Residential Program Results and Trends
Marshall Johnson
2016 Program Results

• Over 18,000 energy upgrades in existing single family homes
• 4,224 EPS new homes
• Energy savings
  • More than 42.5 million kWh saved
  • More than 2.3 million therms saved

Results are for New Homes and Existing Homes in Oregon & SW Washington
Electric Savings—2016

Results are for New Homes and Existing Homes in Oregon & SW Washington
Gas Savings—2016

Results are for New Homes and Existing Homes in Oregon & SW Washington

- New Homes: 36%
- Showerheads: 13%
- Aerators: 13%
- LivingWise Kits: 3%
- Controls: 3%
- Gas Hearth: 10%
- HVAC: 5%
- Insulation: 3%
- Other: 6%
- Water Heating: 0%
- Windows: 8%
Existing Homes Project Installations

**Gas**
- 65% Trade Ally
- 22% Self-Install
- 13% non-Trade Ally

**Electric**
- 84% Trade Ally
- 8% Self-Install
- 8% non-Trade Ally
2016 Trends
Existing Homes Trends—Electric

- Weatherization
- Lighting & Showerheads
- Equipment

2016 goal

KWh

2013
2014
2015
2016
Existing Homes Trends—Gas

- Weatherization
- Lighting & Showerheads
- Equipment

2016 goal
Gas Hearth Trends

- **2016**
  - FE < .70: 200
  - FE .70+: 1,250
  - FE .75+: 300

- **2015**
  - FE < .70: 100
  - FE .70+: 1,400
  - FE .75+: 150

- **2014**
  - FE < .70: 150
  - FE .70+: 1,350
  - FE .75+: 100

- **2013**
  - FE < .70: 100
  - FE .70+: 1,450
  - FE .75+: 50

*Project count range:* 0 to 2,000
Gas Furnace Trends

![Bar chart showing project count over years]

- **2016**: SWR 400, WA 400, Rentals 300
- **2015**: SWR 100, WA 500, Rentals 200
- **2014**: SWR 50, WA 150, Rentals 200
- **2013**: SWR 200, WA 100, Rentals 100

**Project count**

0 200 400 600 800 1,000 1,200
Savings Within Reach Trends

Savings Within Reach - elec.

- 2016
- 2015
- 2014
- 2013

Savings Within Reach - gas

- 2016
- 2015
- 2014
- 2013

KWh

Therms
Thermostat Trends

**Thermostat - elec.**

- 2016: 600 projects
- 2015: 200 projects
- 2014: 50 projects
- 2013: 0 projects

**Thermostat - gas**

- 2016: 3300 projects
- 2015: 700 projects
- 2014: 100 projects
- 2013: 0 projects
Insulation Trends

**Ceiling insulation - electric**

- 2016
- 2015
- 2014
- 2013

**Project count**

- R12 or Less
- > R12

**Ceiling insulation - gas**

- 2016
- 2015
- 2014
- 2013

**Project count**

- R12 or Less
- > R12
Water Heating Trends

**Elec. water heating**

- 2016
- 2015
- 2014
- 2013

**Project count**

**Gas water heating**

- 2016
- 2015
- 2014
- 2013

**Project count**
Ducted Heat Pump Trends

Ducted heat pump

2016
2015
2014
2013

HSPF < 9.0
HSPF 9.0+
HSPF 9.5+

measure count

0 500 1,000 1,500 2,000
Ductless Heat Pump Trends

Ductless heat pump

- **2016**: Installed in EH (1,700), Installed in XMH (300)
- **2015**: Installed in EH (1,600), Installed in XMH (200)
- **2014**: Installed in EH (1,500), Installed in XMH (100)
- **2013**: Installed in EH (1,400), Installed in XMH (100)

*measure count*: 0 to 2,000
2017 Areas of Focus
## 2017 Electric Savings Goals—Existing Homes

