

Brownbag: Clark Public Utilities Home Energy Reports Program: What have we learned?

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October 15, 2015



What are behavior based energy efficiency programs?

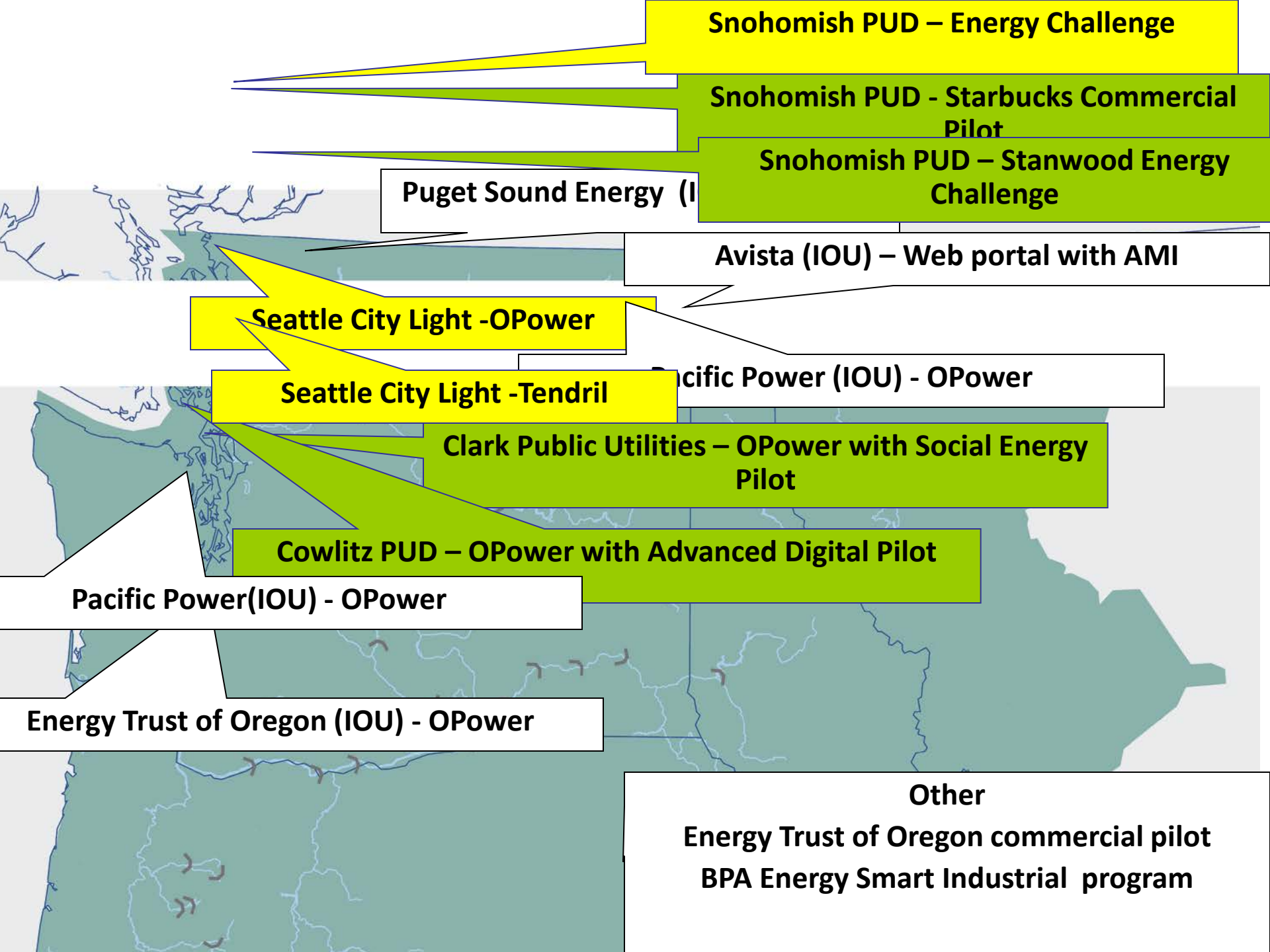
- Behavior based energy efficiency (BBEE) programs focus on energy savings resulting from changes in individual or organizational behavior and decision-making.

