



Shifting from Traditional to Upstream Approaches

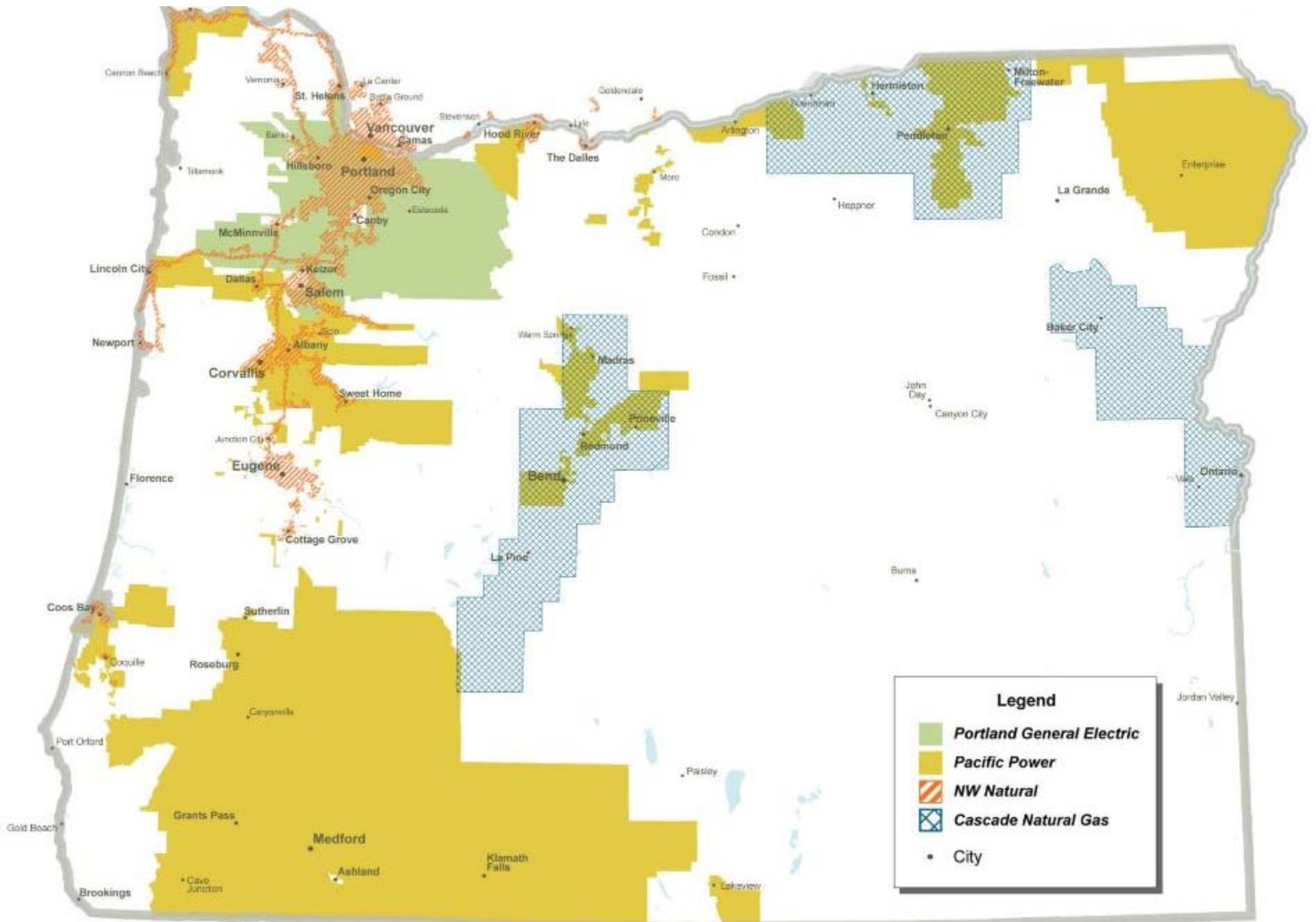
Marshall Johnson





About

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

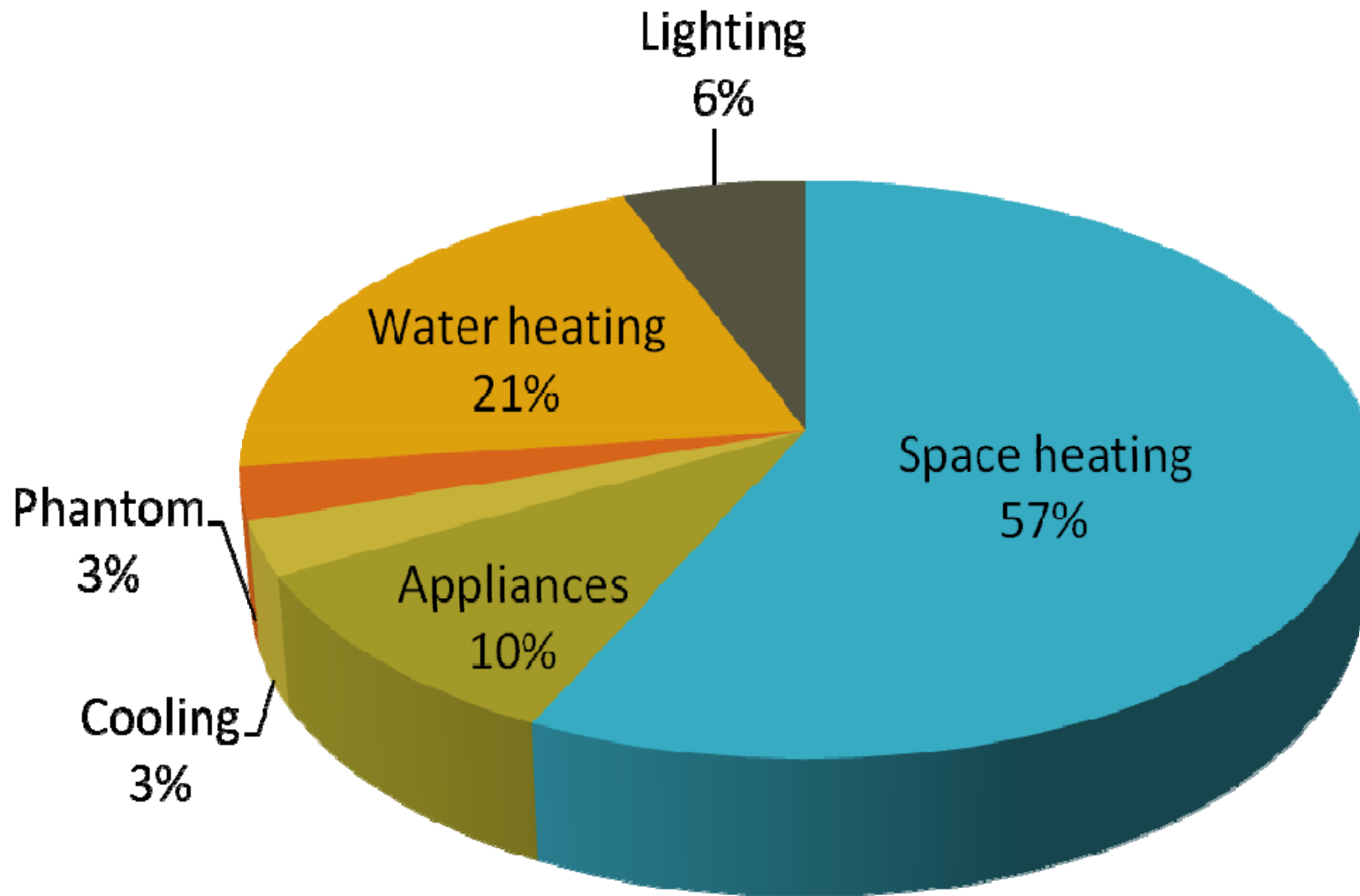




Agenda

- Overview of Energy Trust water heating offers
 - Energy Trust incentives
 - Savings and participation
- Evolution of program design
 - Savings potential
 - Market complexity and barriers
 - Installer and distributor engagement
- Program direction
 - Mid-stream—Distributors/Contractor
 - Mid-stream—Retailers

Why water heaters?



