

Impact Evaluation of FY2014 - 2015 Residential Insulation and Windows Measures

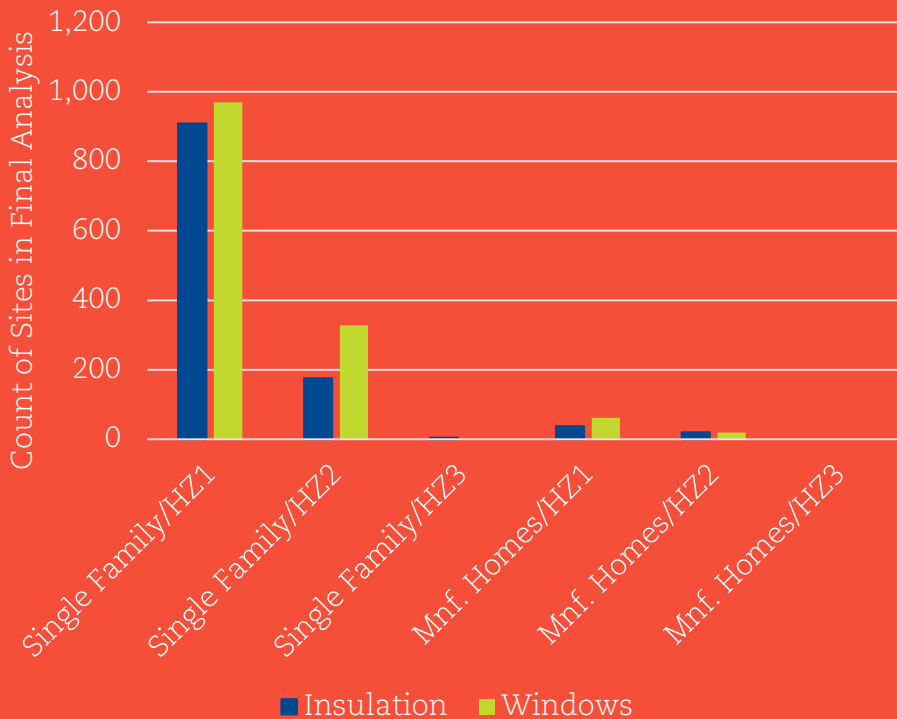
Background

In 2015, the evaluation team, led by Navigant, developed a plan to gain insight into BPA’s energy efficiency programs through impact evaluation. The evaluation team systematically selected UES measures for evaluation based on their large contribution to BPA’s annual energy efficiency savings and their perceived importance amongst stakeholders.

As a part of the CY2016 evaluation planning, the evaluation team identified envelope measures including insulation and window retrofits for billing analysis evaluation. The evaluation team determined that billing analysis would provide the appropriate balance of rigor and evaluation resources for these measures, given their importance to future program planning and that they are the third largest contributor to UES savings.

The evaluation team collected billing data from a representative sample of 15 utilities for the CY2016 envelope measure billing analysis. The team captured data from small, medium, and large contributors with the sampling method.

What measures were evaluated?



- For both insulation and window measures, most of the sites were in single family homes located in Heat Zone 1.
- Multi-family homes are not included in the analysis.
- The baseline for both insulation and window measures is a pre-existing baseline.
- For insulation measures, there was a good mix of attic, wall, and floor insulation with most measures installed in the attic.
- For window measures in single family homes, most of the efficient windows installed were U30 not U22.



Findings

Home Type/Heat Zone	Insulation Measures				Windows Measures			
	Sites	Evaluated Savings per Site (kWh)	Realization Rate over UES Dec. 2016 (%)	Precision	Sites	Evaluated Savings per Site (kWh)	Realization Rate over UES Dec. 2016 (%)	Precision
All Sites	1,146	1,303 ± 381	98 ± 29%	29%	1,378	893 ± 240	68 ± 18%	27%
Single Family/HZ1	909	1,145 ± 277	87 ± 21%	24%	970	882 ± 264	66 ± 20%	30%
Single Family/HZ2	176	Excluded due to precision greater than 100%			328	1,090 ± 553	83 ± 42%	51%
Single Family/HZ3	4	Excluded due to less than 40 sites			0	Excluded due to less than 40 sites (no sites)		
Mnf. Homes/HZ1	37	Excluded due to less than 40 sites			61	Excluded due to precision greater than 100%		
Mnf. Homes/HZ2	20	Excluded due to less than 40 sites			19	Excluded due to less than 40 sites		
Mnf. Homes/HZ3	0	Excluded due to less than 40 sites (no sites)			0	Excluded due to less than 40 sites (no sites)		

Insulation

Evaluated savings are as expected

- o All sites realization rate = 98%

Windows

Evaluated savings are lower than expected

- o All sites realization rate = 68%

Evaluated savings are consistently low across characteristics and available data

Next Steps

Windows and insulation measures will be stable in the Implementation Manual until FY 2020

Planning & Programs will work together, looking more closely at the data, to identify potential areas of program improvement

BPA will work with utilities in the region to find the most fruitful areas for process & customer research for these measures, particularly window measures



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Measures – Quick Summary

Navigant used PTCS data collected in 2013 to develop the billing analysis methods. The PTCS measures were not included in the 2016 evaluation plan and constitute a relatively small percentage of overall savings. However, to close the loop on the prior analysis, Navigant conducted a billing analysis using the new methodology and found similar results to previous investigations that the savings are lower than expected. The RTF has also been working with these results.

For more information, please visit www.bpa.gov/goto/evaluation