2017 True Up Report

Corrections of 2002-2016 Savings and Generation

Energy Trust of Oregon

Introduction

True up is the annual process used to adjust and correct previous years' energy savings and renewable generation to reflect the best and most up-to-date information available. The true up process adjusts past savings and generation based on:

- Corrections to transaction errors
- Updated measure assumptions
- Evaluation results (finalized prior to August 1, 2017)

This 2017 True Up Report adjusts reportable Energy Trust savings from **2011-2016**. This report does **not** cover 2017.

This report contains three sections that describe (1) definitions of terms used in this report, (2) savings adjustments and impacts by program, and (3) the difference between pre-True Up and post-True Up savings and generation by sector.

Summary

The 2017 true up resulted in adjustments to Energy Trust's reportable annual electric and gas savings and renewable energy generation totals. Total electric savings from 2002-2016 decreased by 0.2 percent, from 590 average megawatts to 589 aMW; total gas savings from 2003-2016[1] decreased by 1.2 percent, from 48.8 million therms to 48.3 million therms; and renewable energy generation increased by 0.8 percent, from 121 aMW to 122 aMW.

2016 reportable electric savings increased by 3.9 percent and 2016 reportable gas savings increased by 1.6 percent compared to the savings shown in Energy Trust's 2016 Annual Report. These savings changes for 2016 are primarily due to two factors: substantial decreases in Production Efficiency free ridership compared to the three-year weighted average estimate used to report savings, and updates to Northwest Energy Efficiency Alliance's estimate for 2016 market transformation savings.

Overall, the largest impacts of the 2017 true up were associated with:

- Realization rate adjustments from the 2013-2014 Existing Buildings Impact Evaluation
- Realization rate adjustments from the Impact Evaluation of Selected New Buildings Projects between 2011-2012

[1] Energy Trust's electric programs began in 2002 and gas programs began in 2003

- Adjustments related to 2016 free-ridership estimates for Production Efficiency, Existing Buildings and Existing Multifamily Buildings programs
- Updated NEEA savings results for 2016
- Realization rate adjustments from the 2011-2015 Solar Impact Evaluation

The annual changes to electric and gas savings are summarized by program in the Results section below. To help provide context and clarity for readers, the tables showing impacts by program have been updated to compare the evaluated realization rate and free ridership with the figures used to claim and report savings in the given year.

The last section of the report contains a series of tables showing overall changes by sector and for each funding utility within Energy Trust's service territory.

Definitions and Reasons for Adjustments

Definitions

Working Savings/Generation: The estimate of anticipated results at individual sites. This measure of savings is practical for data entry by program personnel while reviewing and approving individual projects. These savings are based on estimates of typical savings or generation for prescriptive measures and site-specific engineering calculations for custom energy-efficiency measures. Transmission and distribution line loss savings are not included in working savings, and no adjustments are made for free riders (FR), who are customers that would have installed the measures absent program influence, or for spillover, which represents customers who are influenced by the program but did not take the incentive for an efficiency measure. These adjustments are addressed when developing reportable savings/generation values.[2]

The true up process does not adjust working savings claimed in the past. Only reportable savings and generation are adjusted through the true up process. New evaluation information used in true up is incorporated in working savings estimates by updating measure savings and realization rate assumptions on a forward-looking basis.

Reportable Savings/Generation: The estimate of savings results that are used when reporting Energy Trust achievements. Several factors are applied to working savings to arrive at reportable savings, collectively referred to as the savings realization adjustment factors (SRAF). Reportable energy savings are adjusted and updated annually through the true up process based on the most

[2] Sometimes working savings estimates for prescriptive measures do account for free ridership directly in the savings estimate, by using a full market baseline to deem savings.

up-to-date information available. The factors applied to working savings in order to calculate reportable savings include:

- *Realization Rates (RR)*: To adjust the initial estimate of savings, a realization rate of 100 percent indicates that resulting site savings aligned with expectations. The realization rate is typically calculated as part of an impact evaluation or through billing analysis.
- *Net-to-Gross Ratio (NTG):* Another adjustment is for market effects and is known as a Net-to-Gross ratio. The NTG ratio adjusts for free riders and spillover.
- *Line Losses:* This is an adjustment applied only to electric savings, and represents avoided line and transformer losses from saving or generating energy at the customer site. Line losses are assumed to be 10 percent for residential and commercial measures and 6 percent for industrial measures.

