EVALUATION OF PSEG LONG ISLAND ENERGY EFFICIENCY & RENEWABLE ENERGY PROGRAMS

Presentation to LIPA Trustees Oversight & REV Committee

July 24, 2019

Opinion Dynamics

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- Opinion Dynamics Evaluation Team has been providing annual independent evaluation of programs for ten years (2009-2018)
- Primary aim is to design and administer an evaluation that:
  - Is transparent
  - Is well documented
  - Relies on best-in-class methodologies
  - Complies with all regulatory requirements

Evaluation Overview

- Evaluation found that energy efficiency and renewable energy programs continue to be delivered cost effectively overall
- $74.7M investment in energy efficiency and renewable energy programs in 2018
  - $95.6M in total first year economic benefits to the region
  - 643 FTEs on Long Island (first year impact)
- $815.5M investment in energy efficiency and renewables from 2009-2018
- Benefit/Cost ratio (Societal Cost Test) for energy efficiency and renewables in 2018 = 1.5

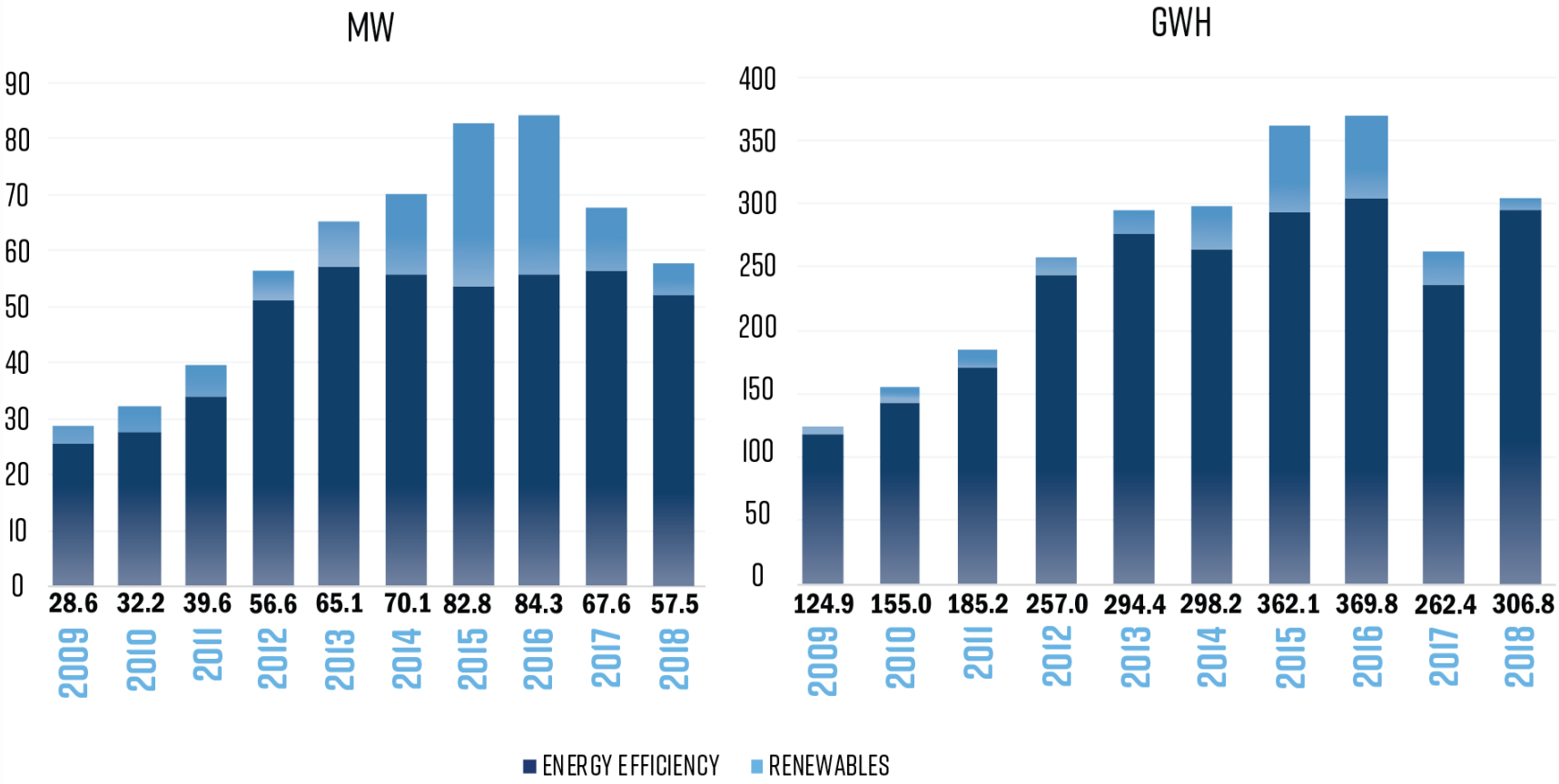
Evaluation Overview

- Energy efficiency and renewable energy programs combined
  - 2018 Evaluated Savings
    - 57.5 MW and 306,756 MWh
    - 97% of demand goal and 114% of energy goal
  - 2018 Greenhouse gas reductions
    - 182,000 tons of CO_2 equivalent
    - Equivalent to removing about 35,000 cars from the road
  - Cumulative Evaluated Savings 2009 through 2018
    - 584 MW and 2,616,000 MWh
    - 1.5 Million tons of CO_2 equivalent
    - Equivalent to removing about 300,000 cars from the road for a year

