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April 3, 2018

MEMORANDUM

TO: **Power Committee**

FROM: **Kevin Smit**

SUBJECT: **Analytical Results of Action Item MCS-1**

BACKGROUND:

Presenter: Kevin Smit, Senior Energy Efficiency Analyst

Summary: The Council will be briefed on analytical results of action item MCS-1 from the Seventh Power Plan Action Plan. MCS-1 is titled "Ensure all Cost-Effective Measures are Acquired." The focus of MCS-1 is on identifying segments of the population that are currently underserved by existing efficiency programs and subsequently identifying ways (i.e., program improvements) to improve participation from those segments.

MCS-1 calls for "Bonneville and the regional utilities to determine how to improve participation from any underserved segment." The first part of this effort is to identify, using data, which markets are underserved and by how much. In essence, this means identifying the gaps in our regional energy efficiency efforts. Reducing or eliminating these gaps is important for ensuring that the region achieves the energy efficiency goals identified in the Plan.

Council staff have stepped in to coordinate the efforts to identify the underserved markets, including the formation of a regional working group who agreed to conduct research in 2017 and provide the results to Council Staff to collate and summarize. Members of the working group include BPA, Energy Trust of Oregon, several investor-owned utilities, and several

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public utilities. The working group analytical work has been completed and the results have been compiled into a report. Council staff will present a summary of these results.

One of the key results of the effort was to develop a new methodology for analyzing proportional savings for specific demographic groups. The Northwest Energy Efficiency Alliance (NEEA), was especially helpful in working through the methodology and data source requirements. The methodology was set up to answer questions like: "is this demographic (e.g., low income) acquiring conservation at similar rates as their population?" For example, if a low income category makes up 20 percent of a service area population, are they participating in 20 percent of the conservation? One key finding of the first phase of MCS-1 is that data are available to do gap analysis. Demographic data on the service-territory population are readily accessible and can used, along with program participant data, provided they are linked by site address.

The analysis results show that in general the regions' utilities are doing a good job of reaching the wide variety of their customer demographic groups. For some of the demographic groups that have targeted programs (e.g., low income, manufactured housing), the results show that these groups are frequently well-served as long as the programs remain in operation. The multifamily housing segment appears to be underserved, because conservation participation rates of this segment were consistently lower than the relative populations. Results for other demographic groups including rural customers, rural utilities, language, commercial buildings, and others will be presented.

While some regional findings and observations can be made, the results are most applicable to individual utility service territories. The caveats and limitations to this effort will also be presented.

Relevance: This action item is from the Model Conservation Standards (MCS) section of the Action Plan. MCS-1 calls for a deliverable (report) containing analysis results.

Workplan: A.1.1 Coordinate with regional entities (e.g. NEEA, BPA, utilities, regulators) to ensure the regional goal for cost-effective conservation is achieved.
A.1.3 Work with regional entities to ensure the model conservation standards are implemented.

Background: The Council's Seventh Power Plan includes numerous action items as part of the Action Plan in Chapter 4, as well as the Model Conservation Standards found in Chapter 17. MCS-1 focuses on "hard to reach" or "underserved" energy efficiency markets, and received significant attention during the development of the Action Plan. Council members, staff, and many constituents provided input into this action item.

MCS-1 Update

7th Plan Action Item on Energy Efficiency for Hard-to-Reach Markets

Council Meeting

Kevin Smit
April 10, 2018

Northwest Power and Conservation Council

SEVENTH NORTHWEST POWER PLAN

Agenda

MCS*-1 – "Ensure All Cost-Effective Measures are Acquired"

- Goals of MCS-1
- Context
- Methodology
- Summary of Results

*MCS stands for "Model Conservation Standards"

Northwest Power and Conservation Council

SEVENTH NORTHWEST POWER PLAN

Goal of MCS-1

- Secure proportional savings from "underserved" populations
  - Identify and fill possible gaps in regional EE program coverage
- Two key parts to MCS-1:
  - Determine, using data, what segments are underserved and by how much (2017 Report)
  - Determine how to improve participation from underserved segments

"Bonneville and the regional utilities should determine how to improve participation in cost-effective programs from any underserved segments." (MCS-1, first paragraph)

MCS-1 – A Few Terms

- Terms
  - Hard to reach
  - Underserved
  - Gaps
  - Untapped potential
  - Equity

For our purposes, we use these interchangeably. Depends on perspective

What Segments Were Investigated?

