



**PPL Electric Utilities**

PPL Electric Utilities  
Stakeholder Meeting  
Act 129 EE&C  
November 19, 2014  
Harrisburg, PA

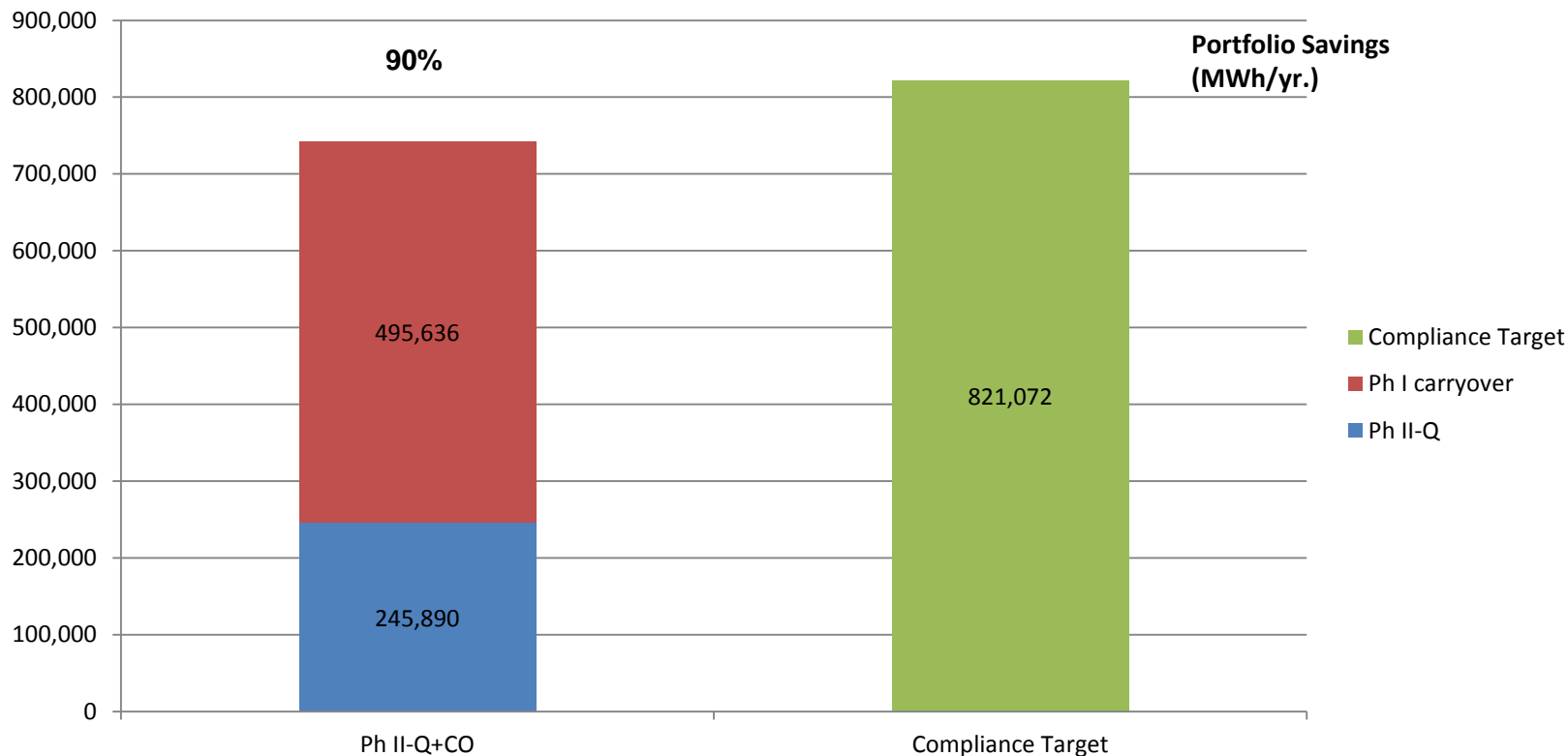
# Objectives:

- Summary of evaluation results for Phase II Program Year 5 (June 2013 – May 2014)
  - Pete Cleff
- Summary of Phase II results through August 2014
  - Pete Cleff
- Program highlights and proposed changes to the Phase II EE&C Plan
  - Tammy Albenzi and Mary Thompson Grassi
- Stakeholders' initial input about the types of programs/measures and the focus for Phase III
  - Pete Cleff

