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Devin Ryan

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December 4, 2015

VIA HAND DELIVERY

Rosemary Chiavetta, Secretary Pennsylvania Public Utility Commission Commonwealth Keystone Building 400 North Street, 2nd Floor North P.O. Box 3265 Harrisburg, PA 17105-3265

Re: Petition of PPL Electric Utilities Corporation for Approval of its Act 129 Phase III Energy Efficiency and Conservation Plan - Docket No. M-2015-2515642

Dear Secretary Chiavetta:

Enclosed for filing, please find Direct Testimony of PPL Electric Utilities Corporation for its Petition requesting approval of its Act 129 Phase III Energy Efficiency and Conservation Plan for the above-referenced proceeding, as follows:

PPL Electric Statement No. 1 – Direct Testimony of Peter Cleff

PPL Electric Statement No. 2 – Direct Testimony of M. Hossein Haeri, Ph.D.

PPL Electric Statement No. 3 – Direct Testimony of Bethany L. Johnson

Copies will be provided as indicated on the Certificate of Service.

Respectfully submitted,

Devin Ryan DTR/il **Enclosures**

cc: Megan Good Kriss E. Brown Certificate of Service

Honorable Susan D. Colwell

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities for Approval of its Act 129 Phase III Energy Efficiency and Conservation Plan

Docket No. M-2015-2515642

PPL Electric Utilities Corporation

Statement No. 1

Direct Testimony of Peter Cleff

Date: December 4, 2015

1		Direct Testimony of Peter D. Cleff
2		
3	Q.	Please state your full name and business address.
4	A.	· My name is Peter Cleff, and my business address is 827 Hausman Road, Allentown PA
5		18104.
6		
7	Q.	By whom are you employed and in what capacity?
8	A.	I am employed by PPL Electric Utilities Corporation ("PPL Electric" or the "Company")
9		as Manager-Energy Efficiency Evaluation & Performance.
10		
11	Q.	What are your duties as Manager-Energy Efficiency Evaluation and Performance?
12	A.	I am responsible for managing all aspects of PPL Electric's Act 129 Energy Efficiency
13		and Conservation programs including planning and development of the Energy
14		Efficiency and Conservation Plan ("EE&C Plan") and the implementation, evaluation,
15		and compliance of the EE&C Plan.
16		
17	Q.	What is your educational background?
18	A.	I received a B.S. in mechanical engineering from Lehigh University.
19		
20	Q.	Please describe your professional experience.
21	A.	I have over 30 years of experience in the energy industry including engineering, project
22		management, and construction management of large projects for generating plants;
23		wholesale power marketing; power plant development; bulk power system operations;

1		and currently, seven years of experience developing, implementing, evaluating, and
2		managing energy efficiency programs.
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4	Q.	Have you previously testified as a witness before the Pennsylvania Public Utility
5		Commission ("Commission")?
6	A.	Yes, I previously testified as a witness in Petition of PPL Electric Utilities Corporation
7		for Approval of its Energy Efficiency and Conservation Plan, Docket No. M-2009-
8		2093216; Petition of PPL Electric Utilities Corporation for an Evidentiary Hearing on
9		the Energy Efficiency Benchmarks Established for the Period June 1, 2013 through May
10		31, 2016, Docket No. P-2012-2320369; Petition of PPL Electric Utilities Corporation for
11		Approval of its Act 129 Phase II Energy Efficiency and Conservation Plan, Docket No.
12		M-2012-2334388; and PP&L Industrial Customer Alliance v. PPL Electric Utilities
13		Corporation, Docket Nos. C-2013-2398440 and C-2013-2398442.
14		
15	Q.	Briefly describe the subject matter of your testimony in this proceeding.
16	A.	I will explain the objectives, philosophy, and process that PPL Electric applied to the
17		preparation of its Phase III Energy Efficiency and Conservation Plan ("Phase III EE&C

- 3 -

Plan" or "EE&C Plan") filing as required by Act 129 of 2008 ("Act 129" or the "Act"),

as well as the relevant Commission Orders for Phase III. See Energy Efficiency and

Conservation Program, Docket No. M-2014-2424864 (Order Entered June 19, 2015)

("Implementation Order"); Energy Efficiency and Conservation Program, Docket No.

M-2014-2424864 (Order Entered Aug. 20, 2015) ("Clarification Order"); 2016 Total

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1		Resource Cost (TRC) Test, Docket No. M-2015-2468992 (Order Entered June 22, 2015)
2		("2016 TRC Test Order") (collectively, "Phase III Orders").
3		
, 4	Q.	Please describe how PPL Electric's EE&C Plan filing is organized.
5	A.	PPL Electric's filing consists of the following documents:
6		1. A petition requesting approval of the EE&C Plan and the Company's proposed
7		cost recovery mechanism.
8		2. The EE&C Plan (PPL Electric Exhibit No. 1);
9		3. The direct testimony of Peter D. Cleff (PPL Electric Statement No. 1);
10		4. The direct testimony of Dr. Hossein Haeri (PPL Electric Statement No. 2); and
11		5. The direct testimony of Bethany L. Johnson (PPL Electric Statement No. 3).
12		The Phase III EE&C Plan is structured consistent with the Template for Energy
13		Efficiency and Conservation Plans issued by the Commission via Secretarial letter dated
14		September 22, 2015, at Docket No. M-2014-2424864. The EE&C Plan includes an
15		overview of the Plan; program summary tables and charts; program descriptions;
16		program management and implementation strategies; information about the reporting and
17		tracking systems; the Company's plans for quality assurance, evaluation, measurement,
18		and verification; details of the proposed cost recovery mechanism; an analysis of the
19		EE&C Plan's and programs' cost-effectiveness; and other information to support the
20		EE&C Plan.
21		

Q. Are you sponsoring any exhibits in this proceeding?

Yes. Dr. Haeri, Ms. Johnson, and I are co-sponsoring PPL Exhibit No. 1. Within that A. 2 exhibit, I am primarily responsible for and am sponsoring Sections 1, 3, 4, 5, 6 and 9, and 3 Appendices B and C. Dr. Haeri is primarily responsible for and is sponsoring Sections 2 4 and 8, and Appendix D. Ms. Johnson is primarily responsible for cost recovery issues 5 and is sponsoring Section 7 and Appendices A and E of PPL Electric Exhibit No. 1.