- MCS-1 listed several possibilities:
  - Low income
  - Mid-income
  - Customers in rural regions
  - Small business owners, tenants
  - Multifamily tenants
  - Manufactured home dwellers
  - Small and rural utilities
- But, just because it is listed in MCS-1, doesn't mean it is underserved. Use data to determine/show if any of these are underserved

Data Sources (Residential)

- Participant Data (Utility EE Program Data)
  - Measures adopted
  - Energy Usage
  - Meter numbers
  - Addresses
  - House type?

Key Link: Site Address

- Population Data (Typically Non-Utility Data)
  - County Assessor data
    - House Type
    - Year built
    - Heat fuel type
    - Heating system
    - Size of home
    - Address
  - Experian™ data
    - Income levels
    - Ethnicity
    - Number of people in home
    - Address
    - Etc.
  - NEEA...

Strategy for 2017 Report

- Learned early on that there won't be one large regional study to identify all the gaps
  - Primary concern is sharing customer-specific data
- Individual utilities in the working group conducted their own studies and shared the results
  - Important to recognize utility-specific gaps also
- Council staff collected the results and produced report

Working Group Members

("Coalition of the Willing")

- BIG thanks to the working group members
- Most of the region was included
  - Over 85% of region
  - BPA "covered" many smaller utilities
- NEEA provided data support and methodology guidance

Participating Entities:
- Puget Sound Energy
- BPA
- Energy Trust of Oregon
- Seattle City Light
- Snohomish PUD
- Ravalli Electric
- Tacoma Power
- Idaho Power
- PacifiCorp*
- Northwestern Energy
- NEEA (data support)

* Has done work on their own but did not provide data for the regional report.

But First, Some Caveats

- Timeframe: 2014-2016
- Only programs/measures with addresses
  - Missing measures from upstream delivery (e.g. significant light bulb & showerhead savings 2014-16)
- A "one-touch" analysis
- Differing methods and data sources between program operators; could not aggregate
- Results are applicable to the authoring organization
- Most did not account for relative savings potential among markets

Results Categories

Income

Housing Type

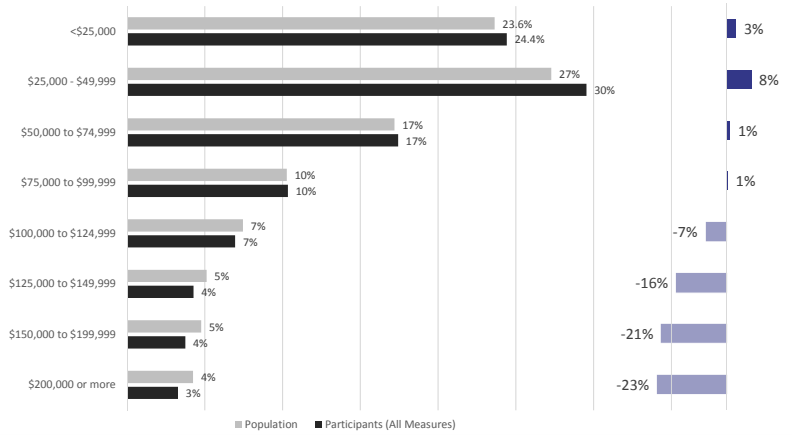
Urban/Rural

Home Ownership

Commercial

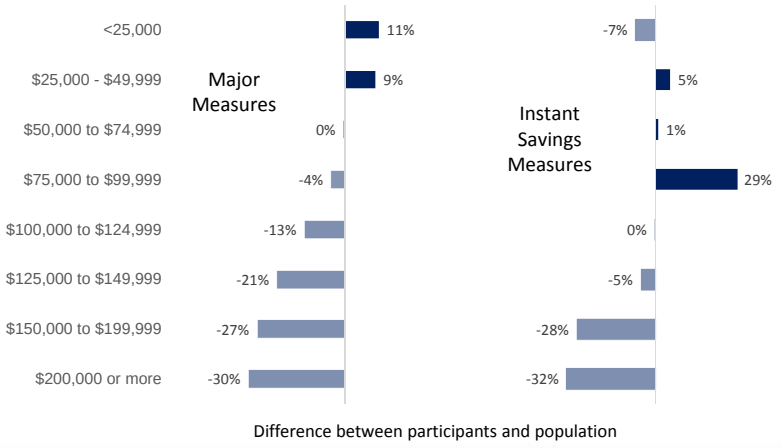
These are the primary markets covered by the working group in this assessment

