



Home Energy Reports Pilot Progress Report on OPOWER Project

May 10, 2011

Andrew Gibb
Conservation Resources Division

www.seattle.gov/light/conserve

Service Territory and Fast Facts

Seven suburban cities, as well as the City of Seattle

Burien, Lake Forest Park, Normandy Park, Renton, SeaTac, Seattle, Shoreline, Tukwila and some parts of unincorporated King County.

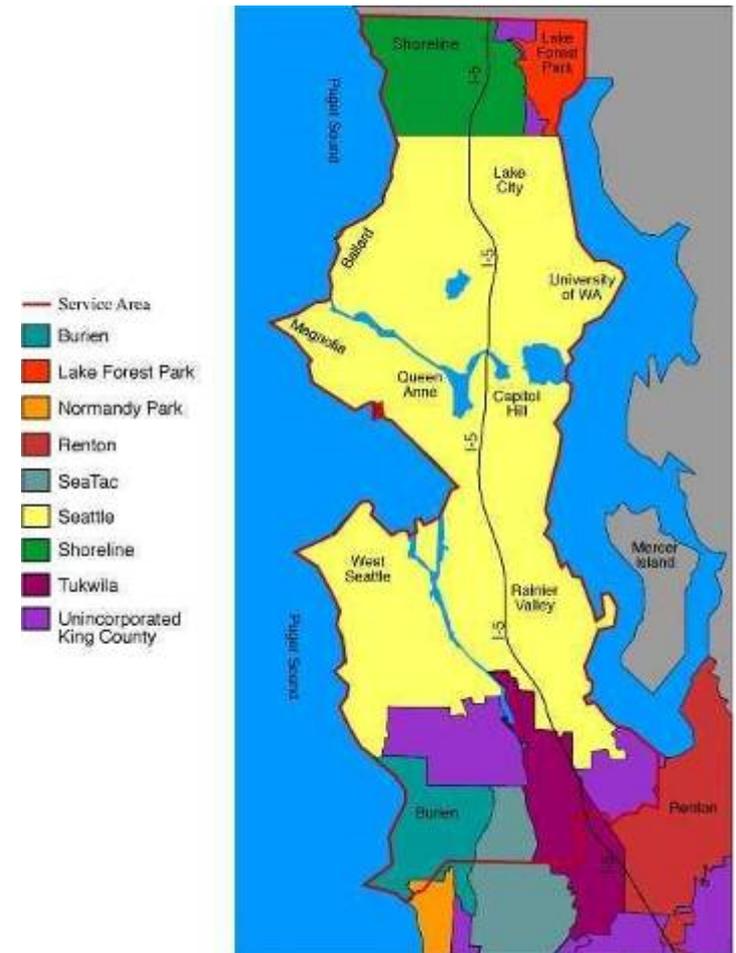
400,000 Commercial, industrial and residential accounts

