Agenda

Conservation Advisory Council
Wednesday, June 21, 2017
1:30 p.m. – 4:30 p.m.

421 SW Oak St., #300, Portland, OR 97204

1:30 Welcome and Introductions
New Conservation Advisory Council facilitator—Hannah Cruz, Sr. Communications Manager

1:35 Announcements, Old Business and Short Takes *(discussion)*
May 2017 CAC minutes, reminder on budget review survey, September CAC meeting date change, Residential PMC RFP update and Board Strategic Planning Workshop next steps

1:50 2017 Legislative Update (*information)*
Staff will provide an update on the state legislative session and bills that are being monitored. Under our grant agreement with the OPUC, Energy Trust does not take positions on legislation or engage in political issues. During legislative sessions, we monitor bills that could impact Energy Trust and respond to legislative requests for information.

2:00 Large Customer Funding Analysis *(discussion)*
Staff will describe the history of the large customer funding analysis, present the 2016 results and review next steps given the report's findings that Energy Trust reached the funding threshold.

2:45 New Buildings Program Update *(discussion)*
Staff will present an update on the New Buildings program, including market engagements, community building, training and education.

3:15 Cannabis Market Update *(information)*
Staff will present an update on the cannabis market for production grow facilities.

3:30 Business Customer Reports Overview *(information)*
Staff will provide an overview of Energy Trust's Business Customer Reports, a recently launched business customer engagement tool.

3:45 Residential Lighting Market Update *(information)*
Staff will present an overview of recent trends in residential lighting in the Products program.

4:15 Public Comment

4:30 Adjourn

The next scheduled meeting of the Conservation Advisory Council is Wednesday, August 2, 2017

Conservation Advisory Council Meeting Notes

May 3, 2017

Attending from the council:
Jess Kincaid, Bonneville Power Administration (for Brent Barclay)
JP Batmale, Oregon Public Utility Commission
Holly Braun, NW Natural
Roger Kainu, Oregon Department of Energy
Julia Harper, Northwest Energy Efficiency Alliance
Andria Jacob, City of Portland
Don Jones, Jr., Pacific Power
Don MacOdrum, Home Performance Guild of Oregon
Garrett Harris, Portland General Electric
Lisa McGarity, Avista
Stan Price, Northwest Energy Efficiency Council
Allison Spector, Cascade Natural Gas
Charlie Grist, NW Power and Conservation Council
Tony Galluzzo, Building Owners and Managers Association

Attending from Energy Trust:
Mike Bailey
Tom Beverly
Peter West
Cameron Starr
Marshall Johnson
Mike Colgrove
Kathleen Belkhayat
Oliver Kesting
Jay Ward
Hannah Cruz
Kate Hawley

Others attending:
Alan Meyer, Energy Trust board
John Frankel, NW Natural
Chris Smith, Energy350
Scott Brogan, ICF
Jason Jones, Ecova
Rick Hodges, NW Natural

1. Welcome and introductions

Peter West convened the meeting at 1:30 p.m. The agenda, notes and presentation materials are available on Energy Trust's website at: https://www.energytrust.org/about/public-meetings/conservation-advisory-council-meetings/.

2. Old business and announcements

Hannah Cruz announced an upcoming opportunity to provide input on Energy Trust's annual budget process and how it intersects with utility planning. An internal project team has been convened to discuss the budget process, timing, objectives and improvements. Conservation Advisory Council members and other Energy Trust stakeholders will be emailed a survey with open-ended questions to provide feedback.

Peter West added a new criterion to Conservation Advisory Council member selection: experience in the energy industry. Conservation Advisory Council members expressed support.

3. 2017 Legislative Update

Jay Ward provided an update on the current legislative session.

Jay Ward: Energy Trust doesn't lobby or take positions on legislation, but we do monitor and report on legislative issues. This legislative session, we've monitored about 100 bills that may impact us. Nine bills dealt with the public purpose charge.

Holly Braun: What was most startling or surprising to you?
Jay Ward: It's common to see bills about increased oversight of Energy Trust.

Brent Barclay: Is anything related to code advancing in the process?
Jay Ward: The governor may have an interest in administrative code changes, but it's not in rulemaking.

4. Existing Buildings Pay for Performance offering
Kathleen Belkhayat provided an update on Pay for Performance.

Kathleen Belkhayat: One unique aspect of this program, unlike Strategic Energy Management, is that the customer is working directly with a contractor for performing the operations and maintenance and capital measures. Contrary to our other programs, where we are using engineering estimates for savings, we are looking at what was achieved at the end of the year. For the customer, it's an opportunity to be hands off or as involved as they want. The pilot customer is very happy with the level of service and savings.

Holly Braun: Who was the manager for this project?
Kathleen Belkhayat: It was internally managed. We looked at existing conditions and in some cases used code as a baseline. Pulling the measures apart is complicated. We are looking at how we handle this by backing out the savings.
Oliver Kesting: This is the remaining piece we need to pin down before launching the program.

Kathleen: Pay for Performance allies will work with customers through this program and will receive training. We'll start with retail, office and grocery customers

JP Batmale: What's the Program Management Contractor role? Does the PMC coordinate allies' outreach?
Kathleen Belkhayat: There's a little bit of outreach from the PMC on this offering as initial work in the market. The PMC will mostly review energy reduction plans and qualify and train Pay for Performance allies. They are helping do engineering review and program design.

Stan Price: I'm interested in talking more about the baseline issue. Maybe offline.

Holly Braun: Are you connecting with the city's scoring mechanism to find the right buildings?
Kathleen Belkhayat: That could be a future strategy.

Jess Kincaid: What's the threshold for delayed payment. How long are customers willing to wait for payment?
Kathleen Belkhayat: Seattle City Light got some customer input about this through a workshop. There were some questions about the length of the contract. It's not an issue after the first year.

Charlie Grist: How long is the term? Is it monitored over the full course of the three years?
Oliver Kesting: It's monitored for three years, and we're assuming a five-year measure life.

Charlie Grist: Was there a baseline discussion?
Oliver Kesting: We have been trying to design the program to use the most accurate information upfront to determine what the baseline should be and deduct any extra savings from the model.

The challenge is if the baseline is code and you're looking at the whole-building level, you'll pay on the additional savings also. We can either deduct it upfront or on the back end. I would like some input from the Conservation Advisory Council members. Do you see value in going the second route and paying for savings we actually see at the whole building level?
Stan Price: Yes. I appreciate the hard work you've put into this. I'm not a huge fan of worrying too much about free ridership. I'm in favor of moving this baseline discussion to after-the-fact, so a project isn't held up with a calculation of what the baseline should be. Having the discussion up front puts a throttle on the program that's supposed to encourage participation so you can learn more. If you are trying to weed it out after the fact instead of screening out good candidates, it's helpful.

JP Batmale: This is what a code building should be.

Charlie Grist: If it has a five-year measure life, it limits the term of the baseline thinking. Lighting is a good example. By limiting the term life cycle, you can decide what's in and what's out. The Regional Technical Forum is using a dual baseline where you have a condition for a while and if lighting needs to be replaced after year one, you make some adjustments. What will happen without the intervention, you don't know. Some look like early replacement of things that would have happened anyway. You can change the operating hours of a grocery store and it adjusts the baseline.

JP Batmale: Is the challenge old equipment that never dies—zombie equipment?
Oliver Kesting: Zombie equipment is the nickname we've given equipment that just keeps running and won't get replaced unless we intervene. That's not the concern as much as equipment they would have replaced in the timeline of the program. How do we deduct that? We've seen more and more challenges as we look at it. One solution would be to take a lower evaluation factor.

Stan Price: One of the screening criteria is that there's no planned significant capital project during that time. This may have more implications during the full-scale program. The risk factor may not be significant.

Don Jones: How long they'll wait for payments depends on the size of the payment. The idea of having a baseline calculation will complicate the process.

Julia Harper: If more than six potential projects are interested, how will you decide?
Kathleen Belkhayat: We'll look at the diversity and geographic locations to get a mix.

Chris Smith (Energy 350): Cost-effectiveness will be used to screen projects out, right? If you look at the full cost and full savings, projects end up not being cost-effective and need to be looked at incrementally. If it passes the screening, doing nothing is a viable option. I would hate to throw out good projects. I like the idea of netting it out in the end with evaluations but not ruining good projects up front.

Charlie Grist: Other programs struggled with building and reviewing models. Are you doing that in house? Have you had similar struggles? Is there room for a third party to help?
Kathleen Belkhayat: ICF's engineering team will review the models. We've developed a performance tracking tool that has a standardized format that should help to make review easier.

Holly Braun: Between this and Strategic Energy Management, how do the incentives compare?

Kathleen Belkhayat: For SEM, we offer $0.04/kwh and $0.40/therm for achieved savings after the first year. We pay for incremental savings each subsequent year. For Pay for Performance, we offer $0.05/kwh (operations and maintenance path), $0.10/kwh (capital path) $0.60/therm (operations and maintenance path) and $1.20/therm (capital path) for achieved savings after the first year. The same rate is paid on maintaining the same level of savings in the second and third year.

Oliver: For operations and maintenance measures, that's a total of 15 cents compared to 4 cents for electric savings. Engineering services and coaching are a big part of costs in SEM. In Pay for Performance, we are paying the 15 cents, but the customer needs to have the contract with and pay the Pay for Performance ally.

5. Residential Trends: Existing and New Homes

Marshall Johnson provided an overview of residential trends and sources of savings, including for New Homes and Existing Homes programs in Oregon and Washington.

Don MacOdrum: What is the difference between trade ally and non-trade ally in gas versus electric?
Marshall Johnsons: We have a lot of contractors who install windows but aren't trade allies. A larger percentage of homes with non-trade ally projects are related to windows installed in homes heated by gas.

Lisa McGarrity: Are you counting electronic ignition savings?
Marshall Johnson: We've decoupled the savings from Fireplace Efficiency savings of the unit from electronic ignition savings. This data includes a small subset of Electronic Igntion units that were in Avista territory prior to offering all measures at the start of 2017.

Charlie Grist: How are you measuring savings from midstream ignitions?
Marshall Johnson: We took an allocation based on 2015 baseline research and collected data to adjust the allocation.

Don MacOdrum: Related to the Savings Within Reach trend, there is a steep increase on the gas side and NW Natural recruitment helped. Were they doing something new?
Marshall Johnson: We expanded Savings Within Reach income eligibility. We also focused on HVAC trade allies participation. HVAC contractors are a good fit to support participation this pathway.

Tony Galluzzo: This suggests the DHP measure is upgrading people from electric heat to addcooling also, but what happens on the gas side?
Lisa McGarrity: Are you taking into account a penalty if customers add air conditioning, or does it net out in the savings from heating.
Marshall Johnson: There's a non-energy credit applied, but we aren't taking a reduction for air conditioning use. In general, air conditioning hours of use is pretty low.

Holly Braun: Why is the lowest HSPF efficiency level showing up in 2016?
Marshall Johnson: We did a pilot in manufactured homes to replace electric furnaces, using lower efficiency units due to space limitations.

Holly Braun: It looked like lower tiers were already transformed. Do we know if that will come up in 2018?

Marshall Johnson: It will in retrofits (aka, conversions) and upgrade incentives. We are encouraging 9.0 or 9.5 Heating Seasonal Performance Factor to replace forced air furnaces and evaluating the discontinuation of heat pump upgrade incentives in 2018.

Peter West: Planning staff will be back to a future Conservation Advisory Council meeting with analysis results for some of these measures.

Charlie Grist: Is there an upgrade and conversion program?
Marshall Johnson: Yes, we have both, but the conversion is what we'll set our sights on. There's a bigger savings opportunity.

John Frankel: You show 4,224 EPS new homes. What percentage of the market is that?
Marshall Johnson: That's 38 percent in Oregon and 34 percent in Washington.

Holly Braun: New Homes was big on the pie chart for gas savings. Market transformation is a big part of that. Is that from the baseline moving up in furnaces?
Marshall Johnson: That is from changes to the new construction code, not furnace market transformation.

Charlie Grist: It's great to see year-over-year trends. It's helpful and I want to encourage it. Is there full market data on EPS new homes? Also, aerator savings are big. Have you evaluated them?
Marshall Johnson: We have a sense of the composition of measures that get recognized and a sense of the water heating breakdown in EPS, along with a decent sense that non-efficient water heating is going into code homes. Tankless water heaters are going in new homes on the gas side. We've done some evaluation work on aerators. We have a good sense of how often they get installed and it will be updating other elements in 2018 to align with assumptions from the Regional Technical Forum.
Alan Meyer: We did a study on flow rates.
Marshall Johnson: We did a study on flow rates for multifamily buildings, as well as install rates from Energy Saver Kits. Bathroom aerators and showerheads had the same installation rate and kitchen ones had the worst rates.

6. Updates on Portland's Home Energy Scoring Ordinance
Andria Jacob and Andrew Shepard provided information about the City of Portland's Home Energy Scoring ordinance.

Andrew Shepard: Energy Trust helped train trade allies to deliver Home Energy Scores, and also raised customer awareness. We participate in the Oregon Department of Energy-led HB 2801 group. We hosted additional stakeholder meetings to discuss scoring. EPS for existing homes will no longer be offered by mid-2017. Earth Advantage will use the U.S. Department of Energy Home Energy Score that will be available for homeowners. EPS for new homes will remain as an offering.

Andria Jacob: City council adopted an ordinance last December. It stems from our work on climate action and protection. The national carbon emissions trend is much higher than ours and we are trending downward. Our goal is to reduce emissions by 80 percent by 2050. We are currently at 21 percent despite the growth in population. Owner occupied single-family homes are the starting point as the largest chunk of the housing market.

> We are used to seeing informational labels on many things, but not on homes. Single-family homes sold in Portland will receive a score and report. The sellers or builders are

> the regulated parties. We are the first to require this at the point of listing. We won't publish scores on Portland maps, but realtors will have to scores to regional multiple listing service listings. The draft scorecard is out for review and public comment.

Jess Kincaid: Has any effort been made to have instant-savings measures installed when existing homes are scored?
Andrew Shepard: That's a great suggestion. We've looked into that. We would like to empower real estate professionals to help or order kits.