Examples

- Provide residential end-users with information on their energy use, comparisons with usage by others, goal setting, rewards and additional tactics that encourage efficient energy use.
- Assist commercial end-users to benchmark their building(s) energy use and improve operating performance through building or equipment tune-ups and changes to O&M routines.

BPA BBEE Strategy

- Enable, validate and increase the amount and persistence of energy savings achieved through behavior based energy efficiency programs in the Northwest.
 - Monitor and assess national and regional BBEE programs and identify and promote use of best practices
 - Create policies that help our customers operate BBEE programs
 - Collaborate with our customers and market partners to implement and evaluate



Snohomish PUD – Energy Challenge

Snohomish PUD - Starbucks Commercial Pilot

Snohomish PUD – Stanwood Energy Challenge

Puget Sound Energy (I

Avista (IOU) – Web portal with AMI

Seattle City Light -OPower

Pacific Power (IOU) - OPower

Seattle City Light -Tendril

Clark Public Utilities – OPower with Social Energy Pilot

Cowlitz PUD – OPower with Advanced Digital Pilot

Pacific Power(IOU) - OPower

Energy Trust of Oregon (IOU) - OPower

Other

**Energy Trust of Oregon commercial pilot
BPA Energy Smart Industrial program**

Resources

- State and Local Energy Efficiency Action Network EM&V of Residential Behavior-Based Energy Efficiency Programs: Issues and Recommendations
- State and Local Energy Efficiency Action Network Customer Information and Behavior Working Group
- Behavior, Energy and Climate Change Conference
- E-Source Behavior Change Leaders Group
- Behavior Change group on www.Conduitnw.org
- Regional Technical Forum protocol on evaluating BBEE programs
- RTF subcommittee on behavior

Home Energy Reports



Matt Babbitts, Clark Public Utilities
October 15, 2015

Program History & Overview

- Initiated contract with Opower and launched the program in Sept. 2012.
- Three year contract with option to terminate after each 12 month period.
- Included BPA funded 3rd party evaluation after program year two.

Program Design

- Recipient Group: 20,000 Households
- Control Group: 20,000 Households
- Six annual HERs | Web Portal | Custom Marketing Modules
- 2 Year Measure Life

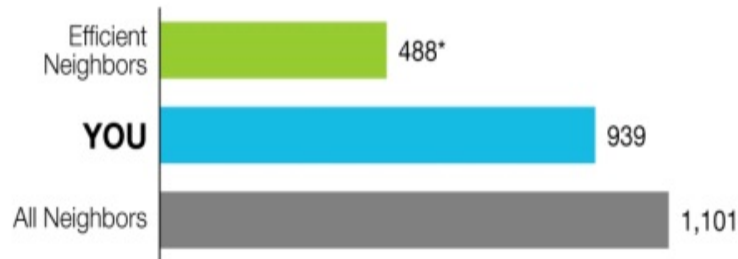


Program Challenge

“Neighbor” comparisons were tough for customers.

Last Month Neighbor Comparison

You used **92% MORE** energy than your efficient neighbors.



How you're doing:

Great 😊😊

▶ **GOOD** 😊

More than average

* This energy index combines electricity (kWh) and natural gas (therms) into a single measurement.

Who are your Neighbors?

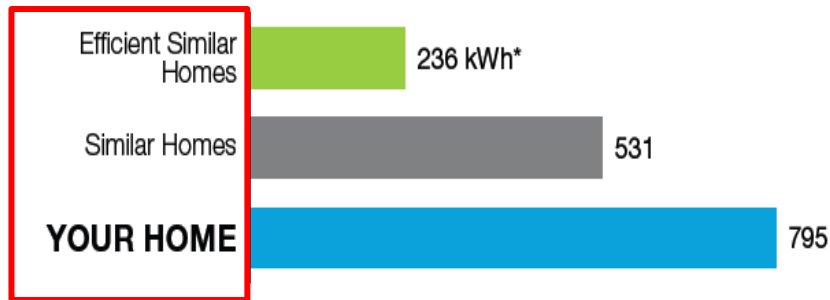
■ **All Neighbors:** Approximately 100 occupied, nearby homes that are similar in size to yours (avg 1,104.337 sq ft) and have electric heat

■ **Efficient Neighbors:** The most efficient 20 percent from the “All Neighbors” group

Program Change

“Similar Home” language made all the difference!