Source: Energy Trust of Oregon, 2008

Energy Trust water
heating offers

Energy Trust incentives--historical

| Water Heater Type | Program Requirements | Year | | | | | | | | | | | | |
|-------------------|-----------------------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | |
| Electric tank WH | 0.93+ EF | \$25 | \$25 | \$25 | \$25 | \$35 | \$35 | \$35 | \$35 | \$35 | \$35 | \$35 | \$35 | - |
| Electric tank WH | 0.94+ EF, with a 20 year warranty | - | - | - | - | \$75 | \$75 | \$75 | \$75 | \$75 | \$75 | \$75 | \$75 | - |
| HPWH | Tier 2 | - | - | - | - | - | - | - | - | - | - | \$500 | \$500 | \$500 |
| HPWH | Tier 1, <60 gallons | - | - | - | - | - | - | - | - | - | - | - | \$150 | \$150 |
| HPWH | Tier 1, ≥60 gallons | - | - | - | - | - | - | - | - | - | - | - | \$500 | \$500 |
| HPWH | Tier 3 | - | - | - | - | - | - | - | - | - | - | - | - | \$500 |
| Gas Tankless | 0.80+ EF | - | - | - | \$200 | \$200 | \$200 | \$200 | \$200 | \$200 | - | - | - | - |
| Gas Tank WH | 0.62-0.66 EF* | \$25 | \$25 | \$25 | \$25 | \$35 | \$35 | \$35 | \$35 | \$35 | - | - | - | - |
| Gas Tank WH | 0.67+ EF, Energy Star Approved | - | - | - | - | - | - | - | \$100 | \$100 | \$200 | \$125 | \$125 | \$125 |

Energy Trust incentives--current

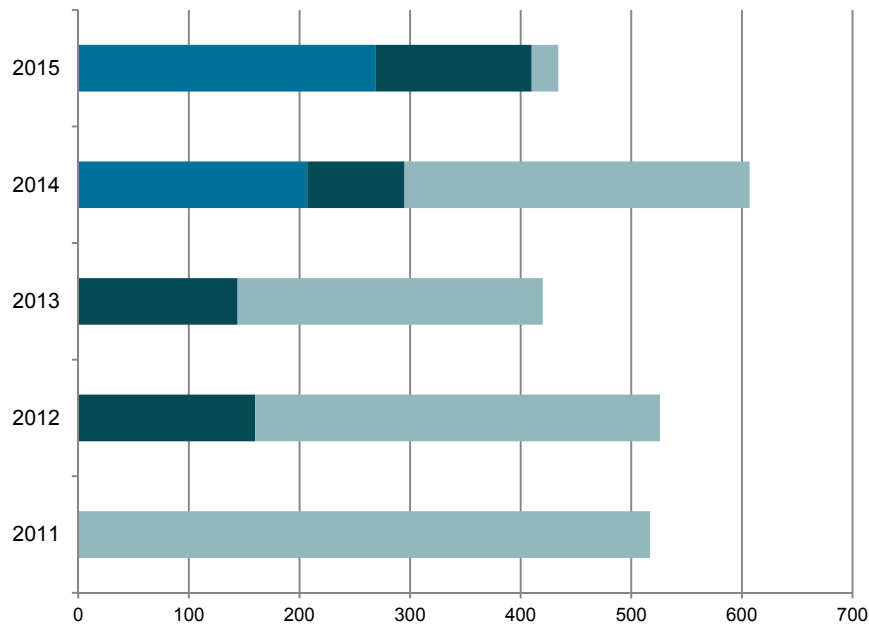
| Water heater type | Program requirements | 2016 Incentive |
|------------------------|---|----------------|
| Gas storage | 0.67+ EF, Energy Star approved | \$100 |
| Heat pump water heater | Northern Climate Specs - Tier 1, ≤ 55 gallons | \$150 |
| Heat pump water heater | Northern Climate Specs - Tier 2 or 3, ≤ 55 gallons | \$300 |