<table>
<thead>
<tr>
<th>Program Category</th>
<th>2017 Electric Savings (kWh)</th>
<th>% of Portfolio</th>
<th>% Change Allocated Savings 2017 v 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls</td>
<td>471,756</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>HVAC</td>
<td>10,243,492</td>
<td>30%</td>
<td>2%</td>
</tr>
<tr>
<td>Insulation</td>
<td>681,195</td>
<td>2%</td>
<td>-1%</td>
</tr>
<tr>
<td>Other</td>
<td>1,734,171</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Water Heating</td>
<td>5,371,270</td>
<td>16%</td>
<td>11%</td>
</tr>
<tr>
<td>Windows</td>
<td>722,337</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>XMH Free Service</td>
<td>458,266</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Aerators</td>
<td>4,643,550</td>
<td>14%</td>
<td>-6%</td>
</tr>
<tr>
<td>Lighting</td>
<td>4,505,376</td>
<td>13%</td>
<td>-2%</td>
</tr>
<tr>
<td>Showerheads</td>
<td>5,131,906</td>
<td>15%</td>
<td>-6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>33,963,318</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2017 Gas Savings Goals – Existing Homes

<table>
<thead>
<tr>
<th>Program Category</th>
<th>2017 Gas Savings (therm)</th>
<th>% of Portfolio</th>
<th>% Change Allocated Savings 2017 v 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls</td>
<td>178,528</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>Gas Hearth</td>
<td>208,890</td>
<td>17%</td>
<td>0%</td>
</tr>
<tr>
<td>HVAC</td>
<td>134,328</td>
<td>11%</td>
<td>3%</td>
</tr>
<tr>
<td>Insulation</td>
<td>56,284</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>96,679</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Water Heating</td>
<td>54,659</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Windows</td>
<td>144,787</td>
<td>12%</td>
<td>1%</td>
</tr>
<tr>
<td>XMH Free Service</td>
<td>571</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>Aerators</td>
<td>145,869</td>
<td>12%</td>
<td>-11%</td>
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<tr>
<td>Showerheads</td>
<td>175,545</td>
<td>14%</td>
<td>-4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,238,266</strong></td>
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<td></td>
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</tbody>
</table>
## 2017 Regional Focus – New Homes

<table>
<thead>
<tr>
<th>Region</th>
<th>2017 Targets</th>
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</thead>
<tbody>
<tr>
<td>1 - North Coast</td>
<td>17</td>
</tr>
<tr>
<td>2 - South Coast</td>
<td>0</td>
</tr>
<tr>
<td>3 - Portland Metro</td>
<td>2,555</td>
</tr>
<tr>
<td>4 - Mid Willamette Valley</td>
<td>32</td>
</tr>
<tr>
<td>5 - Southern Willamette Valley</td>
<td>108</td>
</tr>
<tr>
<td>6 - Southern</td>
<td>133</td>
</tr>
<tr>
<td>7 - Columbia Basin</td>
<td>26</td>
</tr>
<tr>
<td>8 - Central</td>
<td>368</td>
</tr>
<tr>
<td>9 - Klamath Basin</td>
<td>0</td>
</tr>
<tr>
<td>10 - Northeast</td>
<td>5</td>
</tr>
<tr>
<td>11 - Eastern</td>
<td>0</td>
</tr>
<tr>
<td>12 - Southwest Washington</td>
<td>593</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,837</strong></td>
</tr>
</tbody>
</table>
Example Project Cost

Average Ductless Heat Pump Equipment and Installation Cost

Average Total Project Cost: $4,610

Source: Energy Trust Program Data
Thank You

Marshall Johnson
Sr Residential Program Manager
Marshall.johnson@energytrust.org
Existing Multifamily Program Results and Trends

Nate Collins

April 14, 2017
2016 Multifamily Program Results

- 2,840 projects completed
- 1,807 sites served
- $4,448,902 paid in incentives
- Energy Savings
  - 20,787,800 kWh
  - 252,900 therms
2016 Prescriptive Electric Savings

- HVAC: 62%
- Weatherization: 31%
- Water Heating: 3%
- Food Service: 2%
- Appliance: 2%
2016 Prescriptive Gas Savings

- HVAC: 66%
- Water heating: 17%
- Food Service: 10%
- Weatherization: 7%
Prescriptive Measure Trends
Electric Savings
Ductless, Packaged Terminal Heat Pumps

- **DHP**
- **PTHP**

![Bar chart showing kWh consumption from 2013 to 2016]