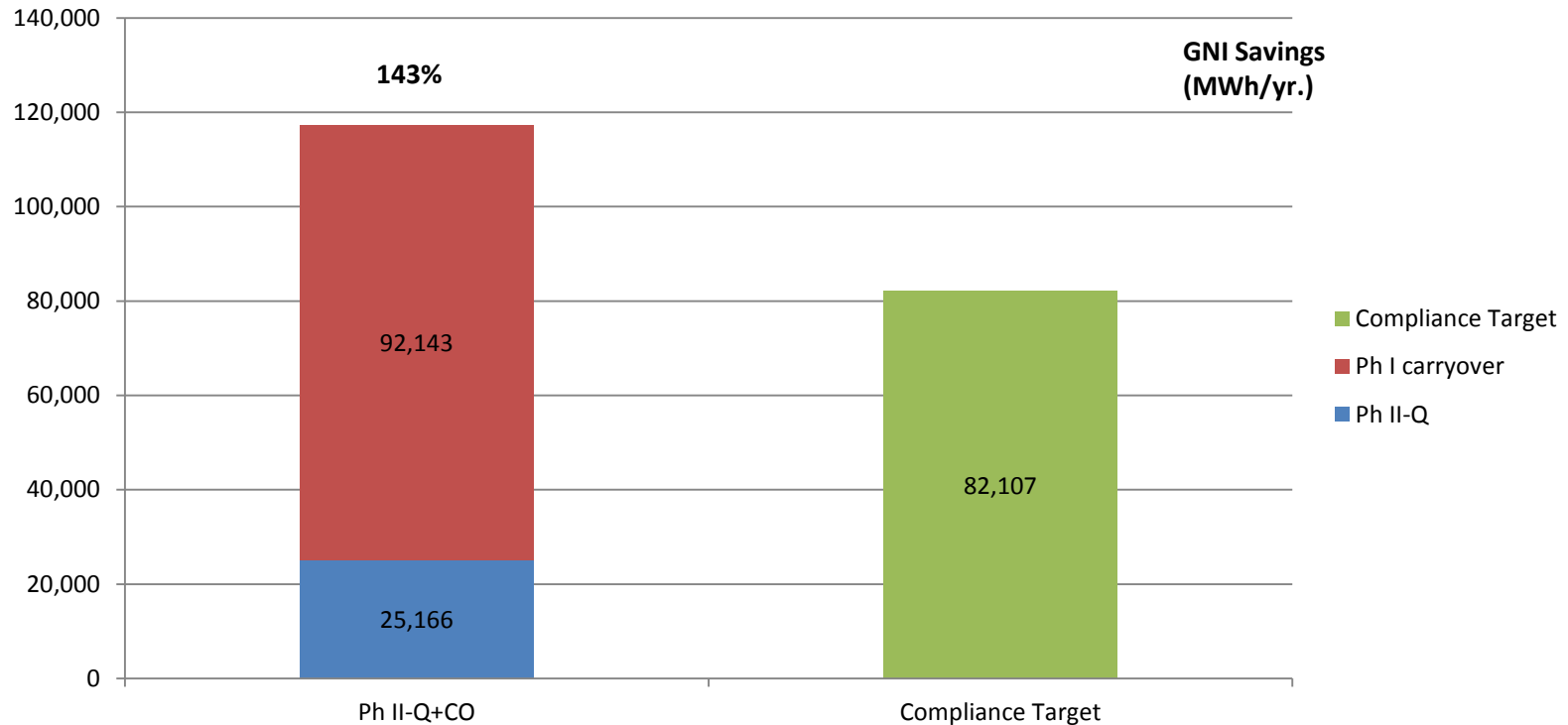
## Evaluation Results Phase II

- Program Year 5
- Summary of Phase II results through August 2014

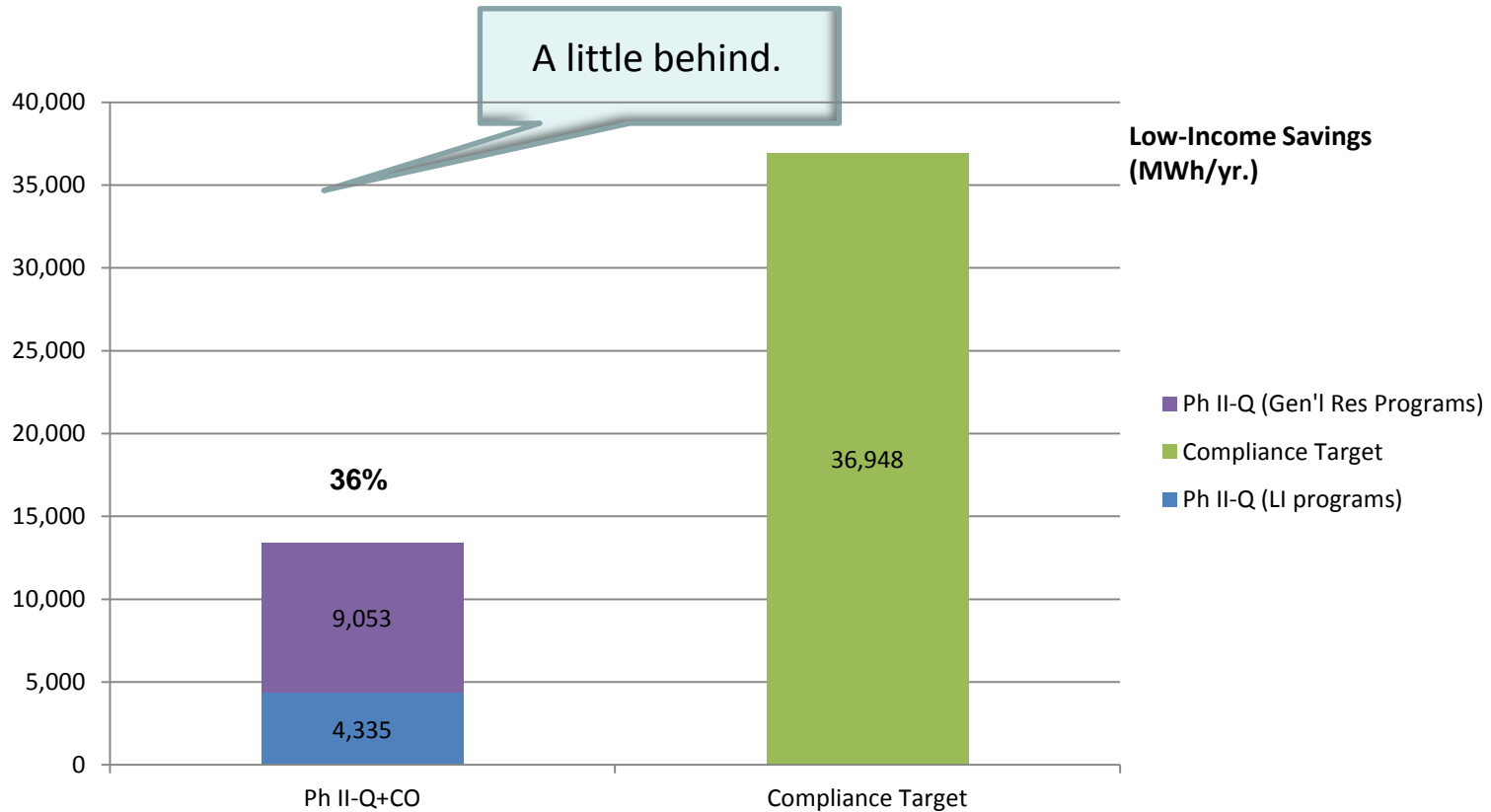
# Phase II Portfolio Savings (PY5 verified and PY6 through 8/30/14)