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O. Please provide a summary of PPL Electric's Phase III EE&C Plan.

PPL Electric's Phase III EE&C Plan includes a portfolio of energy efficiency and demand response programs for PPL Electric's customers. PPL Electric's portfolio of programs is designed to meet the Company's Phase III consumption reduction targets and peak load reduction target and to comply with the other requirements set forth in the Commission's *Phase III Orders*. As discussed below, the Phase III EE&C Plan includes a range of energy efficiency programs for five EE&C customer sectors (i.e., Residential, Low-Income, Small Commercial and Industrial ("Small C&I"), Large Commercial and Industrial ("Large C&I"), and Government/Non-profit/Educational ("GNE"). The EE&C Plan also includes a demand response program for PPL Electric's non-residential customer sectors. These programs are designed as a portfolio of options which will offer all of PPL Electric's customers cost-effective, flexible, and wide-ranging choices and financial incentives to reduce their electricity consumption and peak load, which ultimately will help customers reduce their energy costs.

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What are the primary objectives of the Phase III EE&C Plan? O.

1	A.	PPL Electric aims	to deliver a d	cost-effective	portfolio o	f programs	that will meet
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- customers' needs, fulfill the Company's Phase III EE&C Plan objectives, and achieve the
- 3 results required by Act 129 and the Commission's *Implementation Order*, as further
- 4 clarified by the *Clarification Order*, including the following:
- Achieve 1,443,035 MWh/yr gross verified energy savings by May 2021;
- Achieve 79,367 MWh/yr gross verified energy savings from low-income customers by
- 7 May 2021;
- Achieve 50,507 MWh/yr gross verified energy savings from GNE customers by May
- 9 2021;
- Achieve 92 MW of gross verified peak demand reductions (measured at the generator
- level) by May 2021;
- Have a portfolio of energy efficiency programs that is cost-effective as determined by the
- Total Resource Cost Test;
- Have a portfolio of demand response programs that is cost-effective as determined by the
- 15 Total Resource Cost Test; and
- Spend no more than \$307.5 million plus the costs for the Commission's Statewide
- Evaluator ("SWE"), which PPL Electric estimates are approximately \$5 million. I note
- that at the time PPL Electric prepared its EE&C Plan, the Commission had not awarded
- the Phase III SWE contract.

- 21 Q. Please describe PPL Electric's overall strategy to achieve these objectives.
- 22 A. Section 1.1.2 of the EE&C Plan describes the strategy in detail. PPL Electric's portfolio
- reflects an approach that is targeted, yet flexible enough to meet changing market

conditions and progress toward the Phase III EE&C Plan goals. The portfolio builds on customer, trade ally, and stakeholder relationships established during Phases I and II through training, education, installation of energy efficient measures, marketing strategies, effective trade ally networks, and customer support. Education about energy efficiency will play a more significant role than in Phases I and II. In addition, education, marketing, and the incentive structure in the Phase III EE&C Plan strives to promote a more-comprehensive, holistic approach to energy efficiency.

PPL Electric recognizes that no program can succeed unless it is accepted by the customer and is executed well. The Phase III EE&C Plan includes specific plans for a smooth transition between Phases II and III. This helps to provide consistency and certainty to customers and trade allies, particularly for projects that start in Phase II but go in-service in Phase III and for non-residential customers who were placed on a waitlist when program funding was fully subscribed before the end of Phase II.

PPL Electric's Phase III programs are designed with the flexibility to allow customers to use their own resources and trade allies and to combine incentives from multiple programs or from other sources to create the best solution for any facility or system in a way that utilizes normal market mechanisms for these activities. Programs are designed to engage trade allies, community-based organizations, and other local market participants through outreach, training and potential co-marketing to ensure that they are aware of PPL Electric's programs, are able to articulate program features and benefits to potential customers and can support customers in their decision to take energy efficiency

and demand reduction actions. Where appropriate, programs are designed to leverage existing market delivery channels to provide efficient and simple implementation from the customer's perspective.

PPL Electric has streamlined its administrative and program delivery processes to reduce the cost per annual kilowatt hour of savings by approximately 30% compared to its approved Phase II EE&C Plan. PPL Electric expects to utilize approximately five Conservation Service Providers ("CSPs") to deliver services in support of its programs, with four CSPs operating as program implementation contractors and one CSP for the independent evaluation of the EE&C Plan. In addition, to maintain the budget and cost-effectiveness requirements, measures with low savings, a high program acquisition cost (i.e., cost per annual kWh saved), or a benefit-cost ratio well below 1.0 were generally excluded from the Phase III EE&C Plan. PPL Electric also considered market transformation and freeridership during the program planning process.

A.

Q. Please describe the process PPL Electric used to develop its EE&C Plan.

PPL Electric formed a project team consisting of internal staff from a variety of groups and The Cadmus Group, Inc. ("Cadmus"), a nationally recognized energy consulting firm, to prepare its plan. The Company conducted a thorough review of: the Phase III Market Potential Studies (two conducted by the SWE and the other by PPL Electric); the Commission's *Phase III Orders*, and the results of PPL Electric's Phase II EE&C programs. PPL Electric established guiding principles, key objectives, and preliminary estimates of the savings and cost budgets for each customer sector (i.e., Residential, Low-

Income, Small C&I, Large C&I, and GNE) that would satisfy the overall savings target, meet the Low-Income and GNE set-aside targets and provide an equitable distribution of savings and costs across the customer sectors.

