

# PPL Energy Efficiency Update

Stakeholder Meeting

December 13, 2017

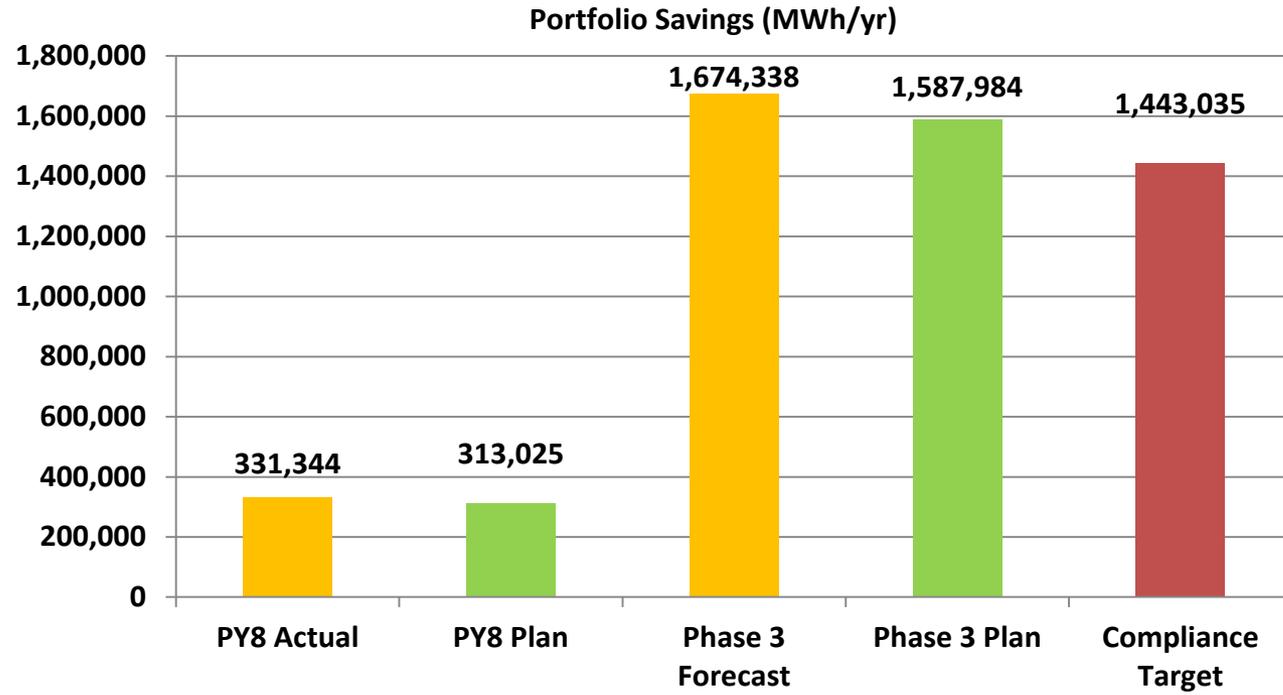
# Agenda

- \* Review Overall Status of PPL's Energy Efficiency Programs
- \* Review PY8 Evaluation Results
- \* Input on Possible EE&C Plan Changes

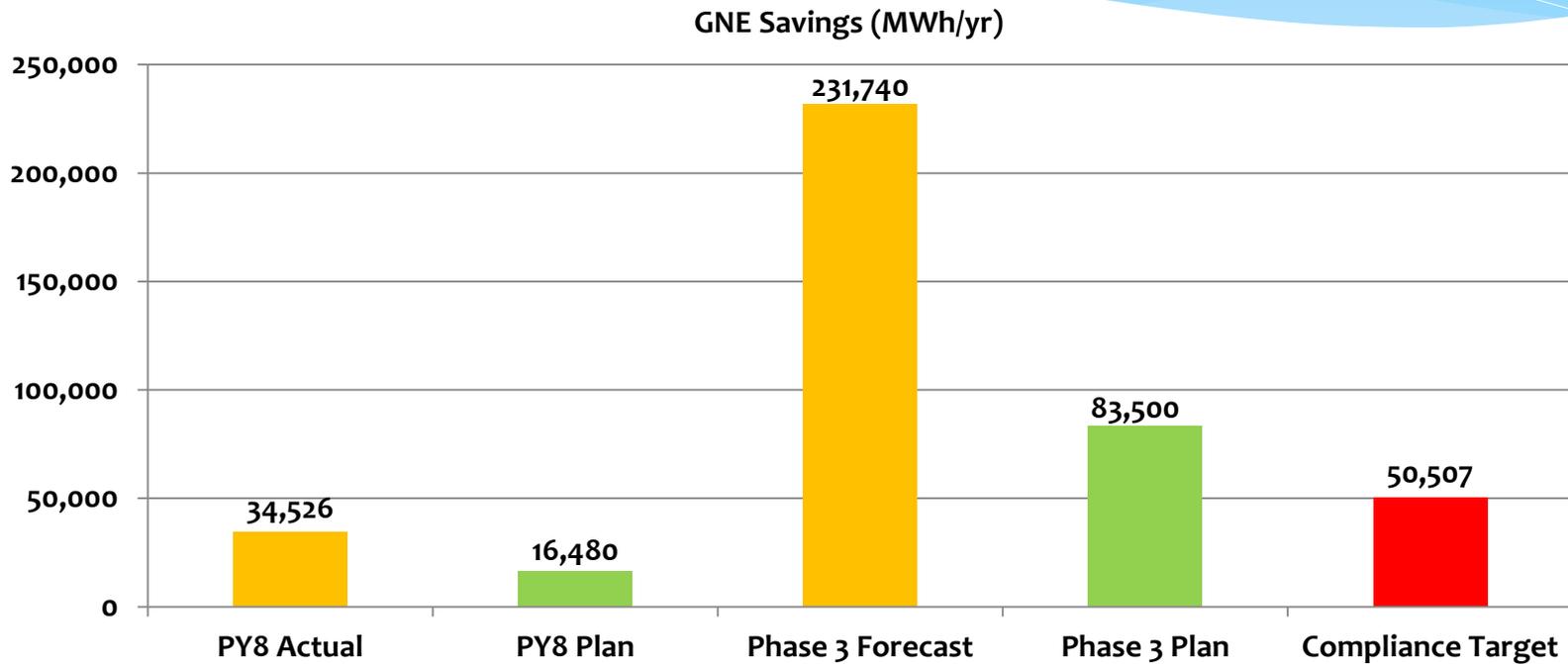
# Overview

- \* Great Shape After 1.5 Years
- \* Savings On Track vs Plan
- \* Costs Under Budget vs Plan
- \* Diverse Measure Mix
- \* Less Reliance on Lighting
- \* Multi-Family Market Penetration
- \* High Customer Satisfaction
- \* GNE Participation is Way Ahead of Plan