Holly Braun: This is awesome to see the progression. Realtors weren't in favor of this. Who will enforce scores being entered into RMLS? Is there an exemption for low-income customers? What is the qualification process?
Andria Jacob: The realtors lost the debate, but they could challenge it in court. There were a number of them in support of this. We promised to go back 30 months after implementation, and compliance rates are part of it. We would like to rely on training and education. People will start to do it over time. Earth Advantage will be our quality assurance partner and implementer.

> To get around the administrative burden of qualifying people, we specified programs that already do it. If sellers are qualified for Low Income Home Energy Assistance Program or reduced-cost lunches at school, for example, we will take people's word for it. Code does give us the ability to levy fines, but that will come later. Rulemaking will happen in July and August.

Lisa McGarrity: Will there be an exemption processes? Who will pay for it if there's no money?
Andria Jacob: Low-income customers will be exempted, including households who make less than 60 percent of the median income.

Garrett Harris: Will the city coordinate with Energy Trust to track leads and closed transactions for trade allies?
Andrew Shepard: Some of the upgrades are outside of what we can track and quantify. We will track on what we can.
Andria Jacob: We have an evaluation contractor who goes over and above energy savings.
Tony Galluzo: It sounds like an assessment similar to what an allied technical assistance contractor would provide. Is this for all utilities?
Andria Jacob: They are trained and licensed providers. The market driven cost is about $200 to $250.
Roger Kainu: I was just at conference where this came up. Nationally, it looks like the prices are coming down to more like $100. Home inspectors can give scores while they are doing their inspections.

7. Energy Trust's diversity, equity and inclusion strategy

Debbie Menashe provided an update on the current status of Energy Trust's Diversity Initiative strategies and community outreach efforts. She shared the mission statement and initiative standards, objectives and goals to bring cultural competency to both the organization and its programs and projects. The purpose of the mission is to better serve diverse populations, contractors and partners. Debbie asked for assistance to convene a group of clean energy organizations to identify the jobs that are available now and in the future in order to better recruit diverse populations.

Lisa: Will you use a third party to help with data analysis?
Debbie: We do that often. We also need help understanding cultural concerns and history.

Andria Jacon: The Clean Energy Works Portland pilot proved that it's difficult and tricky to work with diverse customers. It's not easy, but great to see. We had an external party do an equity audit to understand who benefits from or is harmed by these policies and actions. When we engaged with groups, we heard feedback that it was the city's priority, not theirs.

Don Jones: Have you considered asking other organizations that are out ahead of you on these things?
Debbie Menashe: Yes. We don't cover the low-income community, but we are focused on reaching everyone.

Jess Kincaid: Reach out to the educational system. Community colleges, colleges and universities are trying to support equity.
Debbie Menashe: Mount Hood Community College had a career fair about ten days ago and we attended.

Don MacOdrum: How deep back into the pipeline are you looking? A lot of people are starting to make decisions about their careers in school that will impact the rest of their lives.
Debbie Menashe: We are working with DeLaSalle High School for interns who have been with us all year. We hope that they remember when they move on.

Allison Spector: It's good to look at the educational institutions and why women and people of color are not in certain fields. Are there champions that keep them interested and engaged? Can you support that?

Charlie Grist: This came up in the seventh power plan. Ways to look at data to see where we are touching and not. There is a coalition of 10 utilities or so that are trying to produce some ways to measure by the end of this year. NEEA is participating.

Roger Kainu: Oregon Worksource puts on a presentation about equity gentrification. He can point out where the pockets are within Oregon with the highest concentrations of different groups.

8. Planning 2017 Conservation Advisory Council agendas
Peter West asked what topics should come to Conservation Advisory Council meetings in 2017.

Peter West: What is missing? Sector trends analysis will become part of the upcoming budget process. Penetration analyses will show results of deep reaching into markets. We will present ductless heat pump analyses will come back in about August or September.

JP Batmale: How about a status report on the new residential PMC selection and process?
Peter West: Selection will be presented in September, and status updates will provided in 2018.
Andria Jacob: When will the decision be made?
Peter West: It will go to the board on July 26.
Alan Meyer: You can be fairly confident that the recommendation will go through.

JP Batmale: Do we ever hear what comes out of the board strategic planning workshop?
Alan Meyer: The information will be available following the next board meeting.

Don MacOdrum: Selection and notification of respondents happens on June 26. Would that be public?
Peter West: The selection will be approved and publicly available at the July 26 board meeting.

9. Public comment

Dave Bamford: The diversity study is very progressive, and I would love to see scoring become the national model. It can become a great selling tool for realtors.

10. Meeting adjournment

The next scheduled meeting of the Conservation Advisory Council will be on June 21, 2017 at 1:30 p.m.

2016 Large Customer Funding Compliance Study Results

Conservation Advisory Council

June 21, 2017

Energy Trust of Oregon

Background: SB 838

- Allowed additional charges to acquire more energy efficiency
- Large commercial and industrial electric energy users (> 1 aMW) exempted
- Large electric customers to receive no “direct benefit” from additional funding

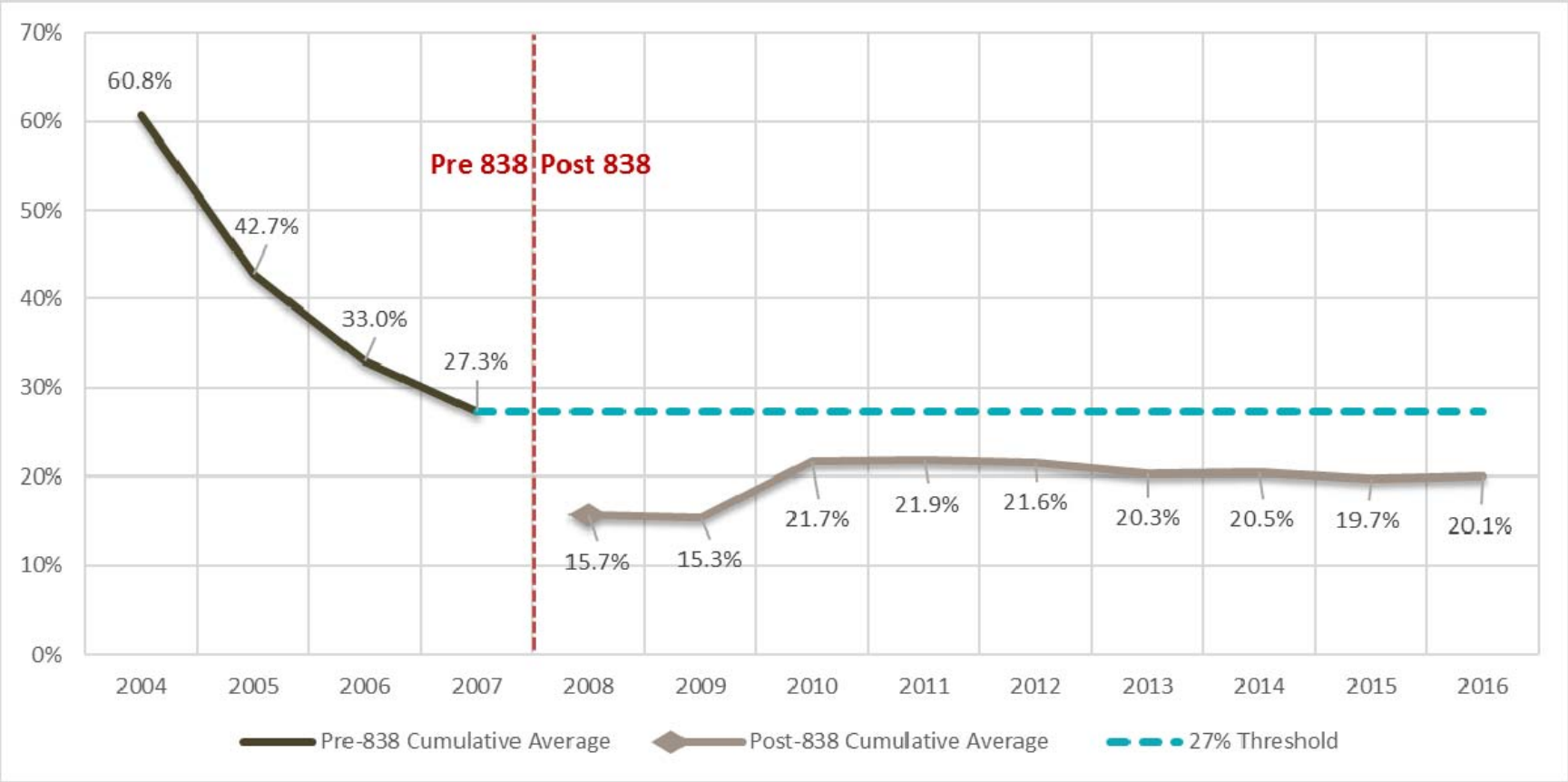
Background: Implementation

- Incentives serve as proxy for program spending (i.e., benefits)
- Calculate cumulative incentives going to large customers as a percentage of SB 1149 revenue in pre- and post-SB 838 periods
- Study completed annually by third party
- Compares Energy Trust project history to utility lists of customers exempt from SB 838 charges
- If historical average is exceeded, three years to correct

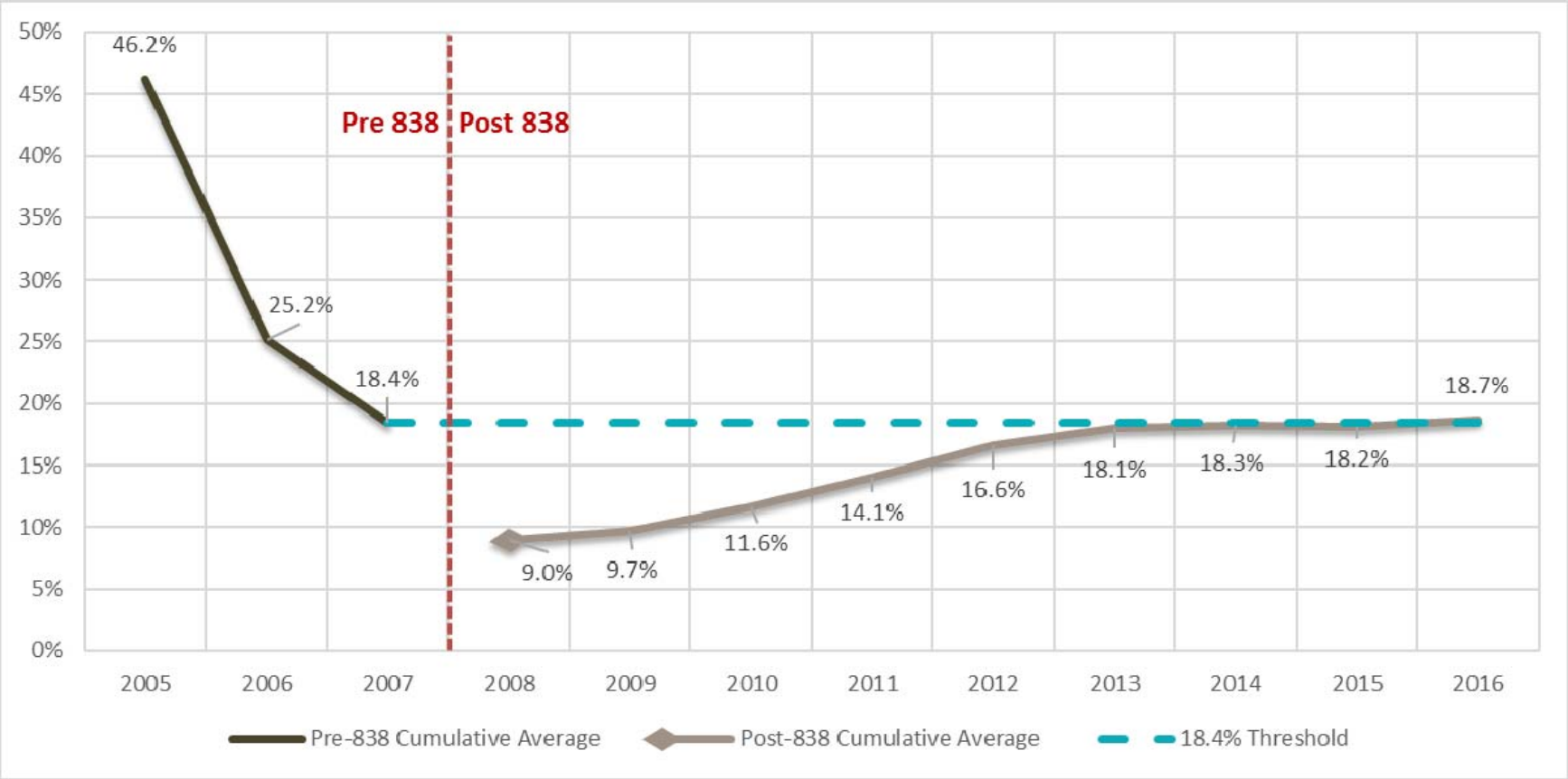
History of Stakeholder Engagement

- Annual update to Conservation Advisory Council during Quarter 2
- Board Strategic Planning Workshop in 2013 reviewed analytic method in preparation for 2015-2019 Strategic Plan
- Stakeholder review of guidelines in 2014; no changes made

2016 Results: Pacific Power



2016 Results: Portland General Electric



Drivers

- Healthy economy
- New Commercial construction activity
- Increased industrial activity
- Success with large customer engagement

Conclusions

- Remain in compliance for Pacific Power for 2016
- Exceeded the pre-SB 838 baseline for PGE in 2016
- 2017 and 2018 forecasted large customer spending should be available this summer
- Remediation likely starting in 2017

Design Ideals for Program Actions

Effective	Reduces spending on large customers
Protective	Minimizes loss of savings
Skillful	Minimizes damage to customer relationships or their attitudes towards energy efficiency
Simple	Does not create major new inefficiencies in program operations; is easy to explain
Realistic	Plans for multi-year time horizons to implement changes and achieve results
Nimble	Able to be changed if ineffective or once average funding spent is back under baseline

Questions?