# Phase II GNI Savings (PY5 verified and PY6 through 8/30/14)



# Phase II Low Income Savings (PY5 verified and PY6 through 8/30/14)



# PY5 Sector Evaluation Summary

## (Data subject to change)

| Sector                  | Phase II Reported Energy Savings (MWh/yr.) | Phase II Verified Gross Energy Savings (MWh/yr.) | PYTD TRC Ratio | Phase II EDC Expenditures (\$1,000) | Program Acquisition Cost (\$/Annual kWh) | Phase II Participants  |
|-------------------------|--|--|----------------|-------------------------------------|--|------------------------|
| <b>Low Income</b>       | 4,928                                      | 4,335 <sup>[1]</sup>                             | 0.92           | \$3,918                             | \$0.90                                   | 5,506                  |
| <b>Residential</b>      | 86,231                                     | 84,597   | 4.09           | \$9,624                             | \$0.11                                   | 231,072 <sup>[4]</sup> |
| <b>Small C&amp;I</b>    | 81,383                                     | 75,156   | 3.23           | \$7,578                             | \$0.10                                   | 28,434 <sup>[2]</sup>  |
| <b>Large C&amp;I</b>    | 15,645                                     | 15,119   | 1.85           | \$1,925                             | \$0.13                                   | 122                    |
| <b>Gov't/Non-Profit</b> | 21,846                                     | 20,857   | 1.28           | \$3,339                             | \$0.16                                   | 830                    |
| <b>Total</b>            | 210,033                                    | 200,065  | 2.20           | \$37,838 <sup>[3]</sup>             | \$0.19 <sup>[3]</sup>                    | 265,965                |

<sup>[1]</sup>Excludes 9,053 MWh/yr. of Low-Income savings in general residential programs that counts toward the Low-Income compliance target.

<sup>[2]</sup>Includes ~26,000 participants in the upstream lighting program (cross sector sales).

<sup>[3]</sup>Includes portfolio common costs (\$11,457) that will not be assigned to a specific sector until the end of Phase II. Excludes \$7 million of actual costs for PY5 transactions that will be paid in PY6. This "payment lag" across program years is normal, except for the final year of a phase.

<sup>[4]</sup>Includes ~208,000 participants in the upstream lighting program.

# PY5 Program Evaluation Summary

## (Data subject to change)

Good Realization  
Rate. Solid TRC.



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| Program                                       | Phase II Reported Energy Savings (MWh/yr.) | Phase II Verified Gross Energy Savings (MWh/yr.) | PYTD Net-to-Gross Ratio   | PYTD TRC Ratio | Phase II EDC Expenditures (\$1,000) | Program Acquisition Cost (\$/Annual kWh) | Phase II Participants |
|---|--|--|---------------------------|----------------|-------------------------------------|--|-----------------------|
| Appliance Recycling                           | 9,776                                      | 9,255  | 0.74                      | 3.16           | \$1,676                             | \$0.18                                   | 11,510                |
| Continuous Energy Improvement                 | 0  | 0  | N/A                       | N/A            | \$219                               | N/A                                      | 0                     |
| Custom Incentive                              | 4,909                                      | 5,394  | 0.55                      | 1.74           | \$971                               | \$0.18                                   | 56                    |
| E-Power Wise                                  | 1,863                                      | 1,525  | 1.0                       | 2.99           | \$259                               | \$0.17                                   | 2,715                 |
| Low-Income Energy-Efficiency Behavior and Ed  | 0  | 0  | N/A                       | N/A            | \$268                               | N/A                                      | 0                     |
| Low-Income WRAP                               | 3,065                                      | 2,810  | 1.0                       | 0.83           | \$3,390                             | \$1.21                                   | 2,791                 |
| Master Metered Multi-Family                   | 1,792                                      | 2,039  | 0.77                      | 1.45           | \$746                               | \$0.37                                   | 37                    |
| Prescriptive Equipment                        | 86,548                                     | 81,170   | 0.74                      | 2.31           | \$10,415                            | \$0.13                                   | 2,348                 |
| Prescriptive Equipment Non-lighting           | 2,297                                      | 2,267  | N/A <sup>[1]</sup>        | 2.31           | \$10,415                            | \$0.13                                   | 24                    |
| Prescriptive Equipment Lighting               | 84,251                                     | 78,903   | 0.74                      |                |                                     |  | 2,324                 |
| Residential Energy-Efficiency Behavior and Ed | 0  | 0  | N/A                       | N/A            | \$708                               | N/A                                      | 0                     |
| Residential Home Comfort                      | 2,367                                      | 2,410  | 0.57                      | 0.64           | \$1,188                             | \$0.49                                   | 2,554                 |
| Residential Retail                            | 92,804                                     | 90,314   | 0.83                      | 7.48           | \$5,227                             | \$0.06                                   | 243,218               |
| Residential Retail Equipment                  | 2,756                                      | 2,875  | 0.83                      | 7.48           | \$5,227                             | \$0.06                                   | 8,204                 |
| Residential Retail Upstream Lighting          | 90,048                                     | 87,439   |                           |                |                                     |  | 235,014               |
| School Benchmarking                           | 0  | 0  | N/A                       | N/A            | \$152                               | N/A                                      | 22                    |
| Student & Parent Education                    | 6,910                                      | 5,147  | 1.0                       | 3.01           | \$1,162                             | \$0.23                                   | 714                   |
| <b>Total</b>                                  | <b>210,033</b>                             | <b>200,065</b>                                   | <b>0.73<sup>[2]</sup></b> | <b>2.20</b>    | <b>\$37,838<sup>[3]</sup></b>       | <b>\$0.19<sup>[3]</sup></b>              | <b>265,965</b>        |