Working savings for Energy Trust's commercial and industrial programs are adjusted for reporting by applying an evaluation factor at the program or track level, while working savings for Energy Trust's residential programs are adjusted for market effects at the measure level. The evaluation factor applied to a measure or program's working savings, for any given program year, is calculated as follows:

$$\textit{Evaluation Factor} = \textit{Realization Rate} * (1 - \textit{Free-rider Rate} + \textit{Spillover Rate})$$

Free-rider rates are determined through Fast Feedback, which is a short phone survey with a sample of recent program participants to assess satisfaction, understand customer decision making, and gather suggestions for program and process improvements. The survey is generally 10 or fewer questions and is customized for each program or measure of interest. The goal of Fast Feedback is to get accurate answers to important questions within two months of program participation and to minimize the time required of survey respondents.

There are two reasons the evaluation factor is applied differentially across the residential and commercial and industrial programs:

- The Fast Feedback free-rider estimates are sampled at the program or track[3] level for commercial and industrial programs, whereas the residential Fast Feedback results are sampled at the measure-group level (e.g., ceiling insulation, thermostats). This is because commercial and industrial respondents typically cannot recall all the details of a potentially

[3] In 2016 the Production Efficiency program requested FF results at the track level (Custom and Standard Track + Lighting). Currently, the number of eligible gas sites for FF in a given period is not large enough to create sub-samples by track that meet the required thresholds. Realization rates for Production Efficiency continue to be applied at the program level.

complex project, whereas residential participants purchase a relatively limited number of measures for which they can more readily recall the purchase and decision-making process.

- Realization rates that affect reportable savings are calculated at the program level for commercial and industrial, even if the evaluation also calculates it at the measure level. This is because the confidence and precision levels are lower at the measure level and therefore less reliable for program planning.

Anticipated Evaluation Results: Experience shows that evaluated estimates of savings and generation can be either lower or higher than reportable estimates. Reportable estimates are often based on typical savings for prescriptive measures or “as installed” engineering analysis for custom measures. Impact evaluation uses energy-use data and/or improved data on post-installation operation to improve reportable estimates. However, impact evaluations cannot be completed until well after a year’s activity. This is due to the need to utilize post-installation energy use data. Based upon past Energy Trust Board of Directors direction, staff attempts to anticipate these effects in reportable savings for programs where there is not yet evaluation information available.

For program years where savings have not been evaluated for free ridership or energy savings impact (realization rate), an anticipated evaluation result is applied prospectively in budget planning and annual reporting until actual evaluation results are obtained and savings can be trued up. Anticipated evaluation results are calculated as the average of the last three years of evaluated results, weighted by the savings from each respective year. A program year is closed when evaluation results and free-rider rates for a given program year have been applied to savings in that program year, rather than the anticipated evaluation/free-rider results that are applied before evaluations of that program year are complete.

Beginning with this 2017 True Up Report, we made one procedural change to streamline the annual process and increase the clarity and transparency of the results. That change is to discontinue the past practice of using the most recent anticipated impact evaluation results (i.e. the three-year weighted realization rate used for budgeting) to retrospectively adjust interim years for which no impact evaluation has been completed. By eliminating this step, a program’s annual savings remain with the anticipated three-year weighted realization rate until the impact evaluation results are finalized and applied during true up. At this point, the program is then closed for a given year and will not be subject to future true up efforts.

Reasons for Adjustments

True Up adjusts past reportable savings and generation estimates in different programs for different reasons, falling into the following categories:

1) Corrections: Occasionally, through Energy Trust's routine quality assurance processes, transaction errors are discovered in the database, which require corrections. Individual transaction errors (e.g., incorrect measure savings for a custom site) are usually adjusted immediately and generic transaction errors (e.g., out of date deemed savings value for a measure) are fixed once per year during true up.

