC has met the electricity consumption reduction goal or the peak demand reduction
23 goal would be to compare retail sales and peak demand in the goal years with the base
24 years. There is no need to try to determine whether the EDCs met the goals through their
25 conservation programs or through customer reductions caused by programs of others
26 (such as federal tax credits, PA DEP grants or lending) or by rate shock or economic
27 recession. The goals are met if the retail sales are 99% (in 2011) and 97% (in 2013) of
28 the base year sales and if the peak demand registered in the 100 highest hours is 95.5% of

⁶ See Comments of the Energy Association of Pennsylvania dated November 3, 2008 in Docket No. M-2008-2069887, page 20, available at http://www.puc.state.pa.us/electric/pdf/Act129/EEC_Comments-EAPA.pdf.

1 the base year peak demand levels. The only adjustments needed are to weather-
2 normalize the data and to adjust for extraordinary loads the EDC must serve.

3 But the goals are only the first way of evaluating program performance. The second way
4 is the determinations of program cost-effectiveness. Act 129 calls for independent
5 evaluations that quantify program expenditures and program impacts (i.e. savings) to
6 determine whether the programs are cost-effective. This analysis would examine only
7 the results of the EDC programs and would not give credit to energy reductions that are
8 caused by other programs or forces.

- 9 c. How will economic activity within Pennsylvania and an EDC's service territory be
10 considered when measuring the performance of EE/DR programs? For example,
11 an EDC's territory that is experiencing a recession may meet their goals from
12 decreased economic activity from plant closures, business failures and worker
13 migration out of the service territory.

14 See my answer to the previous question. Some argue that the savings approach is
15 desirable as it avoids the "problem" of an EDC getting credit for meeting its reduction
16 goals through economic recession. They prefer the predictable program sizes and
17 program budgets of the savings approach since the savings targets would need to be met
18 regardless of what was happening to overall EDC sales. I think this concern is
19 overstated. In a 2002 paper entitled *Recession Lessons*, the authors Tip Kim and John
20 Barrett of L.E.K. Consulting analyzed the impact of ten post-WWII recessions on
21 numerous industry sectors and found that residential electricity sales experienced
22 accelerated growth during recessionary periods and that commercial and other electricity
23 sales maintained their growth rates.⁷

24 3. Evaluation:

- 25 a. Should the Commission establish a standardized total resource cost manual to
26 evaluate projects? If so, is there a state or utility this Commission should use as
27 a starting point for discussions?

⁷ *Recession Lessons* is available at www.lek.com/UserFiles/File/recessionlessons.pdf.

1 Evaluation is critical in determining the effectiveness of the programs and their impact on
2 energy usage and demand. Evaluation is also the primary vehicle for uncovering
3 opportunities for improving the programs from year to year. Evaluation must be a central
4 component of the program from the start and should be addressed in the initial program
5 designs.

6 §2806.1(b)(1)(i)(j) requires the EDC to obtain an annual evaluation by an independent
7 evaluator of the cost-effectiveness of the plan. The Commission is required by
8 §2806.1(a)(2) to develop an “evaluation process, including a process to monitor and
9 verify data collection, quality assurance and results of each plan and the program.”

10 As for a standardized manual, I recommend that the Commission take advantage of the
11 experience other states have with evaluating demand resource programs. The widely-
12 recognized model is the California Public Utility Commission’s Energy Efficiency Policy
13 Manual, which is now available in Version 4.0.⁸ TRF recommends that the Guidelines
14 adopt the California Policy Manual.

15 Good evaluation is not inexpensive. The EDC plans and budgets must reserve adequate
16 funding to support a strong evaluation effort.

17 b. What other cost benefit tests should the Commission use to achieve reduction in
18 consumption requirements pursuant to Section 2806.1(C)(3).

19 I recommend that the Commission apply both the Total Resource Cost Test and the
20 Societal Benefits Test when evaluating the cost-effectiveness of the EDC programs. The
21 Societal Benefits Test also considers the benefits of the programs such as employment
22 and environmental improvements. These benefits are important to the General Assembly
23 and to the public and they should be evaluated as well.

⁸ Version 4.0 of the Manual is available at www.cpuc.ca.gov/NR/rdoonlyres/2737D0E6-7163-46ED-B6DA-16A817FF3AF8/0/PolicyManualv4.pdf.

- 1 c. Act 129 requires utilities to file a plan to assure quality assurance [includes
2 evaluation, measurement and verification by independent parties to ensure
3 quality of completed measures], and further requires an annual independent
4 evaluation of cost effectiveness of the Plan. Given the exposure to penalties by
5 EDCs for potential non-compliance on meeting statutory energy efficiency and
6 conservation goals, what approaches are appropriate to ensure that such
7 independent, third parties are free of coercion from the EDCs they evaluate?

8 I think the concern expressed in this question is very real. To shield the evaluators from
9 undue influence by the EDCs and to avoid the possibility of disparate evaluations, I
10 recommend that the Commission and not the EDCs manage the evaluation process. To
11 better compare the EDC programs, I support having the same independent evaluator
12 examine the residential programs of all of the EDCs, while another evaluator looks at the
13 commercial programs and a third at the industrial programs. The Commission and not
14 the EDCs should select the evaluators and negotiate the work plans for the evaluations.
15 The draft evaluation reports should be provided to the Commission staff, the Office of
16 Consumer Advocate, the Office of Small Business Advocate, the EDCs and the public for
17 written comments. The final evaluation reports should be public documents.

18 4. Cost Recovery:

- 19 a. What are the appropriate time frames to expense or amortize energy efficiency
20 and demand response expenditures?

21 §2806.1(k)(1) states:

22 “An electric distribution company shall recover on a full and
23 current basis from customers through a reconcilable adjustment
24 clause under section 1307, all reasonable and prudent costs
25 incurred in the provision or management of a plan provided under
26 this section.

27 Demand side resources are like supply side resources in that the capital investment occurs
28 in the first year, but the electricity saved, like the electricity generated, occurs over many
29 years (up to the life of the installed measures). The question is whether “current”
30 recovery means the program costs must be recovered entirely in the year they are
31 incurred, or whether the recovery can be amortized over the life of the measures, similar
32 to how ratepayers pay for generation facilities.

1 The important comment I would make about cost recovery is that its structure should be
2 influenced by the Commission's decision on the program cost cap in §2806.1(g). I
3 support same year recovery in the early years when the 2% cost cap is not an issue, but I
4 believe it will be appropriate to move to amortization of the program costs so recovery is
5 analogous to cost recovery of generation resources.

6 b. How should this Commission ensure recovery of only "prudent and reasonable"
7 costs? Is this established at the time of plan approval? Is it established only after
8 quality assurance and performance is measured, verified, and evaluated, or is it
9 established during the annual independent analysis?

10 When the Commission evaluates the EDC plans, it will pass judgment on the
11 appropriateness of the program budgets, which should contain an estimate of the cost of
12 saved electricity. However, it is in the §1307 proceeding that the real determination will
13 be made, based on the results of the evaluations and the Commission's examinations of
14 the expenditures.

15 I think we need to recognize that there is a learning curve to demand resources, and the
16 EDCs will get better as they gain experience. The Commission's sense of "prudent and
17 reasonable" will evolve over time.

18 c. If services are not competitively bid, how will this commission determine such
19 costs are reasonable and prudent?

20 I think the touchstone for reasonable and prudent program costs is the cost of saved
21 electricity as determined by the evaluations. This is far more useful than competitive
22 bids. If an EDC program is saving electricity at a cost of 2.75¢ per kWh, the costs are
23 reasonable, regardless of whether the conservation service provider was selected through
24 a competitive solicitation. Likewise, if the cost of saved electricity is found to be 8.75¢
25 per kWh, the costs are unreasonable even if the EDC used a competitive process to select
26 its conservation service providers.

1 5. Program Design

- 2 a. How should the statutory requirement be interpreted and implemented that
3 requires energy efficiency and conservation measures be equitably provided to
4 all classes of customers?

5 As I stated earlier in my testimony, I recommend that the energy consumption reduction
6 goal apply separately each customer class. That is the most direct way of ensuring
7 compliance with the §2806.1(a)(5) requirement that each plan “includes a variety of
8 energy efficiency and conservation measures and will provide the measures equitably to
9 all classes of customers” and the §2806.1(b)(1)(i)(i) requirement that the EDC plans
10 provide “a diverse cross section of alternatives for customers of all rate classes.” Since
11 §2806.1(a)(11) prohibits cross-class subsidization of program costs by requiring that
12 measures “are financed by the same customer class that will receive the direct energy and
13 conservation benefits,” it stands to reason that the goals should apply separately to each
14 customer class.⁹

15 If the Commission does not support the concept of customer class goals, then I believe
16 the test of whether an EDC is providing a “variety” of energy efficiency and conservation
17 opportunities “equitably” to each customer class should whether the programs are being
18 used by customers in similar proportions and whether consumption and peak demand
19 reductions are being realized by customer classes in some proportional fashion.

- 20 b. Should all EDCs be required to implement the same type of EE/DR programs?
21 Is it likely that programs will be equally cost effective in every EDC territory?

