

Memorandum

April 6, 2018



TO: Andy Eiden, Planning and Evaluation, Energy Trust of Oregon

CC: Stephanie Rider, Senior Manager, NEEA Planning

FROM: Christina Steinhoff, Planning Analyst

SUBJECT: Final 2017 Annual Savings Report

This memo provides savings estimates for 2017 and updates to the 2016 values. Details about the savings estimates and allocation methodologies are available in the attached Excel spreadsheet and in Appendix A.

NEEA would like to thank the Energy Trust 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.

2017 Savings Summary

NEEA estimates the Energy Trust of Oregon's 2017 annual electric energy savings associated with its programs is 6.96 aMW (Table 1). The savings are not counted as baseline¹ or through the Energy Trust's local programs.²

¹ NEEA estimates Baseline as the savings that would have occurred without NEEA, utility, the Bonneville Power Administration, and the Energy Trust of Oregon's market intervention.

² NEEA estimates the share of energy savings claimed through the Energy Trust of Oregon based on an annual survey.

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Table 1: Final Savings Estimates

2017 (aMW)	Total Regional		
	Savings	Co-Created Savings	Net Market Effects
Total	21.91	8.22	6.96
Residential	15.90	6.19	4.94
Commercial	5.66	1.93	1.92
Industrial	0.35	0.10	0.10

Notes:

These are site-based, first year electric savings.

Net Market Effect= Total Regional Savings- Local Program Savings -Baseline Savings

Current Portfolio

Approximately three quarters of the 2017 energy savings come from codes and standards. Influencing the adoption of codes and standards is a key market transformation strategy, and when successful, results in a sustained market change. On behalf of the region, NEEA works at state and national levels to influence the adoption of increasingly stringent building energy codes and federal appliance and equipment standards. Working in collaboration with its partners, NEEA gives the Northwest a voice in codes and standards processes and is frequently the only efficiency organization directly representing utilities in these forums.

One example is with the Electric Motors standard. An evaluation found that the standard would not have been possible without the combined efforts and consensus of the energy advocates and the manufacturers to craft a joint recommendation.³ NEEA was a key member of the Motor Coalition, which helped expand the scope of the standards and accelerate the effect date for compliance. Based on this evaluation, NEEA is able to report 0.64 aMW of savings to Energy Trust.

The remaining portion of the portfolio is made up of new programs, existing programs and prior investments.

- **New Programs**: New programs such as Next Step Home, Super-Efficient Dryers, Certified Refrigeration Energy Specialist and Retail Products Portfolio account for more than 0.27 aMW of Energy Trust’s savings. These programs are still in early development. NEEA forecasts that the market adoption for products within these initiatives will increase and lead to more savings in the years to come.
- **Existing Investments**: Programs in NEEA’s Market Development separate from a code or standard account for 0.54 aMW. Much of the savings come from market transformation within the Heat Pump Water Heaters and Ductless Heat Pump markets. All major water heater manufacturers are now making and marketing multiple models of Heat Pump Water Heaters. NEEA estimates that Heat Pump Water Heaters made up more than 6% of the

³ Cadmus. December 23, 2016. Electric Motors Standard Evaluation.

total installations of water heaters in the Northwest in 2017 (existing and new construction). While the overall volume of regional DHP sales has continued to grow steadily, NEEA's market research and evaluation efforts have revealed that the greatest growth is happening in applications outside of NEEA's targeted markets (e.g. commercial, new construction, multifamily, and even gas-heated homes).

- Previous Investments: The remaining non codes and standards savings come from previous investments such as Televisions, Drive Power and Commissioning. Altogether, previous investments brought in nearly 1.29 aMW of savings to the Energy Trust.

Future Portfolio

NEEA has a number of programs such as Commercial Window Attachments and Manufactured Homes that are fairly new and do not yet have associated savings rates. In the next few years, NEEA anticipates these voluntary programs will begin delivering savings. NEEA is also investigating several emerging technologies with savings opportunities for the 5-10 year horizon. These include ultra-high-definition televisions and quick-connect ductless heat pumps that lower installation costs and will deliver even more cost-effective energy savings.

Variations from January Report

2017

NEEA updated its 2017 savings estimate with final 2017 data. The savings values increased by 0.23 aMW to 6.96 aMW. The largest increase came from Residential and Commercial New Construction and Federal Standards. New construction in the Energy Trust's service territory was greater than NEEA had forecasted, resulting in more savings from code changes. NEEA also updated the Electric Motors Standard's service-territory shares from 18% to 22% based on NEMA motor shipment data.