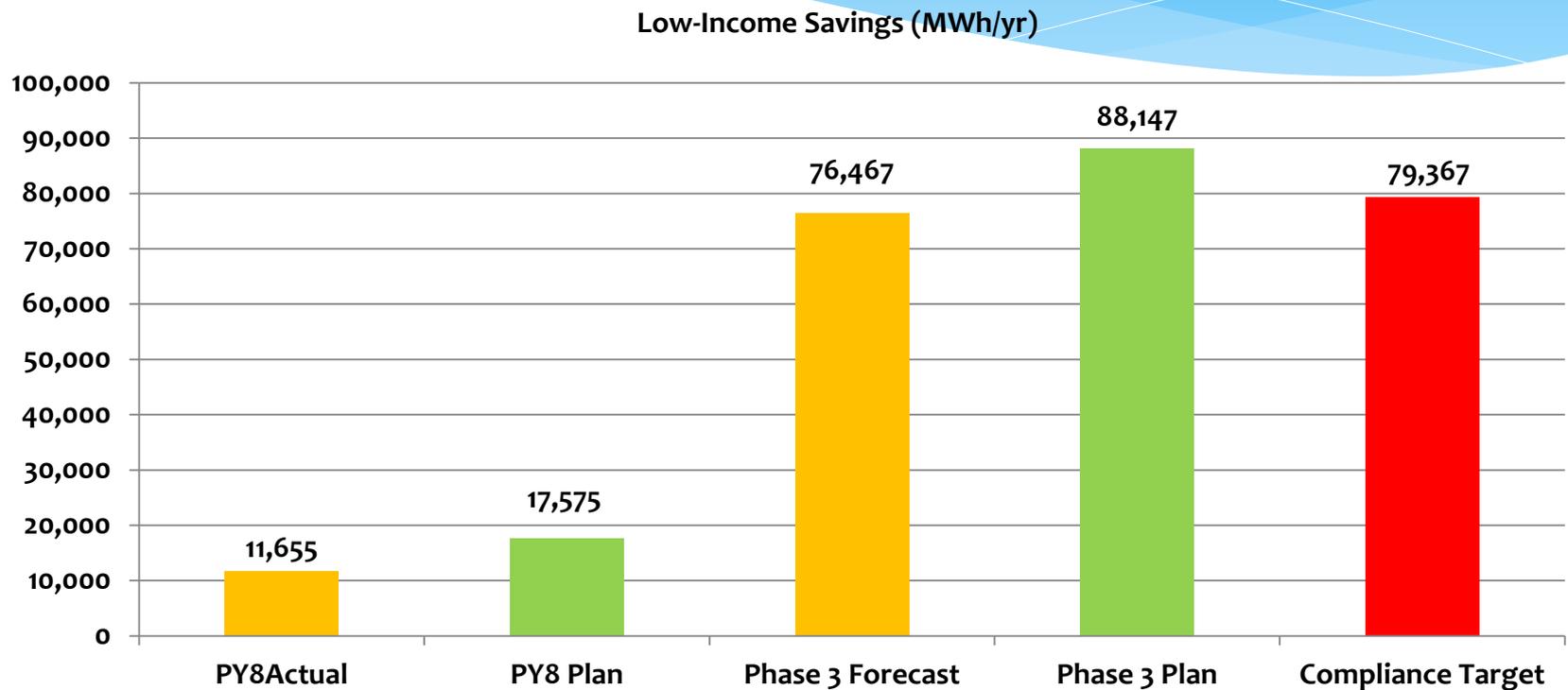
# Portfolio Savings Status



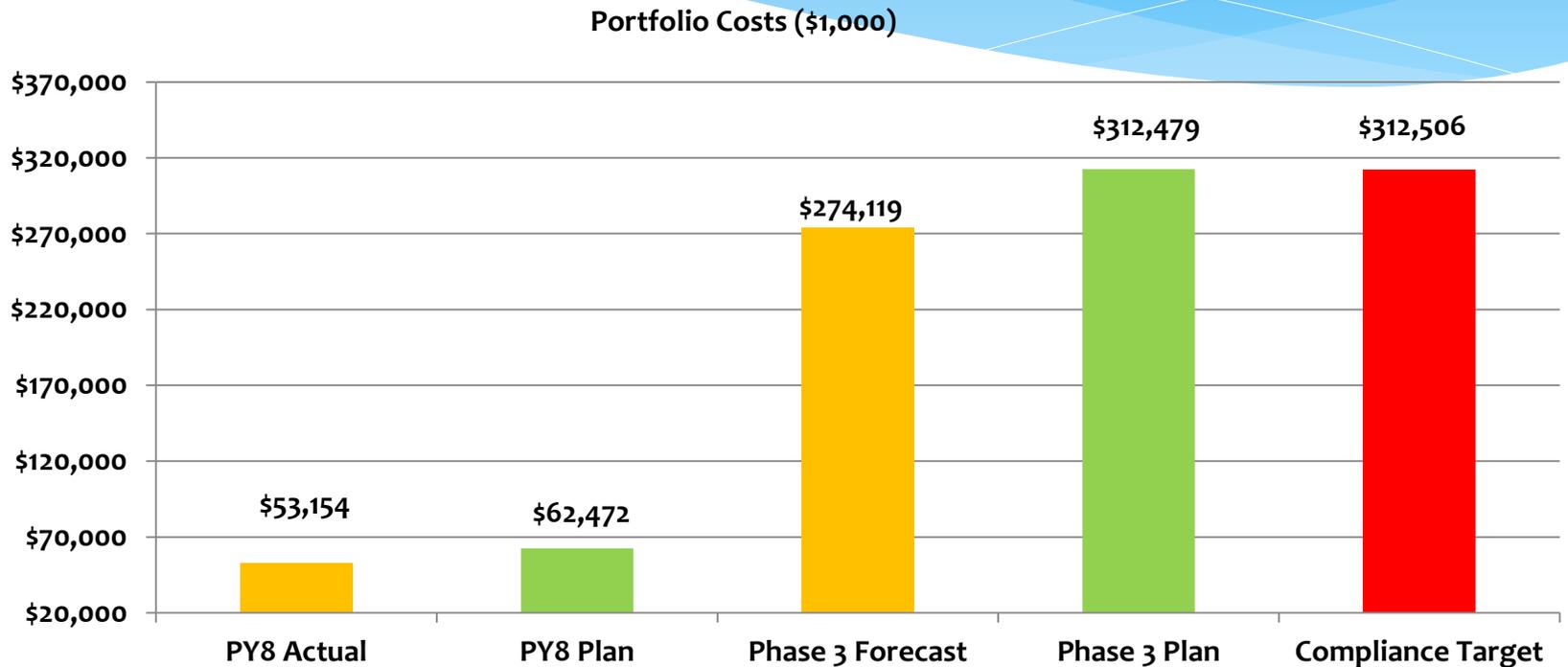
# GNE Savings Status



# Low Income Savings Status