2) *New Data:* Projections are updated based upon improved measure simulations and new data on measure performance. This is typically done only when reliable data becomes available that impacts a measure's basic assumptions, such a new Federal standard for a piece of equipment. Other reasons might be that new primary research is conducted that overturns long-standing assumptions of equipment performance or baseline. For example, the 2017 true up adjusts savings for past installations of multifamily showerheads based on new baseline flow rates.

3) *Evaluation Results:* Once finalized, evaluations provide the most reliable representation of realized savings, and can replace the anticipated results described above. The most up-to-date evaluation results are applied when they become available for the appropriate program year.

Results: Impacts by Program

Existing Buildings

The primary updates to the Existing Buildings program during the 2017 true up are the incorporation of 2013-2014 Existing Buildings Impact Evaluation results and the 2016 free-rider rate. The 2016 free-rider rate estimate has also been included in the development of the anticipated evaluation factors for 2018-2019.

Total electric savings from 2013-2014 for the Existing Buildings program decreased by 24.1 million kilowatt-hours as a result of the 2013-2014 Impact Evaluation. Total Existing Buildings gas savings for the same time period decreased by roughly 445,000 therms. For 2016, total electric savings decreased by 1.3 million kWh as a result of the new free-rider rate, while gas savings increased by 23,000 therms.

Table 1 lists the sources for the adjustments that were applied to reportable savings for the Existing Buildings program.

Table 1: Existing Buildings Evaluation Inputs to the 2017 True Up

Program	Year	Adjustment Source	Type of Adjustment	Notes
Existing Buildings	2013-2014	2013-2014 Existing Buildings Impact Evaluation	Impact evaluation	The study sampled for separate realization rates for 2013 and 2014, and these rates were applied to the savings numbers for the respective years.
Existing Buildings	2014-2016	Schools free ridership exemption	Free-ridership	Planning, program and PUC staff agreed that schools should not be considered free riders due to limited financial resources. This true up made the respective adjustment for the past 3 years, and a manual correction was made to the reporting database in 2017.
Existing Buildings	2016	2016 Fast Feedback survey	Free ridership	
Existing Buildings	2016	Accounting for overlapping funding for discrete schools projects	Correcting errant data	Savings were negated due to two overlapping projects funded by Energy Trust and Oregon Department of Energy.

Tables 2 and 3 describe the evaluated components of the SRAF that have been applied to reportable savings during this true up.

Table 2: Existing Buildings Anticipated and Evaluated Results—Electric

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Electric Realization Rate	Electric Free Ridership	Electric Realization Rate	Electric Free ridership
2013	Impact evaluation	92%	N/A	88%	N/A
2014	Impact evaluation	99%	N/A	81%	N/A
2016	Free ridership	N/A	25%	N/A	26%

Table 3: Existing Buildings Anticipated and Evaluated Results —Gas

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Gas Realization Rate	Gas Free Ridership	Gas Realization Rate	Gas Free Ridership
2013	Impact evaluation	84%	N/A	67%	N/A
2014	Impact evaluation	83%	N/A	72%	N/A
2016	Free ridership	N/A	24%	N/A	23%

Tables 4 and 5 describe the change in total electric and gas savings claimed for the Existing Buildings program as a result of the adjustments described above.

Table 4: Existing Buildings Savings Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2013	72,213,346	63,932,067	-8,281,279	-11.47%
2014	92,817,455	76,968,901	-15,848,554	-17.07%
2015	81,617,444	81,842,275	224,831	0.28%
2016	110,213,832	108,872,810	-1,341,022	-1.22%

Table 5: Existing Buildings Savings Change—Gas

Year	Savings Pre-True Up (therms)	Trued Up Savings (therms)	Net Change in Savings (therms)	Change in Savings (%)
2013	1,253,252	985,873	-267,379	-21.33%
2014	1,124,535	946,554	-177,981	-15.83%
2015	1,003,972	1,006,215	2,243	0.22%
2016	1,517,847	1,541,052	23,205	1.53%

Commercial Strategic Energy Management

The Commercial Strategic Energy Management Impact Evaluation was completed in 2017 and included realization rates for both the cumulative three-year study period, and for each of the individual program years covered in the study. The three-year cumulative results were used for forward looking budget planning (103 percent and 91 percent realization rates, respectively, for electric and gas), whereas the 2017 true up applied adjustments commensurate with the findings for the appropriate program year.