Over 700,000 people served

\$1 billion budget

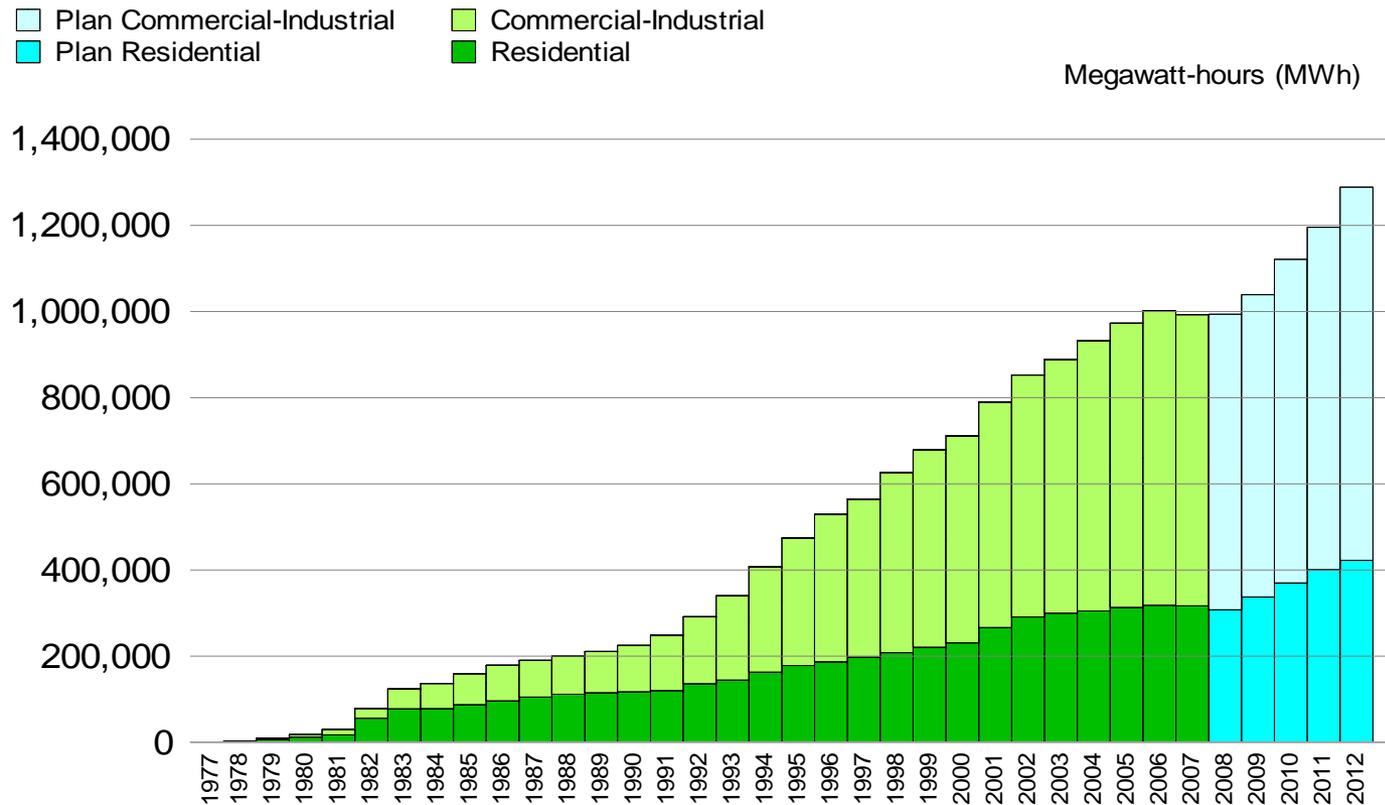
Generate 6,300,000,000 kWh/year

Retail load 9,708,690,000 kWh/year



Ramping Up Conservation

Cumulative Energy Savings



SEATTLE CITY LIGHT'S REASONS FOR PURSUING

Long Conservation History

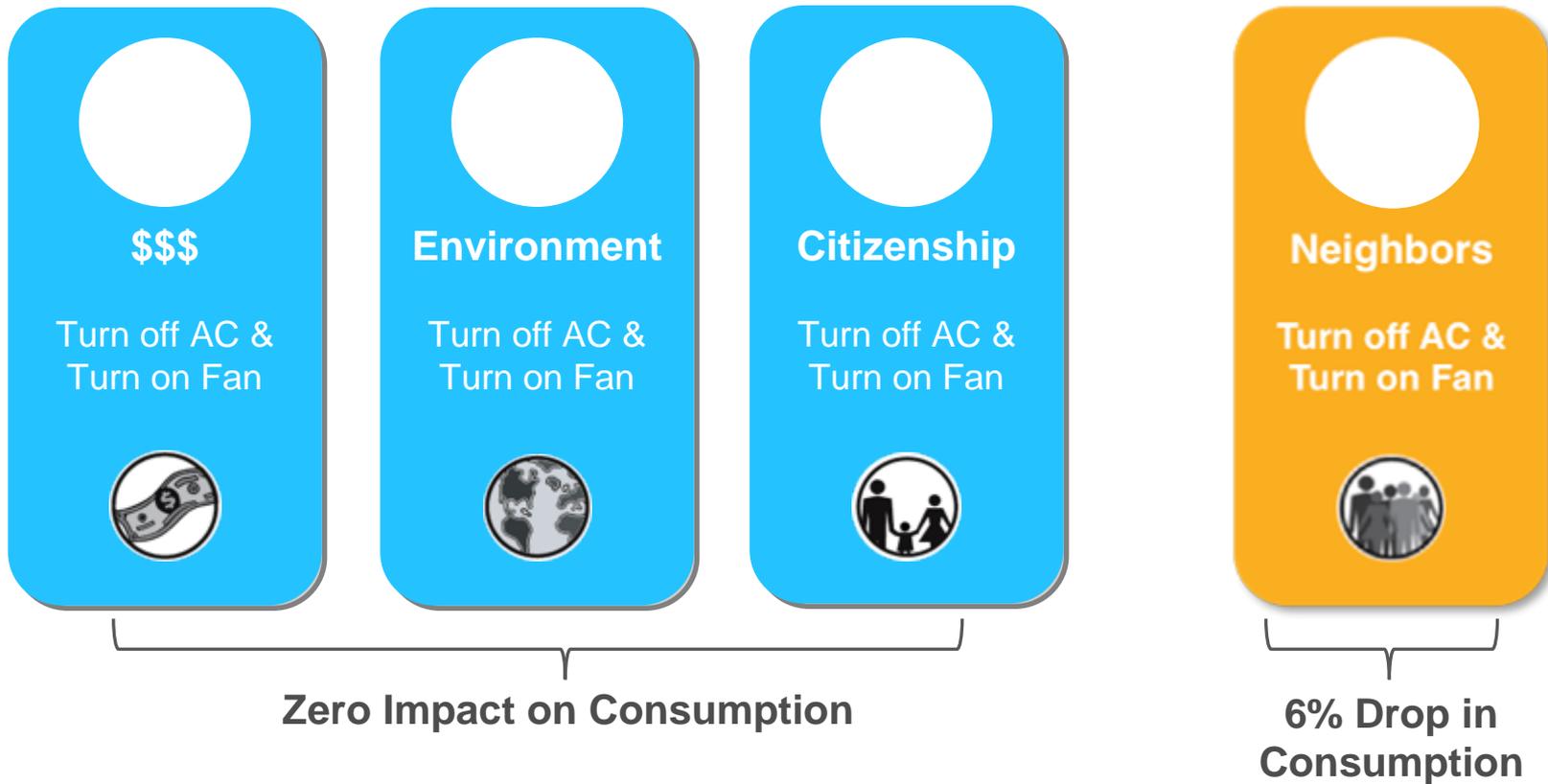
- Programs in place since 1977
- Mature market for measures
- Interest in testing new approaches
- Selected OPOWER

Goals

- kWh savings
- Making energy relevant and interesting to consumers
- A complement to measures – minimizing take back effect.
- Engage customers in a dialogue – for better or worse!



Behavioral Science + Energy Efficiency



PROGRAM OVERVIEW

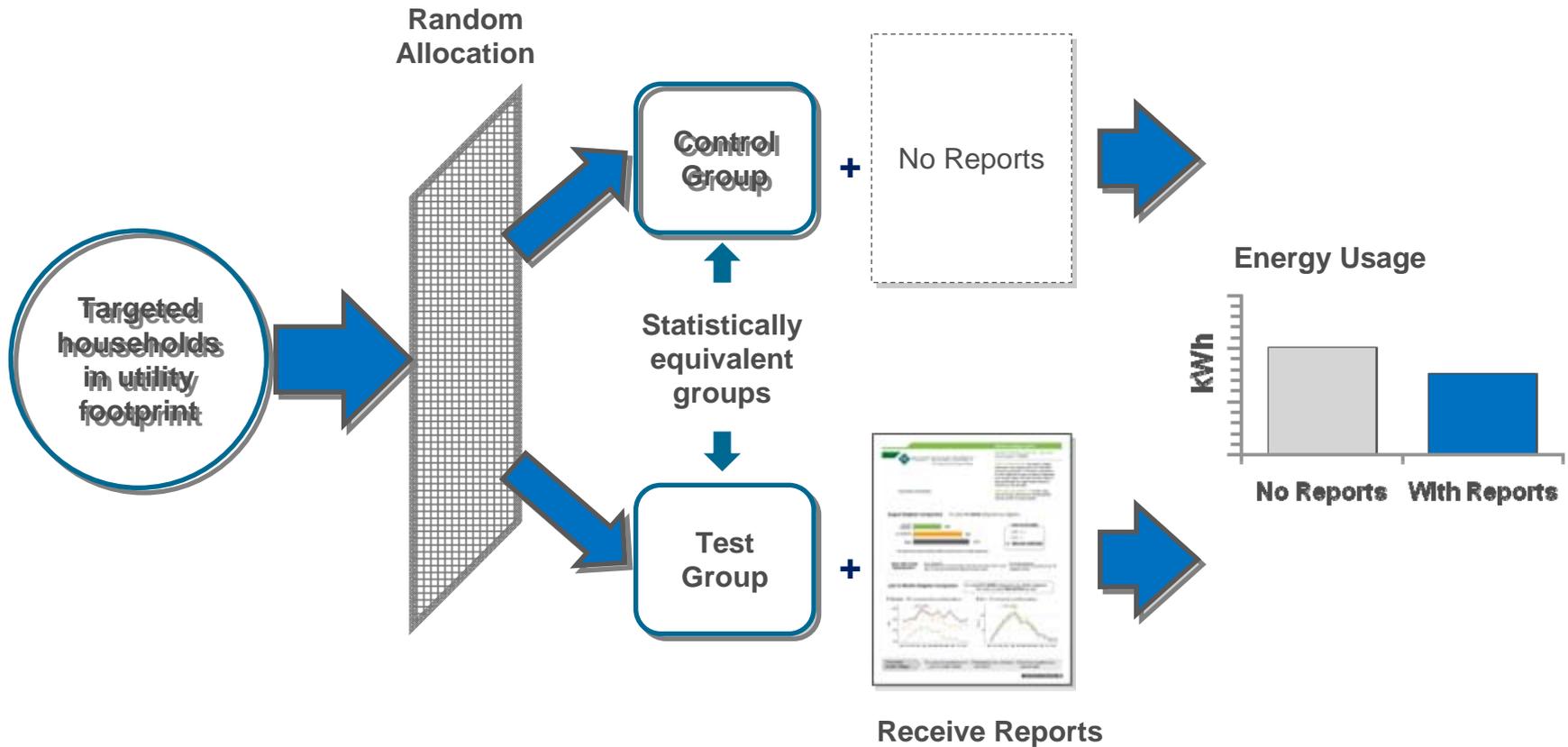
History at Seattle City Light

- Home Energy Reports Program launched in October 2009.
- 20,000 single family residential customers selected, throughout territory.
- 20,000 selected to serve as control – these do not receive reports
- Both groups randomly selected from same population to ensure unbiased selection. Did not include the 25% lowest electricity users.
- Recently, the program was expanded to add 30,000 to the original group.