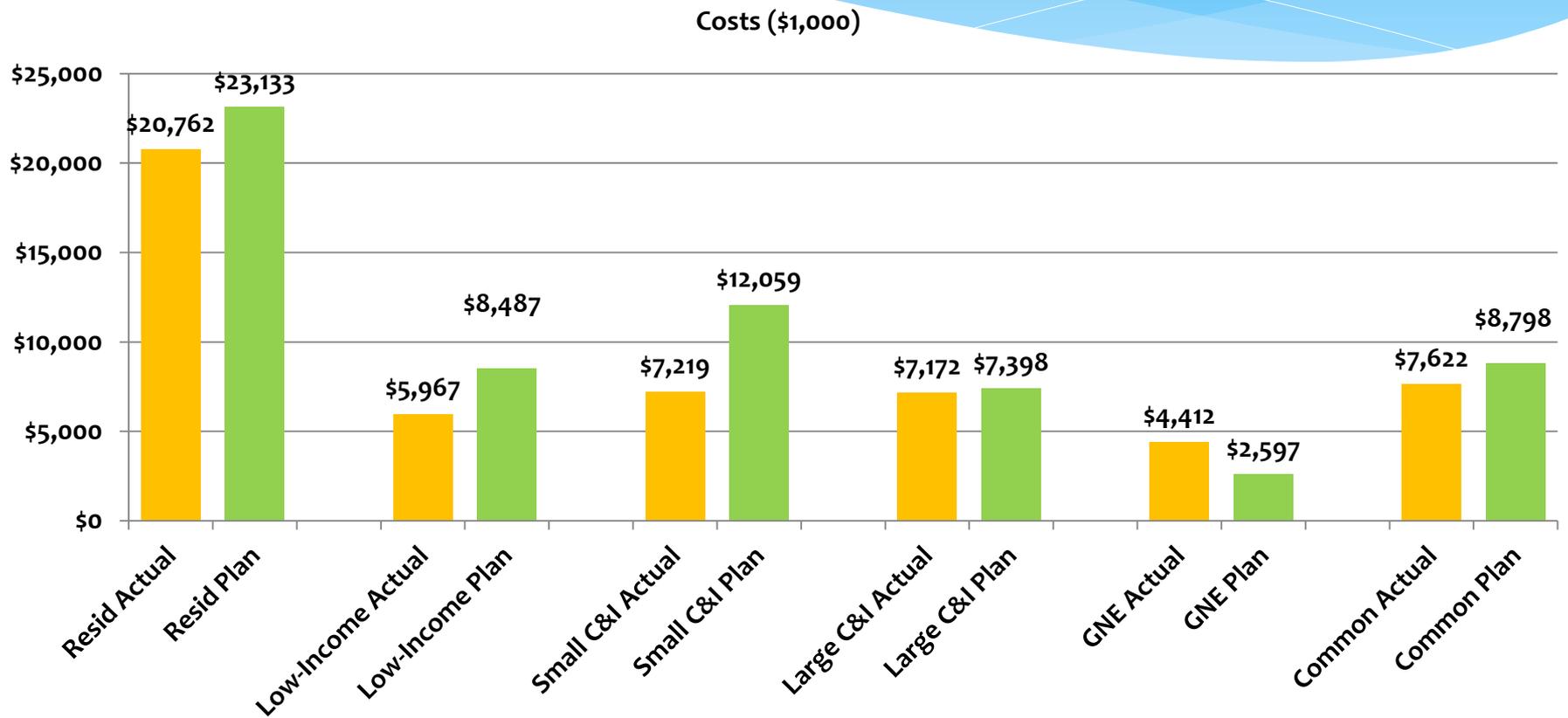


# Portfolio Costs

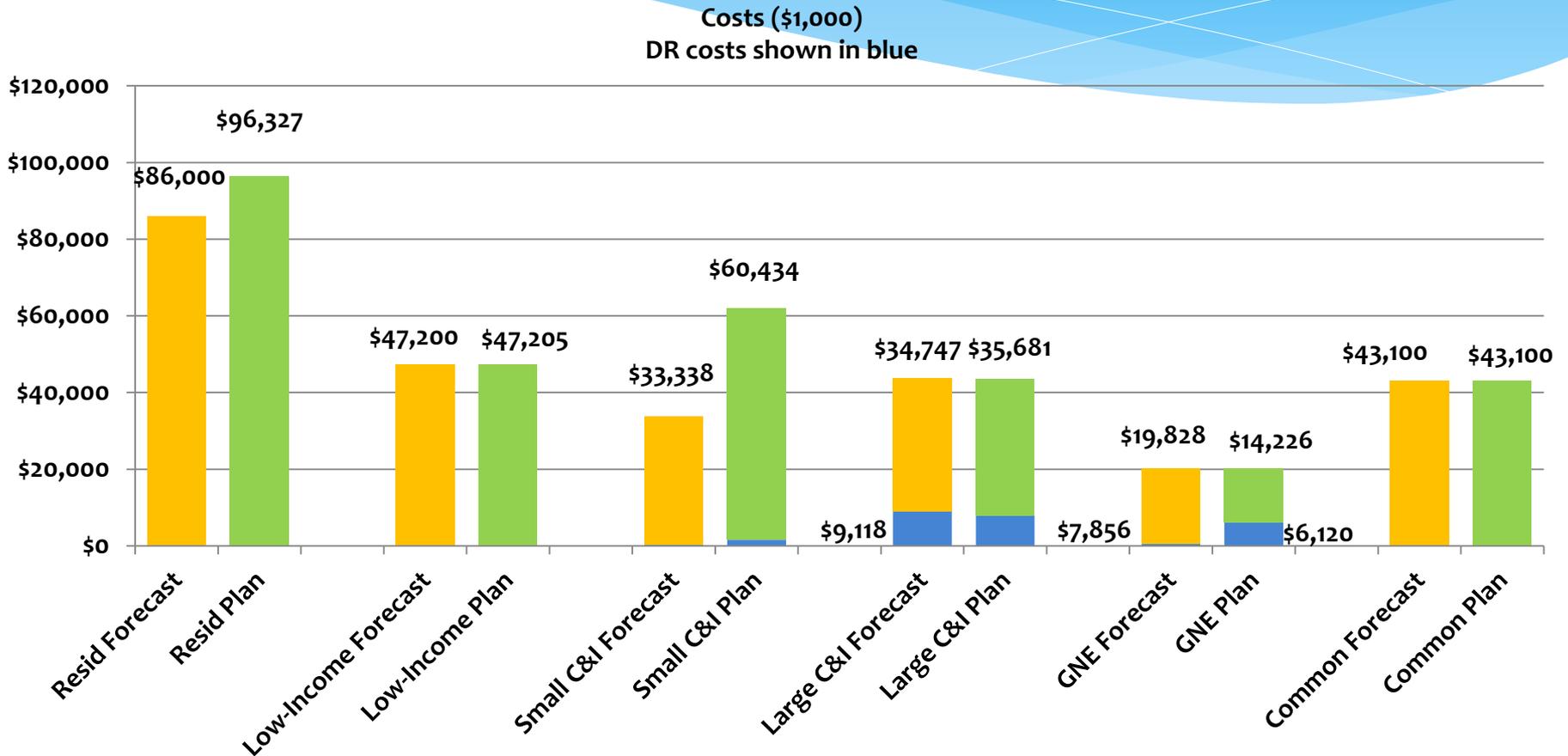


\* PY8 Actual includes pre-funding to accelerate incentive payments

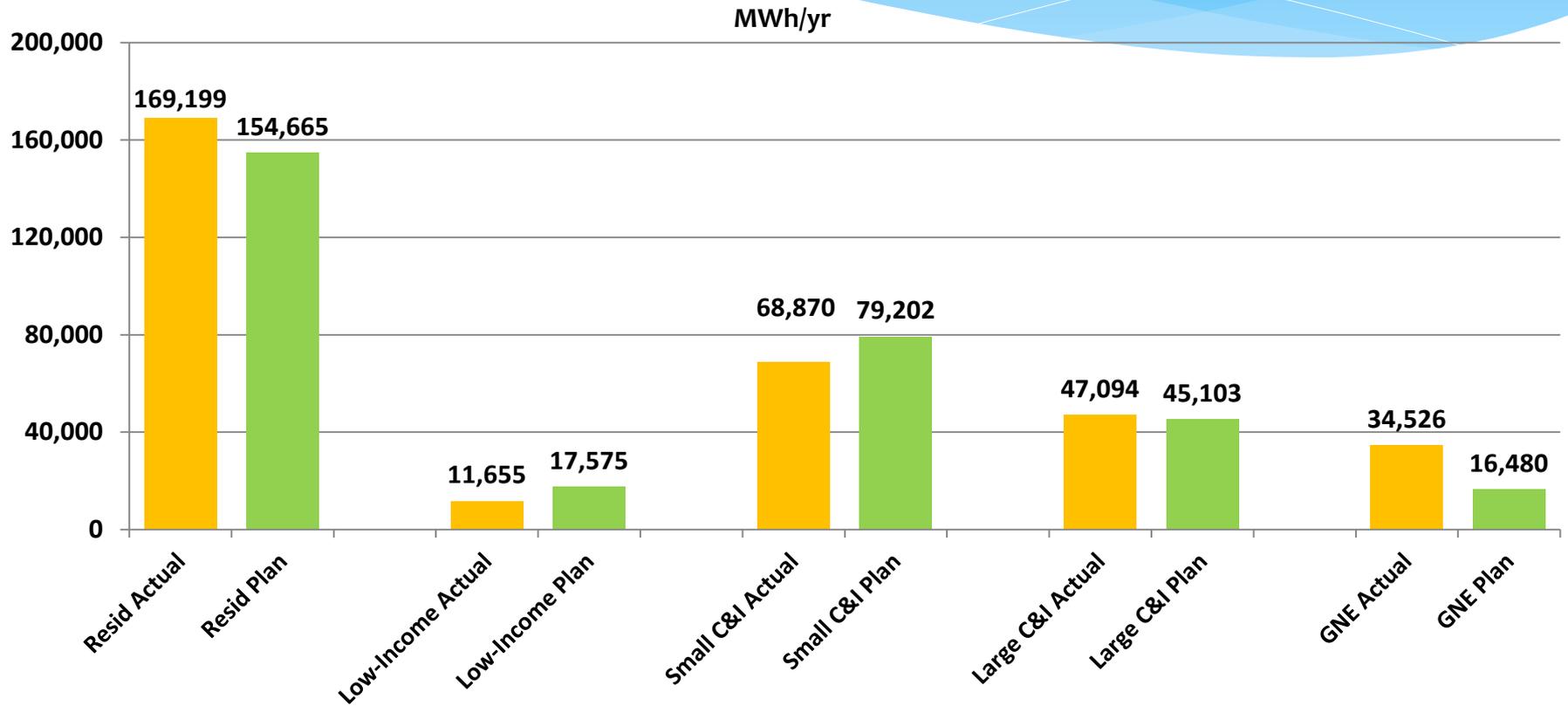
