

Memorandum



March 30, 2018

TO: Bill Hopkins, Manager Development and Evaluation, Puget Sound Energy;
Michael Noreika, Senior Market Analyst, EES Evaluation, Puget Sound Energy

FROM: Christina Steinhoff, Principal Planning Analyst
Kathryn Bae, Senior Planning Analyst

CC: Stephanie Rider, Senior Manager, NEEA Planning

SUBJECT: 2017 Annual Report (Final 2016-2017 Savings Estimate)

This memo tracks the performance of NEEA’s programs against its original 2016-2017 forecast. Appendix A documents NEEA’s methodology to calculate and track energy savings. Details about the baseline and technical assumptions by measure are included in the attached Excel spreadsheet.

Background

Puget Sound Energy, Pacific Power Washington, and Avista Washington have developed a joint approach to calculate savings from NEEA programs. As part of the utilities’ biennial savings updates, NEEA provides a two-year electric energy savings forecast.¹ The utilities subtract the savings from their conservation forecast to develop their Biennium Conservation Target.

NEEA would like to thank Puget Sound Energy for its partnership and continued support of the alliance. Please do not hesitate to contact Christina Steinhoff at 503.688.5427 with any questions about this report.

2016-2017 Biennium Savings Final

NEEA estimates Puget Sound Energy’s 2016-2017 savings is **2.98 aMW**. These savings were enabled by alliance market transformation programs as well as investments in infrastructure (e.g., tools, training and

¹ The utilities agreed that NEEA would develop a Total Regional Savings estimate using baseline and technical assumptions from the most recent Power Plan. NEEA would remove estimated savings counted by the utilities, the Bonneville Power Administration and the Energy Trust of Oregon. NEEA would allocate the remaining savings to the utilities based on their NEEA funder share percentage.

resources), data and research that support the market’s capability to deliver greater efficiency and NEEA’s ability to measure and verify savings (Table 1).²

Table 1: Final Remaining Site Savings Estimate³

			Biennium		
			Forecast	Target	
	2016 (Estimate)	2017 (Forecast)			
Total	1.51	1.46	2.98	2.57	
Industrial & Commercial	Building Operator Certification Expansion	0.06	0.02	0.07	0.17
	Commercial Real Estate	0.00	-	0.00	-
	Commissioning Buildings	0.16	0.09	0.25	0.15
	Desktop Power Supplies	0.23	0.22	0.45	-
	Existing Building Renewal	0.01	-	0.01	-
	Luminaire Level Lighting Controls	-	-	-	-
	Other Codes (Commercial)	-	0.04	0.04	0.03
	Reduced Wattage Lamp Replacement	0.08	0.10	0.18	0.54
	Drive Power	0.01	0.01	0.02	0.01
	Certified Refrigeration Energy Specialist (CRES)	0.01	0.01	0.02	-
Residential	Clothes Washers (Long-term Monitoring & Tracking)	0.26	-	0.26	-
	Refrigerators (Long-term Monitoring & Tracking)	0.03	-	0.03	-
	Ductless Heat Pumps	0.17	0.20	0.37	0.53
	Heat Pump Water Heaters	0.08	0.12	0.20	0.15
	Other Codes (Multifamily)	-	0.02	0.02	-
	Residential New Construction/Next Step Homes	0.14	0.19	0.33	0.11
	Residential Lighting (CFLs)	0.16	0.10	0.27	0.88
	Retail Product Portfolio	0.02	0.22	0.24	-
	Super-Efficient Dryers	0.09	0.11	0.20	-

Note: values might not add up because of rounding.

Variance from Targets

Puget Sound Energy’s 2016-2017 savings exceeds NEEA’s original forecast by 0.4 aMW. Much of these additional savings come from new programs, such as Super-Efficient Dryers, Certified Refrigeration Energy Specialist and Retail Products Portfolio, which were in early development when NEEA created its targets in August 2015. As a result, NEEA did not have enough information to include them in the original forecast.

² NEEA did not include savings from Residential LED bulbs or Non-residential LED tubes in the total. NEEA only included savings from product categories for which it has or has had a program.

³ Estimates are based on actual sales data.