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The Company also met with stakeholders several times to get input on several aspects of the EE&C Plan, including the savings and cost estimates for each customer sector. Based on fairly broad stakeholder consensus on these customer sector budgets, guiding principles, and objectives, PPL Electric issued requests for proposals ("RFPs") for its four program implementation CSPs (i.e., Residential, Low-Income, Non-residential, and Demand Response). These proposals were essential to get confirmation from bidders that the budgets and objectives were realistic (especially the savings and costs for each sector), to better understand the types of programs and measures that were necessary to achieve these budgets and objectives, and to confirm that the CSPs would be able to achieve the program performance objectives. In addition, PPL Electric solicited bids for a new tracking system and for a CSP to conduct an independent evaluation of its EE&C Plan. This input was also necessary to confirm PPL Electric's cost estimates for these services were realistic.

Based on these RFPs, PPL Electric defined likely measures and programs, designed the programs, and estimated the savings and costs for each measure, program, and customer sector. PPL Electric used an iterative "bottom up" approach to align with the "top down" objectives, such as the savings and cost budgets for each sector, the overall energy savings compliance target, the set-aside target for Low-Income, the set-aside target for

GNE, the peak reduction compliance target, the cost-effectiveness requirement, and the overall cost cap. PPL Electric then met with stakeholders several more times to review the portfolio of programs and measures.

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- 5 Q. Please describe the programs included in PPL Electric's EE&C Plan.
- 6 A. The programs in the Phase III EE&C Plan include the following:
- Appliance Recycling. This program provides incentives for customers to remove and
 recycle refrigerators, freezers, windows air conditioners, and possibly dehumidifiers.
 This program is primarily for residential customers but is available for all customer
 sectors. This program is very similar to the Phase II program.
 - Efficient Lighting. This program provides discounts at the point of sale for light emitting diode ("LED") light bulbs. This program also has other, less significant, delivery channels available such as give-away promotions and new customer welcome kits. This program is primarily for residential customers but is available for all customer sectors.

 This program is very similar to the Phase II program.
 - Energy Efficient Home. This program provides incentives for energy efficient equipment
 in a home, such as heating, cooling, water heating, smart thermostats, appliances, pool
 pumps, insulation, and air scaling. This program is for residential customers only. This
 program offers measures that are similar to those delivered in two separate programs in
 Phase II.
 - Student Energy Efficient Education. This program provides energy efficiency education and kits to students in grades K-12. This program is very similar to the Phase II program.

- Home Energy Education. This program provides education about behaviors and 2 measures customers can adopt to reduce energy consumption in their home. This 3 program is for residential customers only. This program is similar to a Phase II program but will be more extensive, will be implemented in all program years, will be more personalized, and will include new tools and components.
 - Low-Income Winter Relief Assistance Program ("Low-Income WRAP"). This program provides education and direct-install energy efficiency measures in low-income customers' homes. Measures are provided at no cost to the customer and may include weatherization, lighting, heating, cooling, appliances, water heating, and water conservation. This program is similar to the Phase II program but will be delivered differently, by using a single CSP.
 - Energy Efficiency Kits and Education. This program provides energy efficiency education and kits to low-income customers. This program is very similar to the Phase II program.
 - Efficient Equipment. This program provides incentives to non-residential customers for energy efficient equipment. Measures may include heating, cooling, lighting, refrigeration, motors and drives, and others. This program is available to the Small C&I, Large C&I, and GNE customer sectors. This program is similar to the Phase II program.
 - Custom Program. This program provides incentives for any cost-effective measure that reduces electric usage and is not covered by another PPL Electric program. These measures may include new or replacement energy-efficient equipment, retrocommissioning, combined heat and power ("CHP"), repairs, equipment optimization, new construction projects, and operational and process improvements, and behavioral

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1	changes that result in cost-effective electric consumption reductions. This program is
2	available to the Small C&I, Large C&I, and GNE customer sectors. This program covers
3	more measures than the Phase II program.

Demand Response Program. This is a load curtailment type program for non-residential customers. The program is designed to meet PPL Electric's peak demand reduction compliance target. The program offers incentives to customers who reduce their demand during specific curtailment events. This program is available to Small C&I, Large C&I, and GNE customer sectors. This is a new program that did not exist in Phase II, but it is similar to the Load Curtailment Program in Phase I. However, as specified in the *Implementation Order* and *Clarification Order*, the method for determining the events and other program rules are different.

Q.

A.

Is the Phase III EE&C Plan designed to meet the consumption reduction targets and the peak demand reduction target within the designated expenditure cap?

Yes. The EE&C Plan is designed to meet the overall consumption reduction target, the

Low-Income set-aside consumption reduction target, the GNE set-aside consumption target, and the peak demand reduction target, all within the expenditure cap. In fact, PPL Electric has designed its EE&C Plan to exceed all of the compliance targets, within the expenditure cap, to take into account risks and uncertainties such as evaluation results that differ from expectations.

As shown in Table 2 of the EE&C Plan, the estimated overall consumption reduction is 1,582,985 MWh/yr, which exceeds the 1,443,035 MWh/yr overall compliance target by

1	approximately nine percent. The estimated consumption reduction from low-income
2	customers is 88,147 MWh/yr, which exceeds the 79,367 MWh/yr Low-Income
3	compliance target by approximately 11 percent. The estimated consumption reduction
4	from GNE customers is 81,000 MWh/yr, which exceeds the 50,507 MWh/yr GNE
5	compliance target by approximately 60 percent. The estimated peak demand reductions
6	are 115 MW, which exceeds the 92 MW peak reduction compliance target by
7	approximately 25 percent.

Q. Please describe the Company's strategy to ensure the EE&C Plan is designed to achieve at least 15% of the total consumption reduction target in each program year.

As shown on Table 5 of the EE&C Plan, PPL Electric has designed its EE&C Plan to achieve 22 percent of the total consumption reduction target in Program Year 8, 22 percent in Program Year 9, 23 percent in Program Year 10, 22 percent in Program Year 11, and 20 percent in Program Year 12 by leveling projected program performance and pace. PPL Electric will also specify these objectives in the contracts for all program implementation CSPs.