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EnergyTrust of Oregon

Greater Than 1 aMW Analysis Project

Portland General Electric (PGE) 2016 Report

Prepared by CLEAResult for:
Energy Trust of Oregon
06.21.2017

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PROJECT OVERVIEW

The purpose of this project is to determine the percentage of SB 1149 funds that Energy Trust spent on sites that used more than 1 aMW (>1aMW) in 2016. This percentage was compared to Energy Trust's historical spending percentages from 2005-2007 to determine if spending on this group of customers has changed since the inception of SB 838.

PROJECT RESULTS

Key Findings

- While overall 1149 revenue ($28 million) in 2016 was close to 2015, >1aMW incentives increased by almost $1.4 million
- Total kWh savings for PGE in 2016 increased by over 23.5 million kWh while savings at >1aMW sites decreased by 3.5 million kWh during the same period
- The cumulative post-838 share of 1149 revenue spent on incentives at >1aMW sites saw an increase from 18.2% to 18.7% due to the increase in spending in 2016, meaning the pre-838 baseline of 18.4% has been passed

In 2016, total incentive spending on >1aMW users was 23% of SB 1149 revenue, an increase of 6% since 2015 and the highest level since 2013. Average spending per site was up to $103,000 from an average of $86,000 last year, while average savings was down to 592,000 from kWh from an average of close to 695,000 kWh in 2015. Table 1 also shows the average percentage of SB 1149 revenue spending on >1aMW customers since 2008, and the percentage of total savings from >1aMW customers.

Table 1: Comparison of analysis and results 2014 -2016

PGE >1aMW Customer Activity	2014	2015	2016	Change in Overall Percentage
% 1149 revenue to >1aMW customers	19.6%	17.4%	22.8%	5.4%
Cumulative average % 1149 revenue to >1aMW customers since 2008	18.3%	18.2%	18.7%	0.5%
% Total kWh savings from >1aMW customers	23.0%	23.6%	18.9%	-4.7%

*Historical baseline average is 18.4%

Tables 2 & 3 below show SB 1149 revenue, incentives spent on >1aMW customers, the percentage of total SB 1149 revenue spent on the >1aMW sites, total kWh savings from projects at >1aMW sites, and the number of sites receiving incentives for 2005-2007 and 2008-2014.

Table 2: Summary of spending and kWh savings for >1aMW customers 2005-2007 (pre-838)

Pre-838 Results				
Energy Efficiency 1149 Revenue	2005	2006	2007	2005-2007 (average)
Energy Efficiency 1149 Revenue	$21,065,813	$22,720,384	$25,673,961	**$23,153,386**
Incentives to >1aMW Sites	$9,742,145	$1,282,158	$1,762,765	**$4,262,356**
>1aMW Incentives as a Percent of 1149 Revenue	46%	6%	7%	**18.4%**
Number of >1aMW Sites Receiving Incentives	39	30	27	**32**
Savings from >1aMW Sites (kWh)	126,503,077	14,056,604	68,431,766	**69,663,816**
Total Savings (kwh)	213,903,461	121,192,910	139,322,053	**158,139,475**
Percent of Total Savings from >1aMW Sites	59%	12%	49%	**44%**

Table 3: Summary of spending and kWh savings for >1aMW customers 2008-2016 (post-838)

Post-838 Results										
PGE	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2008-2016 (average)**
Energy Efficiency 1149 Revenue	$26,890,837	$26,669,621	$27,065,764	$28,510,770	$28,119,658	$26,484,405	$28,741,721	$28,723,137	$28,127,435	**$27,703,705**
Incentives to >1aMW Sites	$2,421,817	$2,778,741	$4,189,900	$5,950,881	$7,508,724	$6,705,824	$5,621,248	$5,004,680	$6,413,577	**$5,117,266**
>1aMW Sites Incentives as a Percent of 1149 Revenue	9%	10%	15%	21%	27%	25%	20%	17%	23%	**18.7%**
Cumulative Average	9%	10%	12%	14%	17%	18.1%	18.3%	18.2%	18.7%	**18.7%**
Number of >1aMW Sites Receiving Incentives	41	48	49	54	56	56	55	57	62	**53**
Savings from >1aMW Sites (kWh)	21,022,885	26,348,517	49,949,458	46,516,463	62,520,010	95,229,586	73,813,874	40,267,774	36,740,007	**50,267,619**
Total Savings (kwh)	145,935,756	150,705,221	219,884,055	244,453,313	282,316,497	311,992,892	321,470,265	170,374,245	194,005,002	**226,793,027**
Percent of Total Savings from 838-Exempt Sites	14%	17%	23%	19%	22%	31%	23%	24%	19%	**22%**
Potential additional incentives to >1aMW sites (Sensitivity Analysis)	*n/a*	*n/a*	*n/a*	*$39,727*	*$0*	*$0*	*$0*	*$0*	*$0*	***n/a***

Chart 1 shows the cumulative average of 1149 spending from 2005-2007 and 2008-2016. The horizontal line indicates the cumulative average from 2005-2007, which is the historical baseline and threshold for spending in the post-SB 838 period. Annual 1149 spending on >1aMW sites and the cumulative average increased from 2008 through 2012, but decreased slightly in 2013 and 2014. The cumulative average of the post-838 period (18.7%) is now just above the historical threshold of 18.4%. If revenue remained consistent in 2017, it would require a decrease in spending on >1aMW sites of over $2 million from incentive totals in 2016 to $4.4 million to lower the cumulative average below the 18.4% threshold

Chart 1: Cumulative average of SB 1149 revenue spending on >1aMW customer incentives 2004-2016, pre & post-838

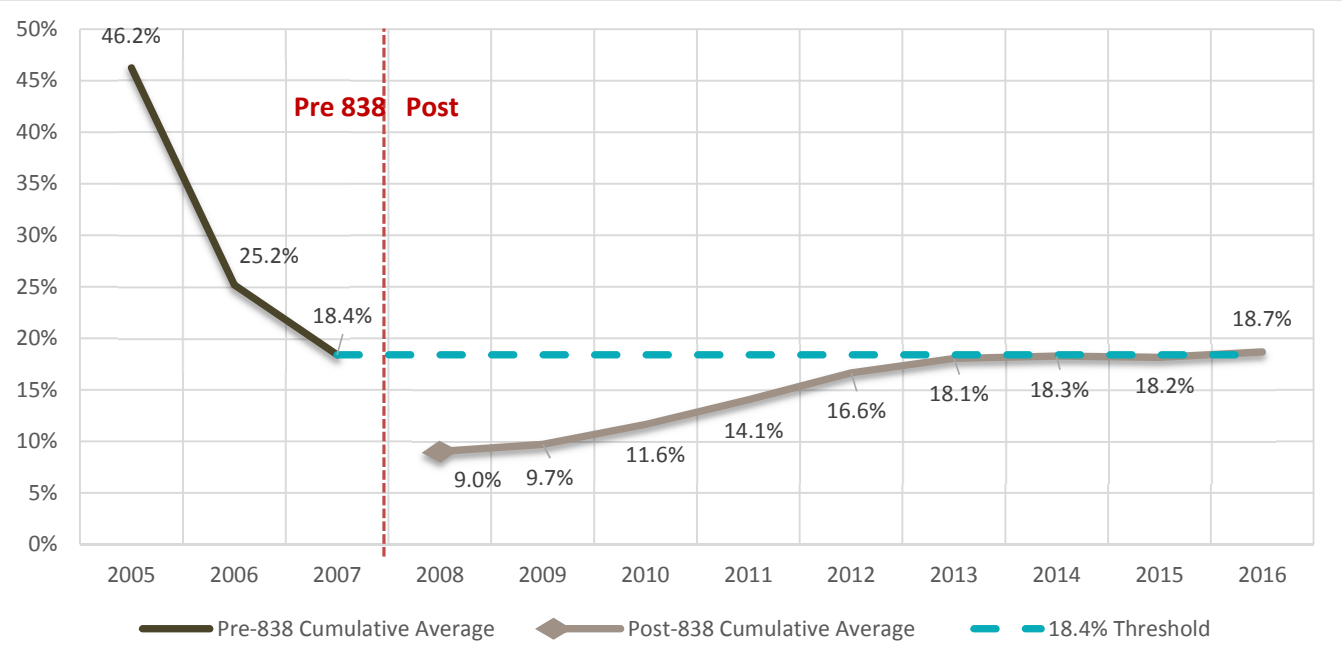


Table 4 below shows PGE spending on >1aMW customers by program by year beginning in 2005. Programs include Production Efficiency (PE), Existing Buildings (BE), and New Building Efficiency (NBE) projects.

Table 4: Summary of incentive spending & savings by program by year on >1aMW customers 2005-2016, pre & post-838

PGE	Production Efficiency		Existing Buildings		New Building		Total	
	$	kWh	$	kWh	$	kWh	$	kWh
Pre-838 Results								
2005	$8,134,413	N/A	$1,236,725	N/A	$371,008	N/A	$9,742,145	126,503,077
2006	$942,023	N/A	$111,121	N/A	$229,014	N/A	$1,282,158	14,056,604
2007	$1,520,782	N/A	$73,324	N/A	$168,659	N/A	$1,762,765	68,431,766
Post-838 Results								
2008	$1,989,391	N/A	$294,243	N/A	$138,184	N/A	$2,421,817	21,022,885
2009	$1,466,194	N/A	$781,466	N/A	$531,081	N/A	$2,778,741	26,348,517
2010	$3,097,231	43,322,367	$1,042,144	6,495,907	$50,525	131,184	$4,189,900	49,949,458
2011	$4,397,749	39,347,943	$1,513,314	6,703,335	$39,818	465,185	$5,950,881	46,516,463
2012	$5,774,602	51,916,828	$1,673,182	10,428,884	$60,940	174,338	$7,508,724	62,520,050
2013	$4,824,179	81,668,283	$1,654,099	11,204,217	$227,546	2,357,086	$6,705,824	95,229,586

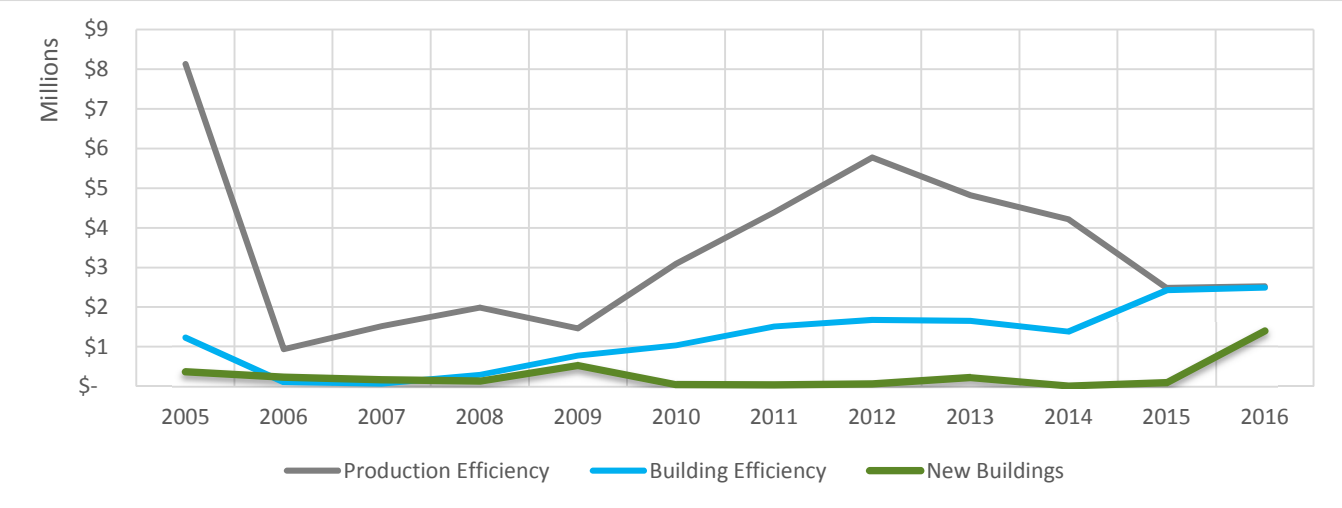
2014	$4,219,172	66,948,131	$1,384,860	6,765,869	$17,216	99,874	$5,621,248	73,813,874
2015	$2,485,462	28,953,430	$2,425,927	11,013,332	$93,291	301,012	$5,004,680	40,267,774
2016	$2,525,003	20,114,928	$2,490,249	9,377,647	$1,398,325	7,247,432	$6,413,577	36,740,007

Chart 2 below shows spending by program by year in graphical form. Each program category demonstrates unique year to year incentive spending patterns:

- New Buildings program spending increased over $1.3 million from 2015
- Production Efficiency and Existing Buildings program spending increased only slightly from 2015

The largest single >1aMW project was $1.2 million data center through the Existing Buildings program and the only large project above $1 million.

Chart 2: PGE >1aMW incentives by program 2005-2016, pre & post-838



METHODOLOGY

To calculate the incentive spending and percentages, a list of PGE >1aMW customers was compared to Energy Trust incentive program data, which includes incentives paid to all commercial and industrial PGE customers. Due to differences in the way that each data set is coded, address was the primary identifying characteristic to match >1aMW customers with incentive recipients.

There were several challenges to using address as the primary identifying characteristic. These challenges included:

- Some sites include multiple addresses
- A few addresses have multiple sites
- Some addresses have multiple customer names (typically, multiple divisions or business lines at one address)
- Multiple addresses exist for the same physical location (ie, one data set uses an address on a particular street, and the other uses an address on the cross street or a parallel street)
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- Generic locations are listed on the PGE >1aMW customer list instead of addresses; for example, “Warehouse” instead of “123 Main Street”
- For large industrial sites, the >1aMW customer list may contain an address for an adjacent office building and does not include every building address within the site

CLEAResult used newer software in addition to past methods to match project addresses to 1aMW sites:

- Both site and project addresses were normalized using Alteryx address normalization functionality
- Direct matches where street addresses matched exactly were considered matches
- Matching of 4-digit zip code extensions (usually indicate the same block)
- Alteryx geo-spatial tools were used to determine closest adjacent projects to 1aMW sites by distance
- Sites with the closest projects in proximity and no direct address match were given the first priority for analysis and review
- Projects with highest kWh savings were given higher priority and additional scrutiny
- Projects and site addresses that matched with different company names were researched and included if proof existed that both were of the same company (often due to company mergers or using corporate names)

ASSUMPTIONS

The primary premise of this analysis is the site definition. The OR SB 1149 definition of a site is: “‘Site’ means a single contiguous area of land containing buildings or other structures that are separated by not more than 1,000 feet, or buildings and related structures that are interconnected by facilities owned by a single retail electricity consumer and that are served through a single electric meter.”