Tables 6 and 7 describe the evaluated components of the SRAF that have been applied to reportable savings during this True Up.

Table 6: Commercial Strategic Energy Management Anticipated and Evaluated Results—Electric

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Electric Realization Rate	Electric Free ridership	Electric Realization Rate	Electric Free ridership
2012	Impact evaluation	100%	N/A	139%	N/A
2013	Impact evaluation	100%	N/A	103%	N/A
2014	Impact evaluation	100%	N/A	89%	N/A

Table 7: Commercial Strategic Energy Management Anticipated and Evaluated Results—Gas

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Gas Realization Rate	Gas Free ridership	Gas Realization Rate	Gas Free ridership
2012	Impact evaluation	100%	N/A	-15%	N/A
2013	Impact evaluation	100%	N/A	47%	N/A
2014	Impact evaluation	100%	N/A	160%	N/A

Market effects (free ridership and spillover) are not currently included in the SRAF for Commercial Strategic Energy Management, though the participant interviews did ask about potential spillover activity at other sites. Qualitative evidence suggests there may be some spillover, but the size or certainty of these potential savings from a customer's engagement with the program have not been quantified.

Tables 8 and 9 describe the change in total electric and gas savings claimed for the Commercial Strategic Energy Management program as a result of the adjustments described above.

Table 8: Commercial Strategic Energy Management Savings Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2012	5,829,250	8,102,653	2,273,403	39.00%
2013	9,138,673	9,412,809	274,136	3.00%
2014	14,960,693	13,314,985	-1,645,708	-11.00%

Table 9: Commercial Strategic Energy Management Savings Change—Gas

Year	Savings Pre-True Up (therms)	Trued Up Savings (therms)	Net Change in Savings (therms)	Change in Savings (%)
2012	126,942	-19,041	-145,983	-115.00%
2013	360,587	169,476	-191,111	-53.00%
2014	439,555	703,288	263,733	60.00%

Existing Multifamily

There were two updates made to the Existing Multifamily program during the 2017 true up. The first was an adjustment to showerhead savings based on a study of baseline flow rates conducted by the program.[4] The second was incorporation of the 2016 free-rider rate estimate.

The showerhead study found that corrections to assumed baseline flow rates led to a decrease in measure savings of between 40-50 percent for showerheads and approximately 70 percent for shower wands.

Tables 10 and 11 describe the evaluated components of the SRAF that have been applied to reportable savings during this true up.

Table 10: Existing Multifamily Anticipated and Evaluated Results—Electric

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Electric Realization Rate	Electric Free Ridership	Electric Realization Rate	Electric Free Ridership
2016	Free ridership	N/A	17%	N/A	17%

Table 11: Existing Multifamily Anticipated and Evaluated Results—Gas

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Gas Realization Rate	Gas Free ridership	Gas Realization Rate	Gas Free ridership
2016	Free ridership	N/A	42%	N/A	22%

Tables 12 and 13 describe the change in total electric and gas savings claimed for the Existing Multifamily program as a result of the adjustments described above.