Preparation

- Utility & third party data collected includes: program participation data; parcel data from the county assessor. Energy consumption data uploaded to OPOWER weekly.
- Conservation messages/tips defined.
- Report layout options available.
- Reports go out shortly after the bills, every two months.

Clearly Defined Measurement & Verification Approach



Residential Efficiency Report

Energy Efficiency Tips Normative Comparison

Action Steps Personalized tips chosen for you based on your energy use and housing profile

Quick Fix **Smart Purchase** **Great Investment**

Last Month Neighbor Comparison You used **27% MORE** electricity than your neighbors.

Category	Usage (kWh*)
Efficient Neighbors	623
All Neighbors	835
YOU	1060

How You're Doing:
You used more than average.
Turn over for easy ways to save.

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

Who are your Neighbors?

- All Neighbors** (Grey bar): Approximately 100 occupied, nearby homes that are similar in size to yours (avg 890.39 sq ft) and have electric heat.
- Efficient Neighbors** (Green bar): The lowest electricity-use 20% of all neighbors.

SAVE UP TO \$165 PER YEAR

SAVE UP TO \$25 PER 100-BULB STRAND PER SEASON

Save up to 40% on appliance energy cost

Seattle City Light Home electricity report

Account Name: [Redacted] Report Period: 06/01/2016 - 06/30/2016

Dear [Redacted],

Last 12 Months Neighbor Comparison This year you're **27% MORE** than your efficient neighbors.

How You're Doing:
You used more than average.

Last 12 Months Neighbor Comparison This year you're **27% MORE** than your efficient neighbors.

Account: [Redacted] **Account Type:** [Redacted]

Account Status: [Redacted] **Account Number:** [Redacted]

Personalized Recommendations | See your monthly electricity use compared to others.

About Your Usage You can reduce your electricity use and save money by making a few simple changes to your home. To see how you can save, click on the recommendations below.

Your Program You are enrolled in the **Smart Choice** program. This means you will receive personalized recommendations based on your electricity use.

Action Steps | Recommendations chosen for you based on your energy use and housing profile.

Quick Fix **Smart Purchase** **Great Investment**

Quick Fix: **Replace incandescent bulbs with LED bulbs.** Replacing incandescent bulbs with LED bulbs can save up to 80% on energy costs. LED bulbs last up to 25 times longer than incandescent bulbs.

Smart Purchase: **Buy energy-efficient appliances.** Energy Star-rated appliances use less energy than standard models. Consider upgrading to a new refrigerator, dishwasher, or washing machine.

Great Investment: **Install a programmable thermostat.** A programmable thermostat can help you save money by automatically adjusting the temperature when you're asleep or away from home.