22 Pennsylvania needs a robust and effective portfolio of energy efficiency and conservation
23 programs brought up to scale very quickly if we are to meet the goals of Act 129. For that
24 reason, I recommend that the Commission be proactive and recommend a generic set of
25 programs that the EDCs are directed to consider as they develop their plans. These

⁹ As I stated earlier, I do not believe the peak demand reduction goals should be separately applied to the customer classes.

1 generic programs are to be presumed to apply in each service territory unless the EDC can
2 show why a particular program is inappropriate for its service territory.

3 My personal opinion is the differences between service territories – climate and electricity
4 rates being two categories of differences – are not so great that a well-designed program
5 would be cost-effective in one service territory but not cost-effective in another.

6 I also commend the work of the American Council for an Energy Efficient Economy.
7 Their reports on the best utility conservation programs are a very good place to start
8 looking for good program designs. A good example of this work is their *Compendium of*
9 *Champions Chronicling Exemplary Energy Efficiency Programs Across the U.S.*¹⁰, issued
10 in February 2008.

11 c. Which programs are more cost effective if implemented on a statewide basis?

12 I believe most programs are more cost-effective if implement on a statewide basis since
13 that reduces the duplication of the administrative costs. Having seven EDCs separately
14 prepare Requests for Bids for conservation service providers, separately process invoices
15 and make payments to contractors and separately prepare reports is bound to increase
16 costs. Also the increased volume of statewide programs is likely to provide volume
17 discounts on the measures being installed.

18 In addition to the benefit of lower costs, statewide programs create less customer and
19 contractor confusion about different program designs and about the brand itself.

20 I think the burden should be on the EDCs to show that distinct programs for each service
21 territory are justified.

¹⁰ Available at <http://aceee.org/pubs/u081.pdf?CFID=1968822&CFTOKEN=97381575>.

1 6. Reporting Requirements

2 a. What additional information should the Commission require the EDCs to report
3 under Section (i)(1)(iv)?

4 I believe the most important additional issue that should be addressed in the annual EDC
5 reports is whether program performance is on track to meet the reduction goals of Act
6 129. As discussed earlier in my testimony, the Commission needs to be able to evaluate if
7 an EDC needs to make mid-course corrections to its programs. The EDC reports should
8 include an analysis of the likelihood that the reduction goals will be met and what changes
9 in programs or budgets are needed to improve performance.

10 7. The EDCs already have some DSR Programs available to various customer classes.
11 They have developed these programs voluntarily without any mandates.*

12 a. Please provide a brief overview of current EDCs' DSR programs.

13 I think this question should be asked of each EDC. Rather than a brief overview, I
14 recommend that the Commission gather specific information about these existing
15 programs, including:

- 16 • The program's annual budget for the current year and the prior four years and
17 how that budget is recovered in rates.
- 18 • The number of program participants for the current year and the prior four
19 years.
- 20 • The energy consumption reductions achieved by the program's participants
21 for the current year and the prior four years.
- 22 • The peak demand reductions achieved by the program for the current year and
23 the prior four years.

24 b. What has been your experience with customer interest and participation levels in
25 current programs?

26 I do not understand the relevance of this question. The fact is no Pennsylvania EDC has
27 done more than take baby steps in deploying efficiency and conservation as a real
28 resource, except for the Low Income Usage Reduction Program. Customer interest and

1 participation levels are proportional to the political leadership and the resources put into
2 the programs. Low customer interest and participation in programs is the result of weak
3 commitment, small program budgets and poor program design. The fact that not many
4 customers have been interested or have participated in the past should have no bearing on
5 the implementation of Act 129. Other states with a strong commitment to energy
6 efficiency and conservation have shown strong results.

- 7 c. What level of weather-normalized peak load and demand consumption
8 reductions have been achieved under the current programs?

9 As I state in my answer to question 7(a) above, the energy consumption and peak demand
10 reductions should be part of the data supplied by the EDCs for their current programs.

- 11 d. What types of new programs or changes to existing programs, if any, would be
12 needed to achieve the targets contained in Act 129?

13 We must be honest, the goals of Act 129 are indeed stretch goals, but they are what are
14 needed in order to bring electricity prices down, to stimulate a new wave of economic
15 development around clean energy and to make a serious improvement to Pennsylvania's
16 public health and environment. Exelon is showing the way by its commitment to reduce
17 its corporate energy consumption by 25% over the next five years.¹¹ No one who studies
18 energy issues doubts that a 3% reduction in electricity consumption is feasible and cost
19 effective, but we all agree it will take some concentrated effort.

20 We must also be honest and realize it will take some serious resources. According to the
21 American Council for an Energy Efficient Economy's report *The 2008 State Energy*
22 *Efficiency Scorecard*,¹² Pennsylvania ranks 39th in electric utility efficiency program
23 spending. The leading states' spending on a per customer basis is almost two orders of
24 magnitude larger than the customer spending on efficiency in Pennsylvania.

¹¹ See http://findarticles.com/p/articles/mi_m0EIN/is_2008_Oct_15/ai_n30894617.

¹² *The 2008 State Energy Efficiency Scorecard*, American Council for an Energy Efficiency Economy, ACEEE Report o86, October 2008, available at <http://www.aceee.org/pubs/E086.pdf>

1 e. What is the projected level of customer interest or savings in these new
2 programs?

3 This question will be answered by the EDCs in the energy efficiency and conservation
4 plans they submit on July 1, 2008.

5 f. Please provide references to any market research pertaining to specific EDC
6 programs in Pennsylvania.

7 The American Council for an Energy Efficient Economy is preparing a report on the
8 potential of energy efficiency and conservation to be a cost-effective resource in
9 Pennsylvania. The first draft of this report should be completed by Thanksgiving and the
10 final report by late December, 2008. This report will examine the energy efficiency and
11 conservation resources available in Pennsylvania and will the most cost effective
12 approaches to deploy these resources.¹³ This work should be an important aid to the
13 Commission in the development of the Act 129 Guidelines.

14 8. In reference to question 1(e) above, the PA Treasury Department already offers the
15 Keystone Home Energy Loan Program (Keystone HELP™). The Department refers
16 to this as Pennsylvania's official streamlined, lower rate financing program for
17 ENERGY STAR™ rated and other high efficiency and renewable energy
18 improvements.

19 a. To what extent will there be overlap and duplication between this program and
20 Act 129 programs?

21 The Act 129 programs will be successful to the extent they are part of existing purchasing
22 and financing efforts so customers do not have to be aware of and apply to multiple
23 programs. If the Commission concludes that Keystone HELP is a viable program, the
24 EDCs should be encouraged to deploy some of their residential energy support through
25 Keystone HELP. The same holds true for the funding coming from the Pennsylvania
26 Alternative Energy Investment Act and other financing programs (including the energy

¹³ The Pennsylvania report will be similar to the reports ACEEE has performed for other states: Virginia (<http://aceee.org/pubs/e085.htm>); Maryland (<http://aceee.org/pubs/e082.htm>); Florida (<http://www.aceee.org/pubs/e072.htm>); Texas (<http://www.aceee.org/pubs/e073.htm>); and Michigan (<http://www.aceee.org/pubs/e07x.htm>).

1 work of The Reinvestment Fund). The Commission should direct the EDCs to integrate,
2 when feasible, their financial support with existing programs and products.

3 b. The Treasury Department already has an application process established for
4 customer enrollment and contractor registry. To what extent could this process
5 be used as a model under Act 129 compliance?

6 See my answer to question 7(a) above. Again, we do not want a wild proliferation of
7 new programs where the existing programs are in place and effective.

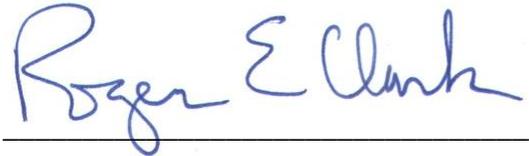
8 c. The Treasury already has a registry of certified contractors. Consumers are able
9 to input a zip code to find certified contractors in their area. To what extent could
10 these contractors' qualifications be used to register CSPs?

11 See my answer to question 1(e) above. I think the Keystone HELP contractor directory is
12 one model that the Commission should consider in developing the Act 129 registry.

13 **CONCLUSION**

14 The goal of the Guidelines should be to provide certainty to the Commission staff, the EDCs and
15 the public about the required elements of the EDC plans and budgets that the EDCs must file
16 with the Commission by July 1, 2009. To the extent humanly possible, the Commission should
17 work to reduce all uncertainty about the provisions of Act 129. The process of reviewing and
18 approving the EDC plans will benefit from clear and unambiguous Guidelines and save everyone
19 time and effort in the long run.

Respectfully submitted,



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Education:

Legal: The National Law Center, George Washington University, Washington, D.C.
Juris Doctor, May 1976

Admitted to the Pennsylvania Bar, December 1976

College: Carleton College, Northfield, Minnesota
Bachelor of Arts, June 1973 (Government and International Relations)

Junior year was spent in Aix-en-Provence, France

Experience:

TRF Sustainable Development Fund, www.trfund.com/sdf, The Reinvestment Fund, 718 Arch Street Suite 300 North, Philadelphia, PA 19106-1591. Manager for Technology and Policy. October 1998 to present.

