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August 28, 2009

Via Electronic Filing and First-Class Mail
James J. McNulty
Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Re: Petition of PPL Electric Utilities Corporation for Approval of an Energy Efficiency and Conservation Plan, Docket No. M-2009-2093216

Dear Secretary McNulty:

Enclosed for filing is the Main Brief of Field Diagnostic Services, Inc., in the above-referenced proceeding. Copies have been served as indicated on the enclosed Certificate of Service.

If you have any questions, please contact me.

Respectfully submitted,

Melanie J. Tambolas
PA Attorney I.D. #209323

MJT/dc
Enclosures

cc: Honorable Susan D. Colwell (w/encl.) (via Federal Express)
Office of Special Assistants (w/encl.) (via Federal Express)
All parties on attached Certificate of Service (w/encl.)

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation For Approval of An Energy Efficiency and Conservation Plan	:	**Docket No. M-2009-2093216**

MAIN BRIEF OF FIELD DIAGNOSTIC SERVICES, INC

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Dated: August 28, 2009

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I. INTRODUCTION

This proceeding presents the Pennsylvania Public Utility Commission (the "Commission") the opportunity to review and improve upon the Energy Efficiency and Conservation Plan ("EE&C Plan," or the "Plan") put forth by PPL Electric Utilities ("PPL") as mandated by Act 129 and the Commission's subsequent Implementation Order. The Plan put forward by PPL is well-designed, comprehensive and cost-effective. The Plan would be substantially strengthened, however, by including additional measures, proposed by Field Diagnostic Services, Inc. ("FDSI"), to encourage PPL customers to better improve the efficiency of their heating, ventilation, and air conditioning ("HVAC") systems. While the Plan does provide a targeted program approach (the Small Commercial HVAC Tune-up Program) and adequate incentives for improved HVAC efficiency, the factual record in this proceeding makes clear that, by increasing the number of HVAC measures available to customers and by offering the HVAC Tune-up Program to all customer classes, PPL can better meet the aim of Act 129: providing the most cost-effective energy savings possible, in order to meet or exceed the targeted reductions.

II. PROCEDURAL HISTORY

On July 1, 2009, PPL filed its Petition for Approval of an Act 129 Energy Efficiency and Conservation Plan ("Petition"), seeking Commission approval of its EE&C Plan, which purports to reduce energy consumption and demand in its service territory in accordance with the requirements of Act 129—codified at 66 Pa.C.S.A. § 2806.1—and the Implementation Orders entered January 16, 2009 and May 28, 2009 by the Commission at Docket No. M-2008-2069887, *Energy Efficiency and Conservation Program*. PPL simultaneously filed direct testimony and exhibits in support of its EE&C Plan.

Petitions to Intervene and Prehearing Memoranda were filed by several parties, including FDSI. A prehearing conference was held in Harrisburg on July 27, 2009 before Administrative Law Judge Susan Colwell. At the conference, Petitions to Intervene—including FDSI's—were granted, the service list was developed, the schedule directed by the Commission was discussed and adopted, and other procedural matters were addressed.

On August 7, 2009, intervening parties, including FDSI[1], circulated Direct Testimony and Exhibits.

An evidentiary hearing was held in Harrisburg on August 17, 2009. PPL proffered rebuttal testimony from its witnesses, certain witnesses sponsored direct testimony and were cross-examined, and the sworn direct testimony of the remaining intervening parties—including FDSI—was admitted into evidence without cross-examination or objection.

III. DESCRIPTION OF PPL'S EE&C PLAN

PPL's Plan purports to reduce energy consumption and demand for the 1.4 million customers in its service territory, in accordance with the requirements of Act 129 and the Implementation Orders entered January 16, 2009 and May 28, 2009 by the Commission at Docket No. M-2008-2069887, *Energy Efficiency and Conservation Program.*[2] The Plan is comprised of fourteen programs which PPL's describes as "a comprehensive portfolio of energy efficiency, conservation practices and peak load reductions, renewable technologies and energy

[1] Direct Testimony of Todd M. Rossi, Ph.D. on behalf of FDSI, identified as FDSI Statement No. 1 (Aug. 7, 2009) (hereinafter, "FDSI St. 1").
[2] PPL's Petition, p. 1-2.

education incentives."[3] PPL predicts that, combined, these programs will reduce annual energy consumption by at least 1,146,000 MWh by May 31, 2013.[4]

PPL's Plan includes a "Small Commercial HVAC Tune-up Program" that targets existing buildings with packaged commercial HVAC systems and is available to both small commercial and industrial customers, government/non-profit sector customers, and tenants in rental properties who have the approval of landlords. The HVAC Tune-up Program is designed to increase the operating performance of electric HVAC systems in commercial buildings.