# PY8 Actual Costs By Customer Sector (EE & DR)



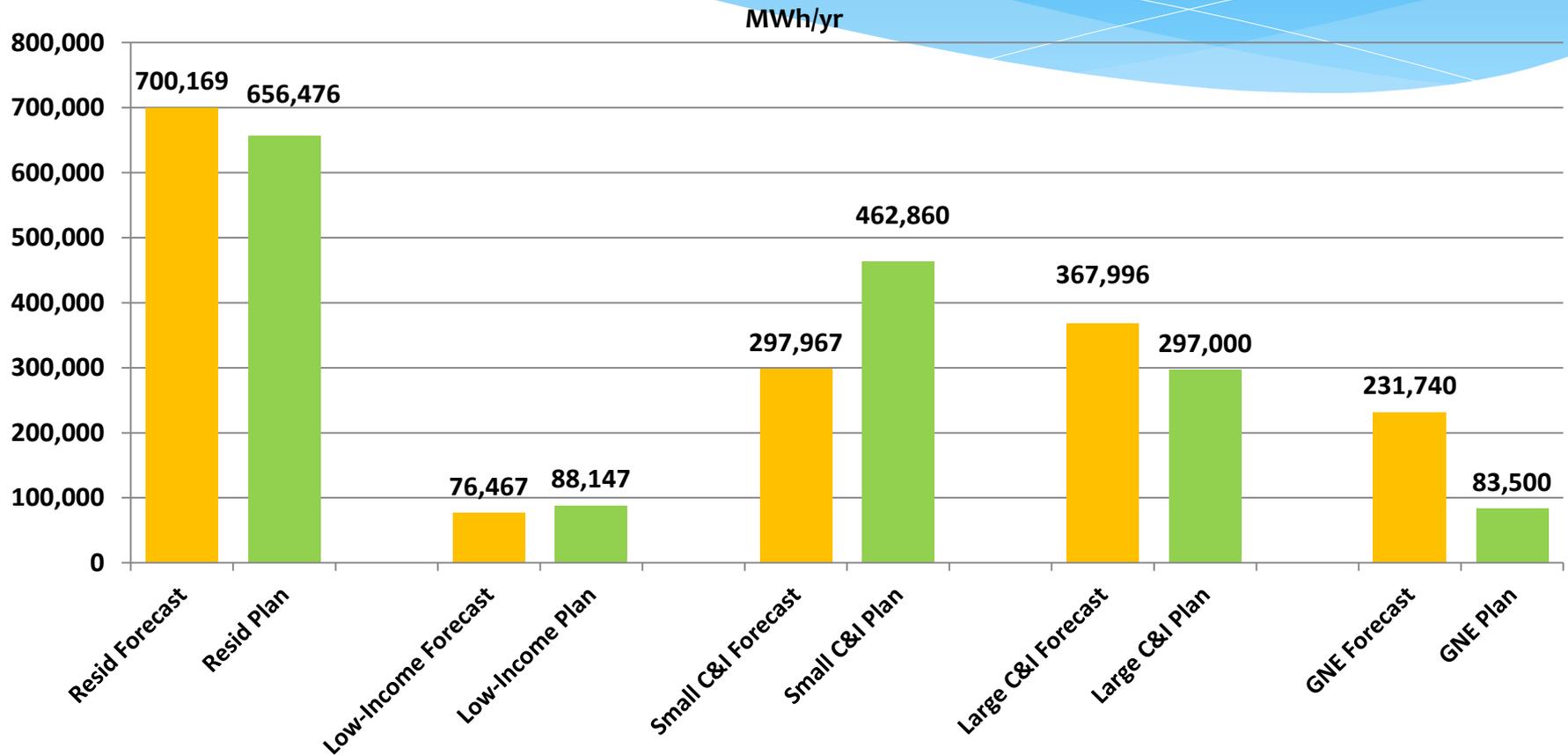
# Forecast Cost at Phase Completion by Customer Sector (EE & DR)