The Sustainable Development Fund (SDF) was created by the settlement agreement in the PECO Energy restructuring proceeding which I negotiated (see below) to provide financial support for renewable energy and energy conservation projects and businesses. I was instrumental in creating the organizational structure of SDF, including its bylaws, board of directors and other procedures. I designed and manage the wind program that is providing \$11.5 million of wind energy production incentives to seven Pennsylvania wind farms. I developed the solar photovoltaic program which has supported approximately 175 solar installations in southeastern Pennsylvania. I also manage the public education initiatives and the core grant program, and assist other SDF staff with technical issues. I also perform legal duties for TRF, representing the organization in the Exelon/PSEG merger proceeding in Pennsylvania and New Jersey and the Constellation/FPL merger proceeding in Maryland. I have represented SDF in testimony before the Pennsylvania General Assembly on energy legislation and policy.

Clean Energy States Alliance, www.cleanenergystates.org, a project of The Clean Energy Group, Montpelier, Vermont. Project Manager. July 2000 to June 2005.

I worked part-time as project manager of the Clean Energy States Alliance (formerly the Clean Energy Funds Network), a project that provides information and coordination services to (and is funded by annual dues from) the 14 states that have created clean energy funds. CESA also developed research projects and other joint initiatives of the member funds. I managed the public education project which developed new branding for clean energy and produced a series of television and radio spots. I also handled the community wind project and the solar activities.

Pennsylvania Environmental Resources Council, a project funded by the Heinz Endowments.
Managing Attorney. March 1997 to June 2000.

I worked with several other attorneys to represent a coalition of environmental and consumer groups in a variety of electric utility restructuring proceedings before the Pennsylvania Public Utility Commission. The cases included a number of the early generic policy and rulemaking proceedings as well as five major utility restructuring cases (PECO Energy, PP&L, GPU, Duquesne Light and West Penn). I was the attorney in the PECO Energy, Duquesne and West Penn cases and supervised counsel in the PP&L and GPU cases. We secured a number of important environmental provisions in these cases, including a systems benefits charge for renewable energy and energy conservation, new net metering and interconnection rules, a renewable portfolio standard, increased budgets for low income energy conservation and a low income pilot program to install photovoltaic and solar water heating systems. I also represented these clients in the DQE/First Energy merger proceeding, the DQE generation auction case, the PECO Energy advertising complaint and the renewable energy pilot program.

Nonprofits Energy Savings Investment Program, www.trfund.com/NESIP, The Reinvestment Fund,
Cast Iron Building - Suite 300 North, 718 Arch Street, Philadelphia, PA 19106-1591, Program
Director. January 1993 to June 2000.

At the request of The Pew Charitable Trusts, I designed, implemented and managed NESIP, a program to help nonprofit organizations reduce their energy costs through energy efficiency and other strategies. NESIP site-specific energy audits, design assistance for new construction and major renovations, low-interest financing, technical and project implementation assistance and energy education. NESIP provided services to approximately 275 clients. I managed a technical staff of three individuals and the occasional services of another three professionals. NESIP is continuing as a program of The Reinvestment Fund.

Pennsylvania Energy Office, Harrisburg, Pennsylvania. Chief Counsel (January 1986 to January 1993), Assistant Counsel (May 1980 to January 1986) and Associate Director for Renewable Energy (September 1983 to January 1986).

As Chief Counsel, I was responsible for representing the agency in administrative proceedings before the Pennsylvania Public Utility Commission and the Federal Energy Regulatory Commission. I also represented the office in trial and appellate court work before the Board of Claims, Commonwealth Court and the Pennsylvania Supreme Court. I provided legal counsel to the agency's directors and review and signed all agency contracts. I served as counsel to the Variance Board established by the Building Energy Conservation Act. I was also responsible for the agency's energy policy work and served as manager of the Energy and Power Task Force and project leader for *An Energy Policy for Pennsylvania*, the 1988 state energy policy. I represented Pennsylvania in the National Governor's Association's policy efforts regarding a national energy policy and global climate change. I was responsible for other assignments, such as directing the agency's demand-side management initiative and forming a building technology research consortium.

APPENDIX A

Resume of Roger E. Clark
Page three

Legal Services, Inc., Carlisle, Pennsylvania. Managing Attorney. June 1979 to May 1980.

I was the managing attorney of a legal services office which had four attorneys, two paralegals, four support staff and six part-time law students. I was responsible for the overall management and direction of the office, supervision of attorney legal work, and developing good working relationships with the community. Approximately half of my time was spent on an individual caseload, specializing in consumer, contract, and utility/energy matters. I was active in the statewide legal services utility specialists group.

Alaska Legal Services Corporation, Fairbanks, Alaska. Staff Attorney. October 1976 to August 1978.

As staff attorney, my duties included client intake and interviewing, case research and preparation, representation of clients in state and federal administrative proceedings, trial work in state and federal court, and appellate work in the Alaska Supreme Court and the U.S. Department of Interior's Board of Land Appeals. I also made regular visits to isolated Native villages in interior Alaska and trained and supervised a paralegal working in the rural community of Tok.

Other Service:

Energy Coordinating Agency, director.
Mid-Atlantic Green-e Advisory Committee, member.
Philadelphia Million Solar Roofs Program, member.
St. Thomas Church Whitemarsh, vestry member.

TRF has experience with energy efficiency and conservation, renewable energy and related energy policies and issues, and is committed to working with the Commission and the electric utilities to make Act 129 a success.

INTRODUCTION TO THE TASK AT HAND

Before diving into the issues and details of implementing Act 129, TRF would like to put this moment in context. As Chairman Cawley noted in a statement released on October 9, 2008, the passage of Act 129 was a “momentous day for Pennsylvania.”³ For the first time, the Commonwealth is firmly headed in a new energy direction by including energy efficiency, energy conservation and demand response in our energy future. These demand resources, if implemented effectively and at the appropriate scale, will have a major, direct and immediate impact on energy prices and will help make consumers’ energy bills more affordable and less subject to the risk of fossil fuel price escalation. These resources also have substantial local economic development impacts as well as environmental benefits that can reduce consumers’ exposure to utility environmental compliance costs now and in the future.

In late 2005, the U.S. Department of Energy, the U.S. Environmental Protection Agency and more than 50 leading electric and gas utilities, state utility commissioners, state air and energy agencies, energy service providers, energy consumers, and energy efficiency and consumer advocates joined together to develop the *National Action Plan for Energy Efficiency*.⁴ The goal of the group was “to create a sustainable, aggressive national commitment to energy efficiency through the collaborative efforts of gas and electric utilities, utility regulators, and other partner organizations.”

In July 2006, the *National Action Plan for Energy Efficiency* report was released⁵ and it contained five over-arching recommendations that are work noting as Pennsylvania begin its implementation of Act 129:

- Recognize energy efficiency as a high-priority energy resource.
- Make a strong, long-term commitment to implement cost-effective energy efficiency as a resource.
- Broadly communicate the benefits of and opportunities for energy efficiency.
- Promote sufficient, timely, and stable program funding to deliver energy efficiency where cost effective.

³ Chairman Cawley’s statement is available at www.puc.state.pa.us/general/pdf/Statement_Chairman_HB2200_100908.pdf.

⁴ The website for this ongoing effort is <http://www.epa.gov/cleanenergy/energy-programs/napee/index.html>.

⁵ The July 2006 *National Action Plan for Energy Efficiency* report is available at www.epa.gov/cleanenergy/documents/napee/napee_report.pdf.

- Modify policies to align utility incentives with the delivery of cost-effective energy efficiency and modify ratemaking practices to promote energy efficiency investments.

TRF urges the Commission to unequivocally proclaim, not only in its Act 129 Guidelines but also in all its other actions and initiatives, that Pennsylvania recognizes energy efficiency as a high-priority resource and is making a strong and long-term commitment to implement cost-effective efficiency as a core resource in Pennsylvania's energy future. The Commission is working together with its regulated utilities and its sister Commonwealth agencies to communicate the benefits of and opportunities for energy efficiency. For the first time, Pennsylvania is committing sufficient, timely and stable program funding to deliver energy efficiency where cost effective and it will further work to give utilities the incentive and ratemaking support to actively pursue energy efficiency investments. This is the clarion call that needs to be made in the Commission's Guidelines if Act 129 is to succeed.

That said, TRF will now address the various issues it sees in the implementation of Act 129 and in the Guidelines that the Commission is directed to issue by January 15, 2009.

ACT 129's GOALS FOR REDUCING CONSUMPTION

TRF believes that the proper implementation of Act 129 begins with a proper understanding of the reduction in consumption goals in §2806.1(c) and the peak demand reduction goal in §2806.1(d). The scale of the EDC programs that are required by the Act and the cost of those programs are shaped entirely by our understanding of the goals. TRF believes that the most important task of the Commission's Guidelines is to clearly and unequivocally define these goals. The subsections that follow will address the reduction in consumption goal, followed by the reduction in peak demand goal in a following section.