Last 3 Months **Household Comparison** You used 50% more electricity than **similar homes.**



How you're doing:

You used more than average

Turn over for ways to save

→

* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

WHAT HOMES ARE COMPARED?

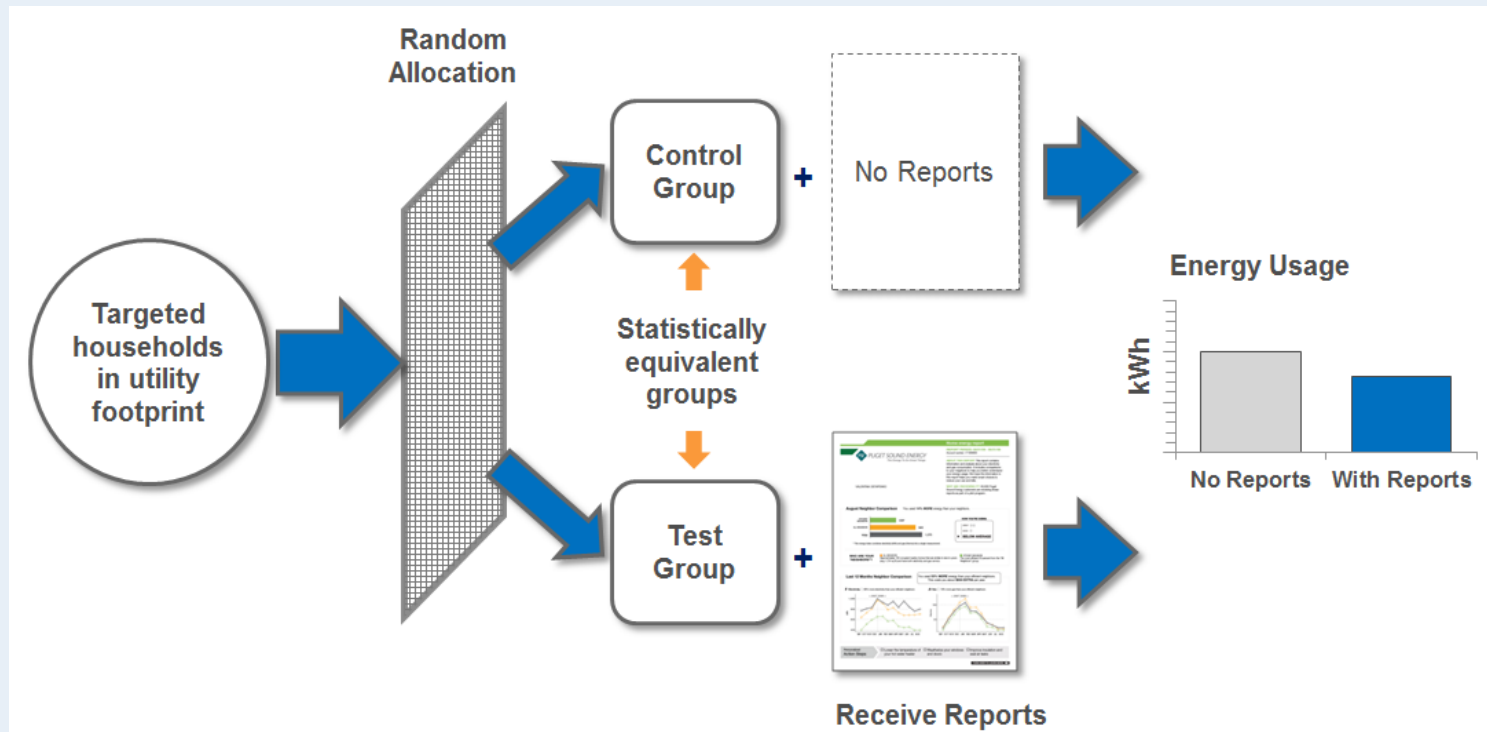
■ SIMILAR HOMES

Approximately 100 occupied, nearby homes that are similar in size to yours (avg 567.042 sq ft) and have electric heat

■ EFFICIENT SIMILAR HOMES

The most efficient 20 percent of similar homes

Experimental Design



...But does it work?