Table 12: Existing Multifamily Savings Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2014	21,949,206	19,543,795	-2,405,411	-10.96%
2015	23,839,566	22,970,286	-869,280	-3.65%
2016	20,787,825	19,395,824	-1,392,001	-6.70%

[4] Multifamily Showerhead Study Report. CLEAResult, 2017. Link: https://www.energytrust.org/wp-content/uploads/2017/02/Energy_Trust_MF_Showerhead_Study_Report_FINAL_wStaffResponse.pdf

Table 13: Existing Multifamily Savings Change—Gas

Year	Savings Pre-True Up (therms)	Trued Up Savings (therms)	Net Change in Savings (therms)	Change in Savings (%)
2014	339,318	272,126	-67,192	-19.80%
2015	281,385	225,266	-56,119	-19.94%
2016	252,903	232,438	-20,466	-8.09%

New Buildings

Two impact evaluations were completed for the New Buildings program in time for the 2017 true up. These impact evaluations results lead to savings adjustments for many projects that were completed by the program.

The 2014 New Buildings Impact Evaluation resulted in savings adjustments to all projects except megaprojects, code assistance projects and those included in the other impact evaluation discussed below.

The Impact Evaluation of Selected 2011-2012 New Buildings Projects evaluated four large projects at three sites. The rationale for evaluating these projects apart from the Impact Evaluation sample was that these projects were identified as needing more time for occupancy levels and equipment loads to stabilize.

Table 14 lists the sources for the adjustments that were applied to reportable savings for the New Buildings program.

Table 14: New Buildings Evaluation Inputs to the 2017 True Up

Year	Adjustment Source	Type of Adjustment	Notes
2011-2013	2011-2012 New Buildings Impact Evaluation of Selected Projects	Impact evaluation	Results vary by project.
2014	2014 New Buildings Impact Evaluation	Impact evaluation	Link to 2014 Impact Evaluation

Tables 15 and 16 show the components of the SRAF that have been applied to reportable savings for 2014 for the New Buildings program. The 2011-2012 results for selected large projects are not included here, but the total change in savings from these projects is reflected in the savings change tables below.

Table 15: New Buildings Anticipated and Evaluated Results—Electric

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Electric Realization Rate	Electric Free Ridership	Electric Realization Rate	Electric Free Ridership
2014	Impact evaluation	92%	N/A	96%	N/A

Table 16: New Buildings Anticipated and Evaluated Results—Gas

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Gas Realization Rate	Gas Free ridership	Gas Realization Rate	Gas Free ridership
2014	Impact evaluation	95%	N/A	94%	N/A

Tables 17 and 18 describe the change in total reportable savings claimed for the New Buildings program for the program years 2011-2014, for electric and gas savings, respectively.

Table 9: New Buildings Savings Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2011	40,969,605	39,733,769	-1,235,836	-3.02%
2012	65,779,025	62,502,078	-3,276,947	-4.98%
2013	76,336,596	76,339,184	2,588	0.00%
2014	38,070,292	39,505,205	1,434,913	3.77%

Table 10: New Buildings Savings Change—Gas

Year	Savings Pre-True Up (therms)	Trued Up Savings (therms)	Net Change in Savings (therms)	Change in Savings (%)
2011	490,799	513,389	22,589	4.60%
2012	437,070	441,240	4,171	0.95%
2013	277,282	277,282	0	0.00%
2014	631,016	626,849	-4,168	-0.66%

Production Efficiency

The 2017 true up made adjustments to Production Efficiency program savings based on results from the 2012 Impact Evaluation and free-rider rate findings from the 2015 Fast Feedback survey of program participants. Industrial Strategic

Energy Management savings were not included in the 2012 Impact Evaluation, and thus were not Trued Up this year.

For the free ridership adjustment, results were applied at the track level for electric savings. There were not enough gas participants to subdivide the sample, and so results for gas free ridership were applied at the program level.

Table 17 lists the sources for the adjustments that were applied to reportable savings for the Production Efficiency program.

Table 17: Production Efficiency Evaluation Inputs to the 2017 True Up

Year	Adjustment Source	Type of Adjustment	Notes
2012	2012 Production Efficiency Impact Evaluation	Impact evaluation	Industrial SEM savings not included
2016	2016 Fast Feedback survey	Free ridership	Results applied at track-level for electric savings and program-level for gas.

Tables 18 and 19 show the components of the SRAF that have been applied to reportable savings for 2012 and 2016 for the Production Efficiency program.