The program offers financial incentives to HVAC contractors to diagnose performance inefficiencies and make energy-saving retrofits. In particular, the program provides a prescriptive rebate for specific diagnostic tests and installation of qualifying equipment and technologies associated with commercial packaged HVAC systems.

The HVAC Tune-up Program will be implemented through an "HVAC Tune-up CSP" that will be directly responsible for managing and administering the program, including contractor recruitment, contractor training, providing ongoing contractor field support, marketing, processing applications and rebates, tracking program data, and reporting to PPL Electric. HVAC Contractors are described as those entities that will provide sales, equipment diagnostics, maintenance, and installation services for EE equipment, such as HVAC systems and appliances. These trade allies will be involved in the program by providing technical assessments, project development, unit maintenance and installation.

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[3] *Id.*, p. 9-10.
[4] *Id.*, p. 5.

The HVAC Tune-up Program has a very high benefit-to-cost ratio[5] and, over the four-year planning horizon of the Plan, is expected to achieve electricity consumption savings of 20,626 MWh.

IV. SUMMARY OF ARGUMENT

The Plan put forward by PPL would be strengthened by providing for greater inclusion of measures to improve end-user HVAC efficiency. As the undisputed factual record establishes, HVAC usage accounts for a significant portion—35% to 60%—of energy consumption among all customer classes: in fact, HVAC usually offers the single best opportunity for any individual end-user to improve its energy efficiency. As the undisputed factual record also establishes, the potential for energy savings under the HVAC Tune-up Program is greater than what is stated in the Plan because the anticipated participation levels should be significantly higher than that assumed by PPL. In particular, Dr. Rossi has shown that the market has sufficient capacity to support an increase in the number of HVAC measures implemented by 200%. And since achievable electricity consumption savings is directly proportional to the number of measures implemented, increasing the number of measures implemented would result in a proportional increase in energy consumption savings. As a result, over the four-year planning horizon, FDSI estimates that the HVAC Tune-up Program could achieve electricity consumption savings of up to 41,252 MWh.

To that end, FDSI has put forth concrete suggestions to improve upon the HVAC Tune-up Program included within PPL's Plan. In particular, FDSI recommends that the Commission enhance the HVAC Tune-up Program proposed within the PPL Plan by:

[5] Rebuttal Testimony of Peter Cleff, on behalf of PPL Electric Utilities, identified as Statement No. 1-R, (Aug. 17, 2009), p. 14, lines 7-8 (hereinafter, "PPL Statement No. 1-R").

(1) increasing the number of measures available for the HVAC Tune-Up Program so that high customer participation levels may be encouraged from the start of the program's implementation;

(2) expanding the availability of the HVAC Tune-up Program to all customer classes, including residential customers;

(3) establishing guidelines to ensure that HVAC tune-ups and other related measures are performed in accordance with appropriate protocols and procedures; and

(4) requiring the use of automated systems for diagnostics in order to improve customer-contractor information-sharing as well as the CSP's ability to verify actual achieved energy savings.

Finally, FDSI encourages the Commission to permit the grandfathering of energy efficiency projects implemented between July 1, 2009, and Commission approval of PPL's EE&C Plan because not only does Act 129 permits such treatment, but it will allow customers to realize the full benefit of projects already implemented. Likewise, FDSI urges the Commission to allow customers that take advantage of federal stimulus funding through the American Recovery and Reinvestment Act ("ARRA"), along with Act 129 funding, for purposes of installing energy-efficiency projects, to be able to demonstrate compliance with Act 129.