CLARK PUBLIC UTILITIES HOME ENERGY REPORTS PROGRAM



Evaluation Results

Lauren Gage (BPA)

Bill Provencher, Jenny Hampton (Navigant)

Matt Babbitts, Larry Blaufus, and Debbie DePetris (Clark PUD)



PROGRAM DESCRIPTION



The printed home energy report (HER) provides participant customers within the following information:

- How their recent energy use compares to their past energy use
- Tips on how to reduce energy use
- How their energy use compares to that of neighbors with similar homes

Customers are randomly assigned to a participant group or a control group (randomized controlled trial, or RCT)

- 20,482 treatment group customers
- 20,543 control group customers

Evaluation period: Sept 2012-Aug 2014

EVALUATION OBJECTIVES

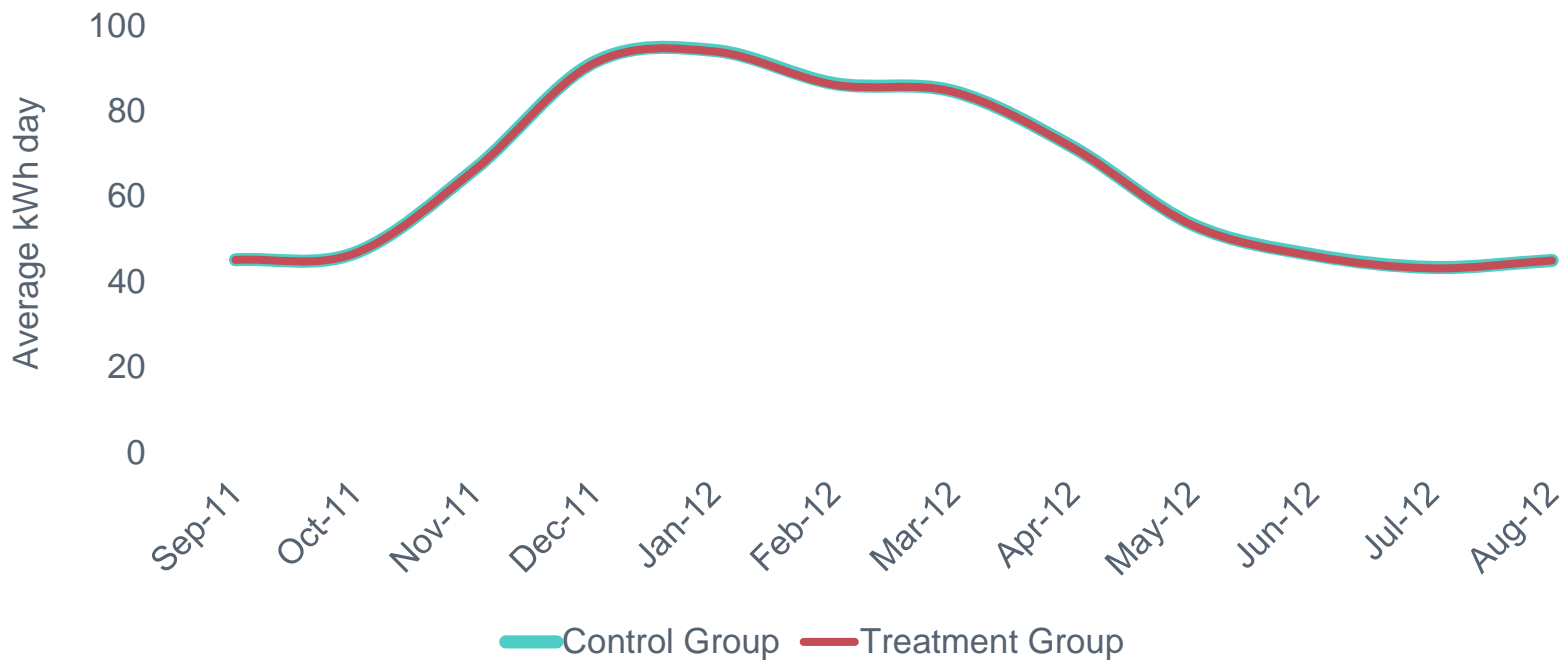
Verify Random
Control Trial
Design

Estimate joint
savings

Estimate Program
Impacts
(kWh, %, annually,
average)

The assignment of customers to the treatment and control groups is consistent with a RCT.