Act 129's goals for reducing electricity consumption by 2011 and by 2013 are contained in §2806.1(c)(1) and (c)(2) which read:

(c) Reductions in consumption.--The plans adopted under subsection (b) shall reduce electric consumption as follows:

(1) By May 31, 2011, total annual weather-normalized consumption of the retail customers of each electric distribution company shall be reduced by a minimum of 1%. The 1% load reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010, with provisions made for weather adjustments and extraordinary loads that the electric distribution company must serve.

(2) By May 31, 2013, the total annual weather-normalized consumption of the retail customers of each electric distribution company shall be reduced by a minimum of 3%. The 3% load reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the

commission for June 1, 2009, through May 31, 2010, with provision made for weather adjustments and extraordinary loads that the electric distribution company must serve.

The Base Year Forecast - June 1, 2009 through May 31, 2010

Any analysis of Act 129's goals to reduce electric consumption begins with the Commission's forecast of future retail consumption. §2806.1(c) states that the:

“... reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010, with provisions made for weather adjustments and extraordinary loads that the electric distribution company must serve. [emphasis added].

The Commission currently prepares an annual report containing a forecast of electric sales. The current report, *Electric Power Outlook for Pennsylvania 2007-2012*, was issued in August 2008, and states the following about the forecast of future electricity consumption for Pennsylvania's retail customers:

“[t]he current aggregate five-year projection of growth in energy demand is 1.4 percent. This includes a residential growth rate of 1.5 percent, a commercial rate of 1.6 percent and an industrial rate of 1.1 percent.⁶

TRF believes that given the importance of the base year forecast to Act 129, a new forecasting effort is appropriate. The Guidelines should set forth the methodology the Commission will use to forecast retail sales by the EDCs, including data collection and analysis. Given the current economic situation, one of the important issues must be what assumptions the Commission should make regarding an economic downturn lasting through the base year period. A forecast that is too high or too low will distort the energy consumption goals of Act 129.

The Guidelines should provide for a process that provides for a draft Commission forecast to be issued by the Commission and for the EDCs and the public to have the opportunity to file written comments and reply comments before the Commission issues the final forecast.

Provisions Made for Weather Adjustments

The Guidelines should address the methodology the Commission will use to make weather adjustments as provided for in §2806.1(c)(1) and (c)(2). What weather data from what cities will be used as the source of the Cooling Degree Day and the Heating Degree Day data for each EDC? How much does a colder-than-normal winter increase electric usage for each EDC, given that the EDCs have different penetration rates for electric heating? How much does a hotter-than-normal summer increase electric usage for each EDC, given the different penetration rates

⁶ *Electric Power Outlook for Pennsylvania 2007-2012*, page 14. This report is available at www.puc.state.pa.us/General/publications_reports/pdf/EPO_2008.pdf.

for air conditioning? The Guidelines need to provide unambiguous guidance about how the Commission will weather normalize the consumption data.

Extraordinary Loads That The Electric Distribution Companies Must Serve

§§2806.1(c)(1) and (c)(2) direct the Commission to adjust for “extraordinary loads that the electric distribution companies must serve.” TRF doubts the term means the EDC’s obligation to serve default service customers, but just what is included in this ambiguous term besides a declared state emergency? The Guidelines need to define an extraordinary load, make clear how it is to be measured and how the forecast and the future consumption data are to be adjusted to account for any extraordinary loads.

TRF’s Placeholder Base Year Forecast

Using data from the *Electric Power Outlook for Pennsylvania 2007-2012* report, TRF came up with its crude placeholder forecast for the base year of June 1, 2009 through May 31, 2010. TRF is not suggesting that this forecast has any validity other than to serve a very rough guidance for answering some of the implementation questions raised by Act 129. TRF began with the 2007 retail sales data contained in Table 2.1 of *Electric Power Outlook for Pennsylvania 2007-2012*. TRF did not weather-normalize the 2007 data. The raw 2007 data was projected forward by inflating the residential sales by 1.5% per year, the commercial sales by 1.6% per year, the industrial sales by 1.1% per year and the other sales by 1.4% per year. Because Act 129 addresses only retail sales, the sales for resale were excluded from the table. To convert from the calendar year, TRF took 7/12’s of the 2009 forecast and 5/12’s of the 2010 forecast.⁷

These calculations resulted in the following:

Base Year Sales Forecast - 06/01/09 - 05/31/10

EDC	Residential (MWH)	Commercial (MWH)	Industrial (MWH)	Other (MWH)	Total (MWH)
Duquesne	4,364,906	6,978,205	3,229,490	69,589	14,642,189
Met-Ed	5,800,425	4,899,512	4,099,299	35,831	14,835,067
Penelec	4,661,702	5,339,982	4,733,125	42,628	14,777,438
Penn Power	1,751,546	1,468,924	1,670,734	6,715	4,897,919
PECO	13,981,779	9,239,610	17,026,679	962,267	41,210,336
PPL	14,938,976	14,293,946	9,735,798	233,611	39,202,331
West Penn	7,531,895	5,193,535	8,378,320	53,764	21,157,514
Totals:	53,031,229	47,413,715	48,873,445	1,404,404	150,722,793

TRF hopes that the Guidelines provide a far better methodology and process for developing the very important forecast for EDC sales from June 1, 2009 through May 31, 2010.

⁷ TRF will share its Excel file used to generate this table with any interested party.

The 1% and 3% Goals – Reduction or Savings?

Act 129's goals for reducing electricity consumption by 2011 and by 2013 are contained in §2806.1(c) which reads:

(c) Reductions in consumption.--The plans adopted under subsection (b) shall reduce electric consumption as follows:

(1) By May 31, 2011, total annual weather-normalized consumption of the retail customers of each electric distribution company shall be reduced by a minimum of 1%. The 1% load reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010, with provisions made for weather adjustments and extraordinary loads that the electric distribution company must serve.

(2) By May 31, 2013, the total annual weather-normalized consumption of the retail customers of each electric distribution company shall be reduced by a minimum of 3%. The 3% load reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010, with provision made for weather adjustments and extraordinary loads that the electric distribution company must serve.

A fundamental issue that needs to be addressed in the Guidelines is what is the meaning of the §2806.1(c) phrase “measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010...” Are the 1% and 3% goals are a reduction in sales from the base year (the reduction approach) or a quantification of the savings that must be achieved (the savings approach).

The Reduction Approach

Under the reduction approach to the §2806.1(c) goals, Act 129 would require retail sales in the year ending May 31, 2011 are to be at a level 1% lower than the forecasted sales of the base year of June 1, 2009 through May 31, 2010. In the year ending May 31, 2013, the retail sales are to be 3% lower than the base year's forecasted sales. With the reduction approach, the EDCs would be responsible for deploying energy efficiency and conservation programs at the level needed to reduce retail sales to hit the 2011 sales target of 99% of the base year sales and the 2013 sales target that is 97% of the base year sales.

Using TRF's placeholder forecast described earlier, the reduction approach would require retail sales to be reduced as follows:

Annual Sales Forecasts

EDC	Base Year Forecast (MWHs)	2011's 1% Reduction Goal (MWHs)	2013's 3% Reduction Goal (MWHs)
Duquesne	14,642,189	14,495,767	14,202,923
Met-Ed	14,835,067	14,686,716	14,390,015
Penelec	14,777,438	14,629,663	14,334,114
Penn Power	4,897,919	4,848,940	4,750,982
PECO	41,210,336	40,798,232	39,974,026
PPL	39,202,331	38,810,308	38,026,261
West Penn	21,157,514	20,945,939	20,522,789
Totals:	150,722,793	149,215,566	146,201,110

TRF expanded its forecast spreadsheet to calculate how many megawatt-hours (MWHs) need to be saved to hit these targets. TRF calculated a business-as-usual forecast for June 1, 2010 through May 31, 2011 by growing the base year numbers for one year at the same growth rates used to calculate the base year. The difference between the 2011 reduction goals and the 2011 business-as-usual forecast is the quantity of MWHs that the EDC efficiency and conservation programs must save in order to meet the 1% reduction goal. The table below shows the MWH savings that need to be realized in the 19 months⁸ prior to May 31, 2011 to meet the 1% reduction goal:

Savings Required to Meet the 1% Reduction Goal

EDC	Residential (MWH)	Commercial (MWH)	Industrial (MWH)	Other (MWH)	Total (MWH)
Duquesne	109,123	181,433	67,819	1,670	360,045
Met-Ed	145,011	127,387	86,085	860	359,343
Penelec	116,543	138,840	99,396	1,023	355,801
Penn Power	43,789	38,192	35,085	161	117,227
PECO	349,544	240,230	357,560	23,094	970,429
PPL	373,474	371,643	204,452	5,607	955,175
West Penn	188,297	135,032	175,945	1,290	500,564
Totals:	1,325,781	1,232,757	1,026,342	33,706	3,618,585

⁸ The 19 months is based on the assumption that the statutory deadlines of EDC plan submission by July 1, 2009 (per §2806.1(b)(1)(i)) and Commission approval by 120 days (per §2806.1(e)) are met. That would mean that EDC plan implementation could start November 1, 2009.