The site definition used to identify incentives paid to >1aMW user sites cannot be strictly applied to individual meters at large sites because neither CLEAResult nor Energy Trust has granular level data on the meters at a given site. Therefore, CLEAResult assumes that >1aMW user sites with generic addresses, such as “South of A Street,” or multiple close addresses, match Energy Trust incentive program data when the address is a close match. These instances occur most frequently for the three site types outlined below with a set of assumptions are used to overcome uncertainty in each case.

There are three main business types that compose the majority of the >1aMW list: large industrial, hospitals, and college campuses. Each of these business types are typically physically constructed in a campus-like manner with many buildings clustered together that are owned by a single entity. Assumptions must be made when selecting one of these businesses as a match due to subtle differences between the way the >1aMW user list is constructed and the way the Energy Trust incentive program data reports the location of a project:

Large Industrial

- The >1aMW user list typically reports a single address for the site

        - The reported address is typically adjacent to the actual industrial site
        - This address may be a central office that handles billing for all structures
- The Energy Trust incentive project list reports each individual building address within a site
    - The addresses reported on this list don't always align with the >1aMW user list address
- An assumption is made that all addresses on the Energy Trust incentive project list are part of a single site if the >1aMW user list contains an address that is adjacent or within close proximity to all other addresses
    - If a single office reports for several different industrial sites these sites must be relatively close to be considered a match

Hospitals

- The >1aMW user list handles hospital sites by reporting some sites with a single address and other sites with multiple addresses within a campus
    - Single address entries are typically within the hospital campus but not part of the main structures
        - This address may be a central office that handles billing, similar to large industrial
    - Sites with multiple addresses often times do not include every potential address within the site
- The Energy Trust incentive project list reports each individual building address within a site
    - A single health care company often times owns several different sites within a city where each site is relatively close together
    - Each hospital campus is clearly finite and separate from any other site regardless of whether the proximity to other sites is near or far
- An assumption is made for single address entries that all addresses on the Energy Trust incentive project list are part of a single site if they are within the finite campus where the >1aMW user address is located
- An assumption is made for multiple address entries that all addresses within the associated campus are part of a single site even if the >1aMW user list does not provide a complete list of addresses for the site

College Campuses

- The >1aMW user list always gives multiple addresses for a single site
    - Every potential address within a single college campus is not given
- The Energy Trust incentive project list reports each individual building address within a site
- An assumption is made that all addresses on the Energy Trust incentive project list for a college campus are part of a single site even if the >1aMW user list does not provide every address

Greater Than 1 aMW Analysis Project

Pacific Power 2016 Report

Prepared by CLEAResult for:
Energy Trust of Oregon
06.21.2017

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PROJECT OVERVIEW

The purpose of this project is to determine the percentage of SB 1149 funds that Energy Trust spent on Pacific Power sites that used more than 1 aMW (>1aMW) in 2016. This percentage was compared to Energy Trust's historical spending percentages from 2004-2007 to determine if spending on this group of customers has changed since the inception of SB 838.

PROJECT RESULTS

Key Findings

- Overall 1149 revenue increased by over $377,000 while >1 aMW incentives increased by over $1.7 million from 2015
- Total kWh savings for Pacific Power increased by over 2 million kWh while savings at >1 aMW sites decreased by over 9.8 million during the same period
- The cumulative post-838 share of 1149 revenue spent on incentives at >1aMW sites is consistent at 20%, still below the pre-838 baseline of 27%

In 2016, total spending on >1aMW users was 23% of SB 1149 revenue, an increase of 8% from 2015. The percentage of total savings from >1aMW customers increased by 5% in 2016. Average savings per >1aMW customer site decreased from around 767,000 kWh per site to 643,000 kWh per site, while total incentives per site increased from about $93,000 to almost $114,000 in 2016

Table 1: Comparison of analysis and results 2014 -2016

Pacific Power	2014	2015	2016	Change in Overall Percentage
% 1149 revenue to >1aMW customers	21.7%	15.0%	22.7%	7.7%
Cumulative average % 1149 revenue to >1aMW customers since 2008*	20.5%	19.7%	20.1%	0.4%
% Total kWh savings from >1aMW customers	26.2%	31.1%	22.6%	-8.5%

*Historical baseline average is 27%

Tables 2 & 3 below show SB 1149 revenue, incentives spent on >1aMW customers, the percentage of total SB 1149 revenue spent on the >1aMW sites, total kWh savings from projects at >1aMW sites, and the number of sites receiving incentives for 2004-2007 and 2008-2016.

Table 2: Summary of spending and kWh savings for >1aMW customers 2004-2007 (pre-838)

Pre-838 Results					
Pacific Power	2004	2005	2006	2007	2004-2007 (average)
Energy Efficiency 1149 Revenue	$13,346,771	$13,584,551	$14,614,927	$15,514,799	**$14,265,262**
Incentives to >1aMW Sites	$8,109,843	$3,401,328	$2,194,056	$1,867,641	**$3,893,217**
>1aMW Incentives as a Percent of 1149 Revenue	61%	25%	15%	12%	**27%**
Number of >1aMW Sites Receiving Incentives	38	42	27	34	**35**
Savings from >1aMW Sites (kWh)	64,086,521	36,711,900	14,947,636	27,311,042	**35,764,275**
Total Savings (kwh)	135,919,794	104,841,801	101,439,945	113,245,845	**113,861,846**
Percent of Total Savings from >1aMW Sites	47%	35%	15%	24%	**31%**

Table 3: Summary of spending and kWh savings for >1aMW customers 2008-2016 (post-838)

Pacific Power	2008	2009	2010	2011	2012	2013	2014	2015	2016	2008-2016 (average)
Energy Efficiency 1149 Revenue	$16,068,161	$16,391,296	$16,254,154	$18,772,015	$19,637,424	$20,069,559	$21,298,942	$21,164,176	$21,541,576	$19,021,922
Incentives to >1aMW Sites	$2,527,165	$2,435,060	$5,595,740	$4,223,682	$3,993,951	$2,953,604	$4,618,310	$3,168,073	$4,892,441	$3,823,114
>1aMW Incentives as a Percent of 1149 Revenue	16%	15%	34%	23%	20%	15%	22%	15%	23%	20%
Cumulative Average	16%	15%	22%	22%	22%	20%	21%	20%	20%	20%
Number of >1aMW Sites Receiving Incentives	39	46	54	51	50	53	48	49	42	48
Savings from >1aMW Sites (kWh)	28,944,611	20,615,419	73,365,871	43,075,265	60,102,118	68,146,982	49,011,387	37,592,519	27,779,471	45,403,738
Total Savings (kwh)	114,454,241	91,026,119	175,567,589	163,873,693	180,707,979	194,374,912	186,775,439	120,813,231	122,910,753	150,055,995
Percent of Total Savings from >1aMW Sites	25%	23%	42%	26%	33%	35%	26%	31%	23%	30%
Potential additional incentives to >1aMW customers (Uncertain Sites)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0	n/a

Chart 1 shows the annual cumulative average of 1149 spending from 2004-2007 and 2008-2016. The horizontal line indicates total cumulative average from 2004-2007, which is the historical baseline and threshold for spending in the post-SB 838 period. While annual 1149 spending on >1aMW customers has fluctuated since 2008, the cumulative average has shifted only slightly from 22% to 20% from 2010 to 2016. The cumulative average of the post-838 period has not exceeded the 27% threshold and is not likely to reach that level without a considerable increase in >1aMW spending relative to recent trends. If current revenue levels remained consistent, it would require an increase of over 100 percent from the current annual >1aMW incentive spending average for over seven years for the cumulative average to reach the 27% threshold.

Chart 1: Cumulative average of SB 1149 revenue spending on >1aMW customer incentives 2004-2016, pre & post-838

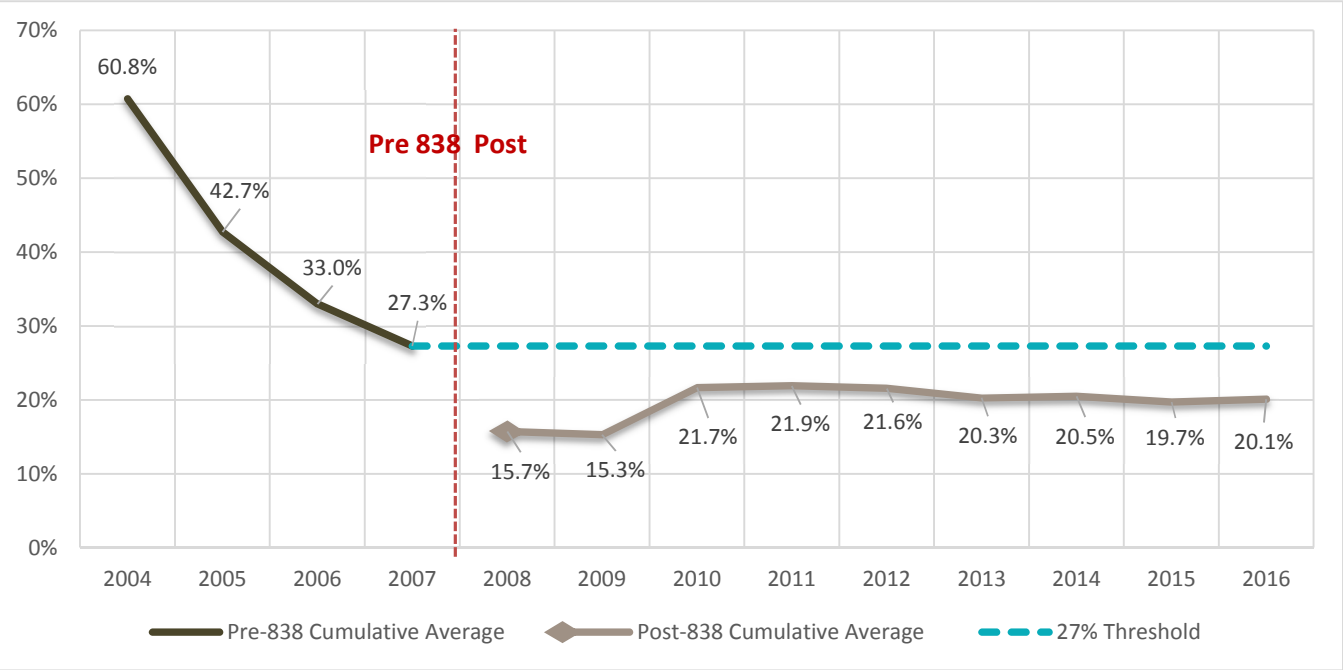


Table 4 below shows Pacific Power spending on >1aMW customers by program by year beginning in 2004. Programs include Production Efficiency, Existing Buildings, and New Building Efficiency projects.

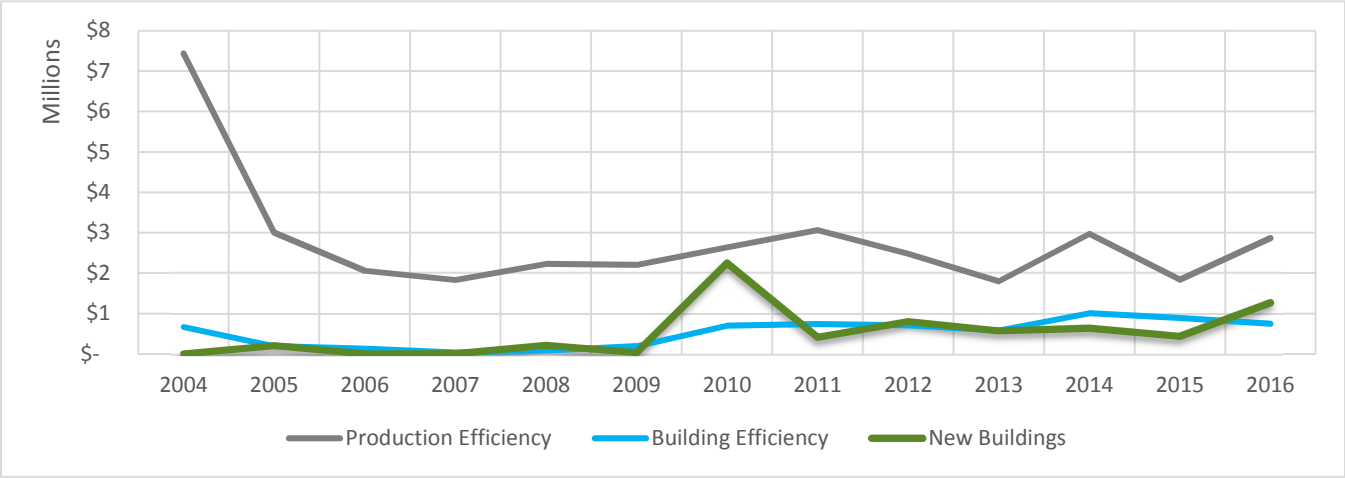
Table 4: Summary of incentive spending & savings by program by year on >1aMW customers 2004-2016 pre & post-838

Pacific Power	Production Efficiency		Existing Buildings		New Buildings		Total	
	$	kWh	$	kWh	$	kWh	$	kWh
Pre-838 Results								
2004	$7,437,150	59,431,460	$672,694	4,655,061	$0	0	$8,109,843	64,086,521
2005	$3,001,897	32,462,637	$191,317	1,471,116	$208,114	2,778,147	$3,401,328	36,711,900
2006	$2,064,894	12,915,875	$129,162	1,954,899	$0	76,862	$2,194,056	14,947,636
2007	$1,829,793	26,303,769	$37,848	1,007,273	$0	0	$1,867,641	27,311,042
Post-838 Results								
2008	$2,228,208	26,993,981	$81,581	558,736	$217,375	1,391,894	$2,527,165	28,944,611
2009	$2,205,999	19,304,368	$196,508	1,172,455	$32,553	138,596	$2,435,060	20,615,419
2010	$2,637,471	43,403,777	$701,914	3,988,196	$2,256,356	25,973,898	$5,595,740	73,365,871
2011	$3,068,225	36,323,836	$739,033	4,439,079	$416,424	2,312,350	$4,223,682	43,075,265
2012	$2,484,773	33,870,298	$704,960	2,905,115	$804,219	23,326,705	$3,993,951	60,102,118
2013	$1,803,408	21,747,738	$579,008	2,628,407	$571,188	43,770,837	$2,953,604	68,146,982
2014	$2,974,893	33,411,070	$1,009,363	10,392,722	$634,054	5,207,595	$4,618,310	49,011,387
2015	$1,839,594	22,287,566	$889,313	3,725,733	$439,167	11,579,220	$3,168,073	37,592,519
2016	$2,870,429	17,865,468	$748,341	3,232,974	$1,273,671	6,681,029	$4,892,441	27,779,471

Chart 2 below shows spending by program by year in graphical form. Each program category demonstrates unique year to year incentive spending patterns.