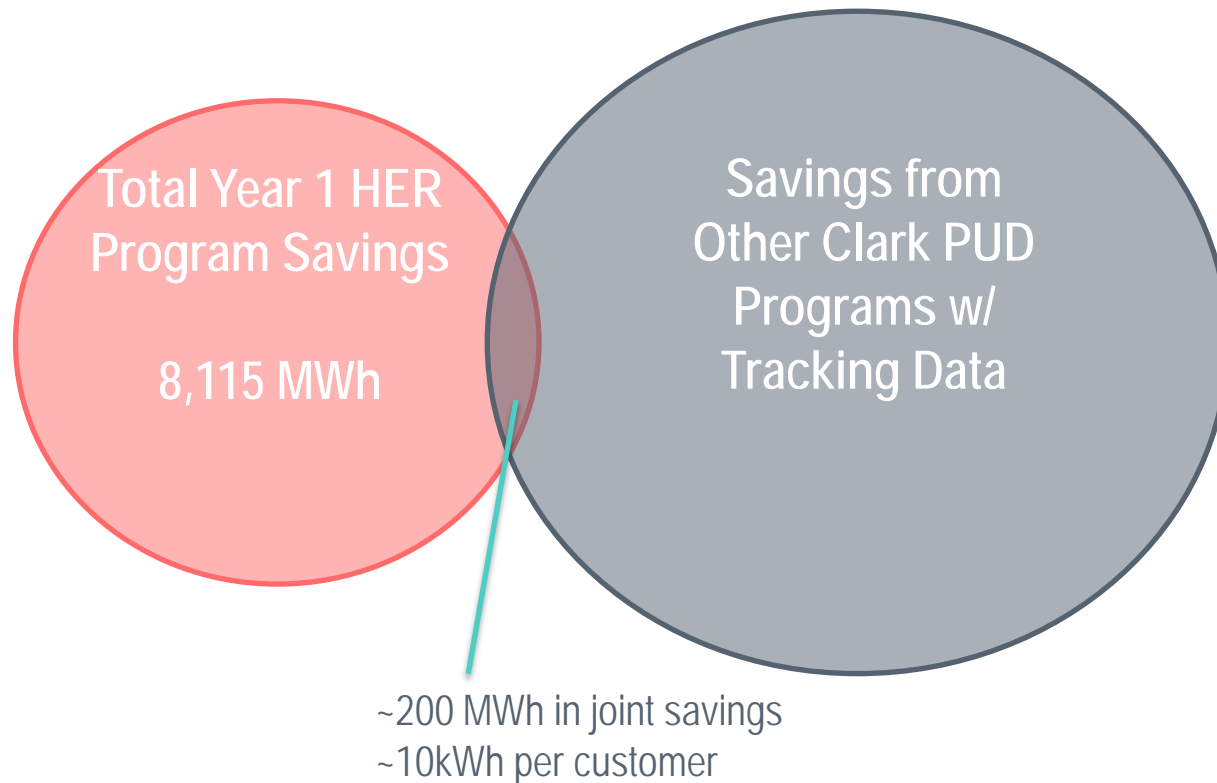
Average Daily Energy Use of the 20,000 customers in both Treatment and Control is essentially the same for the 12 Months Prior to HER Program Implementation.