Assuming the EDCs have met the 1% reduction goal on May 31, 2011, the table below shows the additional MWH savings that need to be realized to meet the 3% reduction goal on May 31, 2013:

Additional Savings Required to Meet the 3% Reduction Goal

EDC Served	Residential (MWH)	Commercial (MWH)	Industrial (MWH)	Other (MWH)	Total (MWH)
Duquesne	217,908	362,402	135,315	3,334	718,959
Met-Ed	289,573	254,449	171,760	1,717	717,498
Penelec	232,725	277,324	198,317	2,043	710,408
Penn Power	87,442	76,286	70,003	322	234,053
PECO	698,009	479,845	713,414	46,106	1,937,374
PPL	745,795	742,334	407,928	11,193	1,907,250
West Penn	376,013	269,718	351,050	2,576	999,357
Totals:	2,647,465	2,462,357	2,047,787	67,291	7,224,900

It should be noted that TRF's spreadsheet methodology for the reduction approach somewhat overstates the number of MWHs that must be saved in the preceding two tables because it does not assume any savings until the year immediately preceding the compliance date. Because the growth rate is compounded, reductions earlier in the time period would have a greater impact and reduce the total number of MWHs that must be saved to attain the sales targets.

The Savings Approach

The other approach to interpret the §2806.1(c) goals is the savings approach, which interprets the 1% and 3% goals as describing the quantity of MWHs the EDC programs must save. The savings goals are easy to calculate, being simply 1% and 3% of the base year sales figures. The table below shows the number of MWHs each EDC must save to meet in 1% savings goal by May 31, 2011.

Savings Required to Meet the 1% Savings Goal

EDC	Residential (MWH)	Commercial (MWH)	Industrial (MWH)	Other (MWH)	Total (MWH)
Duquesne	43,649	69,782	32,295	696	146,422
Met-Ed	58,004	48,995	40,993	358	148,351
Penelec	46,617	53,400	47,331	426	147,774
Penn Power	17,515	14,689	16,707	67	48,979
PECO	139,818	92,396	170,267	9,623	412,103
PPL	149,390	142,939	97,358	2,336	392,023
West Penn	75,319	51,935	83,783	538	211,575
Totals:	530,312	474,137	488,734	14,044	1,507,228

The table below shows the additional number of MWHs each EDC must save to meet in 3% savings goal by May 31, 2013.

Additional Savings Required to Meet the 3% Savings Goal

EDC	Residential (MWH)	Commercial (MWH)	Industrial (MWH)	Other (MWH)	Total (MWH)
Duquesne	87,298	139,564	64,590	1,392	292,844
Met-Ed	116,008	97,990	81,986	717	296,701
Penelec	93,234	106,800	94,662	853	295,549
Penn Power	35,031	29,378	33,415	134	97,958
PECO	279,636	184,792	340,534	19,245	824,207
PPL	298,780	285,879	194,716	4,672	784,047
West Penn	150,638	103,871	167,566	1,075	423,150
Totals:	1,060,625	948,274	977,469	28,088	3,014,456

One question that arises under the savings approach is whether the quantity of savings identified for the 2011 and the 2013 goals must be achieved in the 12 months prior to May 31, 2011 and May 31, 2013, or whether the savings can be spread out over the prior years. For example, do the energy savings realized prior to June 1, 2010 count towards the 2011 goal of 1,507,228 MWH saved? Or does the entire savings goal of 1,507,228 MWHs saved need to be saved during the 12 months prior to May 31, 2011? The distinction is clearer on the following tables.

Under the first savings scenario, the assumption is that the savings goal is met only when the savings realized in the 12 months preceding the date of the goal (May 31, 2011 and May 31, 2013). Since energy efficiency and conservation measures result in savings for the useful life of the measures, the measures installed prior to May 31, 2010 are still producing savings in 2011, but only the savings from these prior year measures that are realized in the 12 months before May 31, 2011 are counted as part of the current year savings. As shown on the table below, the EDCs can meet the 1% goal in 2011 by saving 0.25% in 2010 and 0.75% in 2011.

Savings Needed Assuming Savings Must Occur in Year of Goal

12 Months Ending	Savings (%)	Savings from Measures Installed in Current Year (MWH)	Current Year Savings from Measures Installed in Current and Prior Years (MWH)	Cumulative Savings to Date (MWH)
May 31, 2010	0.25%	376,807	376,807	376,807
May 31, 2011	0.75%	1,130,421	1,507,228	1,884,035
May 31, 2012	0.85%	1,281,144	2,788,372	4,672,407
May 31, 2013	1.15%	1,733,312	4,521,684	9,194,090

As of May 31, 2011, the total measures installed are generating savings at an annual rate of 1,507,228, which is the 1% savings target.

In the second savings scenario shown on the table below, the goal is the cumulative savings realized, not an annual rate of savings. By May 31, 2011, the annual rate of savings is only 1,130,421 MWHs a year, but since the savings realized are counted towards the total, the 1% goal is deemed met. Because the savings accumulate, the EDCs can satisfy the savings goal with even fewer installed measures, particularly in the latter years. The total savings realized in the table below over the four program years is less than half the savings in the previous table.

Savings Needed Assuming Savings Can Be Cumulative

12 Months Ending	Savings (%)	Savings from Measures Installed in Current Year (MWH)	Current Year Savings from Measures Installed in Current and Prior Years (MWH)	Cumulative Savings to Date (MWH)
May 31, 2010	0.25%	376,807	376,807	376,807
May 31, 2011	0.50%	753,614	1,130,421	1,507,228
May 31, 2012	0.15%	226,084	1,356,505	2,863,733
May 31, 2013	0.20%	301,446	1,657,951	4,521,684

While these two scenarios of the savings approach do save energy, total consumption increases steadily since the savings never exceed the growth in consumption. Retail sales grow from the Base Year levels throughout the years and is never reduced below the Base Year level:⁹

Total Sales Under the Two Savings Scenarios

12 Months Ending	Forecast Assuming Goal Requires Savings to Occur in Year of Goal (MWH)	Forecast Assuming Goal Recognizes Cumulative Savings (MWH)
May 31, 2010	150,345,986	150,345,986
May 31, 2011	151,320,409	151,697,216
May 31, 2012	152,157,751	153,594,893
May 31, 2013	152,554,648	155,443,776

⁹ TRF acknowledges the work of Kevin Warren of Warren Energy Engineering LLC in creating the spreadsheets that appear on the bottom of the previous page and the top of this page and for his critique of the TRF forecasting spreadsheets that appear elsewhere in this document.

Why TRF Supports the Reduction Approach

TRF believes the §2806.1(c) language “[t]he 1% [or 3%] load reduction in consumption shall be measured against the electric distribution company's expected load as forecasted by the commission for June 1, 2009, through May 31, 2010...”, means an absolute reduction in consumption from the Base Year levels. The goal of Act 129 is not to slow down the increases in retail sales but to reduce those sales.

Act 129 uses the words “reduction” or “reduce” a total of 34 times throughout the energy efficiency and conservation program section of the legislation. Typical of these is §2806.1(b)(1)(i)(a), which requires the EDC plans “to implement energy efficiency and conservation measures to achieve or exceed the required reductions in consumption under subsections (c) and (d)” [emphasis added].¹⁰

In contrast, the term “savings” appears only twice in the legislation and one of those references (§2806.1(d)(2)) is to financial savings. The only reference to “savings” of energy is §2806.1(i)(1)(ii), which requires the annual reports from the EDCs to the Commission to include “[m]easurement and verification of energy savings under the plan” [emphasis added].

It is obvious that the General Assembly intended Act 129 to reduce consumption and peak demand. Only the reduction approach guarantees a reduction in total consumption. The savings approach reduces consumption less than it might otherwise be under business-as-usual, but as was shown in the previous section, an EDC could satisfy the 1% and 3% goals under the savings approach and still see consumption grow during the years of its plan. That is inconsistent with a plain reading of Act 129.

TRF also believes that the reduction approach to Act 129's goals would be easier to verify by simply examining EDC retail sales data. Under the sales approach, a decision as to whether an EDC satisfied the savings goal requires extensive quantification of program savings. This quantification is important under either approach, but under the savings approach, the threat of civil fines and the mandatory loss of program responsibility will surely turn evaluation into a drawn-out consultant duel involving competing evaluations and models. The decision on such a critical question as satisfaction of the goals should be as straight-forward as possible, and that happens only with the reduction approach.