Q. Does the EE&C Plan include at least one comprehensive program for residential customers and at least one comprehensive program for non-residential customers?

A. Yes. As described in Section 3.2.1 of the EE&C Plan, the EE&C Plan includes the Low-Income WRAP Program for residential customers (low-income). For non-residential customers, the Company offers the Custom Program. In addition, as explained in the

EE&C Plan, the Company is encouraging customers to take a more holistic, comprehensive approach to energy efficiency. Moreover, programs such as the Efficient Equipment Program for non-residential customers, can become comprehensive if the customer implements several measures from those programs. Similarly, the Energy Efficient Home Program can be a comprehensive program if residential customers implement several measures from the program.

A.

Q. What process is the Company proposing to evaluate and update its EE&C Plan?

PPL Electric's staff plans to carefully monitor actual program performance compared to estimates in the EE&C Plan. In addition, PPL Electric's independent evaluator will conduct an impact evaluation, an annual cost-effectiveness evaluation, and process evaluations of each program and the overall portfolio. If actual performance deviates from the estimates in the EE&C Plan, PPL Electric will work with its four program implementation CSPs to adjust the performance of programs or will recommend changes to the EE&C Plan. This includes modifying marketing tactics, adjusting incentive levels within specified ranges, offering different measures at different times, and offering multiple delivery channels. To the extent that there are any changes that require Commission approval, PPL Electric will seek approval of such changes in accordance with the EE&C Plan change procedures outlined in the Commission's *Minor Plan Change Order* entered on June 10, 2011, at Docket No. M-2008-2069887, and the *Implementation Order*.

1	Q.	Does the Phase II EE&C Plan offer at least one energy-efficiency program
2		for each customer sector?
3	A.	Yes. As shown in Table 1 and Figure 4 (among numerous other sections, tables, and
4		figures), there is more than one program available for each of the five customer sectors-
5		Residential, Low-Income, Small C&I, Large C&I, and GNE.
6		
7	Q.	Has PPL Electric competitively bid its relevant contracts for the Phase III EE&C
8		Plan?
9	A.	Yes. PPL Electric has issued competitive RFPs for all of its CSPs and for a new tracking
10		system, has selected its CSPs and the tracking system vendor, and is finalizing the CSP
11		contracts for submittal to the Commission for approval.
12		
13	Q.	Does this conclude your direct testimony?
14	A.	Yes, it does.

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities

Corporation for Approval of its Act 129

Phase III Energy Efficiency and

Conservation Plan

Docket No. M-2015-2515642

VERIFICATION

I, Peter D. Cleff, being the Manager-Energy Efficiency Evaluation and Performance at

PPL Electric Utilities Corporation, hereby state that the testimony set forth in PPL Electric

Statement No. 1 is true and correct to the best of my knowledge, information and belief, and that

if asked orally at a hearing in this matter, my answers would be as set forth therein. I further

state that I am responsible for Sections 1, 3, 4, 5, 6, and 9 and Appendices B and C of the Phase

III EE&C Plan, and that they are true and correct to the best of my knowledge, information and

belief.

I understand that the statements herein are made subject to the penalties of 18 Pa.C.S.

§ 4904 relating to unsworn falsification to authorities.

Date: December 4, 2015

Peter D. Cleff

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SECRETARY SBUREAU

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities Corporation for Approval of its Act 129 Phase III Energy Efficiency and Conservation Plan

Docket No. M-2015-2515642

PPL Electric Utilities Corporation

Statement No. 2

Direct Testimony of M. Hossein Haeri, PhD.

Date: December 4, 2015

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PA.P.U.C.

	Direct Testimony of M. Hossein Haeri, PhD.
Q.	Please state your full name and business address.
A.	My name is Hossein Haeri, and my business address is 720 SW Washington Street, Suite
	400 Portland, OR 97205.
Q.	On whose behalf are you presenting testimony in this proceeding?
A.	I am testifying on behalf of PPL Electric Utilities Corporation ("PPL Electric" or the
	"Company").
Q.	By whom are you employed and in what capacity?
A.	I am employed by The Cadmus Group, Inc. ("Cadmus"), as Senior Vice President of
	Energy Sector.
Q.	What are your duties as Senior Vice President of Cadmus's Energy Sector?
A.	I am responsible for managing the firm's consulting practices in the energy sector and
	providing technical leadership in utility planning, assessment, measurement and
	verification practice areas of the firm.
Q.	What is your educational background?
A.	I hold a doctoral degree in regional science from the School of Urban Studies and Public
	Affairs at Portland State University, and a Bachelor's degree in social science research
	from the University of Oregon.
	Q.A.Q.A.

Q. Please describe your professional experience.

A, Since 1985, I have worked in the energy utility industry in various capacities, including as a researcher, consultant, teacher, and utility manager. With the assistance of my staff, I have provided technical advice and consultation to energy utilities on matters related to resource planning, load forecasting, load research, market assessment, energy efficiency, demand response, portfolio assessment, and performance measurement and verification. Before joining Cadmus in 2003, I was Vice President for consulting at DNV GL (formerly KEMA Consulting). I served as the director of Energy Information Systems, responsible for measurement and verification at Chevron Energy Solutions (formerly PG&E Energy Services) from 1997 to 2000. Prior to that, I served as a principal in the consulting firm of Barakat & Chamberlin, where I led the firm's impact evaluation and assessment practice area. I also worked for four years as Manager of Planning and Assessment for Central Maine Power Company ("CMP"), where I was responsible for planning and evaluation of the company's demand side management programs. While at Central Maine, I co-chaired the Maine Collaborative, representing investor-owned utilities in the state. Before joining CMP, I was the manager of Western Operations for ERC International, where I was responsible for utility demand-side management program evaluations. I was also an adjunct assistant professor at Portland State University from 2000 to 2005, where I co-founded the graduate program in Applied Energy Economics and taught courses in energy planning and regulation.

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Q. Have you previously testified as a witness before the Pennsylvania Public Utility Commission ("PUC" or "Commission")?