BPA: EE Participation by Income



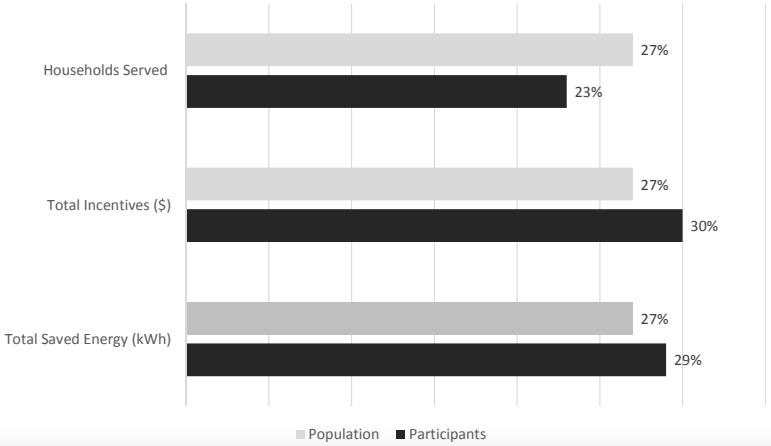
"Population" refers to the characteristics of all households in the utility service area
"Participants" are those who participated in any attributable EE program

BPA: Differences by Measure Cost

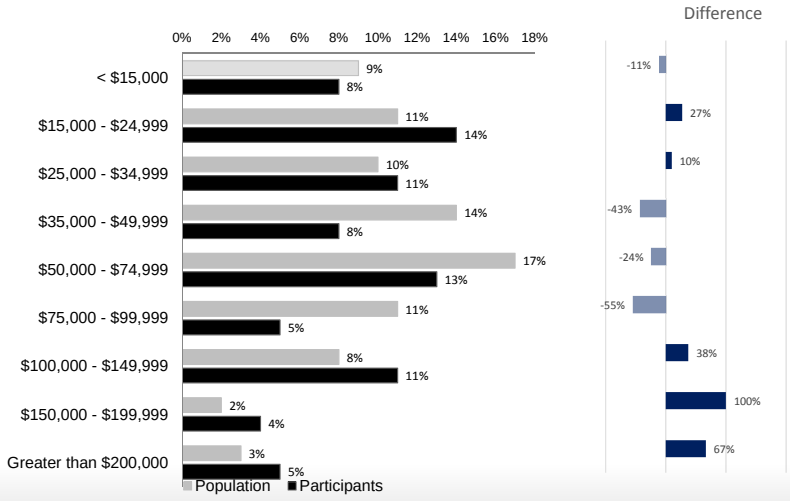


Major measures: HVAC, water heating, appliances, weatherization, new homes, and low-income weatherization and HVAC
Instant Savings Measures: Light bulbs, showerheads, and powerstrips

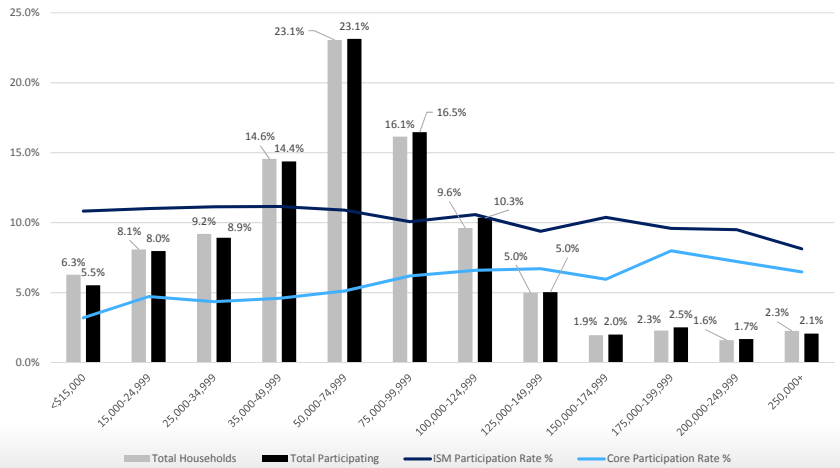
PSE: Households, Incentives, and Energy (Income bracket <$50,000)