One criticism of the reduction approach goals is that they could be satisfied by a drop in retail sales due to rate shock, economic recession or factors having nothing to do with the EDC's efficiency and conservation programs. The savings approach, this thinking suggests, would better guarantee predictable program sizes and program budgets since the savings targets would

¹⁰ The other 33 uses of the word “reduction” or “reduce” are in §2806.1(a); §2806.1(a)(4); §2806.1(a)(6); §2806.1(a)(8); §2806.1(a)(9); §2806.1(b)(1)(i)(a); §2806.1(b)(1)(i)(b); §2806.1(b)(1)(i)(d); §2806.1(b)(1)(ii); §2806.1(b)(1)(i)(a); §2806.1(b)(2); §2806.1(b)(3); §2806.1(c); §2806.1(c)(1); §2806.1(c)(2); §2806.1(c)(3); §2806.1(d); §2806.1(d)(1); §2806.1(e)(1); §2806.1(f)(2); §2806.1(f)(2)(i); §2806.1(f)(2)(ii); §2806.1(f)(2)(ii)(a); §2806.1(k)(2); §2806.1(k)(3); §2806.1(m)'s definition of “Conservation service provider”; and §2806.1(m)'s definition of “Energy efficiency and conservation measures.”

need to be met regardless of what was happening to overall EDC sales. TRF doubts that this fear will materialize. It is not clear that retail electricity sales are hit as hard as other market sectors by a recession. In a 2002 paper entitled *Recession Lessons*, the authors Tip Kim and John Barrett of L.E.K. Consulting analyzed the impact of ten post-WWII recessions on numerous industry sectors and found that residential electricity sales experienced accelerated growth during recessionary periods and that commercial and other electricity sales maintained their growth rates.¹¹

Another criticism of the reduction approach is that it makes the goals significantly larger than the savings approach. The goals under the reduction approach are indeed stretch goals, but they are what are needed in order to bring electricity prices down, to stimulate a new wave of economic development around clean energy and to make a serious improvement to Pennsylvania's public health and environment. Exelon is showing the way by its commitment to reduce its corporate energy consumption by 25% over the next five years.¹² No one who studies energy issues doubts that a 3% reduction in electricity consumption is feasible and cost effective, but we all agree it will take some concentrated effort. TRF urges the Commission to join the General Assembly and the Governor and to issue Guidelines that clearly state the 1% and 3% goals in Act 129 are true reductions and not simply minor adjustments to relentless growth.

Should the Goals Apply to the EDC as a Whole or to Each Individual Customer Class?

Act 129 is ambiguous about whether the goals must come proportionally from all customer classes. §2806.1(a)(5) requires that the Commission's guidelines include standards "to ensure that each plan includes a variety of energy efficiency and conservation measures and will provide the measures equitably to all classes of customers." §2806.1(a)(11) prohibits cross-class subsidization of program costs by requiring that measures "are financed by the same customer class that will receive the direct energy and conservation benefits." §2806.1(b)(1)(i)(i) requires that the EDC plans provide "a diverse cross section of alternatives for customers of all rate classes."

TRF recommends that the Commission consider requiring that the EDCs achieve the consumption reduction goals for each customer class rather than for the retail sales as a whole. This is the most direct way to ensure that a "variety" of energy efficiency and conservation opportunities are provided "equitably" to each customer class.

If the Commission does not support the concept of customer class goals, then the Guidelines will need to address some other standard to assessing whether the utility plan provides a "variety" of energy efficiency and conservation opportunities are provided "equitably" to each customer class. TRF believes it is not enough to offer a comparable number of programs, but the test also needs to include whether the programs are being used by the customers in some proportional

¹¹ *Recession Lessons* is available at www.lek.com/UserFiles/File/recessionlessons.pdf.

¹² See http://findarticles.com/p/articles/mi_m0EIN/is_2008_Oct_15/ai_n30894617.

way and whether consumption and peak demand reductions are being realized by customer classes in some proportional fashion.

ACT 129's GOALS FOR REDUCING PEAK DEMAND

§2806.1(d)(1) contains the Act's goal for reductions in peak demand:

(d) Peak demand.--the plans adopted under subsection (b) shall reduce electric demand as follows:

(1) By May 31, 2013, the weather-normalized demand of the retail customers of each electric distribution company shall be reduced by a minimum of 4.5% of annual system peak demand in the 100 hours of highest demand. The reduction shall be measured against the electric distribution company's peak demand for June 1, 2007, through May 31, 2008.

The peak demand goal avoids the forecasting issues presented in §2801(c) since the peak demand reductions are to be measured against historic demand levels for the period June 1, 2007 through May 31, 2008, but there are several issues involving the demand reduction goal that the Commission's Guidelines should address to avoid confusion.

The Top 100 Hours for Each Separate EDC or for the System as a Whole?

§2806.1(d)(1) requires a reduction of 4.5% of "annual system peak demand in the 100 highest hours of highest demand." Since Pennsylvania's EDCs experience their 100 hours of highest demand at different dates and times, the question arises whether the 100 hours of highest demand are to be calculated separately for each EDC or whether the 100 hours of highest demand on the "system" are used to calculate the necessary demand reductions.

TRF suggest that the phrase "annual system peak demand" indicates the 100 hours should be the 100 hours when system peak was at its highest levels. For Duquesne, Met-Ed, Penelec, PECO, PPL and West Penn, the system is PJM. For Penn Power, the system is MISO. This makes sense as the hours when the peak is highest for the system are the hours when prices are at their highest. An individual EDC peak for an hour when the system was not experiencing a peak would not likely result in power costs as expensive as during times of system peak.

The Commission's Guidelines should identify the 100 hours of highest system peak demand for both PJM and MISO during the base year period of June 1, 2007 through May 31, 2008. The Guideline should also identify the peak demand levels for each of the EDCs during those hours.

The 4.5% Demand Reduction Goal – Reduction or Savings?

Many of the same issues discussed earlier about consumption reduction apply to the demand reduction goals. TRF believes the 4.5% reduction goal should be an absolute reduction as opposed to a demand savings equal in MW to 4.5% of the demand during the 100 hours of

highest system demand. The purpose of Act 129 is to reduce peak demands, not just to nibble away at them a bit.

Should the Goal Apply to the EDC as a Whole or to Each Individual Customer Class?

Because of the ease of obtaining demand reductions for large power consumers - and the lower cost of those reductions - TRF does not recommend that the demand reduction goal should be applied to each individual customer class. That said, the Guidelines will need to develop a standard for assessing whether the EDC's plans satisfy the §2806.1(a)(5) requirement that the plans provides a "variety" of energy efficiency and conservation opportunities are provided "equitably" to each customer class.

MID COURSE CORRECTIONS

Act 129 calls for a five-year plan cycle, but it recognizes that mid-course corrections may be required as the EDC plans are implemented and experience is gained. The EDC plans need the ability to adjust to changes and new opportunities. §2806.1(a)(6) requires the Commission to establish "[p]rocedures to make recommendations as to additional measures that will enable an electric distribution company to improve its plan and exceed the required reductions in consumption under subsections (c) and (d)."

§2806.1(b)(2) gives the Commission authority to "direct an electric distribution company to modify or terminate any part of a plan approved under this section if, after an adequate period for implementation, the commission determines that an energy efficiency or conservation measure included in the plan will not achieve the required reductions in consumption in a cost-effective manner under subsections (c) and (d)."

TRF urges the Commission to provide a process in the Guidelines for reviewing the annual independent evaluation reports prepared under §2806.1(b)(1)(i)(j) and for determining the proper response. This process should include the Commission, the EDC, the Office of Consumer Advocate, the Office of Small Business Advocate and the public. How plans are to be revised is a very important element of the Guidelines.

EDC PLANS AND PROCESS

Act 129 rightly establishes a multi-year planning cycle for energy efficiency and conservation programs. If the funding commitment is too short, there can be significant disruption in the energy efficiency marketplace that will undermine long-term transformation in the market. This is particularly true if programs are initially under-funded, so that funding runs out after only a short time. A five year planning cycle may provide a good balance of program responsiveness and flexibility on one hand, and market stability on the other.

Effective programs will rely upon a network of energy efficiency allies and service providers. These include manufacturer representatives, lighting contractors, design engineers and traditional Energy Service Companies (ESCOs). These entities can only promote the program effectively if they know that the funding will be available at the end of their sales cycle. Many projects, particularly ESCO performance contracts, have very long sales cycles. Also, some programs might require several years to achieve cost-effectiveness and it is important to allow a reasonable “development” period for programs to take hold.

The Commission should focus on the program portfolio rather than individual programs.

Pre-Submission Collaboration

TRF urges the Commission to require the EDCs to use a collaborative process with stakeholders to design the program plans because this will result in better plans and will simplify the approval process. There are many entities in Pennsylvania with energy efficiency and conservation expertise and the EDCs should be directed to work collaboratively with these entities in the design of their programs.

Multi-EDC Programs

TRF also urges the Commission to direct the EDCs to collaborate with each other in proposing programs that span the service territories of multiple EDCs. For example, a respected program such as *Home Performance with ENERGY STAR* can be expected in every EDC plan, but it makes no sense for all seven EDCs to be individually administering the program and creating multiple brands that confuse the public. In such a case, the Commission Guidelines should propose some process for the EDCs to jointly propose programs that are administered state-wide by a single conservation service provider.

EDC Plan Contents

§§2806.1(a) and (b) contain multiple requirements for the EDC plans. The Guidelines should develop a clear outline or template for the EDC plans that address all of the content requirements of §§2806.1(a) and (b). The Guidelines should specify what information the Commission requires about each program.

Commission Procedures

Act 129 direct the Commission to develop procedures and methodologies for addressing many different issues:

- §2806.1(a)(1) calls for “procedures for the approval of plans submitted under subsection (b).”
- §2806.1(a)(2) requires the Commission to have “[a]n evaluation process, including a process to monitor and verify data collection, quality assurance and results of each plan and the program.”