# PY8 Savings at Completion by Sector (EE & DR)



# Phase 3 Savings by Sector (EE & DR)



# Summary of Programs

Program	Phase III Verified Gross Energy Savings (MWh/yr)	Phase III Unverified Energy Savings (MWh/yr)	Phase III Net to Gross Ratio	Phase III Benefit-Cost Ratio	Phase III EDC Total Expenditures (\$1,000)	Phase III EDC Total Incentives (\$1,000)	Program Acquisition Cost (\$/Annual kWh)	Customer Satisfaction Ratings	Phase III Participants
Appliance Recycling	11,844		0.66	2.07	\$1,945	\$341	\$0.16	97%	11,368
Custom	46,368	24,815	0.79	0.99	\$7,351	\$4,325	\$0.16	100%	71
Demand Response					\$647				
Efficient Equipment	70,917	2,601	0.77	1.74	\$7,279	\$4,546	\$0.10	97%	1,751
Efficient Lighting	145,929		0.83	4.98	\$13,162	\$11,513	\$0.09		336,221
Energy Efficiency Kits and Education	9,219		1.00	1.26	\$1,894		\$0.21	99%	12,117
Energy Efficient Home	9,943		0.68	0.50	\$4,937	\$1,734	\$0.50	86%	11,401
Home Energy Education	29,931		1.00	1.91	\$845		\$0.02	73%	184,257
Low Income WRAP	2,652	16	1.00	0.22	\$4,012		\$1.51	80%	2,718
Student Energy Efficient Education	4,539		1.00	1.95	\$905		\$0.20	88%	24,145
Common Portfolio Costs					\$7,622				
<b>Total</b>	<b>331,344</b>	<b>27,432</b>	<b>0.83</b>	<b>1.67</b>	<b>\$50,599</b>	<b>\$22,459</b>	<b>\$0.15</b>	<b>90%</b>	<b>584,049</b>

# Residential Programs

## Highlights

Lighting

New Homes

EE Homes

Pilots

Appliance Recycling

Student Energy Education

Home Energy Education

# Highlights

- \* On Target for Savings and Under Budget
- \* > 549,000 participants in PY8
- \* Cost-effectiveness better than expected
- \* Very High CSAT (avg. of 90%) Except HERs (73%)
- \* Very High Net Promoter Score of 81 (“excellent” NPS is >50) for All Programs Except HERS
- \* Very Smooth, Seamless Transition from Phase 2 Despite A Major Change in Delivery Processes

# Highlights

- \* HERs CSAT is Lower Than Rebate Programs Nationally
  - \* Customers do not opt-in, do not get a rebate, and often do not understand it is an energy efficiency program
- \* HERs Savings Were 15% Less Than Expected
- \* Evaluating Whether to Increase HERs Savings or Offset With More Lighting
- \* Launched the Online Assessment and EE Portal
  - \* 19,435 customers have taken the assessment
- \* Significant Improvement in Rebate Processing Time
  - \* Reduced from 4-8 weeks in Phase 2 to 2-4 weeks now

# Energy Efficient Lighting

- \* Over 3.5 Million LEDs in PY8 - The Highest Ever in A Single Year (2.5 times PY7)
- \* We Intentionally Slowed Down Lighting Significantly to Avoid Exhausting the Budget Too Early
  - \* But That Slows Small C&I Savings (20% of Savings) Which We Want to Speed Up

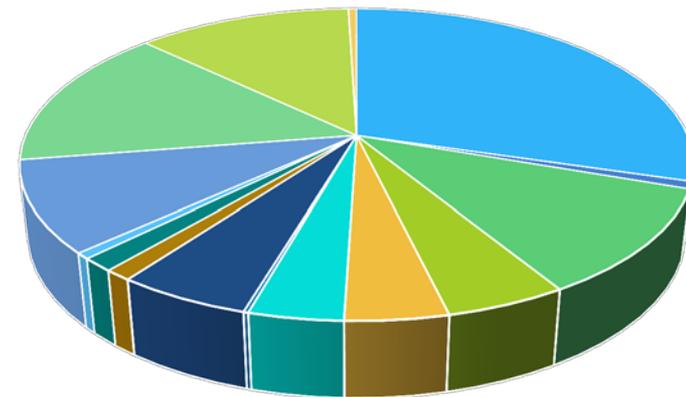
# Energy Efficient Lighting

- \* Advanced Analytics for LED Price Elasticity Helped to Optimize Sales, Minimize Costs, and Adjust Participation (Savings) When Needed
- \* Non-Program Bulbs (Inexpensive, Non- EnergyStar LEDs) Are Competing With Program Bulbs
- \* Savings 150,375,527 kWh/yr.
  - \* That's Enough Electricity To Power 13,967 Homes For A Year!
- \* NTGR of 0.83 Is Acceptable

# Energy Efficient Lighting

Retailer	Type	Units	kWh/yr
The Home Depot	Big Box	1,046,599	45,136,477
Costco	Big Box	518,904	25,439,441
Sams Club	Big Box	434,904	17,327,770
Walmart	Big Box	386,954	15,171,802
Ace Hardware	Independent	331,607	13,790,264
True Value	Independent	192,145	7,865,835
Lowes	Big Box	174,263	7,917,308
Dollar Tree	Independent	147,306	5,940,215
Batteries Plus	Independent	135,273	5,366,709
Goodwill	Independent	48,669	1,945,991
Do it Best	Independent	39,394	1,646,573
Target	Big Box	26,050	1,033,177
Habitat ReStore	Independent	21,632	843,667
HTR	Independent	16,574	638,764
Grocery Outlet	Independent	6,907	284,287
Costco.com	Independent	470	26,636
Wegmans	Independent	22	610