SAVE UP TO \$165 PER YEAR

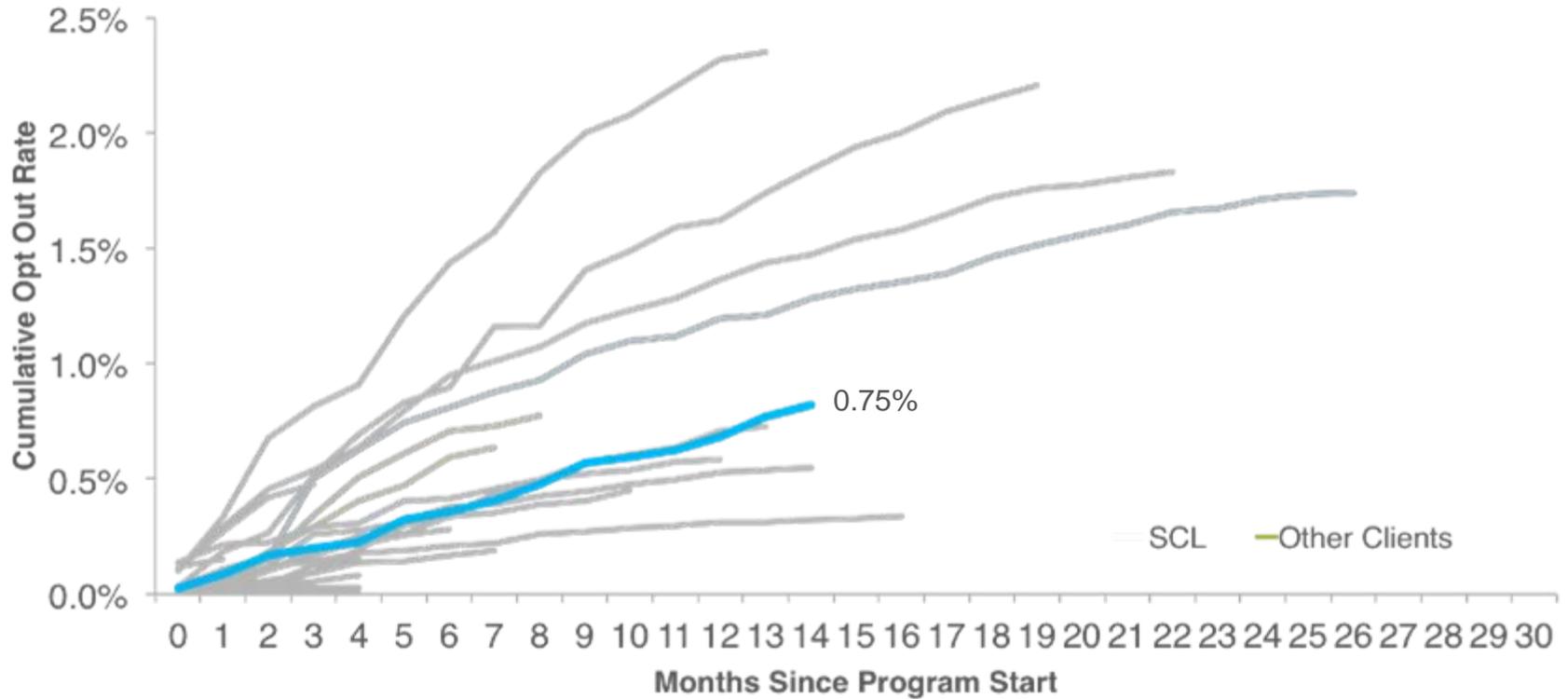
SAVE UP TO \$25 PER 100-BULB STRAND PER SEASON

Save up to 40% on appliance energy cost

NOW **Seattle City Light**

SCL has a relatively low opt out rate

SCL Comparative Opt Out Rate



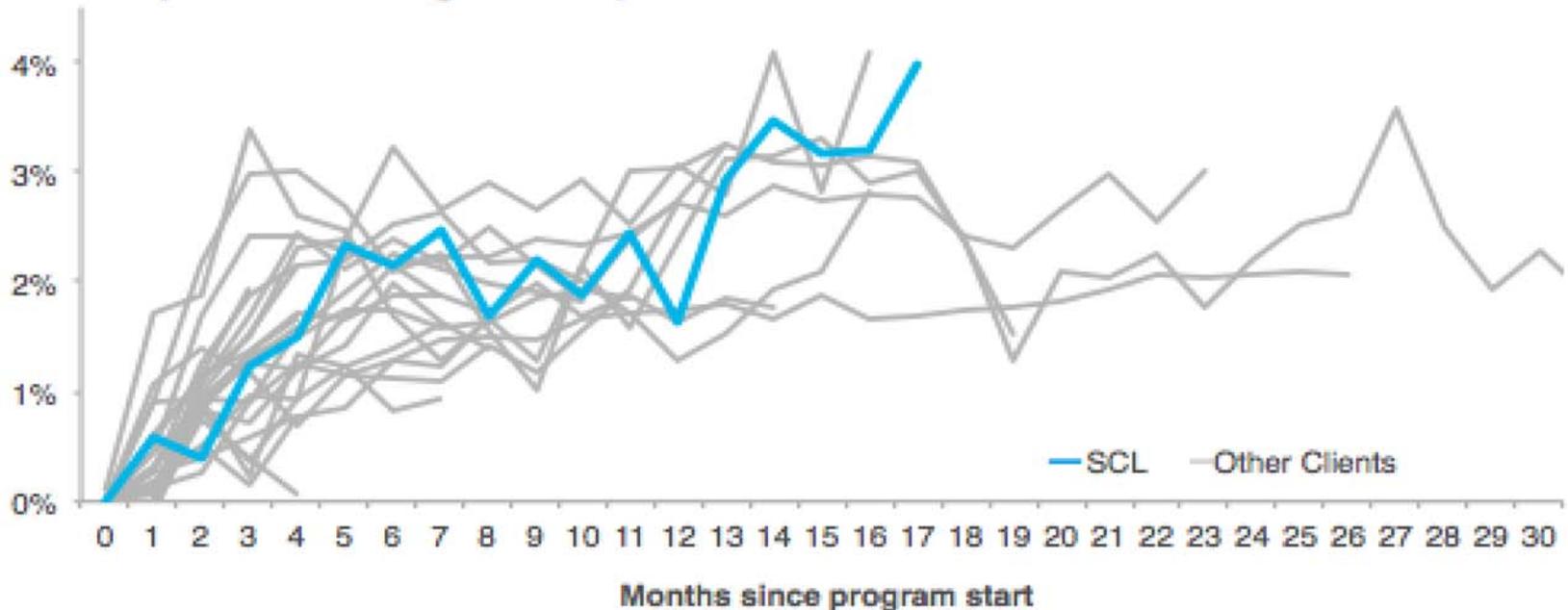
- Over 99% of participants see value in and remain in the program

Source: OPOWER, Data through 12/31/2010

SCL following normal OPOWER performance trajectory

SCL Households saving 2% to 3% in energy savings, recently 4%

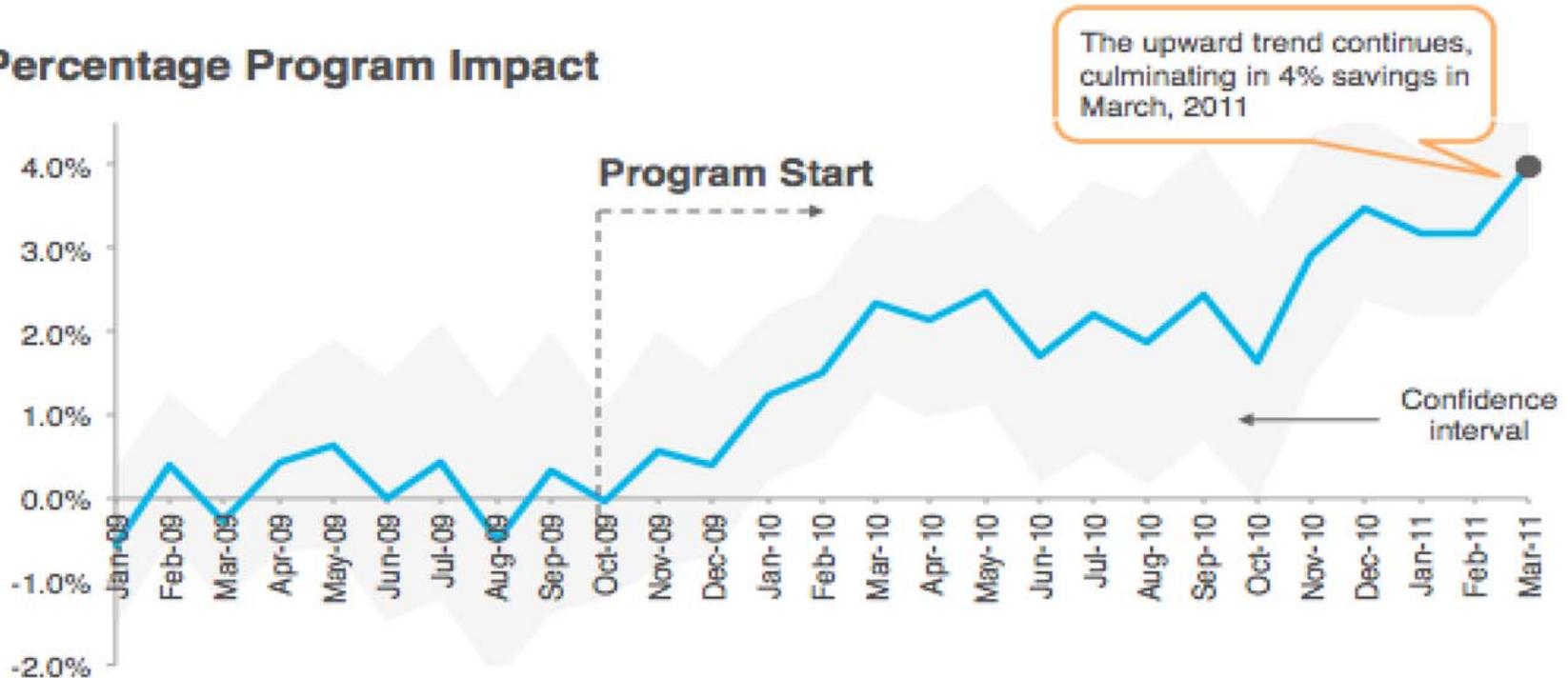
SCL Comparative Program Impact



- OPOWER programs typically ramp up to steady-state savings within 3-4 months, but SCL's program took 5-6 months.
- The program is currently performing at the top of OPOWER's range