A. Yes. I presented testimony in Docket No. M-2009-2093216 in support of PPL Electric's petition concerning its Phase I Act 129 Energy Efficiency and Conservation ("EE&C")

Plan and in Docket No. M-2012-2334388 in support of PPL Electric's petition regarding its Phase II Act 129 EE&C Plan.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide supplemental information regarding PPL Electric's proposed Phase III Act 129 Energy Efficiency and Conservation Plan ("Phase III EE&C Plan"), which was submitted in accordance with Act 129 of 2008, P.L. 1592, 66 Pa. C.S. §§ 2806.1, 2806.2 ("Act 129"), the Commission's June 19, 2015 Implementation Order at Docket No. M-2014-2424864, the Commission's Clarification Order entered on August 20, 2015, at Docket No. M-2014-2424864, and the Commission's 2016 Total Resource Cost ("TRC") Test Order ("2016 TRC Test Order") entered on June 22, 2015, at Docket No. M-2015-2468992.

A.

Q. What was your role in preparation of PPL Electric's proposed EE&C Plan?

I and my staff, working under my direct supervision, provided PPL Electric technical information regarding the design of some of the programs in the proposed Phase III EE&C Plan and assisted PPL Electric in preparing the portfolio including the tables and charts in the EE&C Plan. I also oversaw the technical analyses and quantitative program and portfolio summaries prepared in accordance with the Commission's EE&C Plan Template issued on September 22, 2015, at Docket No. M-2014-2424864, as well as the

1		benefit-cost analyses performed in accordance with the Commission's 2016 TRC Test
2		Order.
3		
4	Q.	Are you sponsoring any exhibits in the filing?
5	A.	Yes. As Mr. Peter Cleff explains in his direct testimony, he, Ms. Bethany Johnson, and I
6		are co-sponsoring PPL Electric's Phase III EE&C Plan, which has been identified as PPL
7		Electric Exhibit No. 1. Specifically, I am responsible for and am sponsoring Section 2, as
8		well as calculations in Section 3 and Section 8 of that Exhibit.
9		
10	Q.	Please describe your responsibilities for each of these sections of the plan.
11	A.	I, with support from my staff, made the following contributions to the various sections of
12		the EE&C Plan:
13		• Section 2 - A quantitative overview of the entire Phase III EE&C Plan for the
14		five-year period, in accordance with the Commission's EE&C Plan Template.
15		The overview consists of the following tables:
16		o Table 7 - Residential, Commercial and Industrial Small, Commercial and
17		Industrial Large, and Governmental/Educational/Nonprofit Portfolio
18		Summaries
19		o Table 9 - Budget and Parity Analysis
20		o Table 8 - Plan Data - Costs, Cost-Effectiveness, and Savings by Program,
21		Sector and Portfolio
22		o Table 10 - Summary of Costs and Savings by Program

1		• Section 3 - Review of program-specific costs, savings and cost-effectiveness
2		calculations.
3		Section 8 - Determination of avoided costs and cost-effectiveness analysis for
4		each program and the portfolio according to the Commission's 2016 TRC Test
5		Order.
6		•
7	Q.	Does the Phase III EE&C Plan contain a process for conducting an annual cost-
8		effectiveness evaluation of the plan in accordance with the Commission's 2016 TRC
9		Test Order?
10	A.	Yes. The Phase III EE&C Plan outlines a process for conducting an annual cost-
11		effectiveness evaluation of the Plan in accordance with the Commission's 2016 TRC Test
12		Order. See Section 1.7.3 of the Phase III EE&C Plan.
13		
14	Q.	What method was used to estimate the cost-effectiveness of the Phase III EE&C
15		Plan and its individual programs?
16	A.	For each program in the Phase III EE&C Plan and for the entire EE&C Plan (including

A. For each program in the Phase III EE&C Plan and for the entire EE&C Plan (including portfolio-level common costs), cost-effectiveness was estimated in accordance with the procedures described in the California Standard Practice Manual (SPM)¹.

Q. Is the proposed Phase III EE&C Plan cost-effective as a whole, based on the TRC criterion?

¹ See California Standard Practice Manual for Economic Analysis of Demand-Side Management Programs and Projects, California Energy Commission, October 2001.

1 A. Yes. The cost-effectiveness of the proposed portfolio is demonstrated in data presented
2 in the Phase III EE&C Plan, specifically in Section 3 and in Tables 7A through 7F in
3 Section 8. For each program in the Phase III EE&C Plan, PPL Electric determined cost4 effectiveness in accordance with the Commission's 2016 TRC Test Order.

PPL Electric's proposed Phase III EE&C Plan is cost-effective as a whole. *See* Section 8 of the Phase III EE&C Plan. Specifically, the TRC benefit-to-cost ratio for the overall Phase III EE&C Plan, inclusive of energy efficiency and demand response, is 1.61. This exceeds the value of 1.0 required by Act 129 and is consistent with the benefit-cost ratio of well-performing programs in other states, especially considering Pennsylvania's set-aside savings requirement for low-income. Moreover, of the 10 programs proposed for Phase III, only two are not cost-effective: Low-Income WRAP and the Energy Efficient Home Program.

Regarding the specific measures in these programs, Tables 2 and 3 in the Phase III EE&C Plan provide summaries of portfolio level lifetime costs and benefits for energy efficiency and demand response measures, respectively, to compute each measure's cost-effectiveness from a TRC perspective, PPL Electric determined the life-cycle costs, savings, and avoided cost benefits for each measure.

Q. How did the Company assess the cost-effectiveness for each program?

Assessment of cost-effectiveness for each program in the Phase III EE&C Plan began with determining each measure's net "total resource" benefits ("B_{TRC}") over the life of

the measure, for a maximum of 15 years as directed in the 2016 TRC Test Order,² as well as the measure's total incremental installed costs ("C_{TRC}"). A measure (or program) was deemed cost-effective if its net "total resource" benefits were positive or the benefit-to-cost ratio exceeded 1.0.