Oregon tax credits

| Water heater type | Program requirements | 2016 Incentive |
|------------------------|---|----------------|
| Gas storage | 0.70 EF or greater or 0.80 TE or greater | \$175 |
| Gas tankless | 0.82-0.849 EF | \$225 |
| | 0.85 or greater EF | \$245 |
| Heat pump water heater | Northern Climate Spec - Tier 1 | \$300 |
| | Northern Climate Spec - Tier 2 or greater | \$600 |

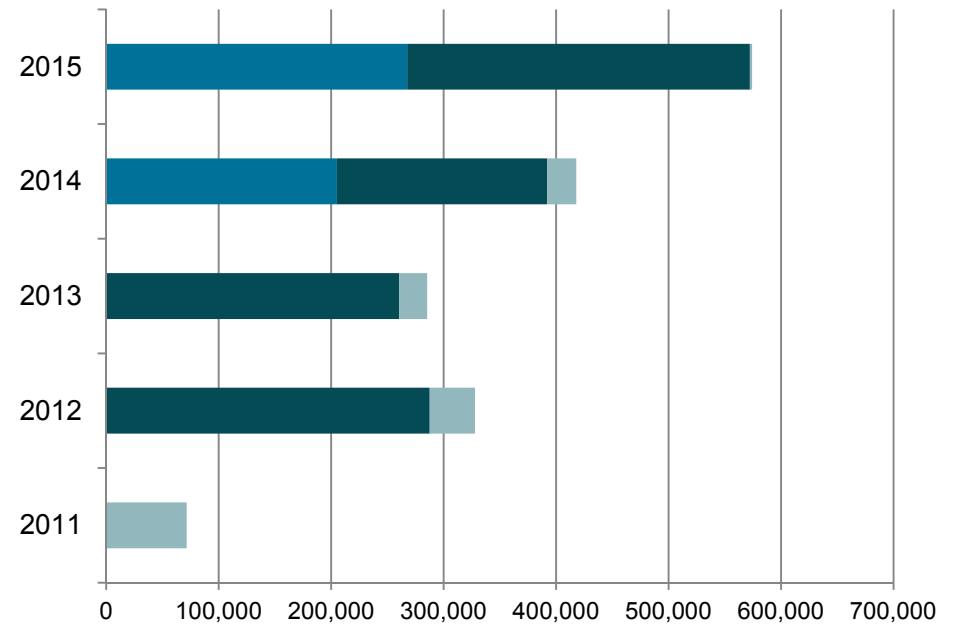
Savings and Participation -- Electric

Participation - Electric



■ Tier 1 HPWH ■ Tier 2 HPWH ■ Tank

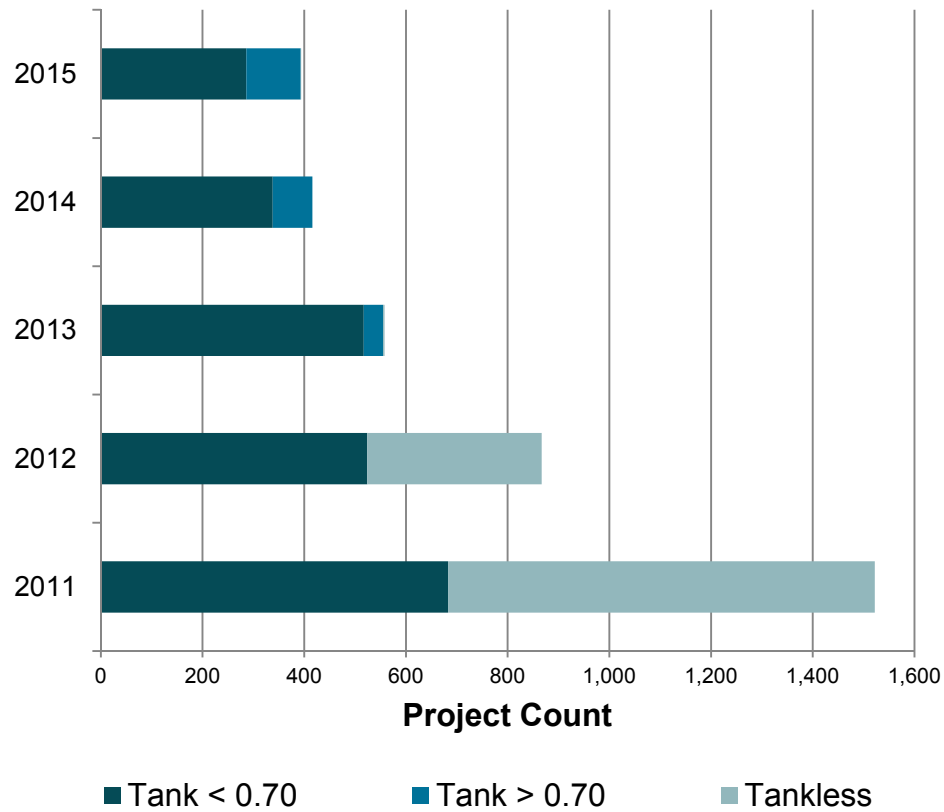
Savings - Electric



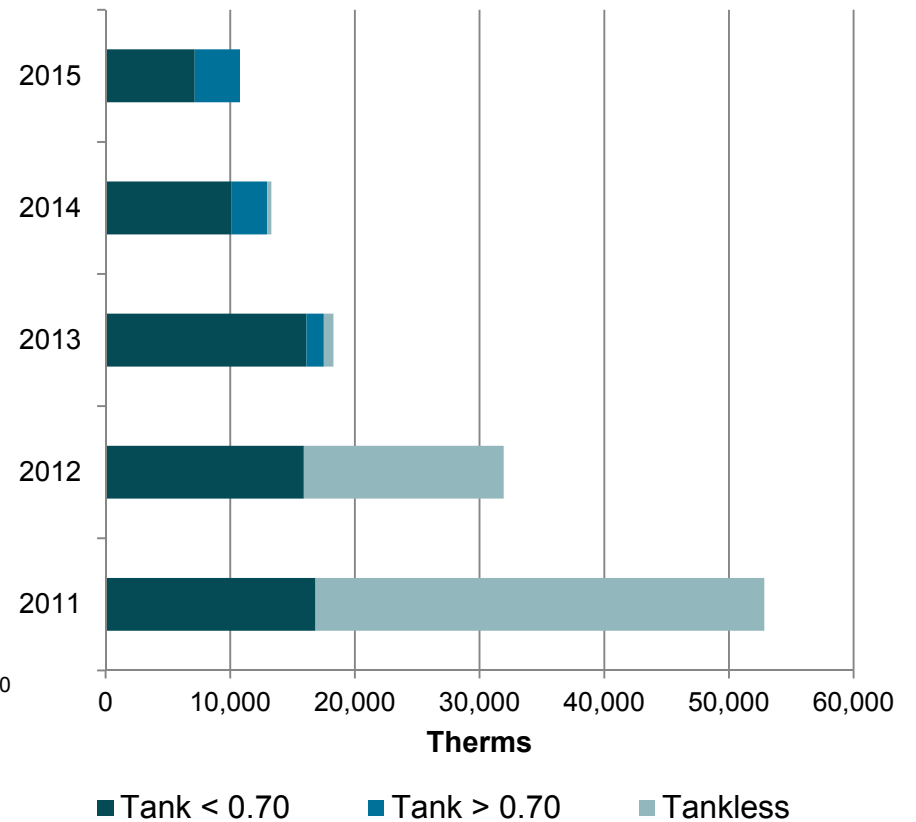
■ Tier 1 HPWH ■ Tier 2 HPWH ■ Tank

Savings and Participation -- Gas

Participation - Gas



Savings - Gas



Why evolution of
program design?