2018 Program Energy Savings Vs Goals

Program	Annual Energy Efficiency and Renewable Energy Budget	Energy Efficiency and Renewable Energy Actual Cost	Evaluated Net Savings	
			MWh	% Goal
Energy Efficiency Portfolio				
Commercial Programs	**$41,139,144**	**$32,129,236**	**95,633**	**98%**
Residential Programs				
Energy Efficient Products (EEP)	$17,697,376	$20,867,309	135,795	121%
Cool Homes	$4,165,657	$4,212,549	3,697	114%
REAP	$1,909,476	$2,039,234	972	51%
Home Performance	$9,925,218	$10,158,908	1,402	38%
Home Energy Management	$3,106,999	$2,317,251	55,662	139%
Subtotal Residential	**$36,804,725**	**$39,595,251**	**197,527**	**123%**
Total Energy Efficiency Portfolio (Commercial and Residential)	**$77,943,870**	**$71,724,487**	**293,161**	**113%**
Renewable Energy Portfolio	**$3,456,990**	**$2,991,886**	**13,595**	**137%**
Total Energy Efficiency and Renewable Energy Portfolios	**$81,400,859**	**$74,716,372**	**306,756**	**114%**

Energy Efficiency & Renewable Programs Relative Contributions over Past Ten Years (2009 to 2018)



* Renewables include only rebated systems.

2018 Programs Cost Effective Overall

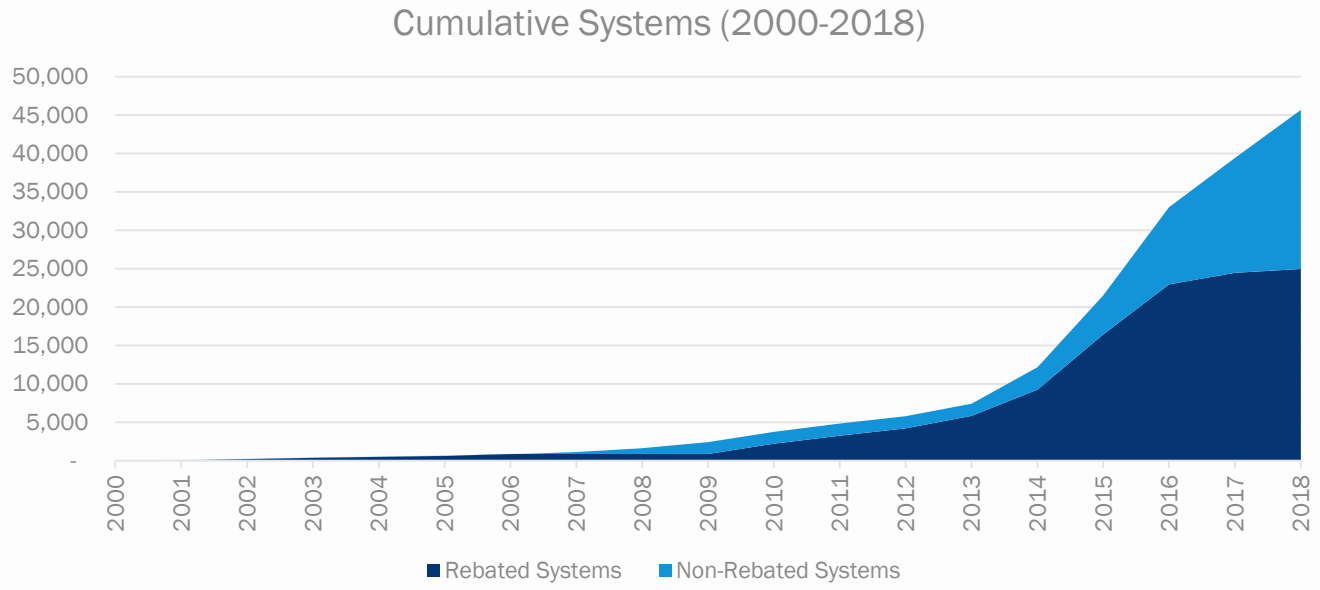
- In 2018, the energy efficiency and renewables portfolio was cost effective compared to conventional supply alternatives from a societal perspective
  - Using standard methodology with PSEG Long Island's avoided costs resulted in benefits > costs

	Societal Cost Test (B/C)*	Levelized Cost ($/kW-yr) Capacity*	Levelized Cost ($/kWh) energy*
Commercial	1.6	$250.47	$0.05
Efficient Products (EEP)	2.9	$138.76	$0.03
Cool Homes	*0.92*	*$215.86*	*$0.13*
REAP	*0.32*	*$1,256.23*	*$0.25*
Home Performance	*0.17*	*$3,895.33*	*$0.74*
Home Energy Management	*1.47*	*N/A*	*$0.04*
EE Portfolio	1.9	$211.24	$0.04
Renewable Energy Portfolio	0.56	$477.54	$0.19
Total Energy Efficiency and Renewable Energy Portfolios	1.5	$248.96	$0.06

*Evaluated Results –Using 5.50% Nominal Discount Rate

Solar PV Installations Continue Despite Reduced Rebates

- A total of 45,643 PV systems have been interconnected on Long Island through 2018
- Approximately 58% of these systems received up-front rebates from LIPA, PSEG Long Island, or NY Sun Initiative
  - All systems receive benefits of net metering or VDER



Source: PSEG Long Island Interconnection Data and Program Tracking Data

Conclusions

- Programs are well managed and cost effective overall
- Program estimated savings compare well to evaluated savings
- PSEG Long Island continues to leverage evaluation results to improve program design, operations, and planning
- PSEG Long Island is proactively addressing changing markets and regulatory circumstances and identifying new savings opportunities
  - Residential lighting
  - Beneficial electrification
- Programs continue to yield positive impacts on Long Island electric system, economy, and environment

Questions and Discussion