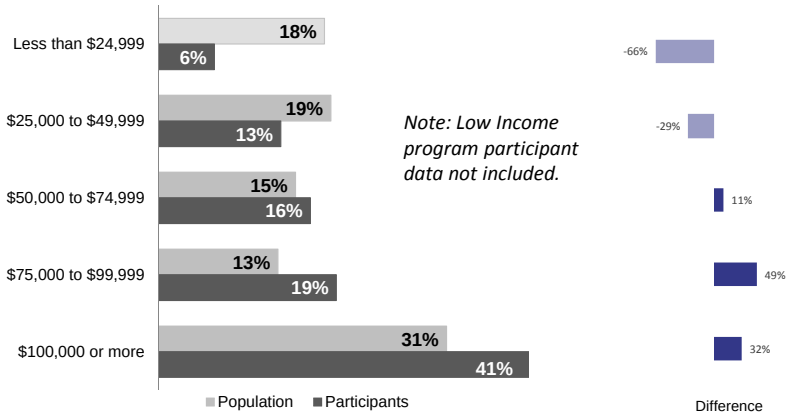
Ravalli Electric: Participation by Income



Energy Trust: Participation Rate by Income

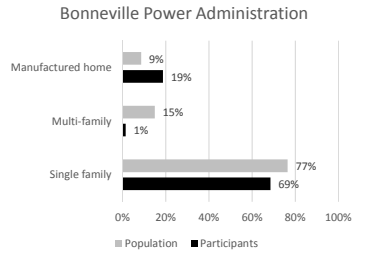


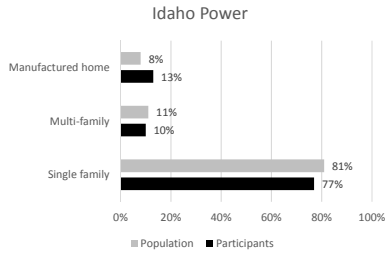
Seattle: Results by Income

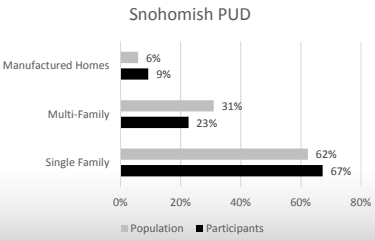


Note: Low Income program participant data not included.

Participation by House Type

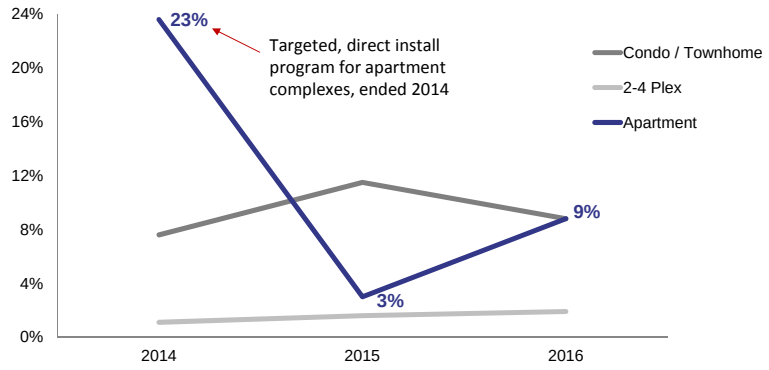






- Manufactured home participation rates higher in all three
- Multifamily participation rates lower in all three
- Single family home participation mixed

Snohomish PUD: House Type Participation Rate

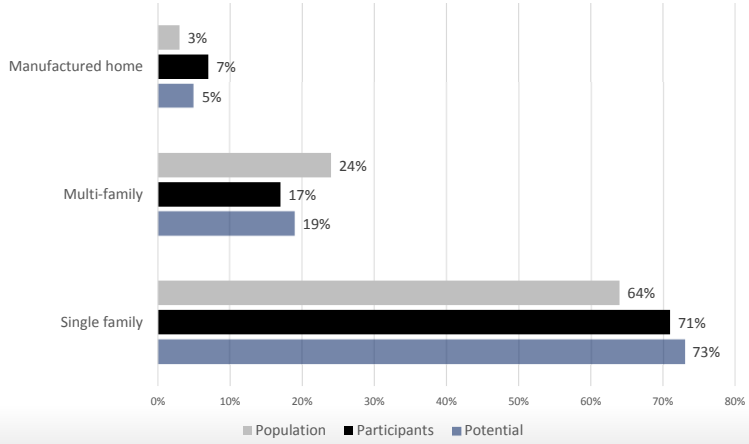


Note: SnoPUD ran aggressive grant-funded programs targeting apartment complexes in 2010-2013 which carried over into significant activity in 2014. The 2014 Multifamily program included in-unit direct install measures that were free to the tenant and property manager.