- Production Efficiency program spending increased by over $1 million from 2015 levels
- New Buildings program spending increased over $800,000 from 2015
- Existing Buildings program spending saw a slight decrease in 2016

Chart 2: Pacific Power >1aMW incentives by program 2004-2016, pre & post-838



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The primary premise of this analysis is the site definition. The OR SB 1149 definition of a site is: “‘Site’ means a single contiguous area of land containing buildings or other structures that are separated by not more than 1,000 feet, or buildings and related structures that are interconnected by facilities owned by a single retail electricity consumer and that are served through a single electric meter.” Pacific Power uses two different methodologies for self-direct and non-self-direct customers:

- **Self-direct:** All meters at a site are included based on the 1149 definition of a site
- **Non-self-direct:** Usage is analyzed at the meter level with no aggregation at any higher level

The site definition used to identify incentives paid to >1aMW user sites cannot be strictly applied to individual meters at large sites because neither CLEAResult nor Energy Trust has granular level data on the meters at a given site. Therefore, CLEAResult assumes that >1 aMW user sites with generic addresses, such as “South of A Street,” or multiple close addresses, match Energy Trust incentive program data when the address is a close match. These instances occur most frequently for the three site types outlined below with a set of assumptions are used to overcome uncertainty in each case.

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New Buildings

Market Engagement Activities

June 2017

EnergyTrust of Oregon

Agenda

Goal: review training and education goals, delivery, and invite discussion of current state and future direction.

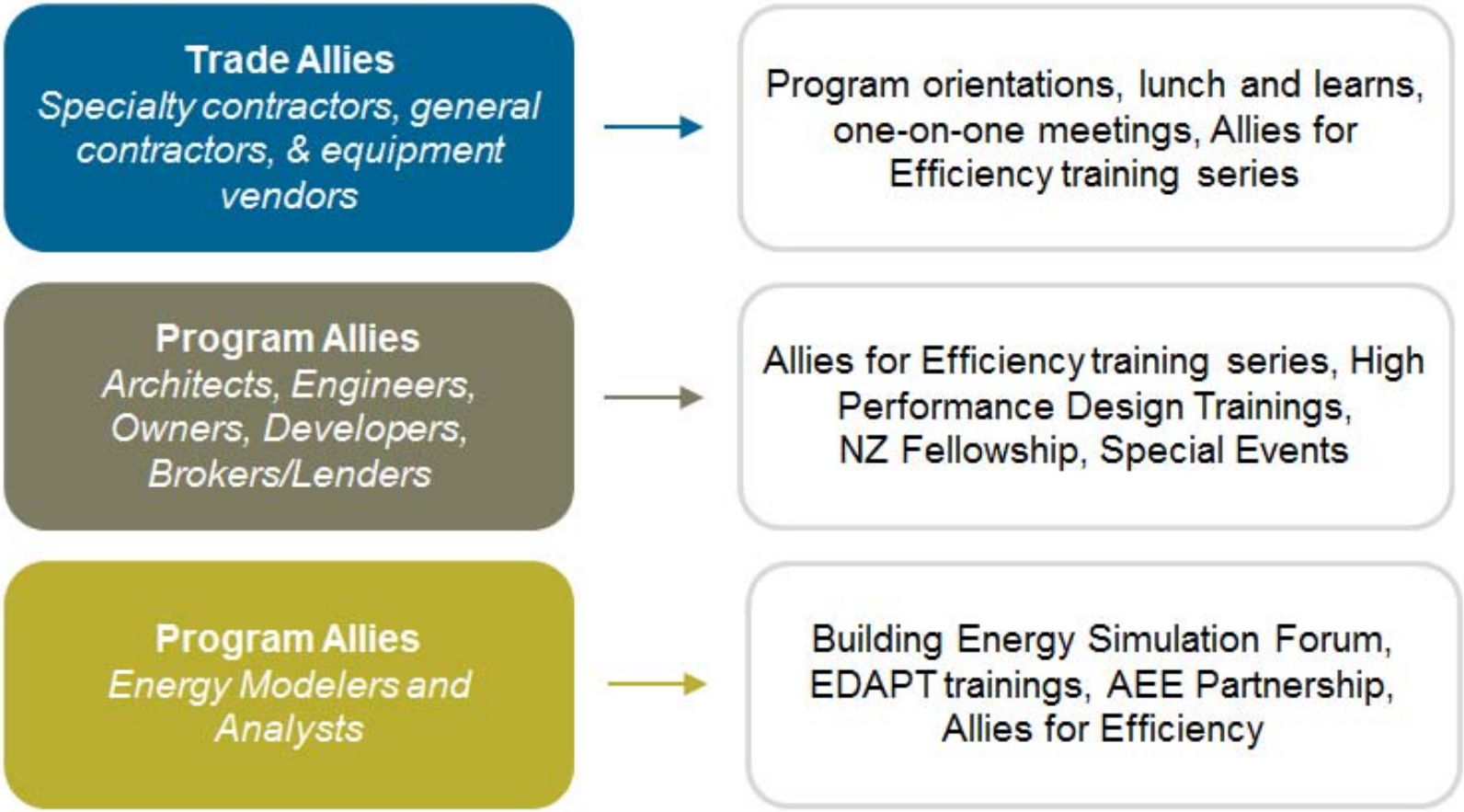
Discuss this question: Where are we headed – from where to where?

Outcome: capture your input, observations.

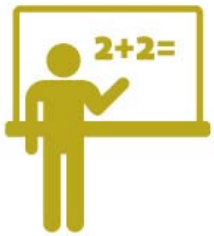
Why Training and Education?

Strategic Market Engagement

New Buildings Audience



Delivery Platforms



Building Energy Simulation Forum (BESF) – Forums for sharing knowledge on building simulation, energy analysis and modeling.

Allies for Efficiency (AFE) – Inspirational trainings that highlight a high-performance building case study. Feature design and construction team, usually located on-site with building tours, take place in Portland and throughout the state.

High Performance Design Technical Trainings – Highly engaging technical trainings on a specific topic, intended for architects and engineers

Special Events – Opportunities to engage with new audiences, to inform Allies about new tools and resources, or to highlight pilot programs or other new offerings

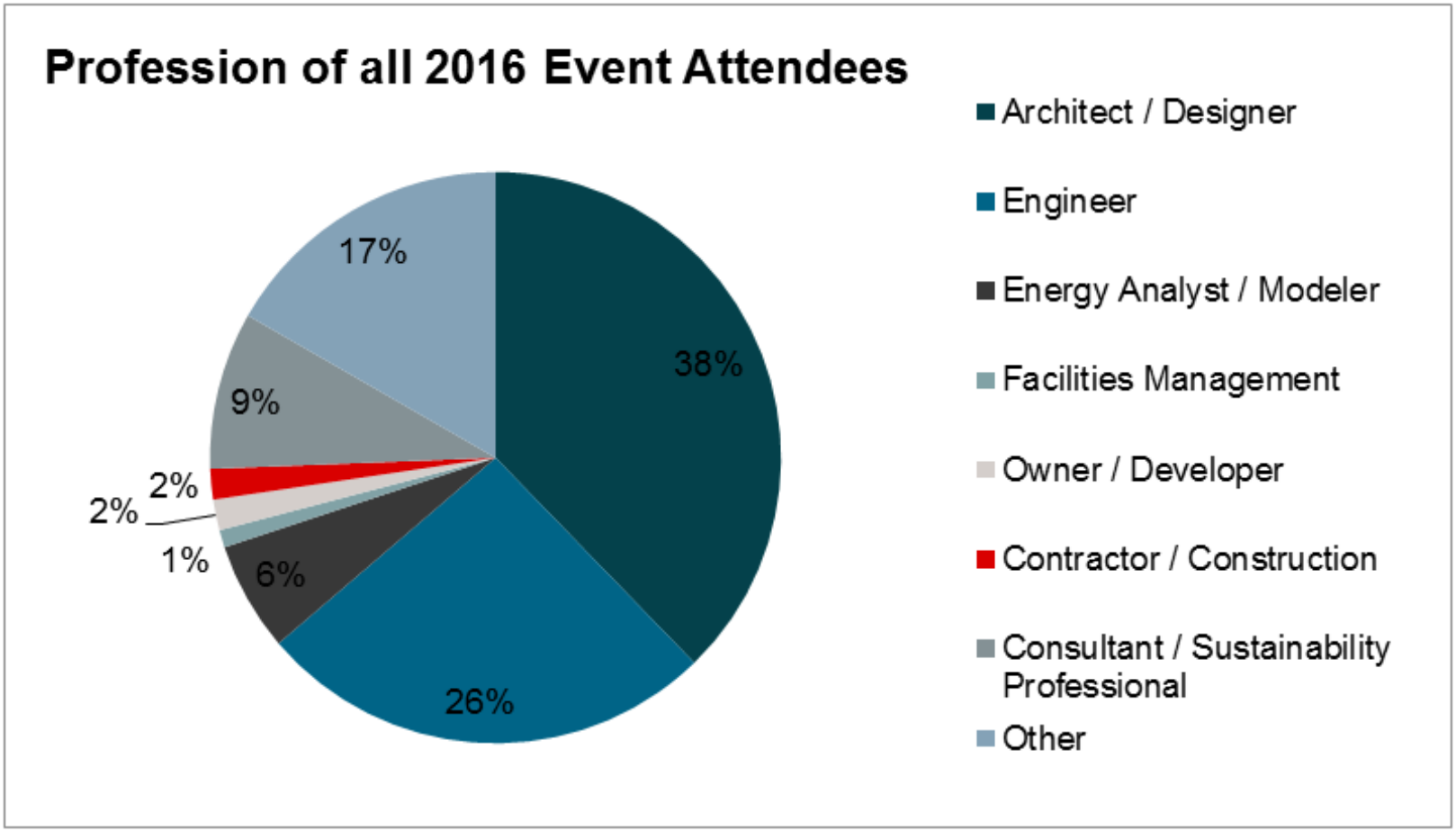
Event Partnerships & Sponsorships – Created to build meaningful relationships with important industry groups. Represent a range of engagement with existing industry events.

Partner and Sponsor Delivery

Event partnerships and sponsorships are a way to build meaningful relationships with important industry groups and organizations, and to connect with audience sectors we don't reach through our standard training types.

Association of Energy Engineers (AEE) Columbia River Chapter
AIA Portland – Emerging Professionals & Committee on the Environment
Women in Commercial Real Estate (CREW Portland)
AIA Salem Chapter
AIA Southwest Oregon Chapter
Design Build Institute of America (DBIA)
Urban Land Institute (ULI) Northwest Council
University of Idaho, Integrated Design Lab (Boise)
University of Oregon, Energy Studies in Buildings Lab (ESBL)
Lane Community College