V. ARGUMENT

A. Act 129 Conservation and Demand Reduction Requirements

Act 129 was signed into law on October 15, 2008, and the standards have since been promulgated in Implementation Orders entered January 16, 2009, May 28, 2009, and June 23, 2009, by the Commission at Docket No. M-2008-2069887. The Act directs that each electric distribution company ("EDC") in Pennsylvania put forth a plan to reduce annual energy consumption by its customers—measured against each EDCs forecasted customer consumption for the period between June 1, 2009 and May 31, 2010—by at least 1% by May 31, 2011, and at

least 3% by May 31, 2013.[6] It further requires each EDC serving at least 100,000 customers reduce average system-wide peak demand during the 100 highest hours of demand by at least 4.5% by May 31, 2013, as compared to peak demand over the highest 100 hours of use occurring between June 1, 2007 and September 30, 2007.[7]

The plans, in their entirety, must satisfy a Total Resource Cost ("TRC") test: the total cost of each plan must be less than the expected cost of the electricity that would otherwise have been consumed in its absence.[8] The costs incurred by each utility due to its EE&C plan, including administrative costs, may be recouped through a cost recovery mechanism, up to 2% of each EDC's total annual revenue as of December 31, 2006.[9]

Finally, at least 10% of the consumption reductions must be realized by federal, state, and local governments, and various non-profit entities,[10] and the plans must include components specifically geared toward low-income consumers.[11]

1. Overall Conservation Requirements

FDSI has no position on this issue.

2. Overall Demand Reduction Requirements

FDSI has no position on this issue.

3. Requirements for a Variety of Programs Equitably Distributed

FDSI has no position on this issue.

4. 10% Government/Non-Profit Requirement

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[6] 66 Pa.C.S. § 2806.1(c).
[7] *Id.* at § 2806.1(d).
[8] *Id.* at § 2806.1(b)(1)(i)(I).
[9] *Id.* at § 2806.1(g,), (h).
[10] *Id.* at § 2806.1(b)(1)(i)(B).
[11] *Id.* at § 2806.1(b)(1)(i)(G).

FDSI has no position on this issue.

5. Low Income Program Requirements

FDSI has no position on this issue.

6. Issues Relating to Individual Conservation and Demand Reduction Programs

As Dr. Rossi testified in this proceeding, the PPL Plan, commendably, includes an HVAC-specific program for small commercial and industrial customers, government/non-profit sector customers, and tenants in rental properties who have the approval of landlords.[12] As will be demonstrated just below, the factual record makes clear the importance and, indeed, necessity, of including these HVAC efficiency incentives as part of the Plan. In addition, the undisputed factual record demonstrates that the existing HVAC programs proposed by PPL would benefit from the following improvements:

> (1) increasing the number of measures available for the HVAC Tune-Up Program so that high customer participation levels may be encouraged from the start of the program's implementation;
>
> (2) expanding the availability of the HVAC Tune-up Program to all customer classes, including residential customers;
>
> (3) establishing guidelines to ensure that HVAC tune-ups and other related measures are performed in accordance with appropriate protocols and procedures; and
>
> (4) requiring the use of automated systems for diagnostics in order to improve customer-contractor information-sharing as well as the CSP's ability to verify actual achieved energy savings.

[12] FDSI St. 1, p. 4, lines 7 - 9.

a. PPL's Plan Should Increase the Number of HVAC Measures Available and Expand Their Offering to all Customer Classes in order to Encourage High Customer Participation Levels From the Start and to Maximize the Cost-Effective Energy Savings Achievable from HVAC Efficiency Improvements.

The requirements of Act 129, taken together, demand that PPL find the most cost-efficient means possible to encourage its customers to reduce their energy consumption. Substantial record evidence demonstrates that the single best means to do so for customers in every class is through improved HVAC efficiency.[13]

Indeed, in his Rebuttal Testimony, PPL witness Peter Cleff acknowledged the cost-effective efficiency gains and energy savings to be realized from improving HVAC performance.[14] In reference to FDSI's request to increase the number of measures allocated to the HVAC Tune-up Program—discussed in greater detail *infra*—Mr. Cleff stated that "[i]f the actual participation level will likely exceed the estimated level in the Plan for the HVAC Tune-up Program, PPL Electric would likely consider making the program available to more participants because **this program has a very high benefit-to-cost ratio**."[15]

Likewise Dr. Rossi testified, "according to the Department of Energy, HVAC use accounts for 40 to 60 percent of the energy used in U.S. commercial and residential buildings, and up to 35 percent of energy used in manufacturing facilities."[16] By way of example, Dr. Rossi explained just how high the potential is for consumption reduction when a customer improves the efficiency of its HVAC unit through diagnostic testing followed by a tune-up or replacement:

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[13] *Id.*, p. 5, lines 18 -21.
[14] PPL Statement No. 1-R, p. 14, lines 1-8.
[15] *Id.* (emphasis added).
[16] FDSI St. 1, p. 6, lines 18 -21.