<sup>[1]</sup>The EM&V CSP was unable to complete surveys with any of the nine unique participants who received rebates for installing prescriptive equipment measures.

<sup>[2]</sup>Weighted by program savings for programs reported NTG Ratio

<sup>[3]</sup> Includes portfolio common costs (\$11,457) not assigned to a specific program. Approximately \$7 million of actual program expenditures were incurred for PY5 transactions (savings claimed in PY5) but were paid in PY6 and, therefore, will be accounted for in PY6. This "payment lag" across program years is normal, except for the final year of a Phase and understates program acquisition costs.

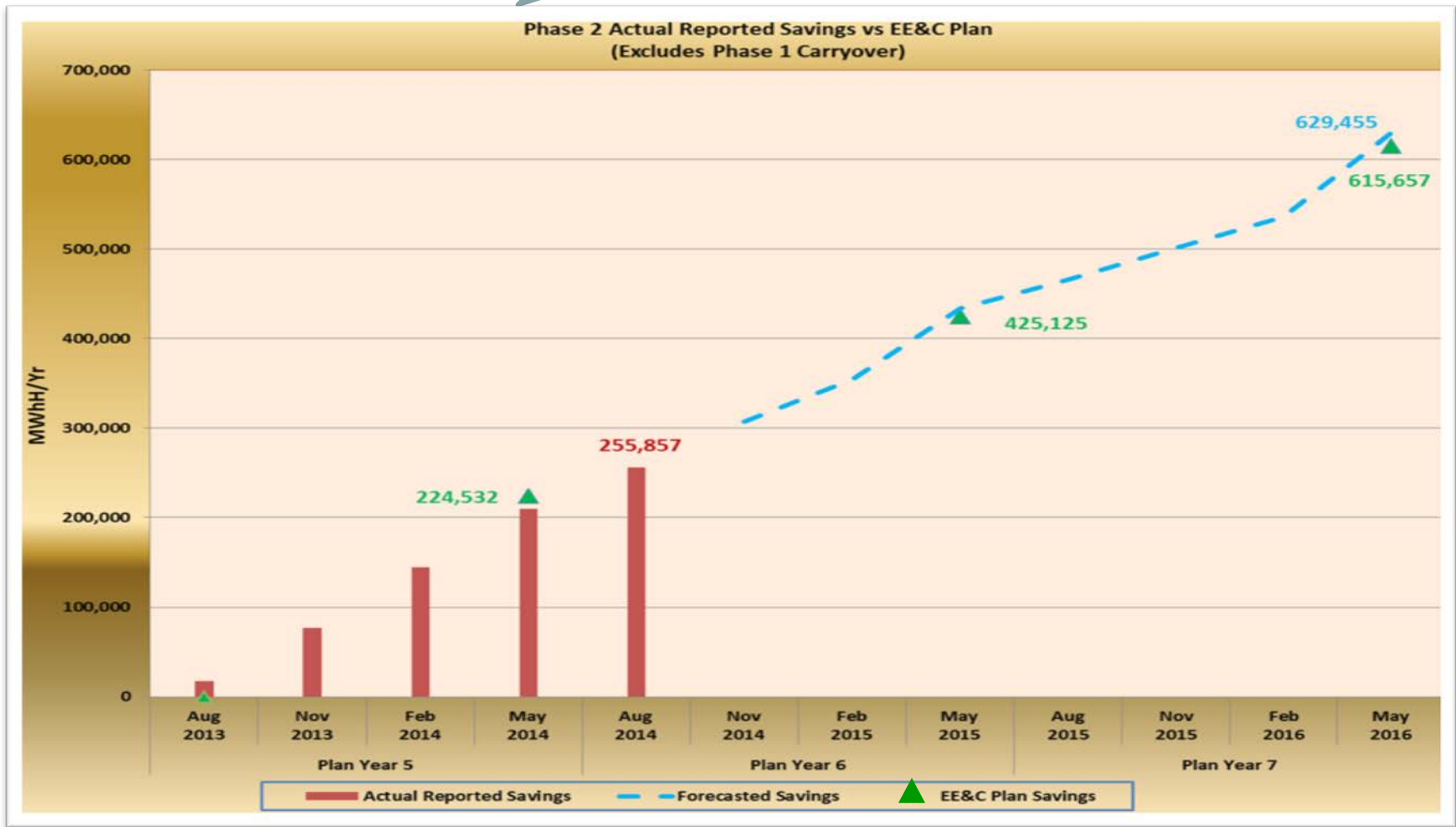


# Phase II: Results Through August 2014 and Forecast to End of Phase II



We are on track at portfolio level!