Source: Navigant analysis of treatment and control customer billing data

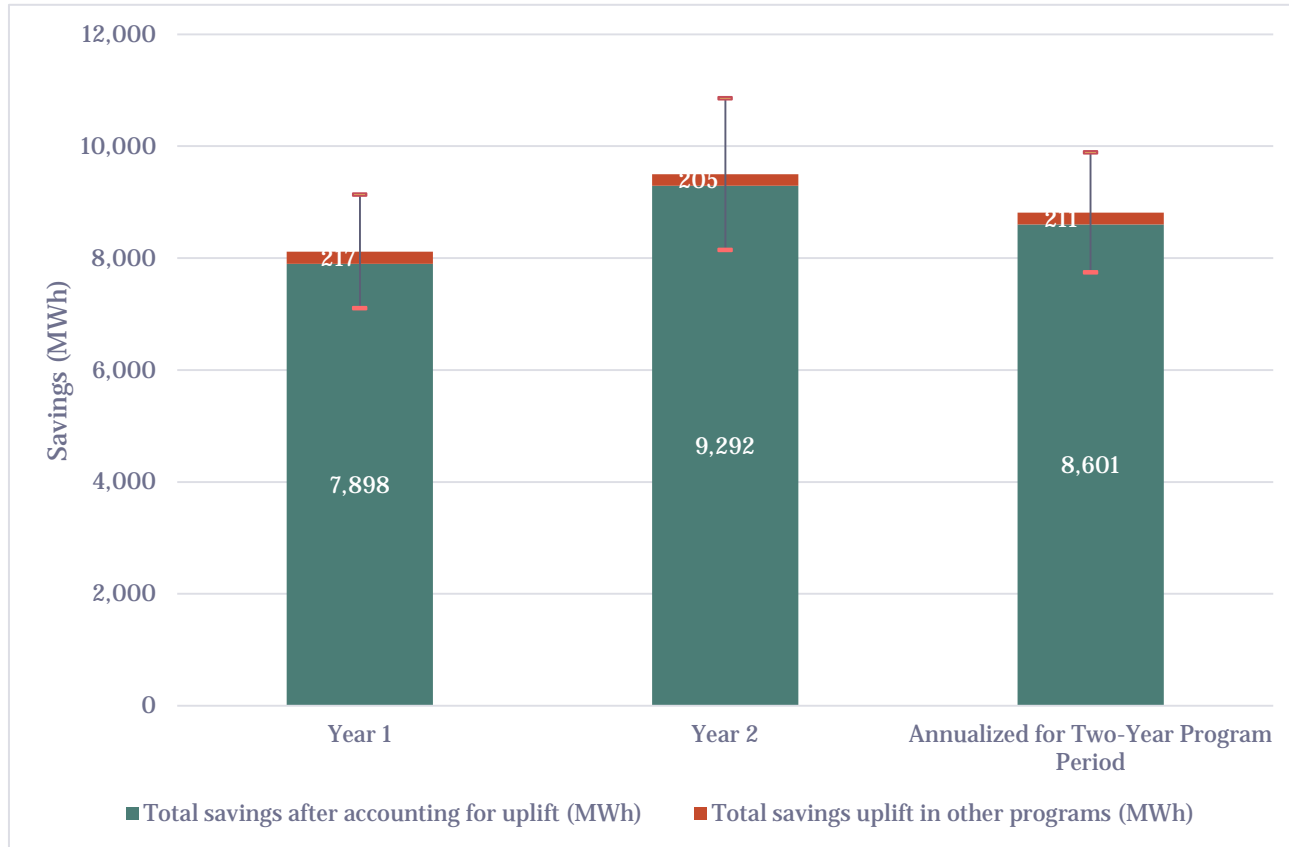
Evaluation Estimated Joint Savings:

HER program drives customers into other Clark PUD EE programs. These “joint savings” were estimated to avoid double counting.