> Assume a typical HVAC unit in the field is currently performing only at 80 percent efficiency compared to "as new" performance. Improving the efficiency of that HVAC unit to 95 percent or 100 percent (which . . . is a very common outcome) can decrease the building's entire energy use by 8 percent to 12 percent for a commercial and residential building, and 7 percent for manufacturing facilities.[17]

The undisputed factual record establishes that, by ***alone*** optimizing the efficiency of a single customer's HVAC performance, each customer can realize average energy use savings of 20 percent – 25 percent per HVAC unit, leading to a 7 percent – 12 percent reduction in a customer's entire energy usage.[18] As the Pennsylvania Department of Environmental Protection ("DEP's") witness, Maureen Guttman testified, "[a] new study shows that improper design and installation of HVAC equipment and building insulation can reduce their efficiency by as much as 30 percent."[19]

The targeted program to improve HVAC efficiency is critical to the success of PPL's Plan. In fact, the Plan estimates that the HVAC program will achieve electricity consumption savings of 20,626 MWh.[20] As PPL's own witness testified, the HVAC program "***has a very high benefit-to-cost ratio***."[21,22] Dr. Rossi testified, however, that the number of measures made available for the HVAC Tune-up Program underestimate the likely consumer demand:

> I believe the potential for energy savings is greater than what is stated in the Plan because the anticipated participation levels should be significantly higher than that assumed by PPL. In my experience the demand for these measures is substantial, and

[17] *Id.*, p. 7, lines 1-5.
[18] *Id.*, p. 10, lines 10-14.
[19] Direct Testimony of Maureen Guttman, AIA, on behalf of the Department of Environmental Protection, identified as DEP Statement. No. 1, p. 18, lines 13 –15 (hereinafter, "DEP St No. 1")
[20] FDSI St. 1, p. 22, lines 9 – 12.
[21] PPL Statement No. 1-R, p. 14, lines 7- 8 (emphasis added).
[22] In the event the Commission orders the number of HVAC measures to be increased, PPL may need to reduce the measures of some other activity. FDSI urges the Commission to order the Company to reduce those measures that have a lower benefit-to-cost ratio than the HVAC measures.

> would greatly exceed the number of measures available each year. For example, in Year 2 of the program, 2,958 measures will be available for customers. Given that FDSI has consistently been able to almost double this amount of measures in less than 3 months during the cooling season with only 10 contractors and 2 operating trucks, this number is simply too low when compared to the actual demand for these measures.[23]

In order to increase the capacity for HVAC efficiency-driven energy savings, Dr. Rossi suggests that the number of measures be increased by 200%, in order to substantially increase the energy savings realized and adequately meet the true expected consumer demand for this program:

> Currently, the market has sufficient capacity to support an increase in the number of measures implemented by 200%. This would represent a proportional increase in energy consumption savings... As a result, over the four-year planning horizon, the HVAC Tune-up Program could achieve electricity consumption savings of 41,252 MWh.[24]

Given the magnitude of energy savings available through HVAC efficiency improvements, PPL's Plan should increase the number of HVAC measures available under the HVAC Tune-up Program in order to encourage high customer participation levels from the start and to maximize cost-effective energy savings. As the undisputed factual record shows, the market has sufficient capacity to support an increase in the number of HVAC measures implemented by 200%. And since achievable electricity consumption savings is directly proportional to the number of measures implemented, increasing the number of measures implemented would result in a proportional increase in energy consumption savings, resulting in potential achievable energy consumption savings of 41,252 MWh over the four-year planning period.

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[23] FDSI St. 1, p. 22, lines 16-22; p. 23, lines 1-2.
[24] *Id.*, p. 23, lines 5-10.

FDSI appreciates PPL's suggestion to examine the actual participation level in the HVAC Tune-up Program and to consider making the program more available to customers during the Plan's implementation. FDSI emphasizes the importance, however, of increasing the number of measures before the program is implemented. If the HVAC Tune-up Program is equipped with the right amount of measures from the start, it will attract higher participation levels from HVAC trade allies based on the incentives available, who will, in turn, have greater incentives to increase customer outreach, education and sales. In other words, while the factual record has demonstrated that this program has tremendous potential for achieving substantial energy savings, actually achieving the savings depends directly upon program design. The greater the program's availability is from the start of implementation, the greater the incentive contractors will have to implement these measures among customers.