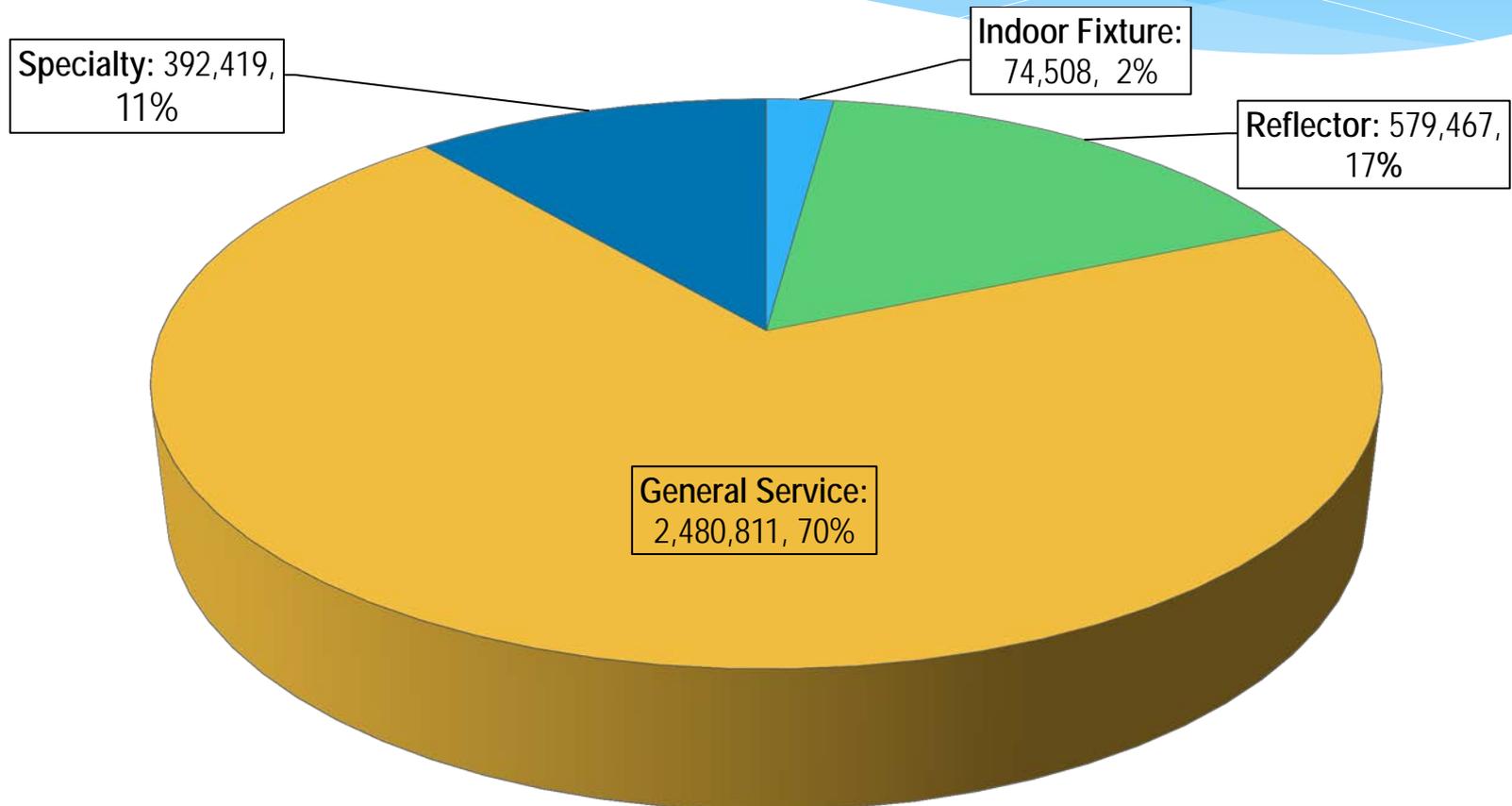
PY 8 Units by Retailer Type



- The Home Depot
- Target
- Walmart
- Lowes
- Dollar Tree
- Batteries Plus
- Grocery Outlet
- True Value
- Wegmans
- Costco.com
- Do it Best
- Goodwill
- Habitat ReStore
- Ace Hardware
- Costco
- Sams Club
- HTR

# Energy Efficient Lighting

\* PY 8 Diverse Mix of Bulbs



# Energy Efficient Lighting

## \* Sales Distribution Through Service



# Bulb Location and Displays Affects Sales *More Than Price*





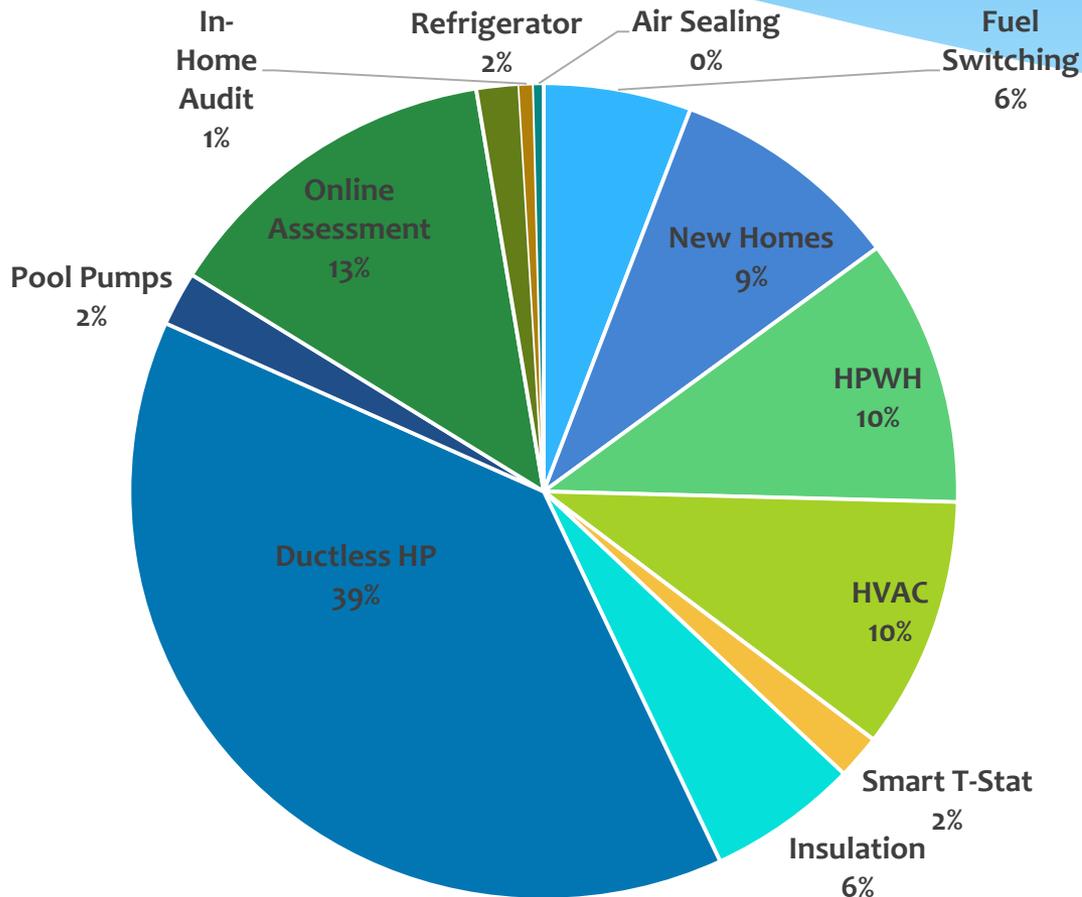
# New Homes

- \* Significant Interest by New Home Builders
  - \* 339 Homes in PY8
  - \* 390 Homes in the Pipeline
  - \* 518 Homes in 3 Years of Phase 2
- \* Efficient New Home Construction
  - \* Strong Relationships with Builders and Raters, Achieved the Following Key Successes:
    - \* Verifying More Than 400 Homes As Above-IECC or ENERGY STAR® Certified
    - \* Driving Incentives Up To \$2,500 Per Home For Participating Builders
    - \* Achieving An Average Savings of More Than 2,800 kWh Per Home Annually

# Stand Out Project

- \* SummerBridge at Rockledge (New Construction)
  - \* Success Was Enabled By Strong Stakeholder Coordination
  - \* PPL, the Builder, and the Rater Worked Together to Determine SummerBridge's Eligibility
  - \* 224 New SummerBridge Homes Exceed IECC Requirements
  - \* Building Enhancements Drive Significant Energy Savings-approx. 5,500 kWh/Unit Annually
  - \* SummerBridge Residents Will Capture More Than 1,120,000 kWh/yr in Energy Savings
  - \* Measures Include: PV, duct sealing, air sealing, high-efficiency HVAC systems, ENERGY STAR® appliances, high-performance windows, insulation, and more.