Total Savings Increase from Year 1 to Year 2

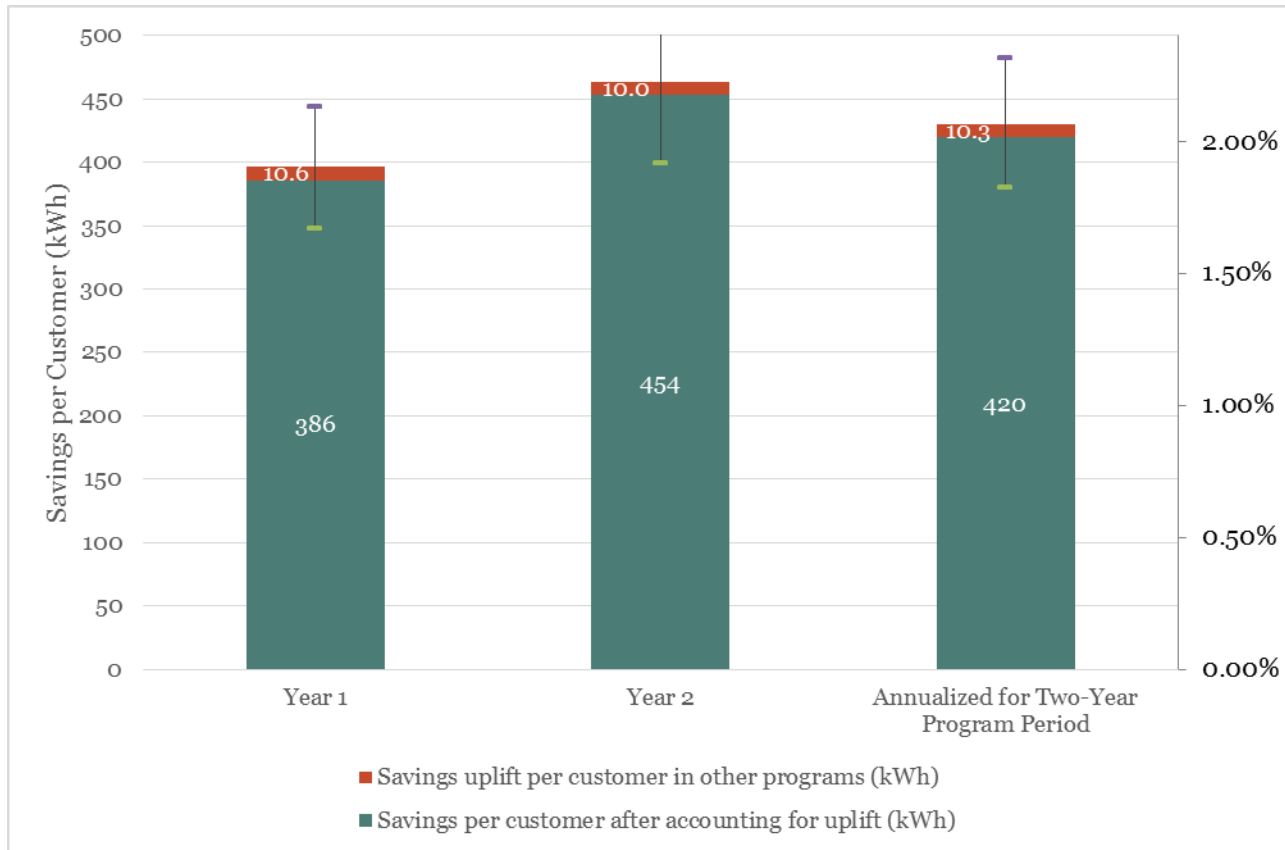
Average program savings are 8,601 MWh for the two-year period



Source: Navigant analysis of treatment and control customer billing data; n= 20,482 treatment and 20,543 control customers

Per Customer Savings

Average savings per customer are 420 kWh (2%) for the two-year period



Detailed Findings

	Year 1	Year 2	Total for Two-Year Period	Annualized for Two-Year Period
Number of Participants	20,842			
Number of Control Group Customers	20,543			
Total savings prior to uplift (MWh) <i>(Standard error in parentheses)</i>	8,115 <i>(617)</i>	9,497 <i>(825)</i>	17,623 <i>(1,305)</i>	8,812 <i>(653)</i>
Total savings uplift in other programs (MWh)	217	205	422	211
Total savings after accounting for uplift (MWh)	7,898	9,292	17,201	8,601
Savings per customer after uplift (kWh) <i>(Standard error in parentheses)</i>	386 <i>(30)</i>	454 <i>(40)</i>	840 <i>(65)</i>	420 <i>(33)</i>
Percent savings per customer after uplift	1.85%	2.18%	2.02%	2.02%

Evaluation found more savings than Clark PUD by OPower

Difference primarily due to number of participant days



Source: Navigant analysis of treatment and control customer billing data; n= 20,482 treatment and 20,543 control customers