More details about the variations are available in the attached spreadsheet.

2016

The attached spreadsheet also includes an update to the 2016 Annual Report. The 2016 values increased from 7.17 aMW to 7.41 aMW based on new data. Most of the change comes from an update to the Electric Motors savings estimate.

- Electric Motors Standards: NEEA updated its service territory allocation approach with NEMA motor shipment data. The data provide a proxy for the state that the motors are shipped. The share increased from 18% to 22%.
- Drive Power: NEEA uses data from the Bureau of Economic Analysis (BEA) to estimate motor shipments. The BEA has revised data from 2014-2016, resulting in higher NEEA estimates for shipments in those years. Across all three years, an additional 3,363 motors are estimated to have been shipped to the Northwest region.

- Retail Products Portfolio: NEEA updated its 2014-2016 savings estimates for products in its Retail Products Portfolio based on additional retailer data.
- Residential Lighting: NEEA updated the 2015-2016 sales estimates based on new regional data. Previously, NEEA estimated sales based on its work with CLEAResult. Now, NEEA is using the Bonneville Power Administration's regional lighting model to estimate total sales by technology.

NEEA also corrected savings estimates for Building Operator Certification Expansion and Televisions.

- Building Operator Certification Expansion: The previous estimate showed negative savings because more operators retired than were retrained. NEEA zeroed out the negative.
- Televisions: NEEA updated the 2016 Net Market Effects savings estimate for ENERGY STAR +30% to zero because 100% of the savings were baseline.

Additional Value Delivery

In addition to Market Transformation programs, the alliance invests in infrastructure (i.e. training, tools and resources), data and research that do not directly deliver energy savings but do support regional efficiency programs, increase the market's ability to deliver greater efficiency and improve NEEA's ability to measure and verify energy savings. For example, in 2017 the alliance:

- Submitted Heat Pump Water Heater, Residential Lighting, Clothes Washers and Dryers data to the Regional Technical Forum to support measure development.
- Provided water heating, room air conditioning and clothes washer sales data Bonneville to support Momentum savings estimates.
- Provided T5 high output linear fluorescent lamp sales data from the alliance's Distributor Platform to the RTF to support for the midstream Non-Residential Lighting UES development.
- Supported expansion of distributor data collection (previously used exclusively for Ductless Heat Pump data) to include a range of equipment through joint effort with Bonneville.
- Completed the second comprehensive inventory of existing Northwest residential Buildings - the Residential Building Stock Assessment, to inform energy efficiency programs as well as regional power planning efforts
- Created the region's first shared emerging technology database to increase regional visibility into emerging technology activities across organizations and reduce development costs by avoiding redundancies
- Launched the first end-use load research effort in the region since the 1980's to support regional planning and efficiency program design

- Developed robust on-line resource centers (BetterBuilt NW, BetterBricks, and SEM Hub) to support and promote energy-efficient practices and to connect key market actors with energy efficiency information and efficiency programs
- Raised market capability for energy efficiency through targeted skills and knowledge training (e.g. industrial technical training, advanced lighting training, and code compliance training, etc.).
- Published 18 market research and evaluation reports to inform market transformation program design and provide critical data and analysis
- Facilitated regional coordination in the Commercial & Industrial Lighting and Consumer Products markets through regional steering committees

Appendix A: Methodology to Forecast Savings

Allocation Methodology

NEEA allocates the savings to the Energy Trust using the most disaggregated data available. The data sources can range from service-territory level to regional. The attached spreadsheet lists the allocation method by measure. It also shows the allocation as a percent of the regional savings. When NEEA only has regional data, NEEA allocates the savings using funding shares. NEEA applies the funder shares to savings by initiative measure based on the initiative start.

Baseline and Technical Assumptions

This report follows NEEA's method of measuring electric energy savings from market transformation efforts. The baseline is an estimate of the market adoption without intervention by NEEA, the Bonneville Power Administration, the Energy Trust of Oregon and utilities. Prior to reporting the savings above the baseline, NEEA removes the savings counted through the local programs. This effort avoids double counting energy savings.

The technical assumptions come from third-party research including NEEA contracted research and the Regional Technical Forum.