Furthermore, it is critical to note that since HVAC offers the single best means to decrease energy consumption, it is imperative that PPL's EE&C Plan continue to prioritize HVAC-specific approaches accordingly, and avoid allowing these crucial programs to be subsumed into less-tailored programs which, as the record demonstrates, will not maximize the potential for HVAC-related energy savings. For instance, others in this proceeding have advocated for an emphasis on whole home audits, which are included in PPL's Plan as "Residential Energy Assessments." While such whole home programs are worthy, the undisputed evidence shows that these programs do not sufficiently address the spectrum of opportunity for HVAC efficiency improvements. As Dr. Rossi testified:

> At best, a comprehensive whole home audit would be able to make recommendations for replacement of existing HVAC units with higher efficiency SEER units. But the return on investment might not be there for the customer to make a replacement. If the return on investment does not exist, customers will not replace the unit. But the real missed opportunity lies in the fact that customers will

> miss out on the ability to implement more cost-effective, efficiency improvements to their HVAC units. . . . All that the auditor is equipped to do is to tell the customer to replace a unit with a new unit. This is because an auditor is only able to tell a customer how efficient a *new* unit is based on the manufacturer's published efficiency ratings, or the SEER level. . . . Yet, the auditor is not able to tell the customer how efficiently the existing 12 SEER unit currently is running. For example, the auditor would not be able to tell if the refrigerant charge needs adjustments, whether there are possible line restrictions in the mechanical unit, if the coils need to be cleaned, or if there are problems with any of the heat exchangers, evaporators, or condensers. An HVAC contractor, in contrast, would be able to tell that the 12 SEER unit is running at 80% efficiency and could recommend the necessary improvements to address the remaining 20% efficiency . . . .[25]

An HVAC-specific approach, as Dr. Rossi testified, is consistent with the approach employed successfully in California and other states.[26]

Additionally, given the potential for energy savings from HVAC, PPL's HVAC program should be extended to all customer classes, including residential.[27]

In summary, the record evidence clearly and amply demonstrates the value and importance of improving HVAC efficiency in order to make PPL's Plan successful – and it is critical that the Plan devotes significant resources to HVAC improvements ***exclusively*** in order to maximize the potential for these energy savings.

b. In the alternative, if the Commission agrees with PPL's suggested approach, the Commission should order that PPL's examination of program participation levels and its decision to increase the number of measures available should be made according to certain parameters and review periods planned around the cooling season.

As discussed *supra*, FDSI appreciates PPL's suggestion to examine the actual participation level in the HVAC Tune-up Program and to consider making the program more

[25] FDSI St. 1, p. 26, lines 1-22; p. 27, lines 1-2.
[26] *Id.*, p. 19, lines 4-13.
[27] *Id.*, p. 25, lines 12-15.

available to customers during the Plan's implementation. FDSI emphasizes the importance, however, of increasing the number of measures before the program is implemented. If the HVAC Tune-up Program is equipped with the right amount of measures from the start, it will attract higher participation levels from HVAC trade allies based on the incentives available, who will, in turn, have greater incentives to increase customer outreach, education and sales.

With that said, if the Commission agrees with PPL's suggested approach, the Commission should order that PPL's examination of program participation levels and its decision to implement additional measures should be made according to certain parameters and review periods planned around the cooling season (*i.e.*, the period from June through October):

1) Initial Review Period: PPL should review the HVAC Tune-up Program before the cooling season begins and after marketing to customers has already started, ideally in March or April, in order to monitor projected trade ally engagement. At that time, PPL, the HVAC CSP and the trade allies should reach agreement on target participation levels that will trigger PPL's commitment to implement additional HVAC tune-up and related measures.

2) Mid-Review Period: PPL should review the HVAC Tune-up Program at the start of the cooling season in June to monitor projected program success. At this time, assuming data is available, PPL should allow the HVAC CSP and trade allies to present projections for participation levels. If the projected participation levels meet or exceed the target participation levels, PPL should increase the number of measures currently in the plan by the amount needed to meet target participation levels.