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Note: EE&C Plan savings are on a verified basis. Forecast and actual savings are on a reported basis.

# Energy Savings by Sector through August 2014 compared to EE&C Plan



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Some Sectors ahead,  
some behind.

| Sector                                | EE&C Plan Forecast at Completion (MWh/yr.) | Actual Reported Savings as of 8/31/2014 (MWh/yr.) | % Complete vs Approved EE&C Plan |
|---------------------------------------|--|---|----------------------------------|
| Residential                           | 253,487                                    | 96,868  | 38%                              |
| Low-Income*                           | 22,223                                     | 6,480   | 29%                              |
| <b>Subtotal Residential</b>           | <b>275,710</b>                             | <b>103,348</b>                                    | <b>37%</b>                       |
| Small C&I                             | 144,386                                    | 92,383  | 64%                              |
| Large C&I                             | 107,417                                    | 30,971  | 29%                              |
| GNI                                   | 88,184                                     | 29,155  | 33%                              |
| <b>Subtotal Non-residential</b>       | <b>339,987</b>                             | <b>152,509</b>                                    | <b>45%</b>                       |
| <b>Total- Phase II</b>                | <b>615,697</b>                             | <b>255,857</b>                                    | <b>42%</b>                       |
| <b>Phase I Carryover</b>              | <b>551,704</b>                             | <b>495,636</b>                                    | <b>-</b>                         |
| <b>Total - Phase II and Carryover</b> | <b>1,167,401</b>                           | <b>751,493</b>                                    | <b>64%</b>                       |
| <b>Phase II Compliance Target</b>     | <b>821,072</b>                             |   |                                  |

\* Excludes low-income participation in general residential programs (~32,000 MWh/yr. estimated in EE&C Plan)

# Costs by Sector through August 2014 compared to EE&C Plan



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| Sector                            | EE&C Plan Total Approved Budget (\$1,000) | Actual Cost as of 8/31/2014 (\$1,000) | % Complete vs Approved EE&C Plan |
|-----------------------------------|---|---------------------------------------|----------------------------------|
| Residential                       | \$53,938                                  | \$12,600                              | 23%                              |
| Low-Income                        | \$17,834                                  | \$5,300                               | 30%                              |
| <b>Subtotal Residential</b>       | <b>\$71,772</b>                           | <b>\$17,900</b>                       | <b>25%</b>                       |
| Small C&I                         | \$26,263                                  | \$10,100                              | 38%                              |
| Large C&I                         | \$20,226                                  | \$2,900                               | 14%                              |
| GNI                               | \$32,597                                  | \$5,900 <sup>[2]</sup>                | 18%                              |
| <b>Subtotal Non-residential</b>   | <b>\$79,086</b>                           | <b>\$18,900</b>                       | <b>24%</b>                       |
| <b>Total Direct Cost</b>          | <b>\$150,859</b>                          | <b>\$36,800</b>                       | <b>24%</b>                       |
| <b>Common Cost <sup>[1]</sup></b> | <b>\$35,262</b>                           | <b>\$14,000</b>                       | <b>40%</b>                       |
| <b>Total Cost</b>                 | <b>\$186,121</b>                          | <b>\$50,800<sup>[3]</sup></b>         | <b>27%</b>                       |

<sup>[1]</sup> Will be allocated to customer sectors at the conclusion of Phase II based on the proportion of each sector's direct cost.

<sup>[2]</sup> ~69% Small C&I rate classes; ~31% Lg C&I rate classes

<sup>[3]</sup> Approximately \$7 million of actual costs were incurred for PY5 transactions but were paid in PY6 and, therefore, will be accounted for in PY6. This "payment lag" across program years is normal, except for the final year of a phase.

# Program Status as of August 2014 compared to EE&C Plan

| Program   | EE&C Plan Forecast @ completion (MWh/yr.) | Actual Reported Savings (MWh/yr.) | Savings % Complete | EE&C Plan Total Budget (\$1,000) | Actual Cost (\$1,000) | Cost % Complete vs Approved EE&C Plan |
|---|---|-----------------------------------|--------------------|----------------------------------|-----------------------|---------------------------------------|
| Appliance Recycling                             | 26,243                                    | 11,930                            | 45%                | \$5,189                          | \$2,145               | 41%                                   |
| Residential Retail                              | 229,276                                   | 102,666                           | 45%                | \$33,634                         | \$6,884               | 20%                                   |
| Home Comfort                                    | 12,739                                    | 3,503                             | 27%                | \$9,851                          | \$1,782               | 18%                                   |
| Residential Behavior & Education                | 32,205                                    | 0                                 | 0%                 | \$2,389                          | \$811                 | 34%                                   |
| Low-Income WRAP                                 | 10,519                                    | 3,961                             | 38%                | \$15,635                         | \$4,604               | 29%                                   |
| Low-Income Behavior & Education                 | 8,325                                     | 0                                 | 0%                 | \$1,164                          | \$342                 | 29%                                   |
| E-Power Wise                                    | 3,378                                     | 2,519                             | 75%                | \$1,036                          | \$348                 | 34%                                   |
| Prescriptive Equipment                          | 205,116                                   | 115,180                           | 56%                | \$58,935                         | \$15,606              | 26%                                   |
| Custom Incentive                                | 65,660                                    | 7,141                             | 11%                | \$12,585                         | \$1,338               | 11%                                   |
| Student & Parent Energy Efficiency Education    | 12,199                                    | 6,910                             | 57%                | \$6,096                          | \$1,480               | 24%                                   |
| Master Metered Low – Income Multifamily Housing | 6,886                                     | 2,047                             | 30%                | \$3,103                          | \$904                 | 29%                                   |
| Continuous Energy Improvement                   | 3,150                                     | 0                                 | 0%                 | \$943                            | \$313                 | 33%                                   |
| School Benchmarking                             | 0   | 0                                 | 0%                 | \$300                            | \$194                 | 65%                                   |