Table 18: Production Efficiency Anticipated and Evaluated Results—Electric

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Electric Realization Rate	Electric Free Ridership	Electric Realization Rate	Electric Free Ridership
2012	Impact evaluation	94%	N/A	94%	N/A
2016	Free ridership - Standard + Lighting Ele	N/A	23%	N/A	12%
2016	Free ridership - Custom Ele	N/A	23%	N/A	10%

Table 19: Production Efficiency Anticipated and Evaluated Results—Gas

Year	Type of Adjustment	Anticipated Results		Evaluated Results	
		Gas Realization Rate	Gas Free Ridership	Gas Realization Rate	Gas Free Ridership
2012	Impact evaluation	97%	N/A	87%	N/A
2016	Free ridership – all tracks	N/A	23%	N/A	16%

Tables 20 and 21 describe the change in total annual savings claimed for the Production Efficiency program as a result of 2017 true up adjustments, for electric and gas savings, respectively.

Table 20: Production Efficiency Savings Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2012	134,553,180	134,314,887	-238,293	-0.18%
2016	102,974,612	117,052,764	14,078,152	13.67%

Table 21: Production Efficiency Savings Change—Gas

Year	Savings Pre-True Up (therms)	Trued Up Savings (therms)	Net Change in Savings (therms)	Change in Savings (%)
2012	707,371	652,905	-54,466	-7.70%
2016	1,332,695	1,447,294	114,599	8.60%

Existing Homes

The 2017 true up adjusted Existing Homes program savings based on free-rider rate findings from the 2016 Fast Feedback surveys of program participants, as well as a completed billing analysis of gas ceiling insulation projects completed between 2009 and 2014.

Only gas heated homes that installed ceiling or attic insulation in 2013 and 2014 were affected by the true up. The reason is that past true ups have already adjusted the savings for 2009-2012 for the Existing Homes program, and it was decided not to further adjust these savings. In addition, the billing analysis did include a realization rate for gas heated homes, but at the time of the true up there were outstanding comments from an external reviewer, and therefore electric results were not included in this year's true up.

No additional adjustments were made to Existing Homes program savings beyond those mentioned above.

Tables 22 and 23 describe the change in total savings claimed for the Existing Homes program for the 2014-2015 program years, for electric and gas savings, respectively.

Table 22: Existing Homes Savings Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2016	35,094,528	35,030,044	-64,484	-0.18%

Table 23: Existing Homes Savings Change—Gas

Year	Savings Pre-True Up (therms)	Trued Up Savings (therms)	Net Change in Savings (therms)	Change in Savings (%)
2013	702,022	709,184	7,162	1.02%
2014	965,415	970,429	5,014	0.52%
2016	1,088,768	1,066,517	-22,251	-2.04%

Products

The 2017 True Up revised 2016 savings for thermostat measures downward to align with free-rider rate findings from the 2016 Fast Feedback Survey. The free-ridership rate was found to be 43 percent in 2016. In 2018, the residential program is testing new delivery methods that could reduce free ridership by implementing targeted marketing and other means.

Tables 23 and 24 show the change in total 2016 electric and gas savings for the Products program as a result of true up adjustments.

Table 23: Products Savings Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2016	114,462,108	114,399,825	-62,283	-0.05%

Table 24: Products Savings Change—Gas

Year	Savings Pre-True Up (therms)	Trued Up Savings (therms)	Net Change in Savings (therms)	Change in Savings (%)
2016	337,261	314,983	-22,277	-6.61%

Solar

The 2011-2015 Impact Evaluation of solar installations was completed in January of 2017. The evaluation provided distinct realization rates for three different ownership structures: commercial, residential direct-owned and residential third-party owned.

Table 25 below shows the overall realization rates by sector. During the 2017 true up, the realization rates were applied by sector/ownership type for the periods covered in the evaluation (2011-2015). The commercial results shown in Table 25 were not applied to any utility scale solar projects in the time period.