Audience by Profession

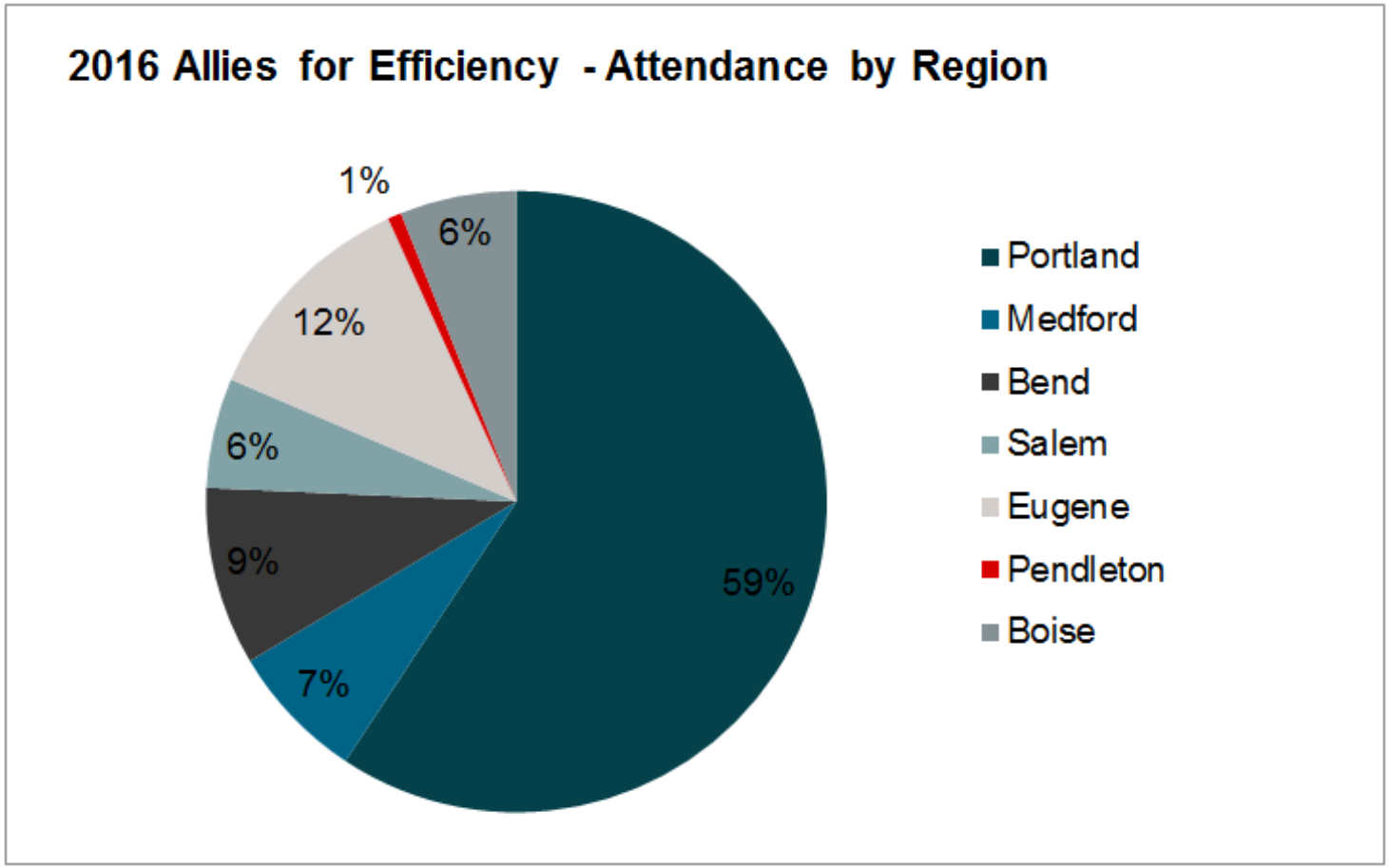


2016 Attendance

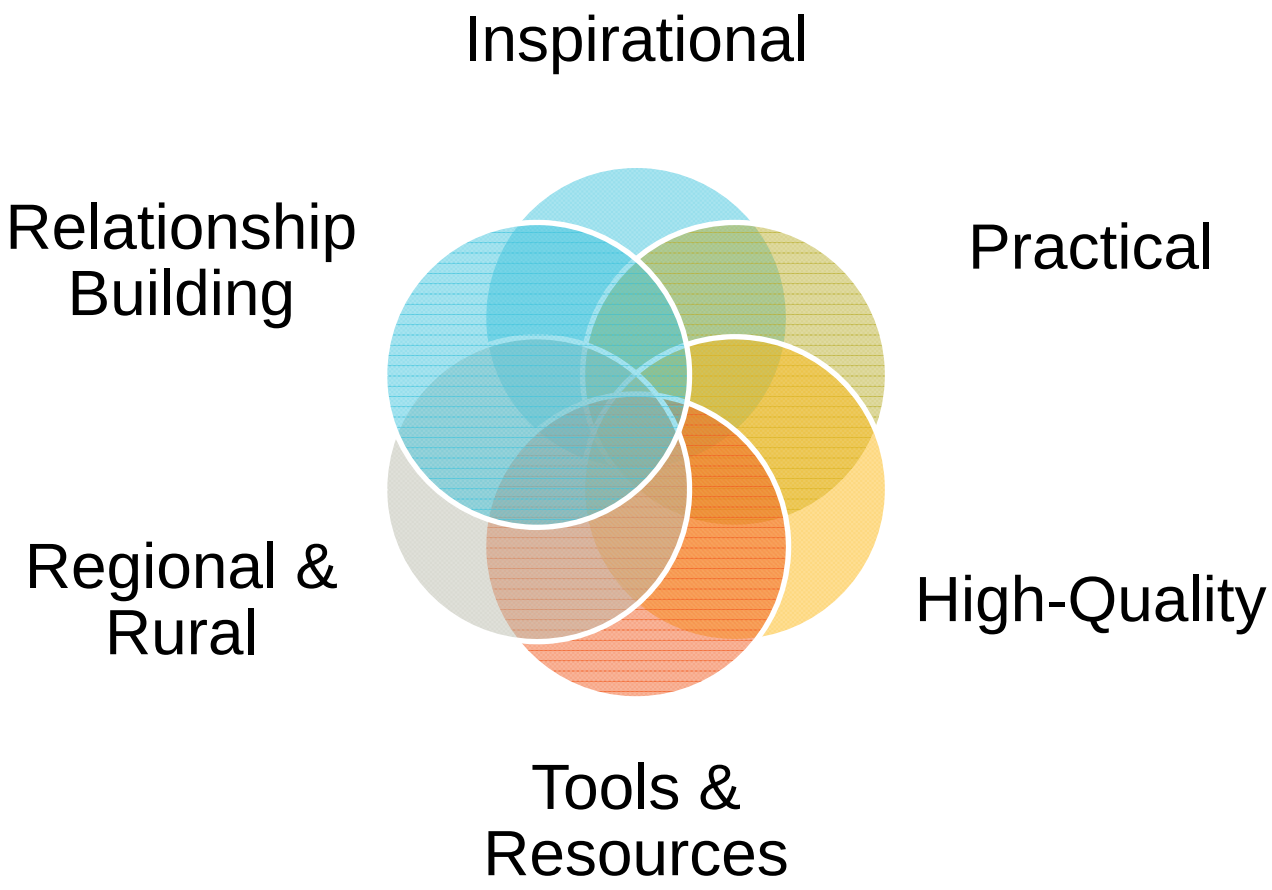
Event Type	# Events	Total Attendance 2016
Allies for Efficiency	6	345 per event
Technical Trainings	4	170 per event
Building Energy Simulation Forum	6	292 per event
Partnered Events	4	220 per event
Total:	**20**	**1,027**

2016 Allies for Efficiency Attendance by Region

In 2016, three trainings were located outside of the Portland metro, and 10 of the Portland-based trainings were available via online webinar. Remote attendees represented 40% of total Allies for Efficiency participation and 26% of Building Energy Simulation attendance.



Content design



Notes from discussion

From _____ to ____?

- What participants are new, missing, regular?
- What portion of the AEC market is represented?
- Categorize design build firms
- Focus on main market needs, define those
- Ask allies and non-allies about their needs
- Apply learnings from program evaluations
- Why are owners not represented – seems like a major market actor we want to influence?
- Continue to bring financial aspects

Thank You

Jessica Iplikci
Business Sector Manager

EnergyTrust of Oregon

Cannabis Market Update

Conservation Advisory Council

June 21, 2017

Overview and History

- Energy Trust began serving medical facilities in May 2013; adult-use/recreational began in 2016
- 2013 to 2015: incentives provided to 12 medical cannabis projects; about 800,000 kWh in savings
- 2016: incentives provided to 15 cannabis sites; about 1 million kWh in savings
- 2017: expect savings to exceed 4 million kWh
- Outreach strategy

Baselines

Baseline lighting is 1,000 watt HPS; some fluorescent

Baseline HVAC is standard eff. heat pump or mini-split

Baseline loads are 80-100 watts per square foot

Typical lighting hours

- Vegetative - 18 hours/day, 7 days per week
- Flowering - 12 hours/day, 7 days per week

Opportunity: Lighting, HVAC, Other

HVAC

- Three coil systems – cooling and dehumidification
- Variable refrigerant flow (VRF)
- Water cooled chillers and water side economization

Lighting: LED, ceramic, plasma

Dehumidification

Odor control – Plasma ionization air filtration

Savings of 25-50% currently feasible

Challenges

- Cultural – Growers know what works
- New players – Investors interested in bottom line
- Technological knowledge
- Competing priorities – Permitting, power, product
- Awareness of programs; building trust
- Learning with the market

Veriko Farms's Head Cultivation Manager Casey Rivers

INCENTIVES FOR CANNABIS CULTIVATION

Cultivation of medical and adult use cannabis can be energy intensive. Energy Trust of Oregon offers licensed growers free technical services and cash incentives for the installation of energy-efficient equipment at new and existing grow facilities.

Custom energy solutions

Energy Trust can work with cannabis producers to identify and implement custom improvements that can reduce energy costs over conventional equipment.

Energy Trust offers free technical services and provides cash incentives for:

- High-efficiency lighting and lighting controls, including LEDs. Energy Trust lighting specialists can work with you or your lighting vendor to specify qualified equipment.
- Technical studies to identify energy-efficiency opportunities for HVAC, insulation and other improvements, for qualified projects. Energy Trust pays 100 percent of the study cost.

Cash incentives are based on estimated annual energy savings and are available at $0.25 per kilowatt hour saved and $2.00 per therm saved.* Incentives can cover up to 50 percent of your upfront project cost and can be provided directly to the equipment vendor or contractor, reducing your investment. All custom projects must be pre-approved by Energy Trust to be eligible for incentive payments.

GREENHOUSE REBATES AVAILABLE

- Infrared, IR, polyethylene greenhouse covers
- Greenhouse controllers
- Condensing unit heaters
- Under-bench heating equipment
- Thermal curtains

Eligibility requirements

- Your business must be licensed by the State of Oregon and be on the active business registry
- Energy-efficiency measures must be installed in a permanent structure. Trailers or movable structures are not eligible for incentives
- The project site must be located in Oregon and served by Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas, or Avista, on a qualifying rate schedule
- Energy Trust must conduct pre- and post-verification for the installation
- Additional eligibility requirements may apply and could vary depending on your project

*Incentives are subject to availability and may change.

Get more from your energy.

To learn more about additional rebates and cash incentives available for your project, visit **www.energytrust.org/grow** or call **1.866.202.0576**.

Energy Trust of Oregon
421 SW Oak St., Suite 300
Portland, OR 97204
1.866.202.0576 **energytrust.org**

Serving customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista. 5/17

EnergyTrust of Oregon

Thank You

Sam Walker

Sr. Program Manager,
Industry and Agriculture

Business Customer Reports Overview

Conservation Advisory Council

June 21, 2017

Energy Trust of Oregon

Background

- Comprehensive view
- Consistent presentation of reliable data
- Program, organizational and customer value
- Developed in-house by a cross-functional team over 15 months

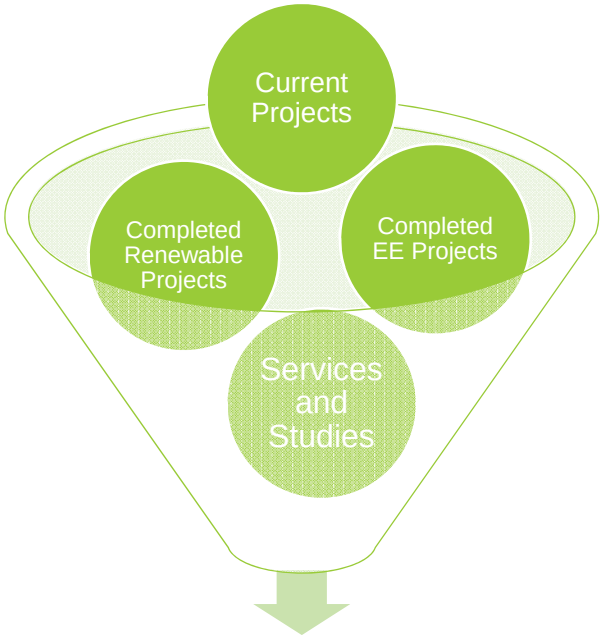
Business Customer Reports Basics

Three report types

1. Project Summary
2. Raw Data File
3. Project Recognition

Staff generates reports in Project Tracker in four steps

1. Confirm Site
2. Select Customer
3. Review Projects
4. Generate Report

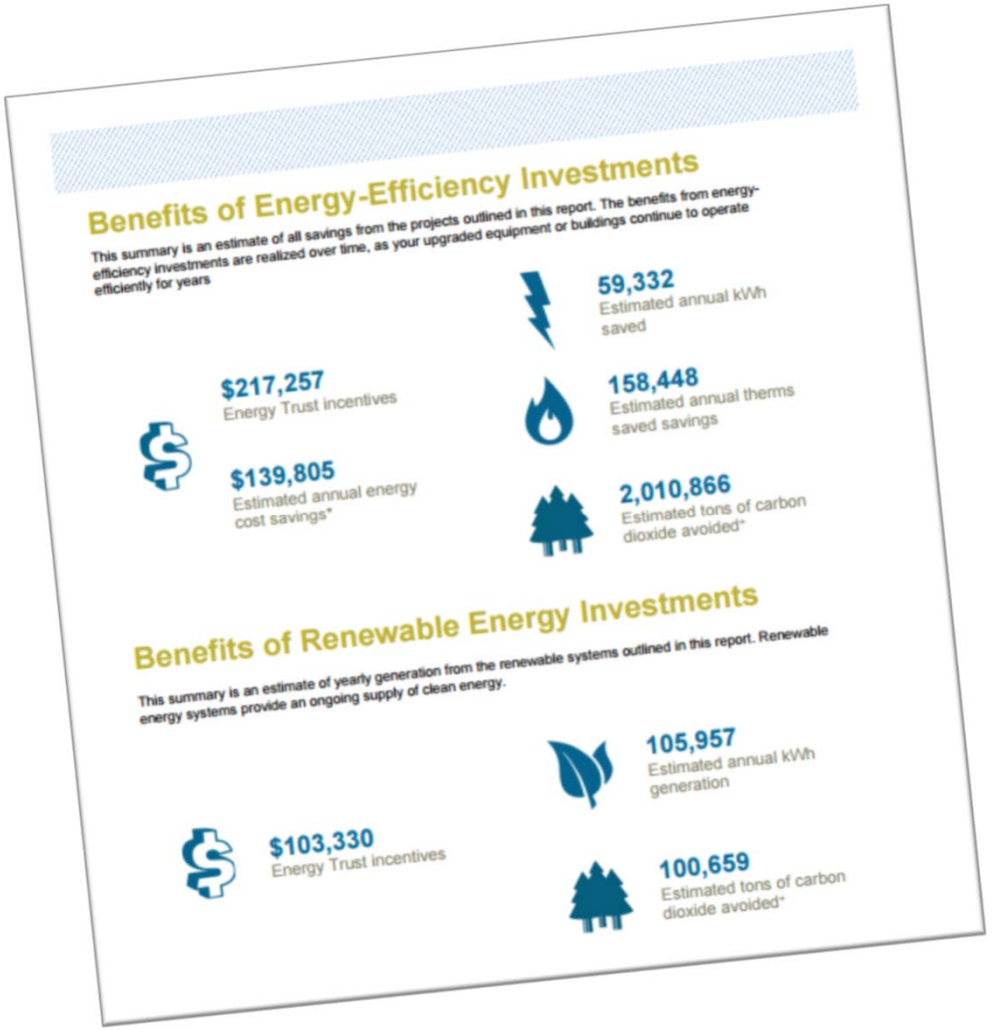


Customer Facing Reports

Project Summary Contents

Benefits of Investments

- One page summary of energy efficiency and renewable energy investments
- Numbers are calculated on an annual basis
  - Exception with Energy Trust summed incentives
- This page does not include:
  - Technical services and studies
  - Forecasted projects
  - References to UCI or specific utility information



Benefits of Energy-Efficiency Investments

This summary is an estimate of all savings from the projects outlined in this report. The benefits from energy-efficiency investments are realized over time, as your upgraded equipment or buildings continue to operate efficiently for years

59,332
Estimated annual kWh saved

$217,257
Energy Trust incentives

158,448
Estimated annual therms saved savings

$139,805
Estimated annual energy cost savings*

2,010,866
Estimated tons of carbon dioxide avoided*

Benefits of Renewable Energy Investments

This summary is an estimate of yearly generation from the renewable systems outlined in this report. Renewable energy systems provide an ongoing supply of clean energy.