- Program Highlights

# Residential Sector Highlights



- The Student and Parent Energy Efficiency Education Program has reached approximately 360 schools, 1,400 teachers and 41,000 students.
- Approximately 40,000 residential customers received their first Home Energy Report during the month of October.
- Twenty-eight “new home” applications are in process including three manufactured homes.
- Appliance recycling still going strong. Almost 17,000 refrigerators and freezers have been recycled along with over 1,500 air conditioners.
- Customers purchased approximately 450,000 LEDs incented through the Residential Retail Program. Approximately 40% were reflectors and specialty LEDs.

# Low-Income Sector Highlights

- [Neighborhood blitz](#)
- Over 4,200 E-Power kits have been delivered

# Small and Large C&I Sector Highlights

- To date, nine agricultural audits have been completed. A number of others are “on hold” until the December timeframe when the interested farmers’ schedules ease.
- A ski area replaced inefficient manual snowmaking guns with energy-efficient automated guns and snow fans to reduce its snowmaking energy use.





# GNI Sector Highlights



- Launched the “exit sign retrofit project.” This project offers schools participating in the School Benchmarking Program replacement of any non-LED exit signs in their buildings with LED models at no cost to the school.
- Eight districts are participating in the Continuous Energy Improvement Program. All created energy teams with an energy policy.
- A school district installed a pool cover with an automatic deployment system on a heated swimming pool used for swimming classes and competitive sports. When the pool is not in use the cover reduces heat and water loss.

# Break



- Proposed Changes

# Summary of Proposed Enhancements and Changes: Portfolio level



- **Increasing** estimated savings and costs for the Small C&I sector to avoid running out of money (and shutting down all programs) for this sector in April 2015 (~1 year early)
- **Reducing** the estimated savings and costs for Residential, Large C&I and GNI sectors to reflect current progress and keep the portfolio under the cost cap (due to increase for Small C&I)
- **Increasing** the estimated savings and costs for Low Income sector to provide a larger cushion for the low-income compliance target.
- **Adding** language to programs to clarify timeframe for PY7 application submissions. The goal is to prevent an unexpected surge and to “close the Phase II books” earlier than in Phase I.
- **Fine-tuning** and relatively minor changes to measures and programs:
  - Changes in the TRM
  - Pilots and rebate changes to better understand the impact on non-lighting measures (to get more penetration for HVAC, for example)
  - Differences between EE&C Plan estimates and actual performance (measure mix, costs, etc.)

# Residential Sector Enhancements and Changes

| Status   | MWh/yr. Savings | % of Total Portfolio Savings | Budgeted Cost (\$1,000) | % of Total Portfolio Costs |
|----------|-----------------|------------------------------|-------------------------|----------------------------|
| Approved | 253,000         | 41%                          | \$54,000*               | 36%                        |
| Proposed | 230,000         | 36%                          | \$53,000*               | 37%                        |

## Home Comfort

- Increasing rebates for HVAC and other non-lighting measures

## Behavioral and Education Program

- Adding cost for call center services

## Student and Parent Energy Efficiency & Education Program

- Increasing number of participants in Communities in Action and Bright Kids Components.

## Residential Retail

- Increasing number of sites with CFL recycling buckets
- Lowering estimated quantity of CFL/LED savings consistent with more accurate market projections.



\*Excluding Common Cost

\*All savings and cost subject to change

# Low-Income Sector Enhancements and Changes

| Status   | MWh/yr. Savings | % of Total Savings | Cost (\$1,000) | % of Total Costs |
|----------|-----------------|--------------------|----------------|------------------|
| Approved | 22,000          | 4%                 | \$18,000*      | 12%              |
| Proposed | 26,000          | 4%                 | \$21,000*      | 14%              |

## Low-Income WRAP

- Adding a limited number of “low-cost” jobs
- Adding a de facto heating pilot
- Adding cost of WRAP tracking system upgrade

## Behavioral reports

- Increasing the number of low-income customer participants
- Adding call center services

## E-Power Wise Program

- Increasing number of low-income customer participants (kits)



\*Excluding Common Cost  
 \*All savings and cost subject to change

# Small and Large C&I Sectors Enhancements and Changes

| Sector    | Status   | MWh/yr. Savings | % of Total Savings | Cost (\$1,000) | % of Total Costs |
|-----------|----------|-----------------|--------------------|----------------|------------------|
| Small C&I | Approved | 144,000         | 23%                | \$26,000*      | 17%              |
|           | Proposed | 190,000         | 30%                | \$36,000*      | 24%              |
| Large C&I | Approved | 107,000         | 17%                | \$20,000*      | 13%              |
|           | Proposed | 102,000         | 16%                | \$14,000*      | 10%              |

\*Excluding Common Cost

\*All savings and cost subject to change

# Small and Large C&I Sectors Enhancements and Changes

- **Increasing** Small C&I budget and savings to reflect market participation and to prevent closing Small C&I programs a year before the end of Phase II
- **Reducing** Large C&I budget and savings to reflect market participation
- **Increasing** incentive for high-efficiency HVAC and other non-lighting measures
- **Including** pilots focused on more comprehensive projects, measures and technology