- 2013: 300,000 kWh
- 2014: 1,000,000 kWh
- 2015: 1,400,000 kWh
- 2016: 2,500,000 kWh

The chart illustrates the significant increase in kWh consumption from 2013 to 2016, with a notable rise in 2016.
Weatherization—Electric

- Windows
- Insulation

KWh

- 2013
- 2014
- 2015
- 2016
Water Heating—Electric

- Electric resistance
- Heat Pump Water Heater

KWh

2013  2014  2015  2016

120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Prescriptive Measure Trends
Gas Savings
All Prescriptive Savings—Gas

<table>
<thead>
<tr>
<th>Year</th>
<th>Therms</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>6000</td>
</tr>
<tr>
<td>2014</td>
<td>50000</td>
</tr>
<tr>
<td>2015</td>
<td>60000</td>
</tr>
<tr>
<td>2016</td>
<td>80000</td>
</tr>
<tr>
<td>2017</td>
<td>60000</td>
</tr>
</tbody>
</table>
2017 Direction
Key Measures for 2017

• Electric
  – Ductless heat pumps and packaged terminal heat pumps—high savings, growing in popularity
  – Weatherization—high demand, consistent opportunity
  – Water heating—strong growth area

• Gas
  – Boilers—high savings, high incentive
  – Steam traps—high savings, quick payback
  – Tankless water heaters—expanding measure, growing in popularity
On the Horizon

• <199 kBTU tankless water heaters
  – Requirements: no added storage tanks
  – (>200 kBTU measure – unchanged)

• Smart thermostats
  – Qualifying models: Nest and Ecobee
  – All property types qualify
New Hires

• Brooke Ingram
  – Business Development in Southern Oregon
    • Contact: brooke.ingram@lmco.com
    • 503-354-4491

• Dan St. Germain
  – Business Development in Central and Eastern Oregon
    • Contact: daniel.j.st.germain@lmco.com
    • 541-419-7907
Thank You

Nate Collins
Trade Ally Coordinator

Nate.Collins@lmco.com
NeighborImpact

Low-Income Weatherization Program
Ken Hanna
“Whole House” Approach

• Improve energy efficiency of home
• Detailed Energy Audit: 4 hours on-site, 3 hours at office
• Top to bottom look at home
• Ensure home has reliable heating
• Repairs to assure Health & Safety
• Work is subcontracted
## Income-Based Program

### Income-Based Program 200% of Federal Poverty Level by Household Size

For Use in DOE Program Year 2016

Poverty Income Guidelines - Source USDOE

<table>
<thead>
<tr>
<th>Household Unit Size</th>
<th>Annual Income</th>
<th>Monthly Income</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>$23,760</td>
<td>$1,980.00</td>
</tr>
<tr>
<td>2</td>
<td>$32,040</td>
<td>$2,670.00</td>
</tr>
<tr>
<td>3</td>
<td>$40,320</td>
<td>$3,360.00</td>
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<tr>
<td>4</td>
<td>$48,600</td>
<td>$4,050.00</td>
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<tr>
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<td>$4,740.00</td>
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<tr>
<td>6</td>
<td>$65,160</td>
<td>$5,430.00</td>
</tr>
<tr>
<td>7</td>
<td>$73,460</td>
<td>$6,121.67</td>
</tr>
<tr>
<td>8</td>
<td>$81,870</td>
<td>$6,822.50</td>
</tr>
<tr>
<td>9</td>
<td>$90,190</td>
<td>$7,515.83</td>
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<tr>
<td>10</td>
<td>$98,510</td>
<td>$8,209.17</td>
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<td>11</td>
<td>$106,830</td>
<td>$8,902.50</td>
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<tr>
<td>12</td>
<td>$115,150</td>
<td>$9,595.83</td>
</tr>
<tr>
<td>Each Additional Member</td>
<td>$8,320</td>
<td>$693.33</td>
</tr>
</tbody>
</table>
Funded Similar to Energy Trust

- Funds from Electric Utilities
- Funds from Cascade Natural Gas
- State and Federal Funds
- “Low-income” program funding is a separate fund from the Energy Trust Funding
Energy Audit – Blower Door Testing
Energy Audit – Duct Blaster Testing
Attic Insulation - Before
Attic Insulation - After
Air Sealing to Reduce Air Infiltration
Floor - Before
Floor - After
Health & Safety Repair