3) Final Review Period: PPL should review the HVAC Tune-up Program after the cooling season has ended in October to allow for better projections and resultant measure adjustments. If actual participation levels during the cooling season have met or exceeded the

target participation levels, PPL should then meet with the HVAC CSP and trade allies to reach agreement on revising the target participation levels for the next year's cooling season.

c. PPL's Plan should establish guidelines to ensure that HVAC tune-ups and other measures are performed in accordance with appropriate protocols and procedures.

The success of PPL's HVAC efficiency measures depend not just on the technical veracity of the program, but also its execution. To that end, the record demonstrates that it is crucial that the proposed HVAC measures—as well as all additional HVAC programs included by the Commission—be performed according to established best practices. As Dr. Rossi explained, "the financial incentives currently built into PPL's Plan for certain HVAC efficiency measures should only be rewarded for measures that are implemented according to appropriate industry protocols and procedures in order to safeguard against any potential loss in energy savings to be achieved from the measure."[28]

Dr. Rossi's position is consistent with Ms. Guttman's expert testimony regarding the importance of establishing standard protocols and procedures to ensure that the programs PPL measures are effectively managed.[29] While FDSI maintains that whole home audits advocated for by Ms. Guttman, though worthwhile, are not the primary solution for maximizing HVAC efficiency, it shares her concern that appropriate protocols and procedures be preemptively established and enforced.[30] As she explains, "[t]here is no uniformity among standards for reporting, education, or consumer incentives, for example, and the critically important standards for contractors and actual installation are generally non-existent. In order to have a successful

[28] *Id.*, p. 27, lines 6-10.
[29] DEP St. No. 1, p. 18, lines 9-19
[30] *Id.*

program, it is important that the parties cooperate on developing a uniform standard that is coordinated with existing whole-home programs being deployed in Pennsylvania."[31]

With respect to HVAC tune-ups for instance, Dr. Rossi explained that certain protocols and procedures must be followed in order to maximize energy savings.[32]

Initially:

> the first step must be the initial performance assessment, or 'test-in.' During this measure the unit controllers (thermostats) are set to 100% for 15 minutes. It is only at this full performance setting that the unit's true efficiency be calculated. Then program prescribed refrigeration cycle tests are performed. Economizer testing and change over setpoints are adjusted."[33]

Second, typically "coil cleaning" is required:

> This measure is essential because most units can gain significant performance from a condenser coil cleaning. In fact, this should be a mandatory measure on all units tested in the program, and the completion of the measure should be tied to an incentive payment. The evaporator coil should only be cleaned if needed per "test-in" criteria. Program standards should encourage power washing of coils, training on the effective techniques, chemical selections, and address how to avoid problems like "over" cleaning to the point that heat transfer is reduced because coils are damaged "blown off" units.[34]

Third "is refrigeration charge and airflow . . . Again, I think that this should be a mandatory measure, tied to an incentive, if the initial testing criteria determines a charge adjustment would increase unit efficiency."[35]

Fourth:

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[31] *Id.*
[32] FDSI St. 1, p. 19, lines 14-23
[33] *Id.*, p. 19, lines 18-22.
[34] *Id.*, p. 19, lines 22-23; p. 20, lines 1-8.
[35] *Id.*, p. 20, lines 9-11.

> repairs to economizers[36] must be considered. The purpose of an economizer device is to pull in fresh air from outside the building when the temperature and humidity are more favorable than the return air inside the space. A significant amount of economizers are found to be poorly functioning or not working at all. The difference between a working and non-working economizer can be up to 40% in energy savings.[37]

Finally, "a 'test-out' should be performed so that any corrective measures performed improve efficiency and capacity to the 90% level, or better."[38]

As Dr. Rossi's testimony makes clear, best practices for improving HVAC performance and efficiency are technically complex, yet extremely important – when these procedures are not employed, the cost for the HVAC program stays the same but the resultant benefit is reduced, thereby threatening compliance with TRC standards. This is why it is imperative that the Commission include in the PPL Plan the appropriate procedures and protocols which will maximize the potential for energy savings. Best practices and procedures can be monitored and enforced through the establishment of the dedicated HVAC CSP within the HVAC Tune-up Program.

d. The Commission should require the use of automated systems for diagnostics in order to improve customer-contractor information-sharing as well as the CSP's ability to verify actual achieved energy savings.