105,957
Estimated annual kWh generation

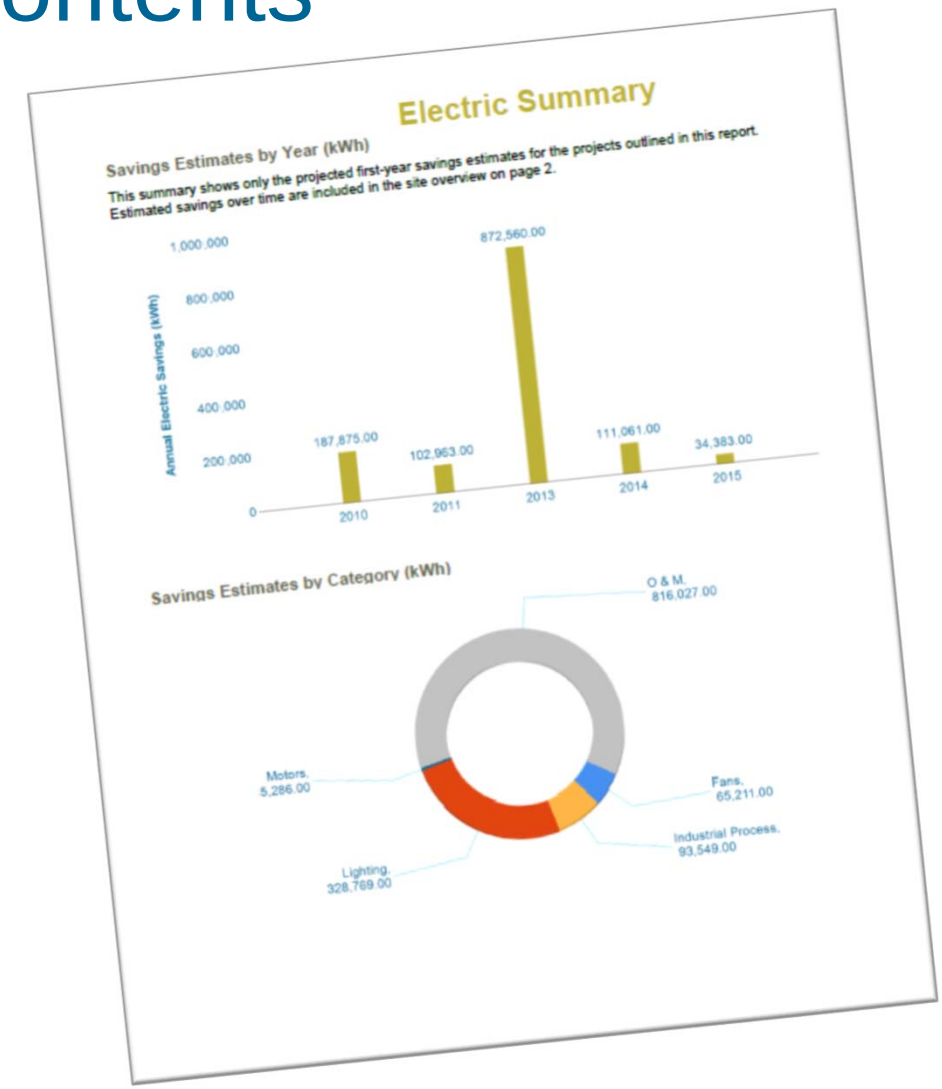
$103,330
Energy Trust incentives

100,659
Estimated tons of carbon dioxide avoided*

Project Summary Contents

Electric and Natural Gas Summaries

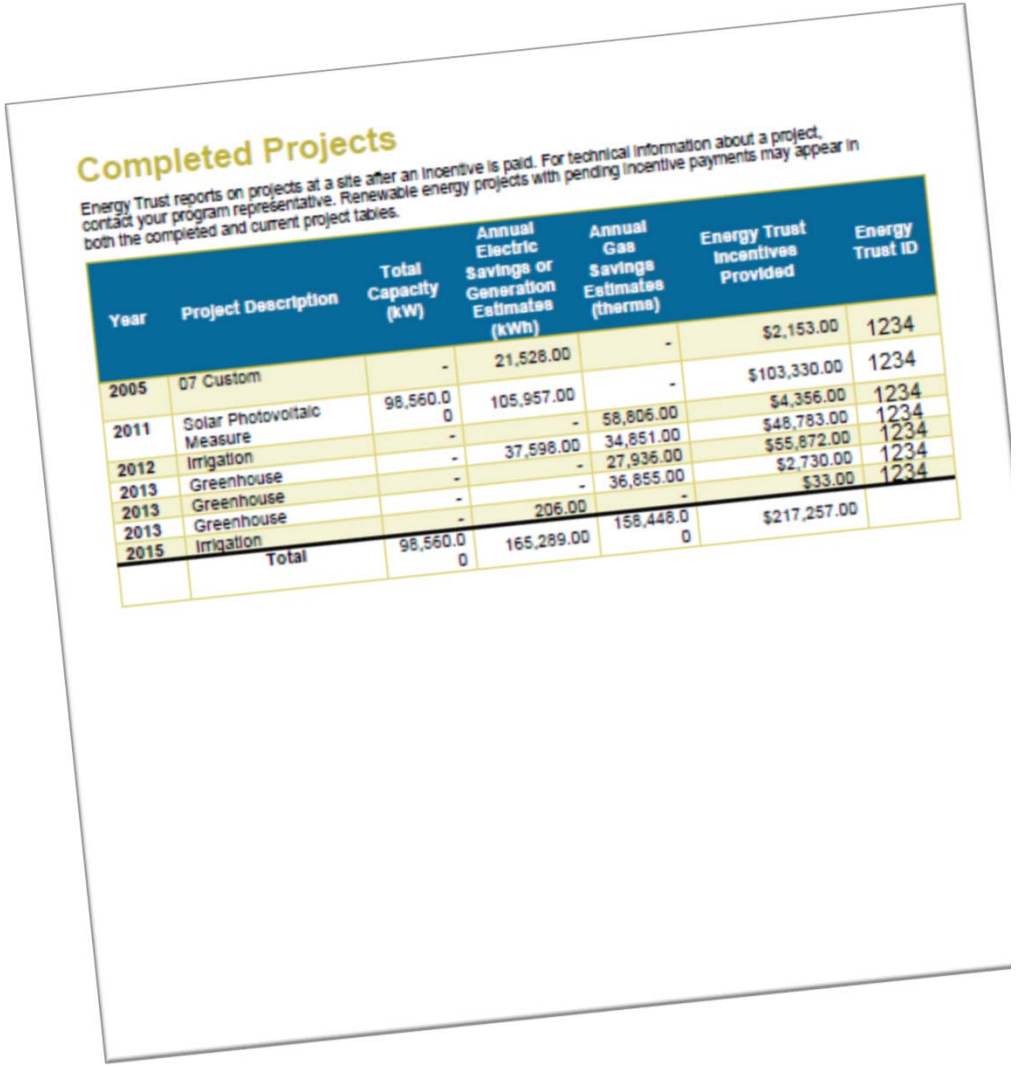
- Quick visual summary of completed project activity
- Savings estimates by year
- Savings estimates by category
  - Energy Trust measures are mapped to customer-friendly category labels



Project Summary Contents

Details on Completed Projects

- Includes all completed projects summed on the benefits page
- Includes year of completion, as well as Energy Trust ID for follow-up questions
- All savings and incentives are summed at the project level



Completed Projects

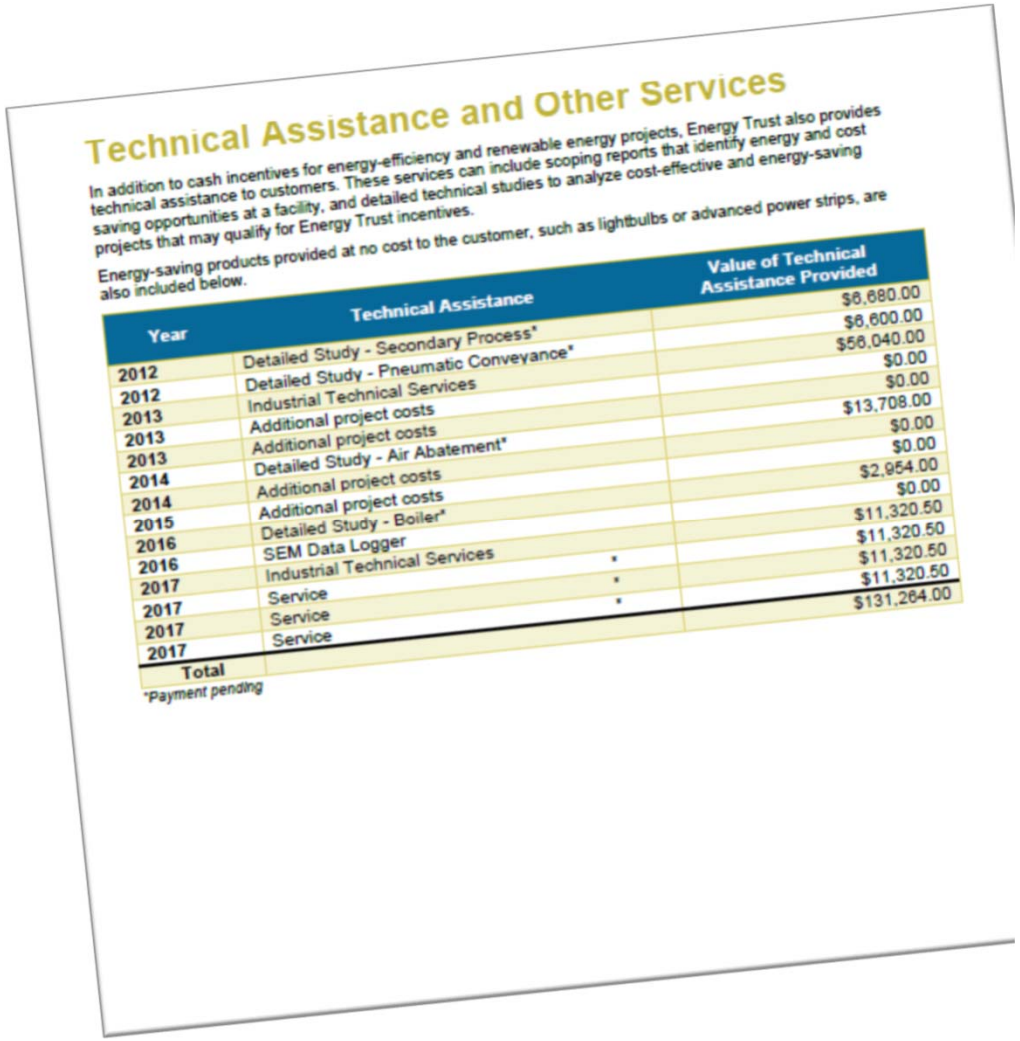
Energy Trust reports on projects at a site after an incentive is paid. For technical information about a project, contact your program representative. Renewable energy projects with pending incentive payments may appear in both the completed and current project tables.

Year	Project Description	Total Capacity (kW)	Annual Electric Savings or Generation Estimates (kWh)	Annual Gas Savings Estimates (therms)	Energy Trust Incentives Provided	Energy Trust ID
2005	07 Custom	-	21,528.00	-	$2,153.00	1234
2011	Solar Photovoltaic Measure	98,560.00	105,957.00	-	$103,330.00	1234
2012	Irrigation	-	-	58,806.00	$4,356.00	1234
2013	Greenhouse	-	37,598.00	34,851.00	$48,783.00	1234
2013	Greenhouse	-	-	27,936.00	$55,872.00	1234
2013	Greenhouse	-	206.00	36,855.00	$2,730.00	1234
2015	Irrigation	-		-	$33.00	1234
	Total	98,560.00	165,289.00	158,448.00	$217,257.00	

Project Summary Contents

Technical Assistance and Other Services

- Payments are investments Energy Trust made at the site
- Customer received value, but not a cash incentive
- The user has the ability to include or not include this page at the time of report generation



Technical Assistance and Other Services

In addition to cash incentives for energy-efficiency and renewable energy projects, Energy Trust also provides technical assistance to customers. These services can include scoping reports that identify energy and cost saving opportunities at a facility, and detailed technical studies to analyze cost-effective and energy-saving projects that may qualify for Energy Trust incentives.

Energy-saving products provided at no cost to the customer, such as lightbulbs or advanced power strips, are also included below.