Energy savings among the treatment population are sustained and improving

Percentage Program Impact

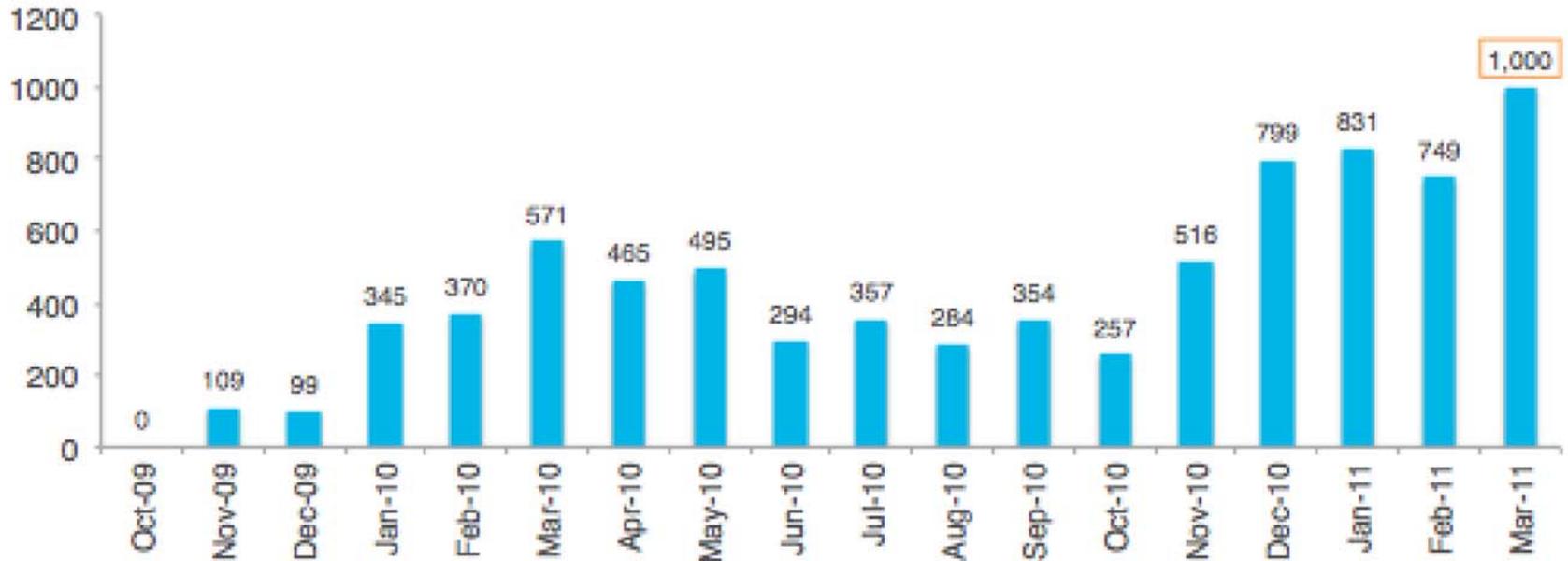


- The pretreatment differences between the test and control group are indiscernible and statistically insignificant
- The post-treatment results demonstrate a clear trend of increasing savings among the test group relative to the control group

Source: OPOWER, Data through 12/31/2010

Collective savings among the recipient group reached 1 GWh in March alone

Overall Program Impact (MWh)



- This translates into roughly 380 kWh savings per household per annum

CURRENT STATUS AND NEXT STEPS

- Program performing at its highest rate yet to date. Per household savings reached 55 kWh/month in March.
- Program savings since inception: 7.9 million kWh.
- Expanding the program to an additional 30,000 customers
 - Includes Community Power Works segment
- Expand Web engagement possibilities
- Try new approaches: post-its, program promotions
- Third party evaluation needed to confirm savings, persistence.
- Pursuing credit/reimbursement with BPA.



LESSONS LEARNED AND CONCLUSIONS

Lessons Learned

Your utility may not be ready - procurement, legal, communications, executive.

A strong advocate is needed.

An enthusiastic conservation-focused call center is very important.

Some customers will be unhappy, but often can be talked through. Many respond.

Conclusions

Normative messaging seems effective in driving energy savings.

Savings appear significant and cost effective.

Public utilities are well positioned to consider such an approach – seems a good fit.



Contacts

Andrew Gibb
Energy Planning Analyst Supervisor
Seattle City Light
206-684-3466
andrew.gibb@seattle.gov

Lars Henrikson
Energy Planning Analyst
Seattle City Light
206-615-1683
lars.henrikson@seattle.gov



Manage, then Measure: The PUD Energy Challenge

Laura McCrae :: Snohomish County PUD



Choosing an Approach

- Late 2008 – Early 2009 Situation:
 - In midst of SAP implementation
 - Behavior Change still new in the EE world
 - Successful residential EE programs and campaign
- Wants:
 - Inclusive of all customers
 - Approachable
 - Adaptable and scalable
 - Easily implementable