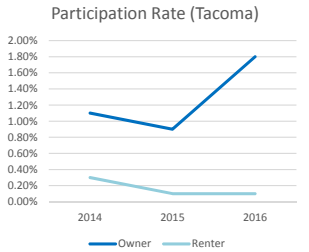
Puget Sound Energy: Participants by Housing Type

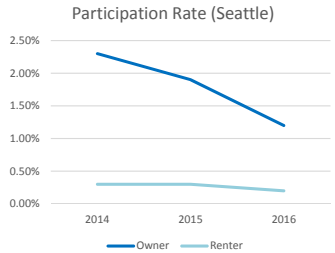
	Participants				PSE Service Area
	2014	2015	2016	2014-16	
Single family	61%	61%	61%	61%	61%
Multi-family	15%	15%	15%	15%	15%
Manufactured home	4%	4%	4%	4%	4%

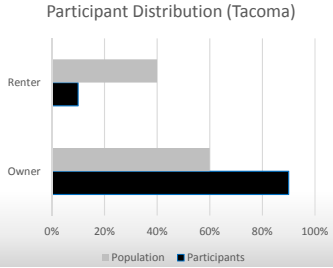
Tacoma: House Type with Potential

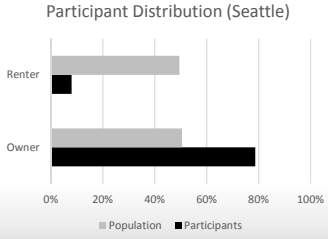


Home Ownership









BPA: Rural Utilities

	Appliance rebate	ISMs per household	Low-income Wx or HVAC
Small, rural, residential (SRR) utility	16%	0.24	3%
Non-SRR utility	6%	0.18	9%

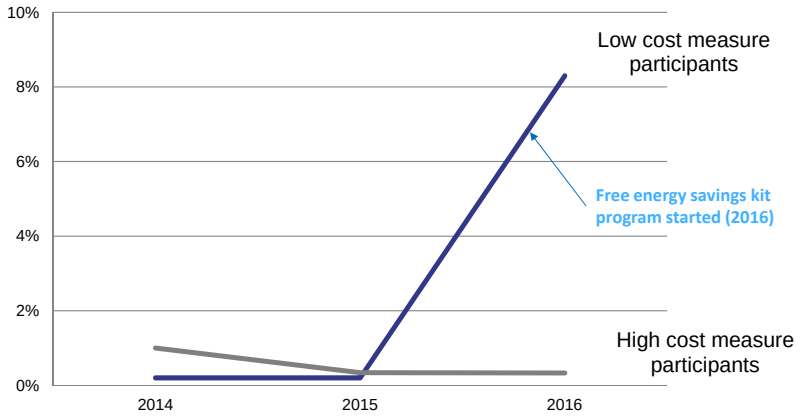
- SRR utilities were similar to non-SRR utilities in their overall and "major measure" participation rates
- SRR utilities had higher participation in "instant savings measures" and appliance rebates, while the non-SRR utilities had higher participation in low-income weatherization and HVAC programs

Urban vs. Rural

(Idaho Power)

	Participants				Population	Difference 2014-16 v. Population
	2014	2015	2016	2014-16		
Urban	73%	66%	72%	70%	77%	-9%
Rural	27%	34%	28%	30%	23%	30%

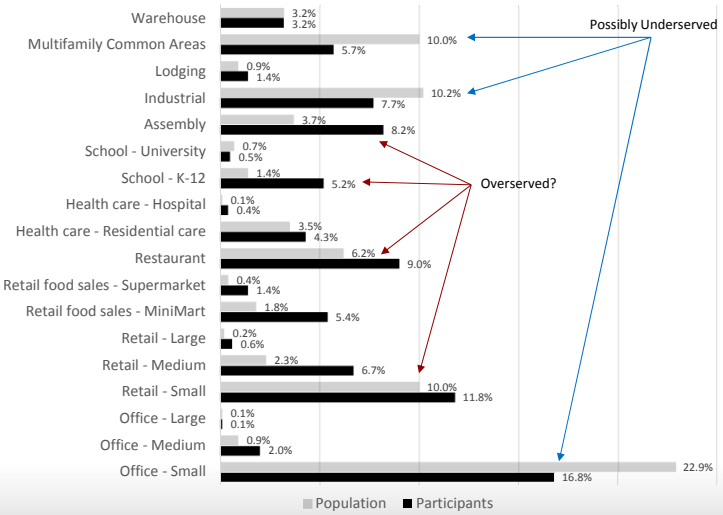
Idaho Power: Measure Type



Race/Ethnicity

- Tacoma Power was the only utility to attempt an analysis of Race/Ethnicity (and provide data)
- Energy Trust of Oregon is also conducting research into participation by race, ethnicity, language, etc. as part of its Diversity/Equity Initiative