- §2806.1(a)(3) suggests a methodology for the “analysis of the cost and benefit of each plan submitted under subsection (b) in accordance with a total resource cost test approved by the commission.”
- §2806.1(a)(4) requires “[a]n analysis of how the program and individual plans will enable each electric distribution company to achieve or exceed the requirements for reduction in consumption under subsections (c) and (d).”
- §2806.1(a)(5) calls for “[s]tandards to ensure that each plan includes a variety of energy efficiency and conservation measures and will provide the measures equitably to all classes of customers.”
- §2806.1(a)(6) requires the development of “[p]rocedures to make recommendations as to additional measures that will enable an electric distribution company to improve its plan and exceed the required reductions in consumption under subsections (c) and (d).”
- §2806.1(a)(7) mandates “[p]rocedures to require that electric distribution companies competitively bid all contracts with conservation service providers.”
- §2806.1(a)(8) directs the Commission to develop “[p]rocedures to review all proposed contracts prior to the execution of the contract with conservation service providers to implement the plan.”
- §2806.1(a)(9) calls for “[p]rocedures to ensure compliance with requirements for reduction in consumption under subsections (c) and (d).”

The Guidelines should address each of these issues and describe the procedure or the methodology the Commission will employ in each. The Guidelines should clearly state the criteria and methodology should the Commission use to determine whether a utility’s plan will enable it to meet the consumption reductions goals and the peak demand reduction goals.

EVALUATING COST EFFECTIVENESS

Evaluation is critical in determining the effectiveness of the programs and their impact on energy usage and demand. Evaluation is also the primary vehicle for uncovering opportunities for improving the programs from year to year. Evaluation must be a critical component of the program from the start and should be addressed in the initial program designs.

§2806.1(b)(1)(i)(j) requires the EDC to obtain an annual evaluation by an independent evaluator of the cost-effectiveness of the plan. The Commission is required by §2806.1(a)(2) to develop an “evaluation process, including a process to monitor and verify data collection, quality assurance and results of each plan and the program.”

Good evaluation is not inexpensive. The EDC plans and budgets must reserve adequate funding to support a strong evaluation effort.

Total Resource Cost Test

§2806.1(m) provides a definition of "Total resource cost test" and states:

“[a] standard test that is met if, over the effective life of each plan not to exceed 15 years, the net present value of the avoided monetary cost of supplying electricity is greater than the net present value of the monetary cost of energy efficiency conservation measures.”

TRF recommends that the Commission take advantage of the experience other states have with evaluating demand resource programs. The widely-recognized model is the California Public Utility Commission’s Energy Efficiency Policy Manual, Version 4.0.¹³ TRF recommends that the Guidelines adopt the California Policy Manual.

There are other costs borne by the EDC that should be included in the total resource cost test. The reduction or avoidance of environmental pollution compliance costs are one example. Another is the reduced risk of terminations of low income customers, with all of the EDC costs associated with those terminations.

An important topic in these times for the total resource cost test is the set of assumptions about fossil fuel prices included in the model.

The Commission needs to provide guidance on all of these issues in the Guidelines.

Other Methods of Evaluating Cost Effectiveness

In evaluating program effectiveness, §2806.1(c)(3) states the Commission’s evaluation “shall be consistent with a total resource cost test or a cost-benefit analysis determined by the Commission.” [emphasis added].

In addition to the standard total resource cost test, TRF urges the Commission to also consider the Societal Benefits Test, which also considers impacts such as economic development and employment, public health and environmental benefits. The EDCs and their independent evaluators should collect data on these topics as well so the Commission can weigh these impacts.

¹³ Version 4.0 of the Manual is available at www.cpuc.ca.gov/NR/rdonlyres/2737D0E6-7163-46ED-B6DA-16A817FF3AF8/0/PolicyManualv4.pdf.

CONSERVATION SERVICE PROVIDER CONTRACTS

Act 129 envisions the EDC's plans being implemented in whole or in part by conservation service providers under contract with the EDC. §2806.1(a)(10) contains a "requirement for the participation of conservation service providers in the implementation of all or part of a plan." §2806.1(b)(1)(i)(e) requires the EDC plan to "include a contract with one or more conservation service providers selected by competitive bid to implement the plan or a portion of the plan as approved by the commission."

The Commission is directed by §2806.1(a)(7) to develop "[p]rocedures to require that electric distribution companies competitively bid all contracts with conservation service providers" and by §2806.1(a)(8) to develop "[p]rocedures to review all proposed contracts prior to the execution of the contract with conservation service providers..."

The Guideline will need to provide procedures to competitive bidding and Commission review. Standards for approving or rejecting proposed contracts will also need to be addressed in the Guidelines.

THE REGISTRY OF CONSERVATION SERVICE PROVIDERS

Act 129 adds a new §2802 that is a registry of conservation service providers. The section reads:

§ 2806.2. Energy efficiency and conservation.

(a) Registry.--The commission shall, by March 1, 2009, establish a registry of approved persons qualified to provide conservation services to all classes of customers. In order to be included in the registry, a conservation service provider must meet experience and other qualifications determined by the commission.

(b) Application.--The commission shall develop an application for registration under subsection (a) and may charge a reasonable registration fee.

This section raises several issues that the Guidelines need to address. The task of populating the Registry will be ongoing, but the Registry's basic features should be presented in the Guidelines.

What Kind of Contractors Should be Included in the Registry?

The definition of "energy efficiency and conservation measures" contained in § 2806.1(m) contains a long list of measures, including:

"... solar or solar photovoltaic panels, energy efficient windows and doors, energy efficient lighting, including exit sign retrofit, high bay fluorescent retrofit and pedestrian and traffic signal conversion, geothermal heating, insulation, air sealing, reflective roof coatings, energy efficient heating and cooling equipment

or systems and energy efficient appliances and other technologies, practices or measures approved by the commission.”

The first question about the registry is whether it should include contractors that install or provide all of these technologies and services. TRF believes the answer needs to be yes and that the list should be expanded to cover products and services that are likely to be included in the EDC programs to reduce consumption and/or reduce peak demand for residential, commercial and industrial customers.

TRF recommends that the Guidelines indicate the list of energy technologies, products and services that are provided by contractors who will be included in the Register of Energy Contractors. EDCs that are considering additional technologies or services would be expected to suggest additions to the Registry list of technologies and services.

Should the Registry Listing be for Individuals or for Companies?

One issue that arises with similar contractor lists is whether the Registry should list individuals or companies. If a company is listed, the customer does not know if the person working on his job is the one who met the listing criteria or was it someone back in the office. TRF supports the listing of both companies and the individuals within the company that satisfy the listing criteria.

What are the Criteria for Listing?

TRF suggests that the Guidelines must establish training and experience criteria that must be satisfied in order for a contractor to be listed on the Registry. § 2806.2(a) states that “[i]n order to be included in the registry, a conservation service provider must meet experience and other qualifications determined by the commission.” These criteria for listing will vary for each different type of contractor that is included in the Registry.

TRF has experience with creating a list of “participating contractors” for the Sustainable Development Fund’s Solar PV Grant Program and it was not a simple matter. To the extent possible, the Commission should rely on national standards and national credentialing organizations, where they exist.

What Should Cause a Contractor to be De-Listed from the Registry?

The Guidelines will need to develop criteria for removing contractors from the Registry who fail to meet basic standards of proficiency or who commit criminal or tortuous acts against their customers or clients. As with the listing criteria, these de-listing criteria will vary to some extent for each type of contractor.

What Format Should the Registry Have?

TRF suggests that the Registry should be web-based, allowing users to search for contractors by name, category and distance. The Registry website should also be where contractors can apply

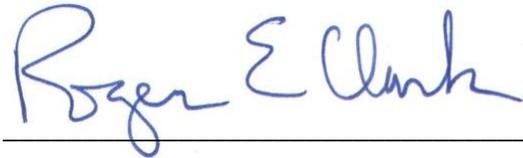
for listing, where EDCs and customers can find contractors and where customers can submit complaints against contractors.

CONCLUSION

The goal of the Guidelines is to provide certainty to the Commission staff, the EDCs and the public about the necessary elements of the EDC plans that must be filed with the Commission by July 1, 2009. To the extent humanly possible, the Commission should work to reduce all uncertainty about the provisions of Act 129. The process of reviewing and approving the EDC plans will benefit from clear and unambiguous Guidelines and save everyone time and effort in the long run.

TRF remains committed to working positively with the Commission, the EDCs and the other stakeholders on the complicated task of implementing Act 129. We appreciate the opportunity to file these comments, we look forward to commenting on the draft Guidelines, and we stand ready to work with all to meet the challenges and realize the opportunities presented by Act 129.

Respectfully submitted,



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**The Goals of Act 129:
Reduction or Savings
Roger E. Clark
The Reinvestment Fund**

The numeric examples that follow are for illustrative purposes only. There is no pretence that the forecast or the other numbers presented on the following slides are for any purpose other than to highlight the implications of the reduction approach and the saving approach to understanding the goals of Act 129.