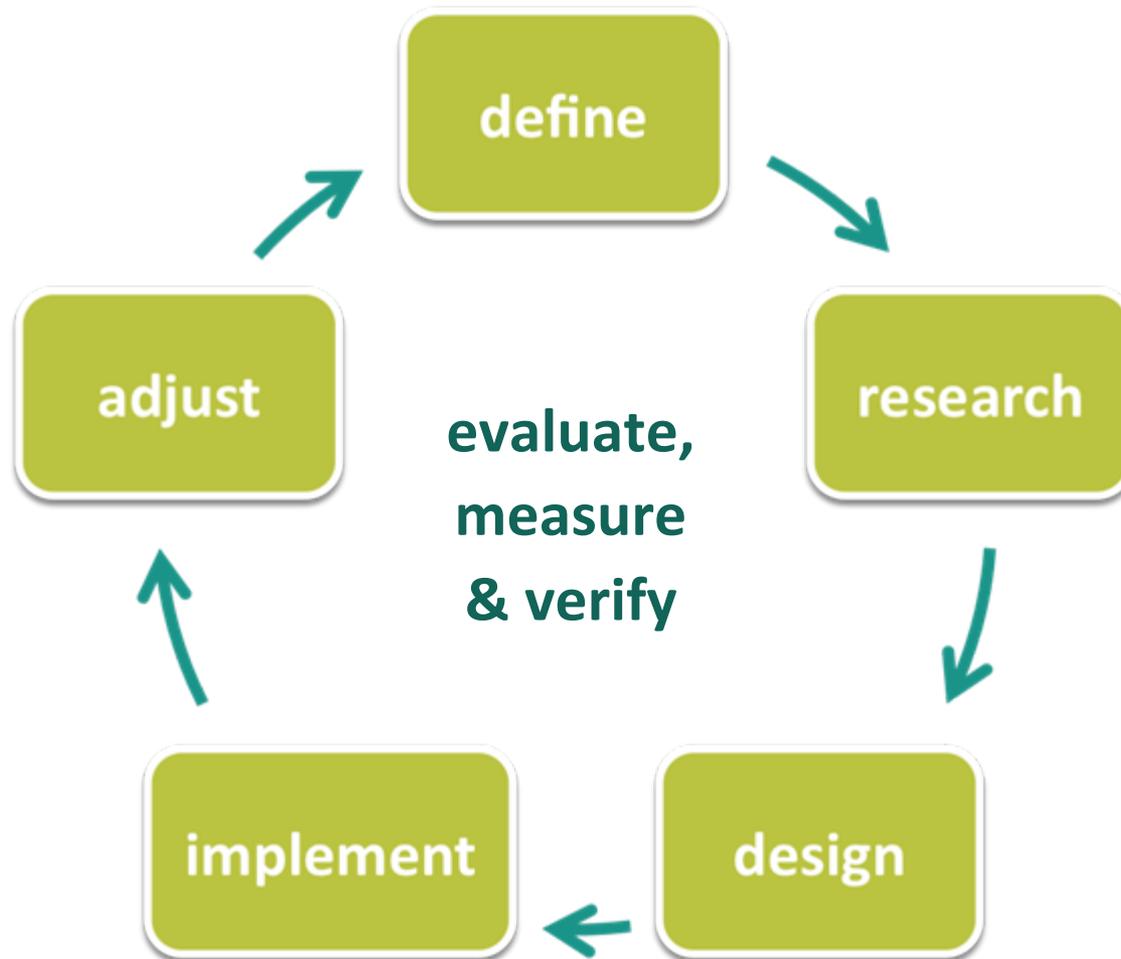


The PUD 10% Energy Challenge

- Community wide invitation to voluntarily reduce use by 10%
- Ongoing, two-way dialog with customers about their energy use to:
 - stimulate interest in energy efficiency;
 - move customers from concern to action;
 - influence behavior change and utility program participation.

Join the
PUD
energy
CHALLENGE

Adaptive Management Model

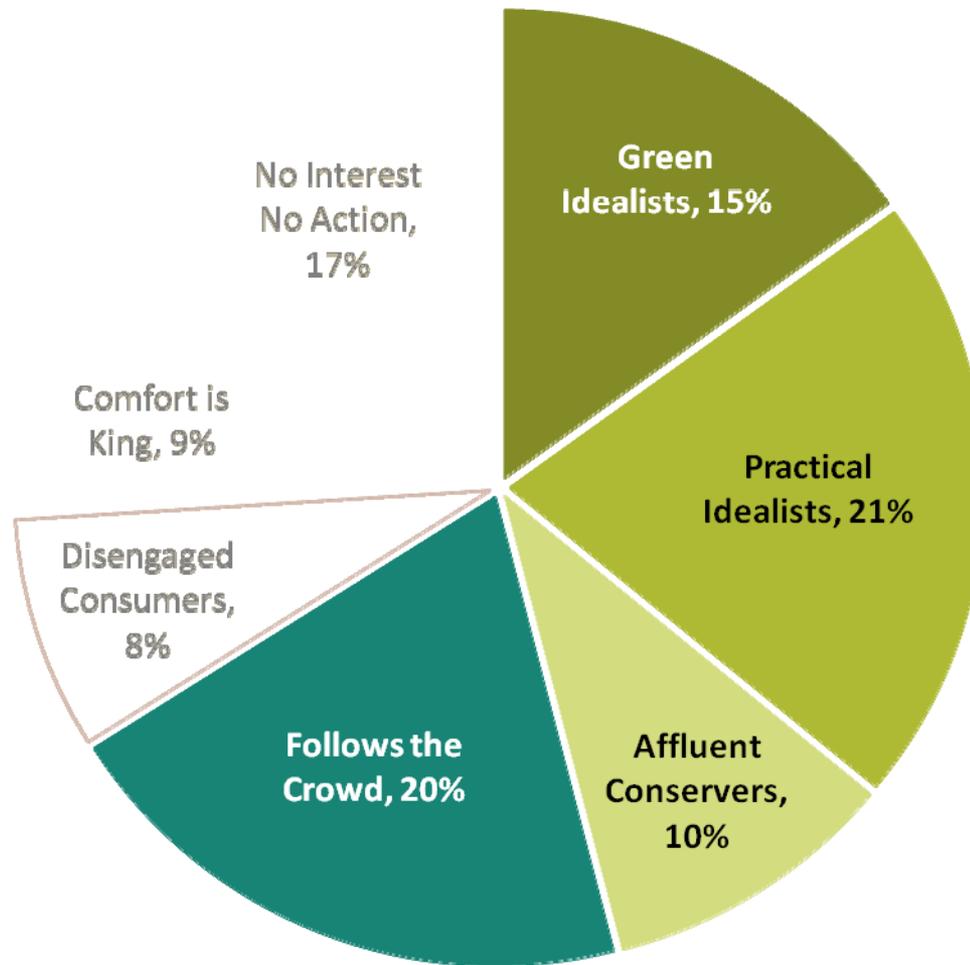


How Are We Measuring Success?

- Awareness
- Participation
- Engagement
- Customer Satisfaction
- Energy Savings