The TRC data used in this assessment were estimates based on the planning assumptions in this Phase III EE&C Plan. The Company will complete a cost-effectiveness evaluation using actual program results as part of its annual evaluations.

10 Q. Please describe the calculation of avoided costs of supplying electricity.

- A. The avoided costs of delivered electricity were calculated for a 15-year planning horizon in three segments, in accordance with the procedure prescribed in Sections IV.K and V.D of the Commission's 2016 TRC Test Order, as follows:
 - Years 1-5 (June 2016-May 2021): PJM Interconnection LLC ("PJM") New York Mercantile Exchange ("NYMEX") PPL Zone Off-Peak and On-Peak Locational Marginal Price ("LMP") Swap futures as of August 27, 2015 through December 2016. PJM Western Hub Off-Peak and On-Peak LMP Swap futures are used from January 2017 through December 2018. PPL Electric adjusted the Western Hub values by assessing the 2016 ratio between PJM PPL Zone LMP Swap futures and Western Hub futures, and applying this ratio to the Western Hub values for 2017 and 2018. The Company used NYMEX Henry Hub Natural Gas Futures from 2019

² 2016 TRC Test Order, p. 20.

1	through 2021, converted to electric prices using an on-peak and off-peak heat rate,
2	and included basis adjustments and on-peak and off-peak spark price spreads.

- Years 6-10 (June 2021-May 2026): PPL Electric used NYMEX Henry Hub Natural Gas Futures as of August 27, 2015, converted to electric prices using an on-peak and off-peak heat rate. The Company included basis adjustments and on-peak and offpeak spark price spreads.
- Years 11-15 (June 2026-May 2031): PPL Electric used Middle Atlantic Natural Gas Prices for Electric Power from the Energy Information Administration Annual Energy Outlook, Energy Prices by Sector and Source, converted to electric prices using the on-peak and off-peak heat rate and including on-peak and off-peak spark price spreads.

Avoided generation capacity costs were estimated using PJM base residual auction results through 2017 and 2018. After 2018, PPL Electric escalated prices using the Consumer Price Index from the Bureau of Labor Statistics ("BLS").

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Q. What are the sources for the Company's estimates of savings, incremental cost, and measure life?

18 PPL Electric obtained estimates of savings, incremental cost, and measure life for its Α. 19 Phase III EE&C Plan primarily from the 2016 Pennsylvania Technical Reference Manual 20 ("TRM"), the Pennsylvania Incremental Cost Database, and the Statewide Evaluator's ("SWE") February 2015 Energy Efficiency Market Potential Study. The Company 22 compiled data for new measures not found in the TRM from secondary sources, including

the California Database for Energy Efficiency Resources ("DEER") and information provided by the implementation conservation service providers ("CSPs").

A.

Q. What benefits were used in the TRC calculation?

The benefits used in the TRC calculation include the full value of time and seasonally differentiated generation, transmission and distribution, and capacity costs. These benefits also accounted for avoided line losses. To capture the full value of time and seasonal impacts of each program measure, the annual generation capacity value was assigned to each program measure according to the hourly load shape of the end user affected by the measure. The Company did not factor non-energy benefits, such as water savings, into the calculation because these benefits were not readily quantifiable and assumed to be relatively minor.

Q. What was included in the cost component of the TRC analysis?

15 A. The cost component of the TRC analysis included three costs: (1) incremental measure
16 costs; (2) participant costs; and (3) direct electric distribution company ("EDC") costs.

Incremental measure costs are the expenses associated with the installation of energy efficiency measures and ongoing operation and maintenance costs, where applicable. The incremental measure costs were obtained primarily from the Pennsylvania Incremental Cost Database. Measure costs not included in this study were obtained from a variety of sources, including DEER, PPL Electric's actual experience and the results of

its Phase II evaluations (such as the actual project cost for an average commercial and industrial ("C&I") lighting retrofit project), among other sources.

Participant costs are costs incurred by the customer, including material and installation of efficient measures. Often, participant costs are determined by subtracting Act 129 EE&C incentives from the incremental cost of the measure. Participant costs are used in the TRC evaluation only.

EDC costs are costs that are in the EE&C Plan budget and subject to the funding cap (plus SWE costs that are not subject to the funding cap). EDC costs consist of expenses associated with program development, delivery and ongoing operation, specifically: (1) EDC labor, material, and supplies; (2) customer incentives; (3) CSP labor, materials and supplies; and (4) marketing (excludes marketing by turnkey program CSPs).

- PPL Electric's EDC costs fall into two general categories:
- **Direct Program Costs:** The costs that are directly related to and charged to a specific program; and
- Common Costs (or "Portfolio-level Costs"): The costs that are applicable to more
 than one customer class or more than one program, or that provide portfolio-wide
 benefits. Common costs are allocated to each program and sector according to their
 shares of direct program costs.
- 22 Q. Does this conclude your direct testimony?
- 23 A. Yes.

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities

Corporation for Approval of its Act 129

Docket No. M-2015-2515642

Phase III Energy Efficiency and

Conservation Plan

VERIFICATION

I, Hossein Haeri, being Senior Vice President of The Cadmus Group, Inc.'s Energy Sector,

hereby state that the testimony set forth in PPL Electric Statement No. 2 is true and correct to the

best of my knowledge, information and belief, and that if asked orally at a hearing in this matter,

my answers would be as set forth therein. I further state that I am responsible for Sections 2, 3,

and 8 and Appendix D of the Phase III EE&C Plan, and that they are true and correct to the best

of my knowledge, information and belief.

I understand that the statements herein are made subject to the penalties of 18 Pa.C.S.

§ 4904 relating to unsworn falsification to authorities.