# Energy Efficient Homes



\* Savings Achieved PY8: 10,621 MWh/yr. (134% of PY8 Estimate)

\* Savings Achieved in Three Years of Phase 2: 18,354 MWh/yr.

# Energy Efficient Homes

- \* PY8:
  - \* Ductless Heat Pumps: 2,644
    - \* The Most Popular Measure
  - \* Pool Pumps: 162
  - \* Smart Thermostats: 272
  - \* In-Home Audits: 88

Measure Category	Total kWh/yr Savings
Ductless HP	4,115,531
Online Assessment	1,434,089
HPWH	1,121,897
HVAC	1,058,534
New Homes	966,499
Insulation	624,051
Fuel Switching	610,974
Pool Pumps	228,266
Smart Thermostat	185,193
Refrigerator	175,702
In-Home Audit	60,285
Air Sealing	40,177

# Baseboard Electric Smart Thermostat Pilot

- \* Launched March 2017
- \* Goal Was To Get 20 Participants Before This Winter
- \* Over 149,000 Target Customers Were Emailed
- \* Targeted Trade Allies (HVAC/Electrical Contractors)
- \* Four Eligible Models
- \* Rebate is \$75/Unit, Which Ranges from 26% to 80% Of The Total Cost Before Installation
- \* How:
  - \* Targeted Marketing
  - \* Messages on Home Energy Reports
  - \* Informed Trade Allies
  - \* Google AdWords

# Baseboard Smart Thermostat Pilot Program

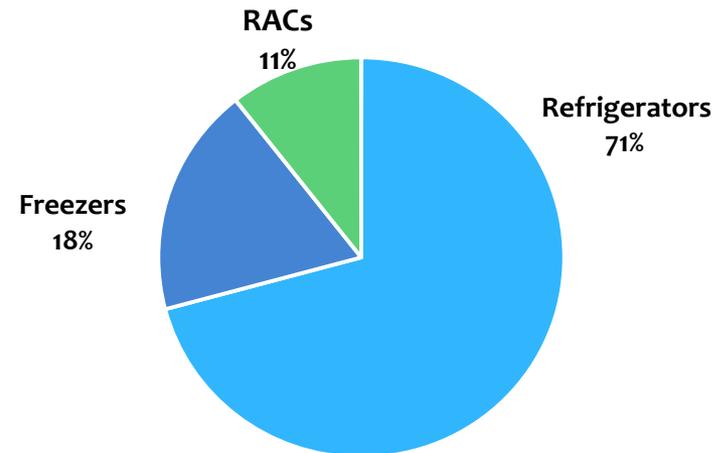
- \* Total Phone Calls Received: 124
- \* Total Applications Sent Out: 105
- \* Total Completed and Returned (to date): 10
- \* Five Approved, One Pending Verification
- \* All Single Family Homes



# Appliance Recycling Program – PY8

## Units Collected in PY8:

- \* Participation & Savings On Target
- \* 8,819 Refrigerators
- \* 2,309 Freezers
- \* 1,323 Room Air Conditioners
- \* NTGR is Holding Steady At Approx. 0.66
- \* Many Utilities are Dropping This Program Due to Low NTGR



# Student Energy Education Program

- \* Fully Subscribed in PY8 *and* PY9
- \* 24,000 Students
  - \* Bright Kids (2<sup>nd</sup> – 3<sup>rd</sup> Grade)
  - \* Take Action (5<sup>th</sup> – 7<sup>th</sup> Grade)
  - \* Innovation (9<sup>th</sup> – 12<sup>th</sup> Grade)

# Home Energy Education

- \* HERs Savings Were 15% Less Than Expected
- \* Evaluating Whether to Increase HERs Savings or Offset with More Lighting
- \* Customers Like The New Look and Feel
- \* Comparisons Are More Accurate
- \* Recommendations Are Personalized
- \* Customers Are More Interested in How They Can Make Their Usage Estimates and Comparisons To Others More Accurate
- \* Much Lower Opt Out Rate

# Connected Lighting Pilot

- \* Scope

- \* A Pre-Configured Smart Lighting Kit with A Hub And Five Bulbs Will Be Offered At An Incented Price of \$94.95 (RTV \$164.95) On An Online Marketplace.
- \* Goal: 300 Customers
- \* Survey Responses And Usage Data Will Be Analyzed to Better Understand How Customers Use Connected Lighting

- \* Status

- \* Awaiting Legal Approval To Launch Targeted Email Campaign To Recruit Participants.

# Low Income Programs

## Highlights

Status

Multi-Family

Kits

Community Blitz

# Low Income WRAP

- \* Goal: 7,000 WRAP Jobs Per Year
- \* Achieved: 2,718 Jobs in PY8
- \* Behind Schedule For Savings Due To Slow Start But Gaining Ground
  - \* 6,900 Jobs Completed Since October 1, 2016
    - \* (When Program Truly Got Started)
    - \* Some Jobs Waiting on Closeout That Are Not Yet Reported
  - \* Creating More Leads, Increased Marketing
  - \* New Quick Track Program
  - \* Need to Increase Savings Per Job, Especially Educational Component
  - \* High CSAT (80%)
  - \* Budget Is On Track

# Multi-Family Status

- \* Streamlined and Improved the Multi-Family Process
- \* Significant Increase In MF Penetration Compared to Phase 2
- \* Increased Participation:
  - \* 2,574 Units Completed; 1,401 Pending Availability and/or Scheduled;  
6,133 In Queue
  - \* Phase 2: 1,400 Completed in 3 Years
- \* Single Point of Contact for Multi-Family Customers

# Multi-Family Status, con't

- \* Collaboration and Lead Generated with Housing Advocates
- \* Multiple Outreach Points
- \* Educating Landlords Has Increased Consent and Participation
- \* Reduced Customer “No-Shows”
- \* Interest in New Construction

# Low Income Kits and Education

- \* Goal: 8,000 Kits
- \* Achieved: 12,000 Kits
  - \* Increased Kits to Help Make Up For WRAP Slow Start
- \* Very High CSAT (99%)
- \* Budget Is On Track

# Community Blitz

- \* Late October in Hazleton
- \* Promotes Energy Efficiency For The Entire Community, With A Focus On Low Income
- \* PPL Energy Savings Day celebrated the concerted effort in the Hazleton area to help make several multifamily buildings, low-income residences and businesses more energy efficient
- \* Partnered with more than a dozen companies and non-profits including YWCA, Lehigh Valley Hospital – Hazleton, The Red Cross, Lowes, Philips Lighting and Penn State Hazleton