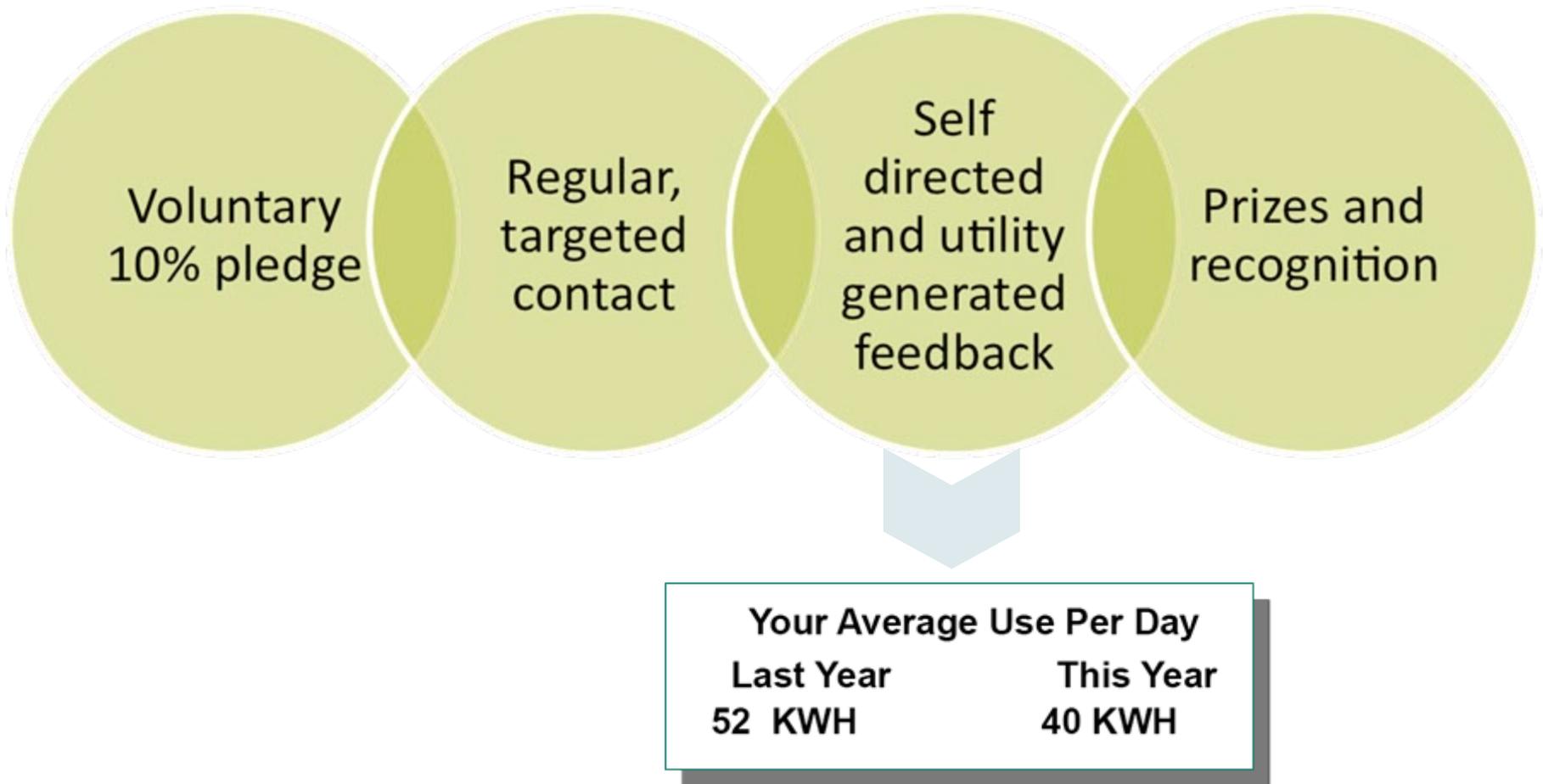


Residential Target Market



Source :: PUD Segmentation Study, 2008. Conducted by Momentum Research and in coordination with Puget Sound Energy, Tacoma Power and the Bonneville Power Administration

Residential Customer Experience



Residential Participation (April 2011)

- Nearly 3,500 residential pledges
- 4,375,000 kWh potential savings
- Representative of our customer base

Home Type	
Single Family	75%
Condo / Townhome	8%
Mobile / Manufacture	5%
Apartment	8%
Duplex / Triplex	3%
Other (houseboat, RV, etc)	1%

Heating Fuel	
Space - Electric	51%
Space - Natural Gas	37%
Space - Other	12%

Water - Electric	56%
Water - Natural Gas	40%
Water - Other	4%

Residential M&V Plans

- Based on Northwest regional protocols
- Evaluation of 2009 vs. 2008 (Jul-Dec)
 - 50% of participants reduced their consumption
 - Non-weather adjusted, using average kWh/day
 - Overall, ~1% decrease in gross consumption, compared to ~0.5% increase in control group consumption
- 2010 Evaluation underway now
 - Reviewing individual participant changes
 - Reviewing program as a whole:
 - Tracking participants in 3 groups
 - Comparing to control groups

Business Target Market

- Key accounts
- Segments with high conservation potential
- Green-aware businesses
- Community-linked organizations



Business Quarterly Reporting



Snohomish PUD Commercial & Industrial Energy Efficiency Services
PUD Energy Challenge :: Quarterly Progress Report

Customer
 Facility Address
 Everett

Account: 123456789
 Meters: 123456
 Square Feet: 500,000

In the past quarter your

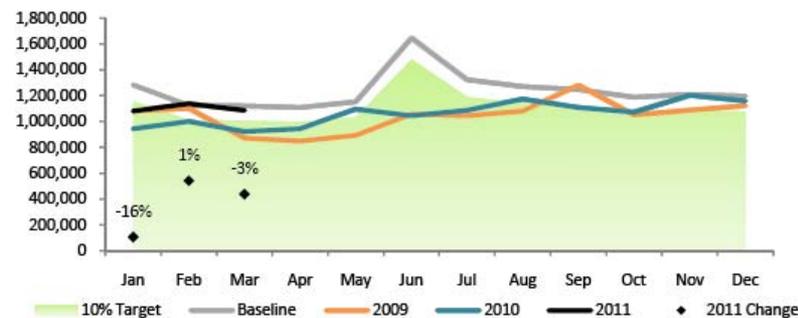
power use decreased by
6.4%

enough electricity to power
18.4 homes

CO2 emissions decreased by
32 tons

As compared to your Baseline (2006-2008 average consumption).

Total kWh Used, by Meter Read Month



Change in kWh Use, by Quarter*



	Baseline YTD ('06-'08 Avg)	10% Target YTD	2010 YTD	2011 YTD	Change**	
Total kWh/year***	3,530,400	3,177,360	2,865,600	3,304,800	-225,600	-6.4%
Avg. Monthly Demand	6,627	5,964	5,053	6,060	-567	-8.6%
Avg. kWh / ft ²	7.06	6.35	5.73	6.61	0	-18.8%

	Baseline YTD ('06-'08 Avg)	2010 YTD	2011 YTD	Change**	
Energy Costs	\$204,166	\$177,696	\$211,911	+ \$7,744	+ 3.8%
Demand & Power Factor Costs	\$21,757	\$17,561	\$22,002	+ \$245	+ 1.1%
Estimated City Taxes	\$10,167	\$8,787	\$10,526	+ \$360	+ 3.5%
Total Costs	\$236,089	\$204,043	\$244,439	+ \$8,349	+ 3.5%
Avg \$ / ft ²	\$0.47	\$0.41	\$0.49	+ \$0	

* As compared to Baseline

** Last 12 months compared to Baseline

*** Includes all meters noted above

Business Participation :: 130 locations

FLUKE



Business 10% Achievers

Business	2010 Change
Snohomish PUD	10%
Philips Healthcare	17%
Alderwood Business Center (KM)	15%
Creekview Building (KM)	34%
Intermec	30%
Highland Elementary School (LSSD)	19%
QFC Claremont Village	16%
QFC Mountlake Terrace	15%
Stockpot	11%

Together we saved **8.3 million kWh**

Contact Info

Laura McCrae

Principal Utility Analyst
Energy Efficiency Planning & Evaluation
Snohomish County PUD

lmmccrae@snopud.com

www.jointhePUDchallenge.com



New Custom Programs: Evaluated Custom Program and Behavior Based Energy Efficiency