Other more mature programs, such as Next Step Home and Heat Pump Water Heaters, achieved savings above the initial forecast:

- Next Step Homes: Efforts in the Next Step Homes program enabled NEEA to measure savings from partner programs such as Built Green, ENERGY STAR and Home Energy Rating System. NEEA works with these home certification programs to align technical specifications, modeling requirements, and partner support, where possible. Doing this has the potential to increase participation in home certification programs and helps move the market in a coordinated effort that influences code advances, increases energy savings, and builds market capacity for above code home building.
- Heat Pump Water Heaters: Since the biennium targets were set in 2015, all major water heater manufacturers are now making and marketing multiple models of Heat Pump Water Heaters. In that time, regional sales have more than doubled from less than 6,000 in 2015 to over 13,000 in 2017. Today, Heat Pump Water Heaters make up more than 6% of the total installations of water heaters in the Northwest (existing and new construction).

Previous investments also continue to deliver savings above the Power Plan baseline. These include Clothes Washers, Refrigerators and Desktop Power Supplies. Two of the programs— Clothes Washers and Refrigerators— are now part of NEEA’s Retail Products Portfolio.

A few programs fell short of the target set in 2015.

- Reduce Wattage Lamp Replacement: This program, which was in early development in 2015, missed its target primarily because of regional growth in the LED product category. Despite missing its targets, this program has successfully secured access to full-category lighting data to inform future lighting programs for the region.
- Residential Lighting: The residential lighting market is changing very quickly and market share for CFL lamps has declined much faster than NEEA had forecasted. CFLs for general purpose applications decreased from 31% market share in 2015 to 5% in 2017, and CFLs for specialty applications decreased from 7% market share in 2015 to less than 1% in 2017. LED lamps are the primary technology that has gained market share from CFLs, representing up to 53% and 41% of general purpose and specialty applications respectively in 2017.⁴
- Ductless Heat Pumps: DHPs show reduced savings as compared to the 2016-2017 forecast due to slowing growth in the target markets. While the overall volume of regional DHP sales has continued to grow steadily, through NEEA evaluation efforts we have learned that the greatest growth is happening in applications outside of targeted housing and heating types such as commercial, new construction, multifamily, and even gas-heated homes.

⁴ Through NEEA’s efforts in the lighting market, NEEA is also able to collect and analyze data for all lighting types. The attached spreadsheet reports the additional market savings for LEDs as ‘other tracked’ for reference. The savings is not included in the savings target reporting.

Appendix A: Methodology to Estimate Savings

Baseline

NEEA met with Council staff in June 2015 to align its measures with the draft 7th Power Plan. The baseline values from that meeting are what NEEA uses in this report. Aside from an update to the CFL general purpose bulb savings rate, these values are not significantly different from the final 7th Power Plan.

The Baseline sources are listed in the attached Excel spreadsheet.

Technical Assumptions

Where available, the technical assumptions come from the draft 7th Power Plan. For measures not in the Power Plan, NEEA uses either the Regional Technical Forum or other third-party research.

To compare the actual savings against the targets, NEEA freezes the technical assumptions. As a result, the savings rate only changes based on actual market data such as a change in the configuration of products sold.

The Key Assumption are listed in the attached Excel spreadsheet.

New Savings Stream

This report includes additional measures from the original forecast. At the time, NEEA forecasted zero savings from programs with limited sales and/or per-unit savings data such as programs with site-based savings and products new to the portfolio.

The current forecast adds those savings streams using the 7th Power Plan baseline and technical assumptions unless NEEA has more up-to-date data. These programs include:

- Existing Building Renewal
- Clothes Washer Long-term Monitoring and Tracking
- Refrigerators Long-term Monitoring and Tracking
- Retail Products Portfolio
 - Room Air Conditioners
 - Freezers
 - Clothes Washers
 - Refrigerators
 - Air Cleaners
- Super-Efficient Dryers
- Commercial Real Estate
- Certified Refrigeration Energy Specialist
- Desktop Power Supplies

Local Programs

To avoid double counting, the values exclude an estimate of savings the Energy Trust of Oregon, Bonneville Power Administration and local utilities claim through their programs. NEEA surveys these stakeholders

every February to estimate the savings overlap. Then, NEEA subtracts these savings from the regional value to calculate Remaining Savings.

Allocation

NEEA allocates the Remaining Savings using funder shares. The shares vary based on the funding cycle. Savings from previous investments receive the previous funder share. Savings from current investments receive the current funder share. The funder shares are available in the attached spreadsheet.