# GNI Sector Enhancements and Changes

| Status   | MWh/yr. Savings | % of Total Portfolio Savings | Budgeted Cost (\$1,000) | % of Total Portfolio Costs |
|----------|-----------------|------------------------------|-------------------------|----------------------------|
| Approved | 88,000          | 14%                          | \$33,000*               | 22%                        |
| Proposed | 81,000          | 13%                          | \$24,000*               | 16%                        |

- Adding cost to manage the installation of LED exit signs in schools
- Reducing number of schools participating in Continuous Energy Improvement Program
- Increasing incentives for high-efficiency HVAC and other non-lighting measures
- Including pilots focused on more comprehensive projects, measures and technologies



\*Excluding Common Cost  
\*All savings and cost subject to change

## Stakeholder input for Phase III

### Planning:

- Types of programs/measures
- Level of “Comprehensiveness”  
interest

# Why this input is important and needed now

- EDC and stakeholder comments are important on SWE's Phase III Market Potential Study and the PaPUC's Phase III Tentative Order for savings targets, budgets, implementation requirements, TRC and TRM will be due now through March 2015.
- PPL Electric needs to define research and information needed in Phase II (such as pilots, data, industry/market infrastructure, etc.) to better prepare for Phase III implementation.

# Likely Act 129 Phase III Requirements

- Portfolio benefit-cost ratio  $\geq 1.0$
- Broad stakeholder input and consensus for the EE&C Plan
- Costs attributed to the customer class that receives the direct energy benefit of the measure
- At least one program per customer class and “fair and equitable” distribution of programs, costs and savings among customer classes

# High-level Considerations for “Comprehensive” Programs/Portfolio

- Should accelerate market transformation-- more EE&C awareness, more sustainable savings and a self-sufficient EE&C infrastructure
- More focus on energy assessments, multiple measures and “whole-building” approach, education, as well as, trade ally training and infrastructure
- Less emphasis on “ad hoc” individual measures, such as lighting only.  
Note: Lighting is approximately 75% of Phase II savings.

# High-level Considerations for “Comprehensive” Programs/Portfolio, cont’d

- Trade ally infrastructure needs to shift from a single contractor (such as lighting contractors who focus on a single, quick to implement measure) to a much broader approach
- Longer lead time to identify, approve, implement, and evaluate projects
- Higher cost projects (participant costs) will require higher incentives to convince customers to act

# High-level Considerations for “Comprehensive” Programs/Portfolio, cont’d

- Cost-effectiveness (TRC) may be a challenge unless individual projects are screened before approval
- Many/most projects will be custom (outside the scope of the TRM), increasing the time for processing, approval, implementation, and evaluation
- Savings are less certain, for customers and for the EDC, than individual measures
- If post-metering is required, it may take > 1 year to verify savings achieved
- Program acquisition cost will increase, probably significantly
- With a fixed budget cap, higher program acquisition cost will mean lower energy reduction targets

# Appendix



# Conceptual Phase III Portfolio at \$0.16 program acquisition cost (\$ per annual kWh saved)



| Sector      | Dollars       | Cost Per annual kWh saved | Savings MWH/yr. | Phase III % of cost | Phase III % of savings | Phase II % of cost | Phase II % of savings |
|-------------|---------------|---------------------------|-----------------|---------------------|------------------------|--------------------|-----------------------|
| Residential | \$19,680,000  | \$0.11                    | 178,909         | 31%                 | 45%                    | 36%                | 41%                   |
| Low-income  | \$15,990,000  | \$1.00                    | 15,990          | 25%                 | 4%                     | 12%                | 4%                    |
| Small C&I   | \$9,840,000   | \$0.13                    | 75,692          | 16%                 | 19%                    | 17%                | 23%                   |
| Large C&I   | \$6,765,000   | \$0.11                    | 61,500          | 11%                 | 15%                    | 13%                | 17%                   |
| GNI         | \$10,455,000  | \$0.16                    | 65,344          | 17%                 | 16%                    | 22%                | 14%                   |
|             | \$62,730,000* | \$0.16                    | 397,435         | 100%                | 100%                   | 100%               | 100%                  |

|  |
|--|
| Low Income: Required<br>4.5% of savings = 18,230 |
| GNI: Required 10% of<br>savings = 40,510         |

\*Include SWE costs (above the cap)

# Conceptual Phase III Portfolio at \$0.16 program acquisition cost (\$ per annual kWh saved)

- Lighting, lighting and more lighting. May need to revert to CFLs.
- A-la-carte measures with a focus on those with low program acquisition costs
- Expanded Behavior program (Home Energy Reports)
- Reduction in Low-Income WRAP
  - Will meet compliance target but will need to rely on lower cost programs like report cards, low-income savings from general residential programs and will have fewer “jobs”
- Very limited focus on whole house and whole building components
- No trade ally training or measures that provide no “direct/immediate” savings