May 2011

Lauren Gage

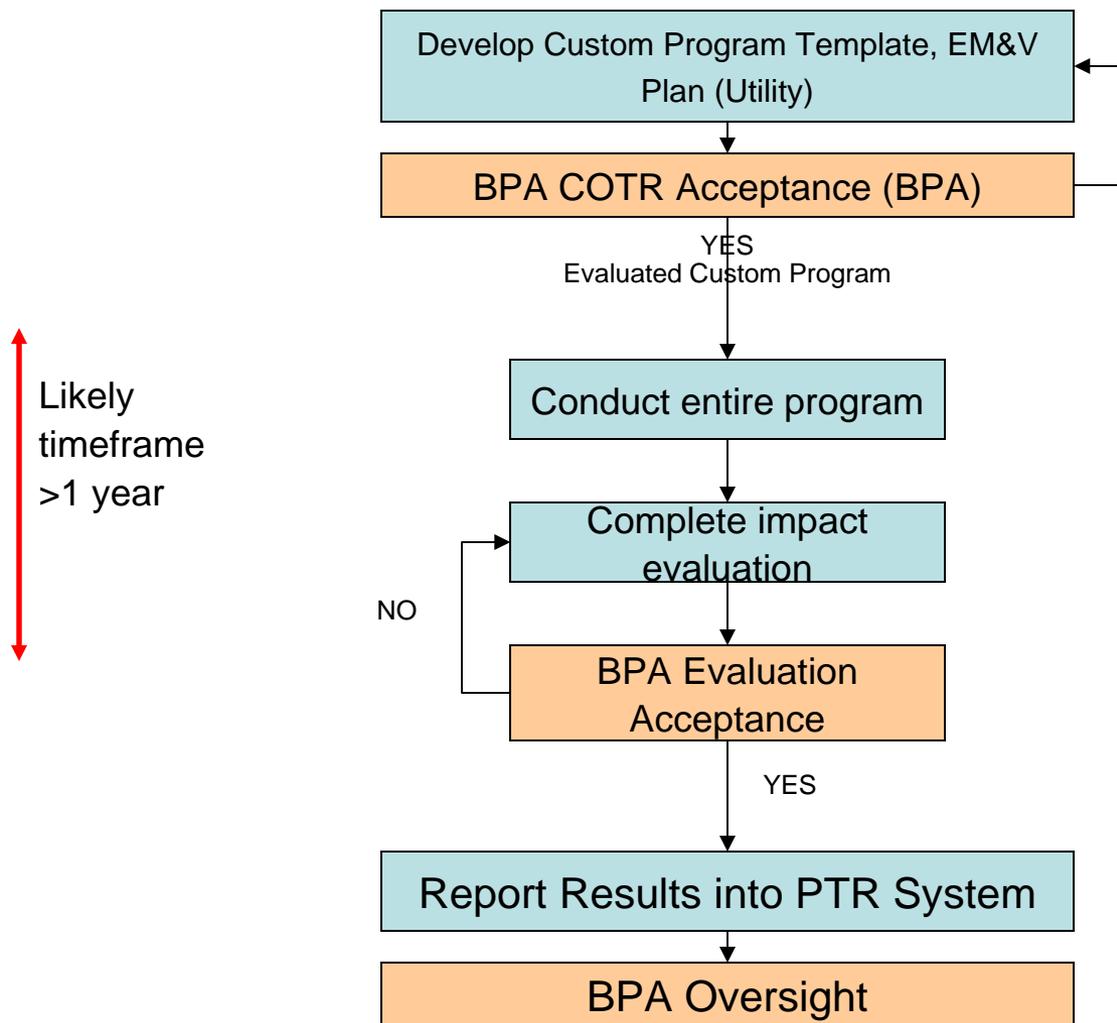


Goal of the Presentation

"If I am a BPA customer and I want to have the savings from my BBEE program booked, what do I need to know?"

“What are key evaluation considerations?”

Evaluated Custom Program: Process Flow



Evaluated Custom Program Steps

1. Utility submits request that includes
 - Custom program template
 - Results from the custom project credit calculator (CPCC)
 - An evaluation, measurement and verification (EM&V) plan
 - (Note: Program must be planned as TRC cost-effective on prospective basis)
2. BPA approves evaluation plan
3. Utility conducts program
4. Utility manages/conducts impact evaluation
 - Evaluation is ex-post evaluation (BBEE for residential is likely a billing analysis)
 - Evaluation must document the program as cost-effective (TRC > 1.0)
 - (Note: Only savings produced after the evaluated custom program is approved by BPA are eligible for reimbursement.)
5. Program-level savings are reported after evaluation is complete and savings are shown as cost-effective
 - Custom Project Credit Calculator used to calculate reimbursement, based on start date of program
6. BPA approves evaluation
7. Reimbursement is available for savings produced after the evaluated custom program is approved by BPA

Details: Custom Program Template – Program Information

Serving Utility:	
Utility Contact Name	
Utility Contact Phone	
Utility Contact email	

Program Title:	
Sector:	
Planned Program Start Date:	
Planned Program End Date:	
Expected Funding Source (s):	
Description of the program	

Program Costs Beyond measure costs	(\$/year)	
Year 1		
Year 2		
Year 3		
Year 4		
Year 5		

Details: Custom Program Template – Measure Information

From CPCC

Calculator File Name:
MEASURE INPUTS FROM CREDIT CALCULATOR
New Construction/Major Renovation/Major Remodel (ie, NOT Retrofit)?
Sector
Category
Subcategory
Energy efficiency activity/load profile that best matches this measure
Measure name for this specific measure (include useful identifying information)
Annual Site Energy Savings (kWh/yr) for this measure
Total Measure Cost (\$)
Enter Change in Measure O&M Cost (Savings -\$ or Increases +\$)
Enter Measure Annual Non-Energy Benefits

RESULTS FROM CREDIT CALCULATOR
Potential Reimbursement (\$/kWh)
Default Measure Life
Annual Energy Savings @ Busbar
Annual Energy Cost Savings
Simple Payback
Present Value of Change in Operation and Maintenance Cost
Present Value Non_Energy Benefits
Present Value Energy Savings
Measure Benefit/Cost Ratio
BPA Measure Reimbursement

From Custom Project Template

DETAILED DESCRIPTIONS OF CALCULATIONS
Measure Baseline Description:
Proposed Measure Description:
Energy Savings Estimate:
Proposed Measure Costs:
Summary of Measurement and Verification Plan:
Estimated Change in O&M Cost and/or
Estimated Non-Energy Benefits:

New Information Required

Expected Units Installed - Number of Measures expected per year of program operation
Year 1
Year 2
Year 3
Year 4
Year 5

Details: EM&V Plans

- Key program requirements
- General research questions to be addressed in the evaluation
- Program participants and selection criteria
- Baseline determination and estimation
- Cost-effectiveness analyses
- Data to be collected during the evaluation
- Data cleaning methods
- Analytical approaches for estimating gross savings
- Method for determining persistence of program
- Method for implementation of the evaluation (e.g., third party contractor)
- Schedule with key milestones for the evaluation

RTF Protocol

- Development of an evaluation plan
- Participant and comparison group selection
- Collect sufficient and relevant data
- Conduct data cleaning consistent with best practices
- Estimate program savings
- Estimate savings from other non-RBBP programs
- Estimate the persistence of savings

Evaluation Key Considerations

- How will you structure your evaluation?
 - Who writes the plan? Who completes the evaluation?
 - Consider the size of the program and likely reimbursement against likely evaluation costs.
- Are customers utility-selected or self-selected?
 - Consider implications for a control group.
- Do you have sufficient data?
 - Billing, weather, participant, control group information, other program participation.
- How will you remove any double-counted savings?
- How will the evaluation consider persistence?

References

- RTF Protocol on Behavior-based savings
http://www.nwcouncil.org/energy/rtf/measures/protocols/res/RBBP_Methods_Final_RTFAproved_030210.doc
- Implementation Manual language
Section 4.1 and 4.2
http://www.bpa.gov/Energy/N/pdf/Implementation_Manual.pdf
- Custom Program Template
<https://www.ptr.nwcouncil.org/specs/CustomProgramTemplate.xls>

Questions?

Contact

Lauren Gage

503-230-4961

lsmgage@bpa.gov

Or contact your Energy Efficiency
Representative