Table 25: Solar Realization Rates by Customer Segment (2011-2015)

Sector	Quantity	Realization Rate
Commercial	407	106%
Direct-Owned Residential	2,570	121%
Third-Party Residential	2,753	117%
Total	5,730	112%

Table 26 shows the change in total 2016 electric savings for the Solar program as a result of true up adjustments.

Table 26: Solar Generation Change—Electric

Year	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2011	9,164,630	10,370,957	1,206,327	13.16%
2012	27,319,278	28,556,056	1,236,778	4.53%
2013	6,302,620	7,266,103	963,483	15.29%
2014	10,061,491	11,605,001	1,543,510	15.34%
2015	16,767,518	19,096,681	2,329,163	13.89%

Northwest Energy Efficiency Alliance

2016 savings for NEEA were revised in the 2017 true up as a result of updated savings estimates reported by NEEA. Savings for the commercial sector increased substantially for 2016, while the industrial sector moderately increased, and the Residential sector decreased.

According to NEEA internal savings reports, increases in 2016 savings were driven by better-than-expected results in the commercial sector. The commercial commissioning and commercial codes initiatives resulted in more than double the forecasted savings, primarily driven by acceleration of the federal standard on electric motors and increased commercial construction activity. The residential sector's decrease in savings was primarily due to reductions in expected savings from NEEA's retail television initiative.

NEEA's savings revisions for 2016 also included, as always, updated savings estimates for other NEEA initiatives based on final market data and updated service-territory allocations.

Table 27 shows the change to total reportable electric savings claimed for NEEA market transformation initiatives by sector for 2016.

Table 27: 2016 NEEA Electric Savings Change

Year	Sector	Savings Pre-True Up (kWh)	Trued Up Savings (kWh)	Net Change in Savings (kWh)	Change in Savings (%)
2016	Commercial	11,719,951	20,529,006	8,809,055	75.16%
2016	Industrial	1,087,577	1,185,690	98,113	9.02%
2016	Residential	50,269,700	47,586,050	-2,683,650	-5.34%

Results: Impacts by Sector and Utility

The following tables summarize the changes in total annual electric and gas savings for 2002-2016 as a result of 2017 true up adjustments. In the tables below, an average megawatt (aMW) means that loads are reduced by an average of one megawatt - or 8,760 MWh - during each year of a measure's estimated useful life. Where units are listed as million therms (MMTh), this reflects the annual gas savings achieved in each year of a measure's useful life, stated in millions of therms.

Tables 28 and 29 describe the change to total reportable savings[5] claimed by Energy Trust for the years 2002-2016.

Table 28: Electric Savings Impact 2002-2016

Sector	Savings Pre-True Up (aMW)	Trued Up Savings (aMW)	Net Change in Savings (aMW)	Change in Savings (%)
Commercial	214.7	212.0	-2.7	-1.24%
Industrial	176.4	178.0	1.6	0.90%
Residential	199.3	199.0	-0.3	-0.16%
Renewables	121.4	122.3	0.8	0.68%
Total	**711.8**	**711.2**	**-0.6**	**-0.08%**

[5] The savings here are total first-year annual savings only, and do not reflect the lifetime of savings.

Table 29: Gas Savings Impact 2002-2016

Sector	Savings Pre-True Up (MMTh)	Trued Up Savings (MMTh)	Net Change in Savings (MMTh)	Change in Savings (%)
Commercial	22.5	21.9	-0.6	-2.73%
Industrial	8.0	8.1	0.1	0.75%
Residential	18.3	18.3	0.0	-0.18%
Total	**48.8**	**48.3**	**-0.6**	**-1.20%**

The following tables show final reportable annual savings and generation totals for each of the utilities in Energy Trust's service territory after the 2017 true up adjustments were implemented.