FDSI encourages the Commission to order PPL to require the use of an automated process for diagnostics. As the undisputed factual record indicates, using diagnostic technology, as opposed to manual testing and reporting, increases the availability of diagnostic information to customers, improves information-sharing between customers and contractors, improves

[36] Where applicable, economizers are not available for residential customers.
[37] FDSI St. 1, p. 20, lines 12-17.
[38] *Id.*, p. 20, lines 18 – 19.

contractor skilled performance and increases the chance of sustainable energy consumption reductions over the long-term.[39]

As Dr. Rossi testified:

> ...Diagnostics performed on an as-needed basis are very helpful, but technologies that constantly measure efficiencies and capacities—along with intelligent temperature/humidity setpoint systems—are the best way to reduce energy usage. This type of technology pays for itself quickly through efficiency gains, particularly when there is an existing energy management system in place...Taking the guesswork out of troubleshooting with the correct tools and the proper training can also help a mediocre service technician diagnose a problem or increase unit efficiency where it would not have been previously possible. Utilizing the proper reporting tools can help the contractor communicate to the HVAC unit owner that there is a real benefit to a specific repair measure, and can even calculate the return on investment of replacing the unit based on the kWh cost of power from the utility in question. The reporting also helps increase contractor credibility with their customers. Credibility is important, given that equipment owners are reluctant to invest in a new system when the existing strategy is to spend the least amount of money possible to keep cold air coming from the unit. Helping all parties make informed decisions is the best way to create sustainable energy reductions.[40]

Furthermore, as Dr. Rossi testified:

> diagnostic technology goes beyond just indicating how the HVAC unit is running, but also makes recommendations for improvement of unit performance. As a result, the most effective procedures for servicing HVAC units are based on the tool's automated findings. This process essentially provides on-the-job training to contractors/technicians because it takes contractors/technicians through the process of benchmarking, detecting and mitigating faults or degradation in the HVAC unit, step-by-step.[41]

Moreover, reliance on an automated process will eliminate the need for manual data reporting, which presents a much higher risk for errors and misreporting than an automated

[39] *Id.*, p. 13, lines 10-15.
[40] *Id.*, p. 13, lines 18-20; p. 14, lines 1-18.
[41] *Id.*, p. 16, lines 15-21.

process. Additionally, any reductions in labor time that can be achieved through the use of automated reporting will also improve the benefit-to-cost ratio of HVAC measures.

7. Proposals for Improvement of PPL's EE&C Plan

FDSI's position on these issues is addressed *supra*, and is incorporated herein by reference.

B. Cost Issues

FDSI has no position on this issue.

C. CSP Issues

FDSI has no position on this issue.

D. Implementation and Evaluation Issues

FDSI has no position on this issue.

E. Other Issues

1. FDSI Supports Grandfathering Energy Efficiency Projects Between July 1, 2009, and Commission Approval of PPL's EE&C Plan because (a) Act 129 Permits Such Treatment; (b) It Will Help Further PPL's Ability to Meet the Act 129 Energy Consumption Mandates; and (c) It Will Allow Customers to Realize the Full Benefit of Projects Already Implemented.

In its EE&C Plan, PPL requests that the Commission allow retroactive customer eligibility for customers who install or commit to install qualifying equipment and services between July 1, 2009, and Commission approval of the Plan. FDSI supports PPL's proposal to grandfather proposed and existing projects for customers that install or commit to install qualifying equipment or services under its EE&C Plan between July 1, 2009, and Commission approval of the Plan for the following reasons.

First, Act 129 expressly permits such treatment, as it defines "energy efficiency and conservation measures" in part as "technologies, management practices or other

measures...installed on or after the effective date of this section at the location of a retail customer."[42] Second, grandfathering these projects would improve PPL's ability to reach its required Act 129 energy efficiency and consumption targets by increasing the amount of time and projects available that PPL may count toward compliance. Finally, grandfathering these projects would allow customers to take advantage of programs and incentives, including federal stimulus funding through the ARRA, discussed *infra* below, that may be available during the time between the Company's EE&C Plan filing and Commission approval.

2. FDSI Urges the Commission to Allow Projects that Received ARRA Funding to be Used to Demonstrate Compliance with Act 129.

