



Existing Multifamily
Showerhead/Wand Flow Rate Study
February 28, 2017

Agenda

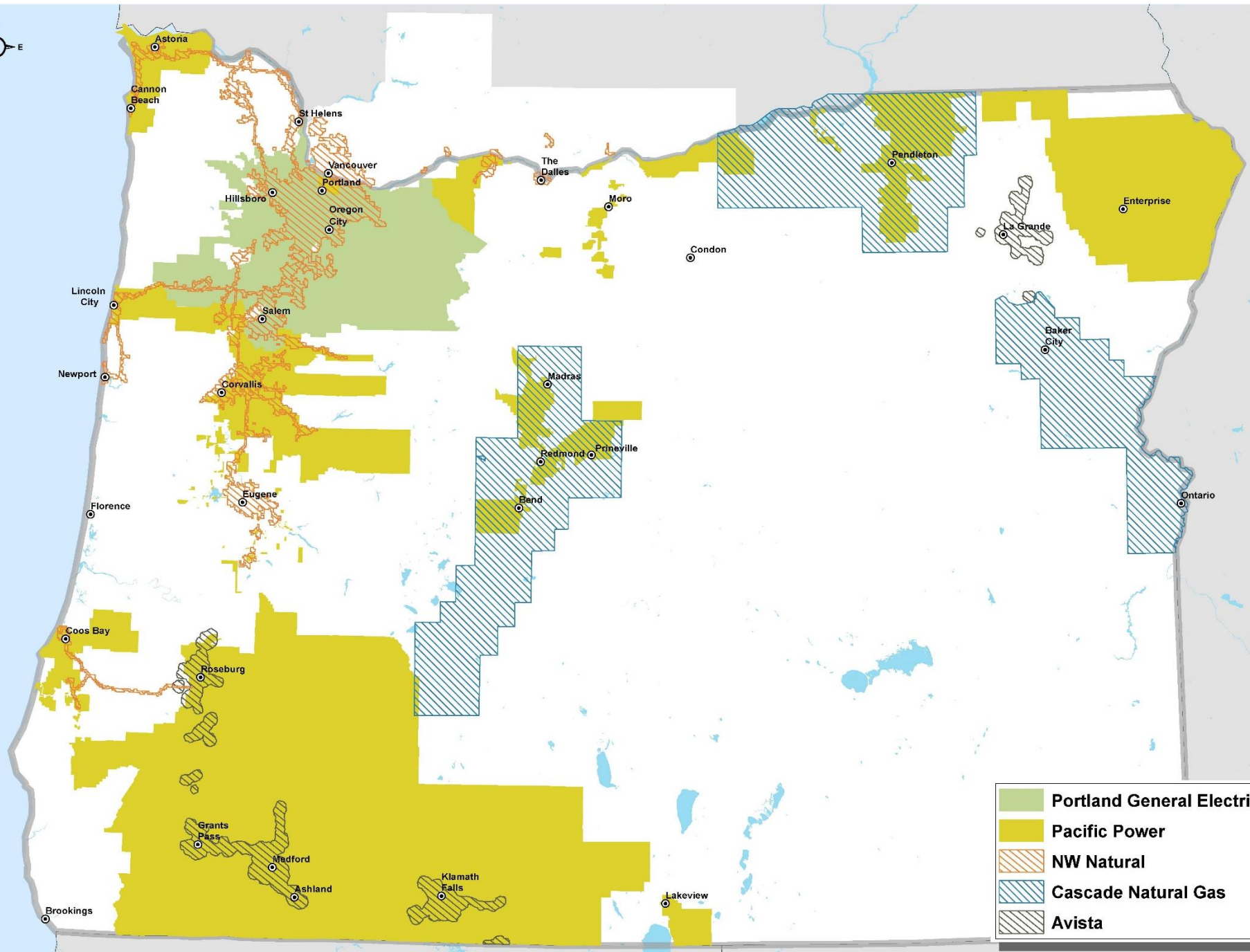
- About Energy Trust of Oregon
- Study Background
- Data Collection
- Findings
- Conclusions & Outcomes
- Program Impacts





About

- Independent nonprofit
- Serving 1.5 million customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista
- Providing access to affordable energy
- Generating homegrown, renewable power
- Building a stronger Oregon and SW Washington



- Portland General Electric
- Pacific Power
- NW Natural
- Cascade Natural Gas
- Avista

Study Background

- Desire to truth-test difference between showerhead and shower wand savings
- Are 2011 RBSA baselines still accurate?
RBSA = Residential Building Stock Assessment by NEEA
- How do actual flow rate of replacement showerheads/wands compare to rated?
 - Effects of pressure compensating devices?
- Is there a resource potential for direct installation of tub spouts when existing is leaking?



Field Study

- Sites visited between 4/11/16 – 7/22/16 by a measurement team
- Approximately 10% of units visited were measured
- List of units for testing showerheads was generated randomly
- All shower wands tested except at assisted living complexes
- 150 units at 29 apartment complexes





Data Collection

If the selected unit cannot be tested, test the next qualifying unit

Qualifying unit protocol:

- Record rated GPM
- Set temperature
- Measure baseline flow, tub spout leakage
- Change showerhead
- Set temperature
- Measure replacement flow, tub spout leakage

Data Collection Tools

- Digital Thermometer
- Micro/Nano-weir



Findings – Showerheads/wands

2011 RBSA MF flow rate: 2.1 GPM

	1.5 GPM Showerhead		1.5 GPM Shower Wand	
Fixture Type	2016 MAD	Field Test (n=96)	2016 MAD	Field Test (n=54)
Baseline GPM flow rate	2.82	2.22	2.75	1.59
Replacement GPM flow rate	1.35	1.32	1.5	1.21
GPM Change	-1.47	-0.9	-1.25	-0.39

Findings – Tub Spouts

- Potential for cost effective measure is highly doubtful
- NY study included both single and multi family

Study	Tub spouts measured	Percent of leaky spouts – (leaking \geq 0.1 GPM)	Average GPM of leaky spout
New York Study (n=120)	120	34%	0.8
Oregon Field Test (n=106)	106	17%	0.3

Key Findings

- Establishing a floor for fixture rating would not significantly impact savings based on the data available
- Elevation of showerhead had no statistically significant effect on pre or post flow in low rise multifamily
- 1.5 GPM showerheads and shower wands flow at different rates (88% and 80% of rated flow respectively)





Conclusions

- Multifamily direct install measures are still cost effective
- Baseline flows were lower than 2016 program year assumptions, especially for shower wands
- Showerhead and shower wand savings revised for 2017
- Leaky tub spout replacements not cost effective based on these study results

Impact on 2017 Total Program Savings

	% impact on direct-install track goals	% impact on total program goals
PGE	-23%	-13%
PAC	-26%	-11%
NWN	-42%	-26%
CNG	-33%	-31%
AVI	-40%	-36%
Ele total	-24%	-12%
Gas total	-41%	-27%



Project Team Acknowledgements

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Joe Marcotte – Lockheed Martin Multifamily Program Manager

Final report publicly available at Energy Trust of Oregon Website:

https://www.energytrust.org/wp-content/uploads/2017/02/Energy_Trust_MF_Showerhead_Study_Report_FINAL_wStaffResponse.pdf





Thank you

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