Date: December 4, 2015

Hossein Haeri

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities for Approval of its Act 129 Phase III Energy Efficiency and Conservation Plan

Docket No. M-2015-2515642

PPL Electric Utilities Corporation

Statement No. 3

Direct Testimony of Bethany L. Johnson

Date: December 4, 2015

1 Direct Testimony of Bethany L. Johnson

- 2 Q. Please state your full name and business address.
- 3 A. My name is Bethany L. Johnson, and my street address is Two North Ninth Street,
- 4 Allentown, Pennsylvania 18101.

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- 6 Q. By whom are you employed and in what capacity?
- 7 A. I am employed as the Manager Regulatory Operations by PPL Electric Utilities
- 8 Corporation ("PPL Electric" or the "Company").

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- 10 Q. What are your duties as Manager Regulatory Operations?
- 11 A. I am responsible for PPL Electric's compliance with the regulatory requirements of the
- Pennsylvania Public Utility Commission ("Commission"), the Federal Energy Regulatory
- 13 Commission ("FERC") and other regulatory agencies, as necessary. As part of this
- function, I am responsible for the preparation, review, technical oversight and guidance
- of the development, content and structure of cost allocation and revenue requirement
- studies. In addition, I am responsible for all aspects of PPL Electric's rates and riders,
- 17 the Company's default service programs, and scheduling and settlement activities with
- PJM Interconnection LLC. I also prepare and present expert testimony regarding these
- and other cost-of-service and ratemaking-related issues.

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- Q. What is your educational background?
- 22 A. I graduated from King's College in 1999 with a Bachelor of Science Degree in Finance,
- and from Moravian College in 2003 with a Master of Business Administration.

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Q. Please describe your professional experience.

In 2000, I was employed by PPL Global Operations, Inc. ("PPL Global Operations"), A. where I supported the accounting and financial reporting activities of the company's domestic activities. In 2001, as a result of realignment, I joined PPL Generation, LLC. In this position, my responsibilities included cost control, budgeting, reporting, and management of the forecasting process for large construction projects, as well as the administration of construction and financing contracts. In 2004, I rejoined PPL Global Operations as a Senior Business Analyst with responsibility for maintaining, analyzing, consolidating, and presenting the business plans and operational performance results of the Company's international affiliates. In 2007, I joined PPL Energy Services Group, LLC as a Business Analyst providing financial modeling and analytical support for the evaluations of acquisition, development, and divestiture opportunities. In 2009, I joined PPL Electric as a Project Controls Specialist providing advanced cost analysis for distribution and transmission projects. Later in 2009, I assumed the position of Financial Business Planning Specialist in the Regulatory Compliance Department. In August 2012, I was named Manager - Regulatory Compliance for PPL Electric, and in October 2015, I was named to my current position as Manager – Regulatory Operations.

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Q. Have you previously testified as a witness before the Commission?

A. Yes, I have testified before this Commission in *PP&L Industrial Customer Alliance v.*'PPL Electric Utilities Corporation, Docket Nos. C-2013-2398442 and C-2013-2398440,

regarding the Company's Phase I and Phase II Act 129 Compliance Riders, the

Company's 2015 base rate case at Docket No. R-2015-2469275, and the Company's 2012 base rate case at Docket No. R-2012-2290597. In addition, I have testified in: several Section 1307(e) reconciliation hearings; Office of Small Business Advocate v. PPL Electric Utilities Corporation, Docket No. C-2013-2367475, regarding PPL Electric's Generation Service Charge Rider; Petition of PPL Electric Utilities Corporation for Approval of a Distribution System Improvement Charge, Docket No. P-2012-2325034; Petition of PPL Electric Utilities Corporation pursuant to Act 11 of 2012, the Final Implementation Order of Act 11 and 66 Pa. C.S. § 1352, for approval of its Long-Term Infrastructure Improvement Plan, Docket No. P-2012-2325034; PPL Electric Utilities Corporation Proposed Transmission Service Charge For the twelve months ending November 30, 2010, Docket No. M-2010-2213754; PPL Electric Utilities Corporation Transmission Service Charge Effective June 1, 2011, Docket No. M-2011-2239805; Petition of PPL Electric Utilities Corporation for Approval of a Default Service Program and Procurement Plan for the Period June 1, 2015 through May 31, 2017, Docket No. P-2014-2417907; and Petition of PPL Electric Utilities Corporation for Approval of its Smart Meter Technology Procurement and Installation Plan, Docket No. M-2014-2430781.

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Q. Briefly describe the subject matter of your testimony in this proceeding.

A. I will describe the calculation of PPL Electric's spending cap for the programs in its

Phase III Energy Efficiency and Conservation Plan ("Phase III EE&C Plan" or "EE&C

Plan"). I also will explain the Company's proposed mechanism for recovering the costs

of its Phase III EE&C Plan.

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2	Q.	Are you sponsoring any	exhibits in this	proceeding?
_	V٠	rate you sponsoring any	CAHIDICS III CHIS	process.

3 A. Yes. I am primarily responsible for and sponsoring Section 7 and Appendices A and E of

4 PPL Electric Exhibit No. 1, the Company's Phase III EE&C Plan.

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6 Q. What is the spending cap for PPL Electric's Phase III EE&C Plan?

7 A. The spending cap for PPL Electric's Phase III EE&C Plan is \$307,506,880, excluding

approximately \$5 million for the Company's share of the Statewide Evaluator ("SWE")

costs. The SWE costs are not subject to the cost cap per the Commission's

Implementation Order entered on June 19, 2015, at Docket No. M-2014-2424864

("Implementation Order"). Thus, the Company's total budget for its Phase III EE&C

Plan is approximately \$312.5 million including the SWE costs.

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Q. How was that spending cap calculated?

- 15 A. The \$307,506,880 cap is based on 2% of the Company's total annual revenue as of
- December 31, 2006, which was \$3,075,068,825. The Commission stated in its
- 17 Implementation Order that the 2% cap applies to the annual budget and not the budget for
- the entire phase of the EE&C Plan. Therefore, the approximately \$307.5 million is for
- the full five-year period, derived from the 2% cap multiplied by \$3,075,068,825
- 20 (\$61,501,376 per year for five years).