# Conceptual Phase III Portfolio at \$0.30 program acquisition cost (\$ per annual kWh saved)



| Sector       | Dollars              | Cost Per annual kWh saved | Savings MWH/yr. | Phase III % of cost | Phase III % of savings | Phase II % of cost | Phase II % of savings |
|--------------|----------------------|---------------------------|-----------------|---------------------|------------------------|--------------------|-----------------------|
| Residential  | \$22,140,000         | \$0.24                    | 92,250          | 35%                 | 45%                    | 36%                | 41%                   |
| Low-income   | \$ 8,610,000         | \$1.20                    | 7,175           | 14%                 | 3%                     | 12%                | 4%                    |
| Small C&I    | \$10,455,000         | \$0.30                    | 34,850          | 17%                 | 17%                    | 17%                | 23%                   |
| Large C&I    | \$7,995,000          | \$0.24                    | 33,313          | 13%                 | 16%                    | 13%                | 17%                   |
| GNI          | \$13,530,000         | \$0.35                    | 38,657          | 22%                 | 19%                    | 22%                | 14%                   |
| <b>Total</b> | <b>\$62,730,000*</b> | <b>\$0.30</b>             | <b>206,245</b>  | <b>100%</b>         | <b>100%</b>            | <b>100%</b>        | <b>100%</b>           |

Low Income: Required 4.5% of savings = 9,281

GNI: Required 10% of savings = 20,624

\*Include SWE costs (within the cap)

# Conceptual Phase III Portfolio at \$0.30 program acquisition cost (\$ per annual kWh saved)

- Similar mix as Phase II PY6/PY7
- Focus on lighting
- Residential LEDs with some specialty bulbs
- Mostly a-la-carte measures with a focus on those with low program acquisition costs
- Behavior program (Home Energy Reports)
- Baseload WRAP with some HPWH and full-cost WRAP jobs
- Limited whole house and whole building components

# Conceptual Phase III Portfolio at \$0.50 program acquisition cost (\$ per annual kWh saved)



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| Sector       | Dollars              | Cost Per annual kWh saved | Savings MWH/yr. | Phase III % of cost | Phase III % of savings | Phase II % of cost | Phase II % of savings |
|--------------|----------------------|---------------------------|-----------------|---------------------|------------------------|--------------------|-----------------------|
| Residential  | \$20,295,000         | \$0.40                    | 50,738          | 33%                 | 41%                    | 36%                | 41%                   |
| Low-income   | \$9,840,000          | \$1.65                    | 5,964           | 16%                 | 5%                     | 12%                | 4%                    |
| Small C&I    | \$11,070,000         | \$0.41                    | 27,000          | 18%                 | 22%                    | 17%                | 23%                   |
| Large C&I    | \$7,995,000          | \$0.41                    | 19,500          | 13%                 | 16%                    | 13%                | 17%                   |
| GNI          | \$12,300,000         | \$0.60                    | 20,500          | 20%                 | 17%                    | 22%                | 14%                   |
| <b>Total</b> | <b>\$61,500,000*</b> | <b>\$0.50</b>             | <b>123,701</b>  | <b>100%</b>         | <b>100%</b>            | <b>100%</b>        | <b>100%</b>           |

Low Income:  
Required 4.5% of savings =  
5,566 MWH/yr.

GNI: Required 10% of savings =  
12,370 MWH/yr.

\*Include SWE costs (within the cap)

# Conceptual Phase III Portfolio at \$0.50 program acquisition cost (\$ per annual kWh saved)



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- Focus on whole home/whole building EE&C in addition to a-la-carte measures
- Energy assessments/audits for residential and businesses (Comprehensive approach – no direct savings)
- Increase WRAP – Baseload, Full Cost, HPWH and instant hot water. Funding to train additional contractors, grow the delivery infrastructure and explore integration with natural gas company programs
- EE&C training for trade allies, especially for whole house/whole building approach
- LED lighting with a shift toward specialty bulbs in later years
- Consider new technologies, wind, solar, etc. for residential and non-residential
- Expand Combined Heat and Power (CHP)

# Impact of TRM and Avoided Costs

- Generally, savings for measures in the TRM (especially lighting) significantly declined 2010 – 2014
- Trend is expected to continue in Phase III
- Lower savings for a measure will increase program acquisition cost
- In Phase II, avoided costs (energy and capacity) decreased significantly (~40%) from the projections in Phase I
- Phase III avoided costs TBD. Current projections are not much different than Phase II
- Lower avoided costs decrease the benefit-cost ratio

# Changes in the TRM impact savings and program acquisition cost



## Residential Lighting CFLs

Assuming general service 14W CFL with lumens between 750-1049 (60W incandescent-equivalent)

- 2012 TRM - 42.3 kWh/yr.; \$0.02 per annual kWh saved @\$1/bulb
- 2013 TRM - 39.5 kWh/yr.; \$0.025 @ \$1/bulb
- 2014 TRM - 27.0 kWh/yr.; \$0.04 @ \$1/bulb
- 2019/2020 – 0 kWh/yr. (CFLs become baseline)

## Residential Lighting LEDs

Assuming general service 13W LED with lumens between 750-1049 (60W incandescent-equivalent)

- 2012 TRM – 48.9 kWh/yr.; \$0.20 per annual kWh saved @\$10/bulb
- 2013 TRM – 45.6 kWh/yr.; \$0.17 @ \$8/bulb
- 2014 TRM – 28.0 kWh/yr.; \$0.21 @ \$6/bulb
- 2019/2020 - 1.0 kWh/yr. (CFLs become baseline); \$2 @ \$2/bulb





# Changes in the TRM impact savings and program acquisition cost

## Appliance Recycling

### 2010 TRM

- 1,728 kWh (refrigerator/freezer retirement); \$0.08 per annual kWh saved

### 2012 TRM

- 1,659 kWh (refrigerator/freezer w/ no replacement); \$0.08
- 1,205 kWh (refrigerator/freezer w/ ES replacement); \$0.11

### 2014 TRM -

- 1,073 kWh (refrigerator w/ no replacement); \$0.13 per annual kWh saved
- 669 kWh (refrigerator w/ ES replacement); \$0.20

# Questions



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