Market potential

| Fuel | Estimate annual sales, Energy Trust territory* | 2015 units incented | Current market share | Annual market potential |
|----------|--|---------------------|----------------------|-------------------------|
| Gas | ~31,000 | 394 | 1% | ~900,000 therms |
| Electric | ~33,000 | 422 | 1% | ~49M kWh |

**Estimated based on Oregon replacement water heater market research using RBSA water heater splits, accounting for other utilities*

Reduce costs – gas DHW

| Efficiency Level | Venting Technology | Standalone Installation | | Home Performance with Energy Star | | Total | |
|--|--------------------|-------------------------|------------|-----------------------------------|------------|----------------|------------|
| | | Average Cost | <i>n</i> | Average Cost | <i>n</i> | Average Cost | <i>n</i> |
| 0.62-0.66 EF Gas Storage - Baseline | Atmospheric | \$1,003 | 56 | | 0 | \$1,003 | 56 |
| | Total | \$1,003 | 56 | | 0 | \$1,003 | 56 |
| 0.67-0.70 EF Gas Storage | Atmospheric | \$1,274 | 622 | \$2,245 | 82 | \$1,387 | 704 |
| | Power Vent | \$1,815 | 74 | \$2,746 | 47 | \$2,176 | 121 |
| | Total | \$1,332 | 696 | \$2,428 | 129 | \$1,503 | 825 |

Gas equipment costs – online retail

| Venting | EF Range | <i>n</i> | Avg. EF | Avg. Online Retail Price | Incremental Cost from 0.60-0.63 |
|--------------------------|----------------|----------|---------|--------------------------|---------------------------------|
| Atmospheric Draft | 0.60 - 0.63 EF | 32 | 0.62 | \$540 | - |
| | 0.67 - 0.69 EF | 6 | 0.68 | \$652 | \$112 |
| Power Vent | 0.67 - 0.69 EF | 2 | 0.67 | \$854 | \$314 |
| | 0.70 EF | 3 | 0.70 | \$1,124 | \$584 |
| Tankless | 0.82 - 0.89 EF | 4 | 0.84 | \$819 | \$279 |
| | 0.90+ EF | 4 | 0.94 | \$1,051 | \$511 |

Electric equipment costs

| Type | Size | Equipment Cost | Incremental Cost (\$400 baseline) |
|---------------|------------------|----------------|--------------------------------------|
| HPWH – Tier 1 | Less than 55 gal | \$1,238 | \$838 |
| | More than 55 gal | \$2,015 | \$1,615 |
| HPWH – Tier 2 | Less than 55 gal | \$1,144 | \$744 |
| | More than 55 gal | \$2,034 | \$1,634 |

Costs from RTF workbook: <http://rtf.nwcouncil.org/measures/measure.asp?id=176>

Cost effectiveness calculations

| Type | Tier | Incremental Cost | Annual Savings | TRC |
|------------------------|--------------|------------------|----------------|------|
| Gas Tank Water Heater | 0.67-0.69 EF | \$200 | 23 therms | 0.51 |
| | 0.70+ EF | \$430 | 31 therms | 0.33 |
| Heat Pump Water Heater | Tier 1 | \$796 | 1,138 kWh | 1.32 |
| | Tier 2 | \$892 | 1,512 kWh | 1.40 |

Market complexity and barriers

- Eligibility restrictions
- Paperwork
- Etc. – why is program portion so small?
- Lack of installer technical familiarity



Installer and distributor engagement

- Water heater installer network (WHIN)
 - Specialty network
 - Offered outreach, cooperative marketing
- Distributor engagement
 - Stocking/Purchasing incentives
 - SPIFs



Program direction

Reducing barriers to participation

- Education
- Marketing
- Simplification
- Reduced paperwork



Next phase

- Expand mid-stream efforts
 - Manufacturers, distributors as educators
 - Enhanced lead generation
 - Simplified paperwork
- Retail channel
 - Launching new retail offerings for 2016
 - Point of sale marketing, education
 - Simplified paperwork



Longer term

- Expand mid-stream efforts
 - Manufacturers, distributors as educators
 - Enhanced lead generation
 - Simplified paperwork
- Retail channel
 - Work with manufacturers to drive best products for cost effectiveness
 - Explore POS incentives and financing tools to address cost





Thank you

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