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- Q. How are the costs to design and develop the Company's Phase III EE&C Plan
- reflected in its budget for the EE&C Plan?

A. The Commission has allowed the Company to include the costs to design and develop its Phase III EE&C Plan, and those incurred prior to the start of the Plan are permitted to be deferred. These costs are included in the \$312.5 million budget. PPL Electric proposes to amortize and recover those costs ratably over the five-year, or 60 months, life of its Phase III EE&C Plan. I note that Appendix E of the Phase III EE&C Plan currently states that the amortization period is 36 months. This will be corrected in the Company's compliance filing.

A.

Q. Please describe the Company's proposed rate mechanism for recovering the costs of its Phase III EE&C Plan.

The Company proposes to use a non-bypassable cost recovery mechanism as authorized by Section 2806.1(k)(1) of Act 129. The Company will calculate its ACR 3 rate for each of its three customer classes – Residential, Small C&I, and Large C&I. For residential customers, the ACR 3 will be recovered as a cents per kWh component included in the distribution charge on the customer's bill. For Small C&I customers, the ACR 3 will be recovered as a cents per kWh component and will be shown as a separate line item from other charges, but combined with any ACR 1 or ACR 2 charges. In other words, a Small C&I customer will see one line item on his bill for all Act 129 charges. For Large C&I customers, the ACR 3 will be recovered as a cents per kW component of the customer's bill and will be shown similar to the Small C&I bill presentment. All Act 129 charges (including ACR1, ACR 2, and ACR 3) will be identified as a single ACR line item shown separately from other distribution charges. For Large C&I customer, the demand (kW) is the customer's PJM peak load contribution and may change yearly.

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- 2 Q. How many different rates will be reflected in the ACR?
- 3 A. Three different rates will be reflected in the Company's ACR 3 rate. The three rates will
- be for each of the Company's customer classes Residential, Small C&I, and Large C&I.

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- 6 Q. How will the Company recover the costs for its Government/Nonprofit/Educational
- 7 ("GNE") programs from the customer classes?

customer class participation.

Customer receiving benefits in the GNE sector may be in any of the three customer 8 A. 9 classes (i.e., Residential, Small C&I, Large C&I). For cost recovery purposes, the 10 Company's ACR 3 rate will assume that 60% of GNE sector costs will come from the 11 Small C&I customer class and that 40% of GNE sector costs will come from the Large 12 C&I customer class. These percentages are based on the actual results from Phases I and 13 II. PPL Electric will assign actual costs for the GNE sector based on upon the specific 14 rate schedule for the customer receiving benefits. The Company's annual reconciliation 15 process will account for differences between the 60%/40% assumption and actual

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- 18 Q. Please describe how PPL Electric will set the annual rates under the ACR 3.
- 19 A. The Company will set the annual rates under its ACR 3 using an annual budget for all
 20 costs required for the Company to implement is approved Phase III programs during the
 21 upcoming 12-month period. The annual budget, or annual projected program cost, is the
 22 sum of the direct and indirect costs incurred by the Company for each of the respective

customer classes. The annual budget will also include the amortization of any deferred costs for the 12-month rate application period.

The total annual budgeted amount will be divided by the expected kWh for Residential and Small C&I customer classes, and by the kW demand for the Large C&I customer class.

The Company will also include in each customer class's ACR 3 rate calculation the e-factor or prior period over or undercollection for the respective customer class. This over or undercollection will also be divided by expected kWh usage or kW demand for the customer class. The current period rate and the e-factor rate will be combined and include an adjustment for gross receipts tax to obtain the ACR 3 rate for the customer class for the period.

A.

Q. Please describe PPL Electric's proposed reconciliation mechanism for the ACR 3.

In accordance with the Commission's *Implementation Order*, the Company proposes to file with the Commission a report of collections within 30 days following the end of each application year. This report will be the reconciliation of the ACR 3 by each of the three customer classes (i.e., Residential, Small C&I, and Large C&I). The reconciliation will compare the actual expenses incurred and the actual revenues received for each of the customer classes at the end of each application year. No interest will be included monthly on the over or under collections.

Q. Will the Phase III cost recovery mechanism be a separate mechanism from the Phase II cost recovery mechanism?

1 PPL Electric proposes to include in its first ACR 3 rate, as a separate line item, any over A. 2 or undercollection remaining from its ACR 2. In all subsequent ACR 3 filings, the Company will include any remaining ACR 2 over or undercollection in its ACR 3 e-3 4 factor, and the ACR 2 reconciliation will no longer be reflected as a separate line item. 5 This will effectively combine ACR 2 with ACR 3 on a going forward basis. 6 7 Is PPL Electric proposing any other mechanisms for adjusting the ACR 3? Q. 8 Yes, included in the Company's pro forma tariff is the ability to file an interim revision A. 9 of the ACR 3 rate. The Company would file this revision if it is determined that leaving 10 a customer class's ACR 3 rate unchanged would result in a material over or 11 undercollection of the Phase III costs incurred or expected to be incurred during the then 12 current 12-month period. 13 14 Q. Is the Company proposing to include any capital costs as part of its ACR 3? A. 15 No. 16

Does this conclude your direct testimony?

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Q.

A.

Yes, it does.

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of PPL Electric Utilities

Corporation for Approval of its Act 129

Docket No. M-2015-2515642

Phase III Energy Efficiency and

Conservation Plan

VERIFICATION

I, Bethany L. Johnson, being Manager - Regulatory Operations of PPL Electric Utilities Corporation, hereby state that the testimony set forth in PPL Electric Statement No. 3 is true and correct to the best of my knowledge, information and belief, and that if asked orally at a hearing in this matter, my answers would be as set forth therein. I further state that I am responsible for Section 7 and Appendices A and E of the Phase III EE&C Plan, and that they are true and correct to the best of my knowledge, information and belief.

I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: December 4, 2015

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

VIA E-MAIL & FIRST CLASS MAIL

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Date: December 4, 2015

Devin T-Ryan

RECEIVED