Start with 2007 Actual Retail Sales

EDC	Residential (MWH)	Commercial (MWH)	Industrial (MWH)	Other (MWH)	Total (MWH)
Duquesne	4,210,531	6,715,380	3,145,181	67,288	14,138,380
Met-Ed	5,595,280	4,714,979	3,992,283	34,646	14,337,188
Penelec	4,496,831	5,138,859	4,609,562	41,219	14,286,471
Penn Power	1,689,599	1,413,599	1,627,118	6,493	4,736,809
PECO	13,487,283	8,891,613	16,582,182	930,451	39,891,529
PPL	14,410,626	13,755,584	9,481,636	225,887	37,873,733
West Penn	7,265,513	4,997,928	8,159,596	51,986	20,475,023
Totals:	51,155,663	45,627,942	47,597,558	1,357,970	145,739,133

Source: *Electric Power Outlook for Pennsylvania 2007-2012*, Table 2.1, page 13.

Inflate Forward Using the PUC Growth Rates

Growth Rate Assumptions

Residential	1.50%
Commercial	1.60%
Industrial	1.10%
Other	1.40%

Source: *Electric Power Outlook for Pennsylvania 2007-2012*, page 14.

Grow the 2007 by the forecasted rates of growth

	2007	2008	2009	2010
EDC	Actual (MWH)	Estimated (MWH)	Estimated (MWH)	Estimated (MWH)
Duquesne	14,138,380	14,344,523	14,553,726	14,766,036
Met-Ed	14,337,188	14,540,957	14,747,682	14,957,406
Penelec	14,286,471	14,487,427	14,691,277	14,898,062
Penn Power	4,736,809	4,802,760	4,869,651	4,937,496
PECO	39,891,529	40,431,534	40,979,039	41,534,151
PPL	37,873,733	38,417,442	38,969,107	39,528,845
West Penn	20,475,023	20,754,456	21,037,801	21,325,113
Totals:	145,739,133	147,779,100	149,848,283	151,947,109

Convert to Base Year Dates

$(7/12 \times 2009 \text{ figures}) + (5/12 \times 2010 \text{ figures})$

Base Year Forecast June 1, 2009 – May 31, 2010

EDC	Residential (MWH)	Commercial (MWH)	Industrial (MWH)	Other (MWH)	Total (MWH)
Duquesne	4,364,906	6,978,205	3,229,490	69,589	14,642,189
Met-Ed	5,800,425	4,899,512	4,099,299	35,831	14,835,067
Penelec	4,661,702	5,339,982	4,733,125	42,628	14,777,438
Penn Power	1,751,546	1,468,924	1,670,734	6,715	4,897,919
PECO	13,981,779	9,239,610	17,026,679	962,267	41,210,336
PPL	14,938,976	14,293,946	9,735,798	233,611	39,202,331
West Penn	7,531,895	5,193,535	8,378,320	53,764	21,157,514
Totals:	53,031,229	47,413,715	48,873,445	1,404,404	150,722,793

Reductions Approach

- To calculate May 31, 2011 sales reduction goal:
99% x Base Year (1% reduction)
- To calculate May 31, 2013 sales reduction goal:
97% x Base Year (3% reduction)

This approach calculates the reduced volume of sales that are required by the goals (hence the name “reductions approach”), not the quantify of savings that must be achieved to meet those sales caps.

Reduction Approach – Total Sales Permitted by Goals

EDC	2009	2011	2013
	Base Year (MWH)	1% Reduction (MWH)	3% Reduction (MWH)
Duquesne	14,642,189	14,495,767	14,202,923
Met-Ed	14,835,067	14,686,716	14,390,015
Penelec	14,777,438	14,629,663	14,334,114
Penn Power	4,897,919	4,848,940	4,750,982
PECO	41,210,336	40,798,232	39,974,026
PPL	39,202,331	38,810,308	38,026,261
West Penn	21,157,514	20,945,939	20,522,789
Totals:	150,722,793	149,215,566	146,201,110

Calculating Savings Needed to Meet Reduction Goals

- I used the PUC growth rates to grow sales for the two years between base year and year ending May 31, 2011. The needed savings is the difference between the business-as-usual sales estimate for 2011 and the 2011 sales goal.
- For 2013, I started with the revised 2011 sales level and grew the sales for two years to 2013. The needed savings is the difference between the business-as-usual sales estimate for 2013 and the 2013 sales goal.

Savings Needed to Meet Goals per the Reduction Approach

EDC	Savings to Meet 2011's 1% Reduction Goal (MWH)	Savings to Meet 2013's 3% Reduction Goal (MWH)
Duquesne	360,045	718,959
Met-Ed	359,343	717,498
Penelec	355,801	710,408
Penn Power	117,227	234,053
PECO	970,429	1,937,374
PPL	955,175	1,907,250
West Penn	500,564	999,357
Totals:	3,618,585	7,224,900

Savings Approach

- To calculate May 31, 2011 savings goal:
1% x Base Year
- To calculate May 31, 2013 savings goal:
3% x Base Year

This approach calculates the quantity of savings that must be achieved (hence the name “savings approach”), not the resulting impact on the overall volume of sales.

Savings Approach – Savings Goals

EDC	Base Year (MWH)	2011 Savings 1% (MWH)	2013 Savings 3% (MWH)
Duquesne	14,642,189	146,422	439,266
Met-Ed	14,835,067	148,351	445,052
Penelec	14,777,438	147,774	443,323
Penn Power	4,897,919	48,979	146,938
PECO	41,210,336	412,103	1,236,310
PPL	39,202,331	392,023	1,176,070
West Penn	21,157,514	211,575	634,725
Totals:	150,722,793	1,507,228	4,521,684

Calculating Estimated Sales under the Savings Approach

- I used the PUC growth rates to grow sales for the two years between base year and year ending May 31, 2011. The sales estimate in 2011 is the difference between the 2011 business-as-usual sales estimate and the quantity of sales needed to meet the 2011 savings goal.
- For 2013, I started with the revised 2011 sales level and grew the sales for two years to 2013. The sales estimate in 2013 is the difference between the 2013 business-as-usual sales estimate and the quantity of sales needed to meet the 2013 savings goal.

Estimated Sales under the Savings Approach

EDC	Base Year Forecast (MWH)	Estimated 2011 Sales (MWH)	Estimated 2013 Sales (MWH)
Duquesne	14,642,189	14,709,390	14,702,634
Met-Ed	14,835,067	14,897,709	14,879,624
Penelec	14,777,438	14,837,690	14,815,264
Penn Power	4,897,919	4,917,188	4,908,307
PECO	41,210,336	41,356,558	41,249,046
PPL	39,202,331	39,373,460	39,337,204
West Penn	21,157,514	21,234,928	21,184,564
Totals:	150,722,793	151,326,923	151,076,643

Comparison of Savings Needed to Meet 2011 Goal

EDC	Savings to Meet 2011 Goal Reduction Approach (MWH)	Savings to Meet 2011 Goal Savings Approach (MWH)
Duquesne	360,045	146,422
Met-Ed	359,343	148,351
Penelec	355,801	147,774
Penn Power	117,227	48,979
PECO	970,429	412,103
PPL	955,175	392,023
West Penn	500,564	211,575
Totals:	3,618,585	1,507,228

Comparison of Savings Needed to Meet 2013 Goal

EDC	Savings to Meet 2013 Goal Reduction Approach (MWH)	Savings to Meet 2013 Goal Savings Approach (MWH)
Duquesne	718,959	439,266
Met-Ed	717,498	445,052
Penelec	710,408	443,323
Penn Power	234,053	146,938
PECO	1,937,374	1,236,310
PPL	1,907,250	1,176,070
West Penn	999,357	634,725
Totals:	7,224,900	4,521,684

Estimated Total Sales - 2011

EDC	2010 Base Year Forecast (MWH)	Estimated 2011 Sales Reduction Approach (MWH)	Estimated 2011 Sales Savings Approach (MWH)
Duquesne	14,642,189	14,495,767	14,709,390
Met-Ed	14,835,067	14,686,716	14,897,709
Penelec	14,777,438	14,629,663	14,837,690
Penn Power	4,897,919	4,848,940	4,917,188
PECO	41,210,336	40,798,232	41,356,558
PPL	39,202,331	38,810,308	39,373,460
West Penn	21,157,514	20,945,939	21,234,928
Totals:	150,722,793	149,215,566	151,326,923

Estimated Total Sales - 2013

EDC	2010 Base Year Forecast (MWH)	Estimated 2013 Sales Reduction Approach (MWH)	Estimated 2013 Sales Savings Approach (MWH)
Duquesne	14,642,189	14,202,923	14,702,634
Met-Ed	14,835,067	14,390,015	14,879,624
Penelec	14,777,438	14,334,114	14,815,264
Penn Power	4,897,919	4,750,982	4,908,307
PECO	41,210,336	39,974,026	41,249,046
PPL	39,202,331	38,026,261	39,337,204
West Penn	21,157,514	20,522,789	21,184,564
Totals:	150,722,793	146,201,110	151,076,643