SnoPUD: Commercial Building Type

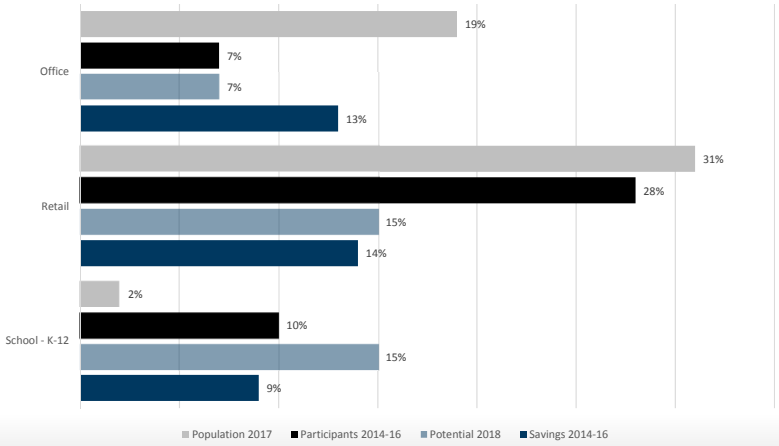


Tacoma: Participation Compared with EE Potential

	Participants	Population	Potential	Savings
	2014-16	2017	2018	2014-16
Office	7%	19%	7%	13%
Retail	28%	31%	15%	14%
School - K-12	10%	2%	15%	9%
School - University & vocational	0.2%	0.2%	4%	0.03%
Warehouse	9%	9%	7%	9%
Grocery	20%	4%	11%	24%
Restaurant	3%	5%	2%	0.7%
Lodging	3%	1%	7%	2%
Hospital	1%	1%	3%	0.5%
Medical Office	2%	5%	4%	1%
Public Assembly	6%	4%	3%	6%
Other Commercial	10%	18%	22%	4%

Tacoma Power took the extra step of comparing participants to EE potential and recent achievements

Tacoma: EE Potential and Savings



General Findings

- Overall NW EE programs are performing well (including targeted programs)
- Developed and demonstrated a process for conducting this type of gap analysis
  - Data are available: Demographic data on the service-territory population are readily accessible and can used, along with program participant data
  - The report summarizes methods and data sources
- Different purposes require different methods and data. There is a difference between savings potential and population of customers.
  - Proportional to population is an equity consideration
  - Proportional to savings potential is a program efficacy metric
- Value of continued monitoring
  - Focus changes over time and
  - Equity accumulates - EE is more than a three year effort.

Findings Summary by Category*

Income

- The "low income" segments showed a wide range of results, but in general utilities have low income programs which are performing well
- The highest income brackets participated at the lowest rates

Housing Type

- Most utilities found the multifamily segment to be somewhat underserved
- Manufactured housing residents typically participated in EE programs at higher rates than single family and multifamily housing residents

Urban/Rural

- Rural customers also appear to participate in programs at similar rates as urban customers

Home Ownership

- As expected, residents who own their homes participated at higher rates that renters

Commercial

- Small business customers were found to be slightly to moderately underserved
- Schools tended to have relatively high participation rates

*Remember the caveats

Recommendations

- Continue supporting effective targeted programs
- Move beyond the "one-touch" analysis (some already have)
  - Multiple measures
  - kWh savings in addition to units
  - Individual measures or categories (e.g., expensive vs cheap)
- Expand the use of potential assessments to determine proportionality relative to EE potential
- Consider expanded programs for the multifamily and renter segments
- Take learnings from this effort and apply to day-to-day processes

Proposed Next Steps
(for this report)

- Power Committee review
- Present to full Council in May
- Release for public comment after May meeting (for 2 months)
  - Present at Efficiency Exchange
  - Present at NW Regional Economic Conference
  - Share results at June CRAC Meeting
- Finalize report in late June/July