FDSI urges the Commission to allow customers that take advantage of federal stimulus funding through the ARRA, along with Act 129 funding, for purposes of installing energy-efficiency projects to be able to demonstrate compliance with Act 129. In the Total Resource Cost Test Order, the Commission determined that "[f]or the purposes of TRC testing, if the end-use customer is a recipient of an incentive/rebate from an Act 129 program, even if the customer is also a recipient of an [ARRA] incentive or rebate for the same equipment or service, we conclude that the entire savings of that equipment or service can also be claimed by the EDC for TRC testing purposes."[43] In FDSI's experience, imposing such an artificial limitation on the use of funding would only tend to hinder customer participation in PPL's Act 129 energy efficiency programs: a counter-productive result to enhancing PPL's ability to meeting the energy consumption reduction targets of Act 129.

VI. CONCLUSION

Substantial record evidence in this proceeding support the following proposed changes to PPL's EE&C Plan:

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[42] 66 Pa. C.S. § 2806.1(m)(1)(I).
[43] Total Resource Cost Test Order, entered June 23, 2009, Docket No. M-2009-2108601.

(1) increasing the number of measures available for the HVAC Tune-Up Program so that high customer participation levels may be encouraged from the start of the program's implementation;

(2) expanding the availability of the HVAC Tune-up Program to all customer classes, including residential customers;

(3) establishing guidelines to ensure that HVAC tune-ups and other related measures are performed in accordance with appropriate protocols and procedures; and

(4) requiring the use of automated systems for diagnostics in order to improve customer-contractor information-sharing as well as the CSP's ability to verify actual achieved energy savings.

Additionally, FDSI encourages the Commission to permit the grandfathering of energy efficiency projects implemented between July 1, 2009, and Commission approval of PPL's EE&C Plan because not only does Act 129 permits such treatment, but it will allow customers to realize the full benefit of projects already implemented. Likewise, FDSI urges the Commission to allow customers that take advantage of federal stimulus funding through the American Recovery and Reinvestment Act ("ARRA"), along with Act 129 funding, for purposes of installing energy-efficiency projects, to be able to demonstrate compliance with Act 129.

VII. PROPOSED ORDERING PARAGRAPHS

IT IS HEREBY ORDERED THAT:

1. The Petition of PPL Electric Utilities ("PPL") for Approval of an Act 129 Energy Efficiency and Conservation Plan (the "Plan"), filed at Docket No. M-2009-2093216, is GRANTED and the Plan is APPROVED, subject to the modifications set forth below.

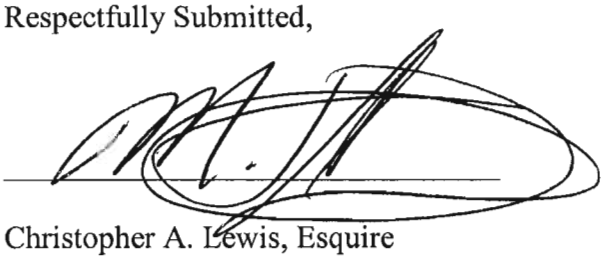
2. The number of measures available for the HVAC Tune-Up Program in the Plan shall be increased by 200%. PPL shall make a corresponding decrease in the number of measures for those programs that PPL has determined have the least benefit-to-cost ratios.

3. PPL is directed to make the HVAC Tune-Up Program available to all customer classes, including residential customers.

4. PPL is directed to require the use of automated systems for diagnostics in order to improve customer-contractor information-sharing as the ability of its Conservation Service Providers to verify actual achieved energy savings.

5. PPL is directed to establish guidelines to ensure that HVAC tune-ups and other related measurers are performed in accordance with appropriate protocols and procedures, including the use of automated diagnostic testing, where possible.

Respectfully Submitted,



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Dated: August 28, 2009

CERTIFICATE OF SERVICE

I hereby certify that this day I have served a true copy of the foregoing document, Main Brief of Field Diagnostic Services, Inc., upon the persons listed below in the manner indicated in accordance with the requirements of 52 Pa. Code § 1.54.

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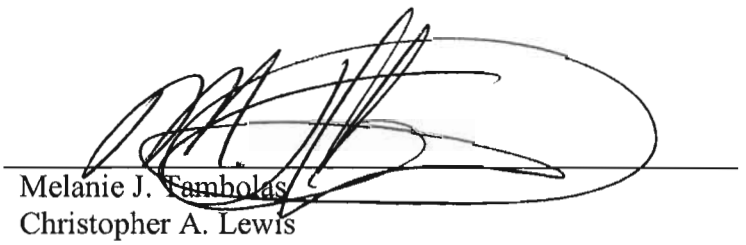

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