- Plumbing leaks repaired before insulating floor
- Special funds used - dedicated for Health & Safety type repairs
Health & Safety Repair

Before Attic Insulation is Added:
- electrician secures and covers open electrical connections
- old vermiculite is tested for asbestos
Furnace Before
Furnace Replacement

Heating System Service, Repair, and Replacement when necessary is an important part of the Low-Income Weatherization Program
Mobile Homes – 75% of Projects
## Income-Based Program

200% of Federal Poverty Level by Household Size
For Use in DOE Program Year 2016
Poverty Income Guidelines - Source USDOE

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<td>$6,822.50</td>
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<tr>
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<td>$8,902.50</td>
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<tr>
<td>12</td>
<td>$115,840</td>
<td>$9,595.83</td>
</tr>
<tr>
<td>Each Additional Member</td>
<td>$8,320</td>
<td>$693.33</td>
</tr>
</tbody>
</table>
Currently: $7800 per home

Low-income program: very limited ability to pay - no cost to client
Predicted total energy reduction: 25%
Predicted savings per year: $599
Energy Trust Website

Multiple Income Level Programs Listed
CROSS REFERRAL

• Refer “Low-Income” Clients to NeighborImpact

• NeighborImpact refer “above income” clients to Energy Trust

• Thank You!
• Ken Hanna  541-504-6554
• www.neighborimpact.org
Home Energy Scoring Updates

Marshall Johnson
Agenda

• Energy Trust EPS Update
• City of Portland Home Energy Disclosure Ordinance Overview
Energy Trust’s Energy Performance Scores

- **EPS for Existing Homes**
  - After stakeholder input and review, EPS for Existing Homes will no longer be offered as of July
  - Earth Advantage will introduce and facilitate the Department of Energy’s Home Energy Score using CakeSystems software
  - Energy Trust will work with CakeSystems and the Oregon Department of Energy to ensure Home Energy Score sheets are HB 2801 compliant

- **EPS for New Homes**
  - Remains unchanged and available for newly constructed above-code homes
The City of Portland recently adopted a policy to require home energy scores on single-family homes at time of sale. Policy effective January 1, 2018.
Background to Home Energy Score Ordinance

• A companion to the Portland’s Commercial Energy Use Disclosure Policy
• Primary approach to produce changes in the residential sector for the purpose of meeting the city’s Climate Action Plan
Requirements

The City of Portland's policy requires sellers of single-family homes to:

1. Obtain a home energy performance report that includes a home energy score

2. Disclose the information from the report to the City of Portland at or before the time that the home is listed publicly for sale on the market
U.S. DOE—Home Energy Score

• Online tool; can be linked to other software tools
• Takes an hour or less to complete
• Can be generated by utilities, contractors, home inspectors or others
• Automated and no reporting requirements
• Over 60,000 scores

Home Energy Score

Score | Home Facts | Recommendations

**Score with improvements**: 6

**Estimated annual savings**: $541

**Uses less energy**

1 2 3 4 5 6 7 8 9 10

Your home’s current score: 2

Learn more at homeenergyscore.gov

The Home Energy Score is a national rating system developed by the U.S. Department of Energy. The Score reflects the energy efficiency of a home based on the home’s structure and heating, cooling, and hot water systems. The Home Facts provide details about the current structure and systems. Recommendations show how to improve the energy efficiency of the home to achieve a higher score and save money.
Construction and Use Type

- **Single-family homes** include
  - Existing, detached single-family homes
  - Existing attached single-family structures like townhomes
  - Newly constructed homes that are either detached or attached side-by-side

- The policy will apply to attached single family homes that are laid out side-by-side and **not stacked**

- Energy modeling software can provide individual scores for attached homes only when they are **side-by-side** and not stacked
Rentals and ADUs

• Initially, the requirement will apply only to owner-occupied units
• Requirements for single-family rental homes will be phased in over time
• Detached accessory dwelling units (ADUs) are not covered by the proposed requirement
Waiver for Energy Trust EPS-Rated New Homes