# Community Blitz

- \* Heavy local media presence with earned media
- \* Targeted advertisements in local Spanish radio and Facebook
- \* Involved Hazleton School District in getting message to families
- \* More than 400 customers served with a total of approximately 1,000 people in attendance
  - \* Approximately 100 WRAP & On Track applications at the event
  - \* Additional 225 WRAP applications based on direct mail to the 1,500 Hazleton customers who eligible for income eligible programs
  - \* Also recognized local businesses who participated in EE programs
- \* Future blitzes planned in Bethlehem and Lancaster

# Community Blitz 2017



# Demand Response

## Highlights

Status

Challenges

Results

# Demand Response

- \* We Met All PY9 Targets, Subject to the Final Evaluation Report Due January 2018
- \* DR PY9 Season: June 1, 2017 – September 30, 2017
- \* Approximately 138 MWs Enrolled With A 92 MW Compliance Target (Avg. Of All Phase 3 Events)
- \* Per Event Target of 78.2 MW
- \* Events Are Called The Day Ahead At 9:45 AM if PJM Day Ahead Forecast Reaches 96% of PJM Peak Load Forecast
  - \* Up To Six Events Per Year
  - \* Each Event Is Four Consecutive Hours
  - \* There Were Three DR Events in PY9

# Demand Response

- \* A Few Challenges
  - \* More Difficult To Recruit Participants Than Expected
  - \* Some Confusion And “Competition” With PJM Programs
  - \* Challenging To Confirm Each Customer’s Intent To Participate In An Event
  - \* Cannot Determine Peak Reductions Until Well After The Event Is Over
  - \* Concerns Raised By Customers Over Consecutive Day Events or Multiple Events In A Week (Scenario On July 20<sup>th</sup> and 21<sup>st</sup>)
    - \* Customer Fatigue
    - \* Financial/Operational Barriers (ex. Can’t Curtail Operations Two Days In A Row)

# Demand Response

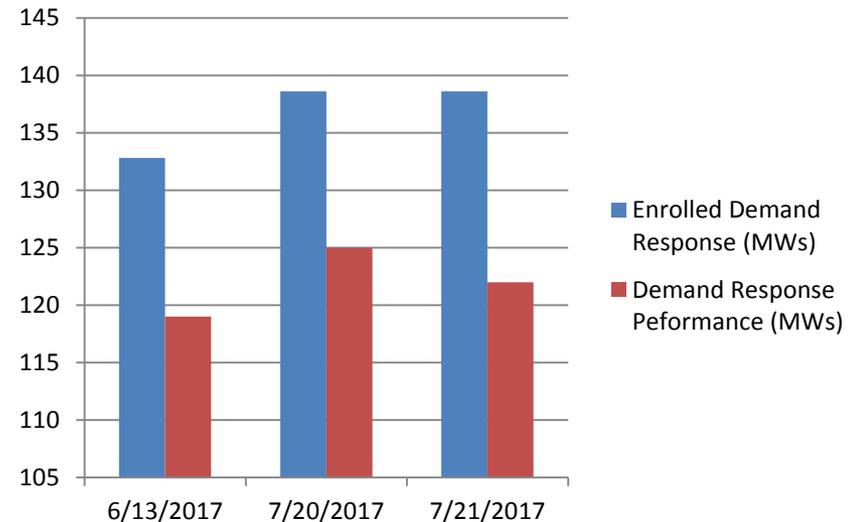
- \* Preliminary Results

- \* Event 1 – 119 MW Avg.
- \* Event 2 – 125 MW Avg.
- \* Event 3 – 122 MW Avg.

- \* Exceeded The Target For Each Event

- \* Average For All Events – 122 MW

- \* On Target For Cumulative Average Ph 3 Target of 92 MW



# Non-Residential Programs

## Highlights

Status

Midstream Lighting

Combined Heat & Power

# Non-Residential Program

- \* Program Achievements
  - \* 1,822 PY8 Participants
  - \* 117,285 Verified MWh/yr. in PY8\*
- \* Customer Satisfaction
  - \* 97% Combined for PY8 (highest ever)
- \* Program Performance
  - \* Total Non-Residential Savings Are on Track
  - \* Very Smooth, Seamless Transition from Phase 2
  - \* The Mix of Small C&I, Large C&I, and GNE Differ From the Plan
    - \* GNE Savings Are Much Greater Than The Plan and The Budget Will Be Exhausted In Mid-2018. Waitlist Effective 1/1/18
    - \* Large C&I Savings and Costs Are Higher Than The Plan But We Are Confident They Can Be Moderated
    - \* Small C&I Savings Are Expected To Be Much Lower Than The Plan
    - \* Likely Need An EE&C Plan Change In Early 2018 To Increase GNE Savings Budget, With An Offsetting Reduction For Small C&I, No Change To Overall Planned Costs For Any Customer Sector, But Reallocate Costs Between DR and EE Budgets Within A Sector
  - \* NTGR is Fine

\* An additional 27,416 MWh/yr. are in Unverified Status

# Midstream Program

- \* First Midstream Lighting Channel in Pennsylvania
- \* Goal: Transform the Market Through A Lower Cost Channel
  - \* Bonus: Reaching Hard to Reach Customers
- \* Launched Successfully (11/2016) And Gaining Traction
- \* Participation:
  - \* November 2016 (Launch)-May 2017
    - \* Customers: 789
    - \* Distributors: 23
  - \* June 2017-November 2017
    - \* Customers: 1,739
    - \* Distributors: 25
- \* Challenges:
  - \* Data Collection - Similar Requirements To Downstream Programs
  - \* Installation Verification
  - \* Leakage

# Combined Heat & Power (CHP)

- \* More Projects Than Expected
- \* 13 Projects
  - \* 3 Completed
  - \* 10 In Progress ++
- \* 160,535 MWh/yr. Saved
  - \* 10,532 MWh/yr. Completed
  - \* 150,003 MWh/yr. In Progress ++
- \* Cost Effectiveness of Completed Projects: 1.03

*++ Two Projects “In Progress” are Included As Unverified Savings in The PY8 Annual Report and Are In The Final Stages of Savings Verification By Our Evaluator*

# Potential 2018 Plan Changes

- \* The GNE Sector is Extremely Interested in EE Programs
- \* GNE Waitlist Set to Begin January 1, 2018
- \* Proposed Minor Plan Changes
  - \* Increase Estimated GNE Savings From 83,500 MWh/yr. To ~ 231,000 MWh/yr.
  - \* Decrease Estimated Small C&I Savings From 462,861 MWh/yr. To ~ 300,000 MWh/yr.
  - \* No Change To The Total Estimated Portfolio Savings Or Non-Residential
  - \* No Change To The Estimated Cost Of Any Customer Sector
  - \* Shift ~\$6 Million From GNE DR To GNE Energy Efficiency
  - \* Shift ~\$3 Million From Large C&I Energy Efficiency To Large C&I DR
  - \* If All GNE Energy Efficiency Funds Are Used Before The End Of The Phase But Additional GNE Participation Is Expected, Allow GNE Customers To Participate In The Non-Residential Energy Efficiency Program Within The Approved Budgets For Small C&I or Large C&I

# Questions? Comments?



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