KEY FINDINGS FROM THE STUDY

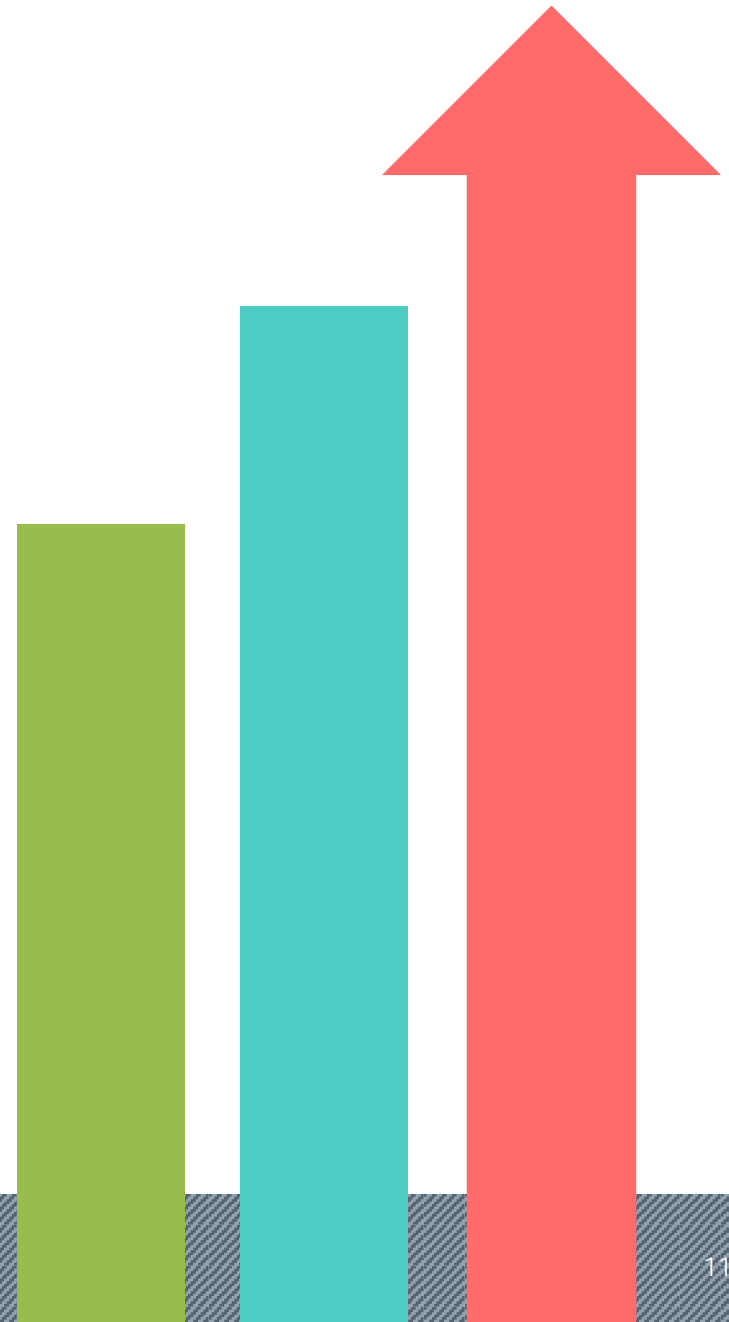
The assignment of customers to the treatment and control groups is consistent with a RCT.

On average, participants reduced their electricity use by about 2%, after accounting for small uplift

Evaluation found slightly more savings than estimated by OPower.

RECOMMENDATIONS

1. For future savings of current program participants, Clark should expect savings close to Year 2 results.
2. For future savings of different participants, additional analysis would be needed to understand expected savings.



There are several national trends to consider when designing an HER program.

Savings results vary by usage tier and region.

In general, HER programs consistently generate between 1% and 2.5% savings per household.

Savings appear to exist for several months after reports stop, but decay over time after that point.

Customer satisfaction with HERs is generally lower than rebate programs; some customers don't like comparisons.

EM&V methods for HER programs are driven by the regulatory environment and utility goals.