Table 30: PGE savings and generation (aMW), 2002-2016

Year	Commercial	Industrial	Renewables	Residential	Total
2002	3.73	2.11	0.00	2.85	8.70
2003	3.64	1.08	0.02	2.92	7.65
2004	3.59	1.54	0.01	3.32	8.45
2005	5.49	13.67	0.42	10.03	29.61
2006	5.83	3.43	0.03	5.79	15.09
2007	4.88	4.15	46.84	6.69	62.56
2008	6.27	3.21	1.84	8.23	19.54
2009	7.11	4.49	0.55	5.71	17.86
2010	10.47	8.77	0.96	7.31	27.51
2011	10.99	8.92	1.17	8.51	29.59
2012	13.81	10.14	2.60	10.48	37.03
2013	12.37	12.76	1.94	9.24	36.31
2014	12.59	10.93	0.83	12.29	36.64
2015	12.08	7.04	3.21	12.02	34.35
2016	15.29	8.24	1.57	14.12	39.22
Total	**128.14**	**100.47**	**61.99**	**119.52**	**410.12**

Table 31: Pacific Power savings and generation (aMW), 2002-2016

Year	Commercial	Industrial	Renewables	Residential	Total
2002	1.77	1.85	0.00	1.57	5.19
2003	1.44	2.91	14.27	2.01	20.63
2004	2.58	9.78	0.08	2.21	14.65
2005	2.97	4.69	0.05	6.94	14.64
2006	2.66	5.58	1.96	3.72	13.92
2007	2.61	4.82	0.08	5.02	12.53
2008	3.09	4.31	31.47	5.51	44.38
2009	3.10	3.51	2.12	3.57	12.30
2010	7.86	7.06	2.42	5.29	22.62
2011	8.26	6.55	0.45	5.33	20.60
2012	10.77	5.67	2.41	6.45	25.31
2013	11.34	4.73	1.04	5.82	22.93
2014	6.81	5.92	1.73	8.47	22.94
2015	8.81	4.86	0.96	8.20	22.82
2016	9.70	5.26	1.21	9.40	25.57
Total	**83.76**	**77.49**	**60.26**	**79.51**	**301.02**

Table 32: NW Natural savings (MMTh), 2002-2016

Year	Commercial	Industrial	Residential	Total
2002	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.61	0.61
2004	0.09	0.00	0.99	1.08
2005	0.46	0.00	1.00	1.46
2006	1.23	0.00	0.81	2.04
2007	1.21	0.00	1.16	2.38
2008	1.13	0.01	1.37	2.51
2009	1.10	0.19	1.21	2.50
2010	2.10	0.54	1.45	4.09
2011	2.03	1.01	1.66	4.70
2012	2.16	0.57	2.63	5.35
2013	1.55	0.94	2.21	4.70
2014	2.38	0.94	2.06	5.37
2015	1.99	2.02	2.00	6.00
2016	2.70	1.43	2.44	6.58
Total	**20.13**	**7.64**	**21.60**	**49.37**

Table 33: Cascade Natural Gas savings (MMTh) 2002-2016

Year	Commercial	Industrial	Residential	Total
2002	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00
2006	0.05	0.00	0.02	0.07
2007	0.02	0.00	0.13	0.16
2008	0.05	0.00	0.12	0.17
2009	0.07	0.05	0.13	0.25
2010	0.20	0.05	0.07	0.32
2011	0.22	0.09	0.11	0.42
2012	0.15	0.09	0.15	0.39
2013	0.13	0.06	0.12	0.31
2014	0.23	0.04	0.14	0.41
2015	0.33	0.05	0.16	0.55
2016	0.28	0.02	0.21	0.51
Total	**1.75**	**0.44**	**1.37**	**3.56**

Table 34: Avista savings (MMTh) 2002-2016

Year	Commercial	Industrial	Residential	Total
2002	-	-	-	-
2003	-	-	-	-
2004	-	-	-	-
2005	-	-	-	-
2006	-	-	-	-
2007	-	-	0.01	0.01
2008	-	-	0.01	0.01
2009	-	-	-	-
2010	-	-	-	-
2011	-	-	-	-
2012	-	-	-	-
2013	-	-	-	-
2014	-	-	-	-
2015	-	-	-	-
2016	-	-	0.03	0.03
Total	**-**	**-**	**0.06**	**0.06**