- Newly-built homes receiving an Energy Trust EPS are given a waiver from complying to exact rules of the ordinance
  - EPS to be temporarily considered a compliant score
  - Waiver process is in development
  - Energy Trust will help develop process with city to ensure minimal impact on EPS verifiers and builders
Earth Advantage has been selected to support the City of Portland in implementing the Home Energy Score Ordinance, and will:

- Support prospective assessors with onboarding, training and mentoring (Home Performance Guild will assist)
- Oversee all required quality assurance activities for assessors issuing scores
- Provide information and training options to the real estate industry
- Collaborate with Home Performance Guild and Enhabit on the city's implementation plan
Portland Home Energy Scoring

For more information, visit the City of Portland’s Home Energy Score Policy web page, or read the adopted code language:

- [https://www.portlandoregon.gov/bps/71421](https://www.portlandoregon.gov/bps/71421)
Next Steps

• Stakeholder group formed to prepare market
• HB 2801 approval process
• Onboarding of more Home Energy Assessors to accommodate demand (business opportunity for new homes verifiers)
• Study to determine HES/EPS compatibility
• Automatic RMLS data transfer
• Explore seamless process to create Home Energy Scores with REM/Rate inputs
5 year term on loans up to $2000

10 year term on loans $2,001-$5,000

Questions?
Thank You

Marshall Johnson
Sr. Residential Program Manager

Marshall.johnson@energytrust.org
Existing Buildings

- About 472 trade allies
- 289 non-lighting
- 259 Oregon, 19 Washington, 7 from other states
- 186 HVAC (147 HVAC controls, 103 boilers), 58 insulation, 19 grocery, 106 tankless water heater
## Custom Insight

<table>
<thead>
<tr>
<th>Year</th>
<th>Site Evaluations</th>
<th>Technical Analysis Studies</th>
<th>Estimates</th>
<th>Offers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>27</td>
<td>248</td>
<td>368</td>
<td>257</td>
</tr>
<tr>
<td>2015</td>
<td>34</td>
<td>206</td>
<td>425</td>
<td>318</td>
</tr>
<tr>
<td>2016</td>
<td>41</td>
<td>216</td>
<td>292</td>
<td>251</td>
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</table>
## Snapshot 2016

<table>
<thead>
<tr>
<th></th>
<th>Incentives</th>
<th>kWh</th>
<th>Therms</th>
<th># Projects</th>
<th># Measures</th>
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</thead>
<tbody>
<tr>
<td><strong>Existing Buildings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Custom</td>
<td>$8,700,781</td>
<td>24,732,628</td>
<td>861,233</td>
<td>247</td>
<td>410 (19)</td>
</tr>
<tr>
<td>- Standard</td>
<td>$3,167,207</td>
<td>9,184,010</td>
<td>314,621</td>
<td>411</td>
<td>659 (92)</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>$11,867,988</td>
<td>33,916,638</td>
<td>1,175,854</td>
<td>555</td>
<td>1069 (111)</td>
</tr>
</tbody>
</table>
What's new

- Brochures – Oregon and Washington
- Custom incentives
- Standard incentives and measure changes
Custom incentives

**Gas:**
$3.00/therm
Capped at 75%

**Electric:**
$0.22/kWh
Capped at 60%

**Dual-fuel:**
$3.00/therm
$0.22/kWh
Capped at 65%
Standard

- Oregon and Washington
  - New measures
  - Discontinued
  - Measure and incentive changes
New measures

Oregon

• Emergency generator block heaters
• Inverter duty welders
• T8 to LED retrofit in grocery cases
Discontinued

- Air to air heat pumps
- LED case lighting in new cases
- Residential fridges and freezers in office setting
- PC power management
Measure and incentive changes

Oregon
- Water heating
- Grocery
- Server room mini-split air conditioner
- Showerheads and wands
- Laundry washers
With you all the way

- Incentives
  - Strengthened
- Brochures
  - Revised
- Incentive applications
  - Improved
- Website
  - Refreshed
- Measures
  - Changed, added
Thank You

Alex Snook
Trade Ally Coordinator, Existing Buildings
503.407.7286
Alex.snook@icfi.com
Thank You

Please join us for the first breakout sessions at 10:30 a.m.