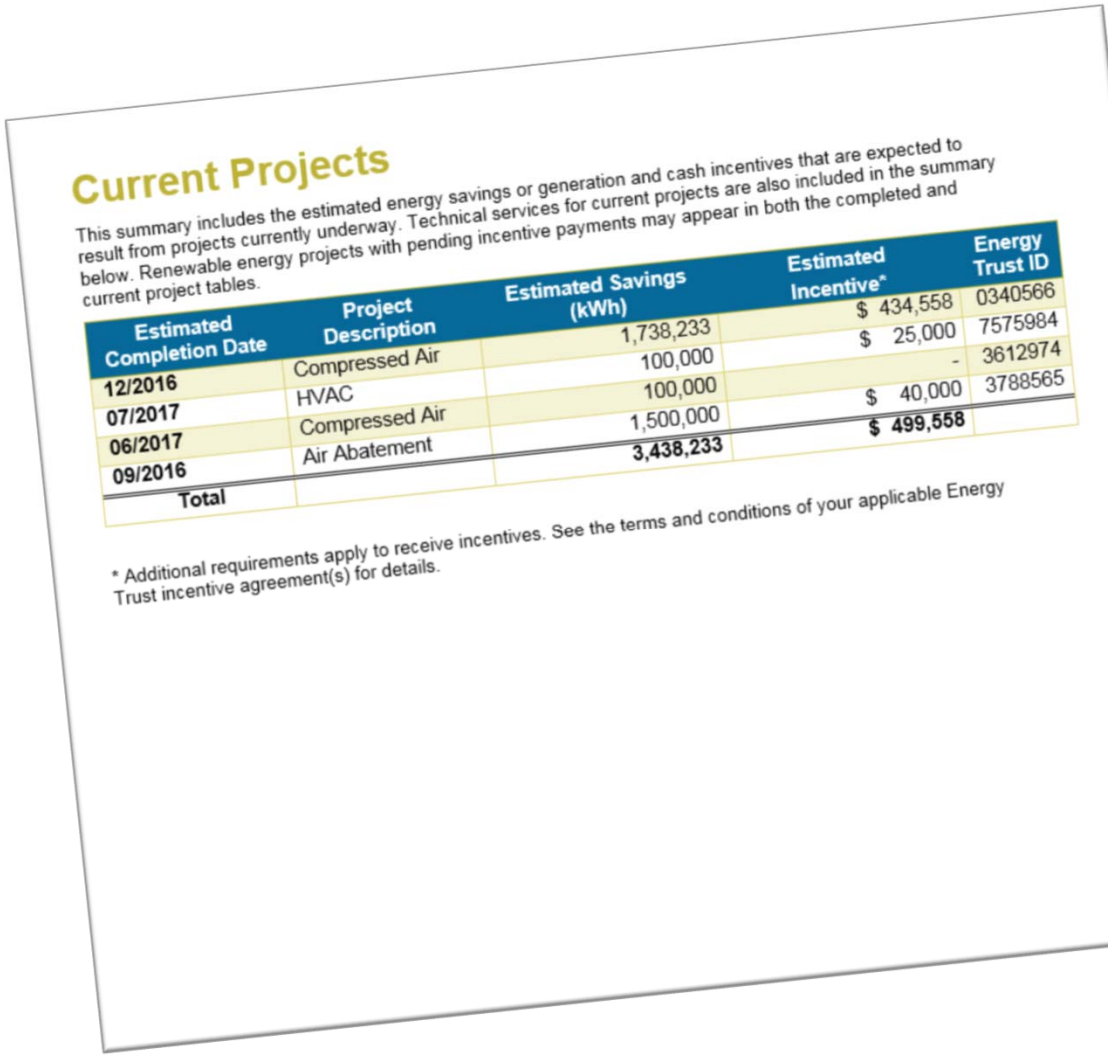
Year	Technical Assistance	Value of Technical Assistance Provided
2012	Detailed Study - Secondary Process*	$6,680.00
2012	Detailed Study - Pneumatic Conveyance*	$6,600.00
2013	Industrial Technical Services	$56,040.00
2013	Additional project costs	$0.00
2013	Additional project costs	$0.00
2014	Detailed Study - Air Abatement*	$13,708.00
2014	Additional project costs	$0.00
2015	Additional project costs	$0.00
2016	Detailed Study - Boiler*	$2,954.00
2016	SEM Data Logger	$0.00
2017	Industrial Technical Services *	$11,320.50
2017	Service *	$11,320.50
2017	Service *	$11,320.50
2017	Service	$11,320.50
Total		$131,264.00

*Payment pending

Project Summary Contents

Current Projects

- Show forecasted values of enrolled projects



Current Projects

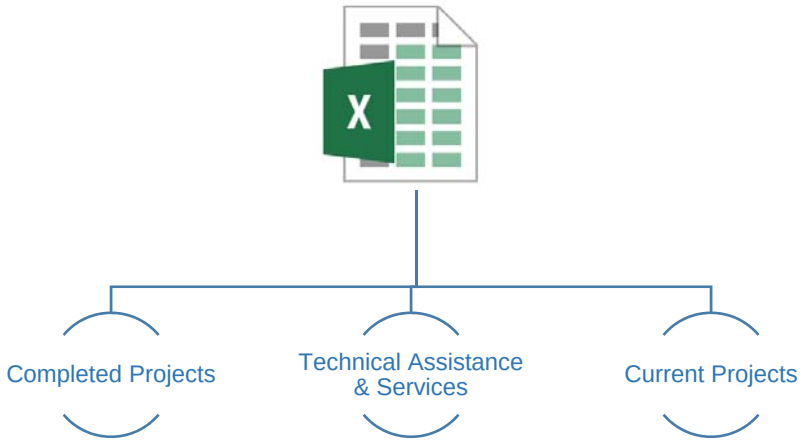
This summary includes the estimated energy savings or generation and cash incentives that are expected to result from projects currently underway. Technical services for current projects are also included in the summary below. Renewable energy projects with pending incentive payments may appear in both the completed and current project tables.

Estimated Completion Date	Project Description	Estimated Savings (kWh)	Estimated Incentive*	Energy Trust ID
12/2016	Compressed Air	1,738,233	$ 434,558	0340566
07/2017	HVAC	100,000	$ 25,000	7575984
06/2017	Compressed Air	100,000	-	3612974
09/2016	Air Abatement	1,500,000	$ 40,000	3788565
Total		**3,438,233**	**$ 499,558**	

* Additional requirements apply to receive incentives. See the terms and conditions of your applicable Energy Trust incentive agreement(s) for details.

Raw Data File

- All three tables from the Project Summary are included within an Excel Worksheet (.xlsx)
- Provides an option for customers who want to combine Energy Trust project data with their own internal project data
- This data can also be used as a more in-depth analysis using Excel



Project Recognition

- Creates a printable recognition document for a single project, in a certificate-like format
- Allows “Team Members” for a specific project to be added
- This document may be valuable to the following customer types:
  - Large projects
  - SEM projects
  - First time engagements

Results To Date

- 70+ reports produced so far
- Initial customer reaction is positive
- Data matters
- Clear connection with renewables, efficiency

Questions?

ACME Industries

Energy Trust of Oregon
Project Summary

June 2, 2016

4600 SE Business Dr.
Anytown, OR 97XXX

Confidential Summary provided by:

Energy Trust of Oregon
421 SW Oak St., Suite 300
Portland, OR 97204

1.866.368.7878
info@energytrust.org

EnergyTrust of Oregon

Energy Trust of Oregon is pleased to provide your Project Summary, an overview of energy efficiency and renewable energy projects at this site that have received Energy Trust support.

This confidential report may not contain every energy project that has been completed at this site – it includes only those that received Energy Trust technical assistance or cash incentives, as recorded in our systems of record.

The savings estimates here are just that – *estimates* based on Energy Trust's energy savings calculations for standard and custom efficiency and renewable projects – and are for informational purposes only. Your actual energy savings may be higher or lower than noted within this summary and could be influenced by a number of factors, including operating hours, weather and changes in your facility.

The summary contains information about your historic accomplishments and projects that are currently underway, that you can use to maintain momentum and continuously improve your site's energy performance.

This summary can be used in a number of ways:

- Orient new staff and management on energy efficiency investments
- Report on annual progress or across multiple sites to executives or corporate offices
- Provide background for capital planning and support for investment decision making
- Manage the timing of current and future projects to meet business goals

Most Oregon companies work with Energy Trust over a period of years on a variety of projects. We hope that this Project Summary provides you with information that can help your company get more from your energy.

Benefits of Energy-Efficiency Investments

This summary is an estimate of all savings from the projects outlined in this report. The benefits from energy-efficiency investments are realized over time, as your upgraded equipment or buildings continue to operate efficiently for years.

$310,773
Energy Trust incentives

$307,234
Estimated annual energy cost savings*

4,326,526
Estimated Annual kWh saved

5,725
Estimated Annual therms saved

2,089
Estimated Tons of carbon dioxide

Benefits of Renewable Energy Investments

This summary is an estimate of yearly generation from the renewable systems outlined in this report. Renewable energy systems provide an ongoing supply of clean energy.

$80,206
Energy Trust Incentives

604,161
Estimated Annual kWh generation

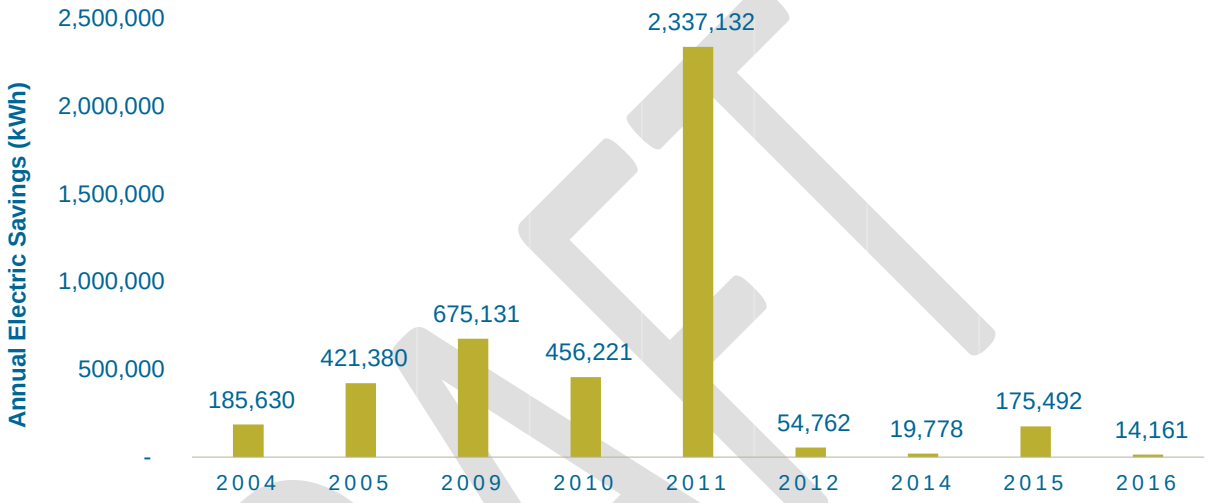
287
Estimated Tons of carbon dioxide avoided+

**Using a rate of $0.8402/therm and $0.0699/kWh; Cost savings for renewable projects cannot be automated by this report*
+Using a rate of 11.70 lbs/therm and 0.95 lbs/kilowatt hour

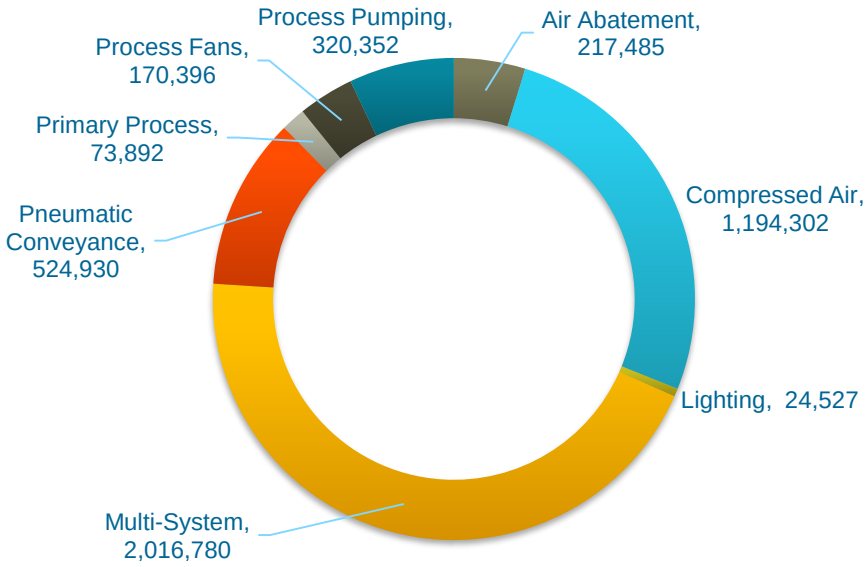
Electric Summary

Savings Estimates by Year (kWh)

This summary shows only the projected first-year savings estimates for the projects outlined in this report. Estimated savings over time are included in the site overview on page 2.



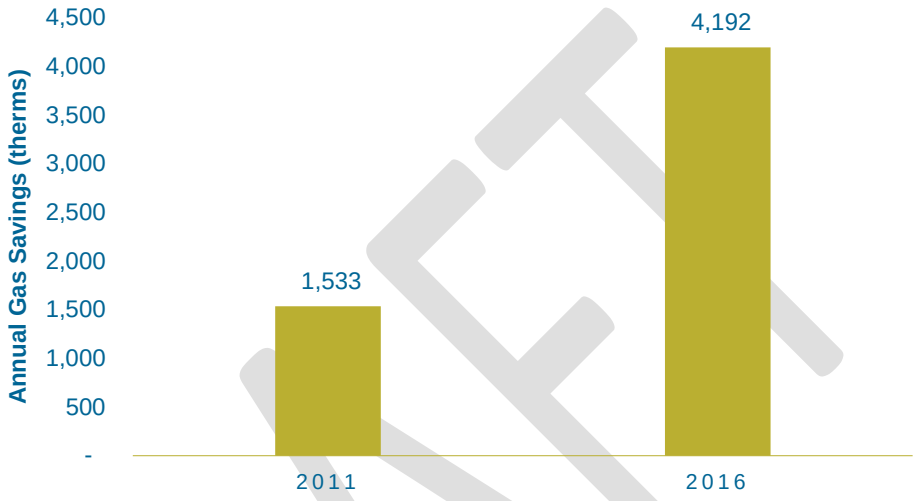
Savings Estimates by Category (kWh)



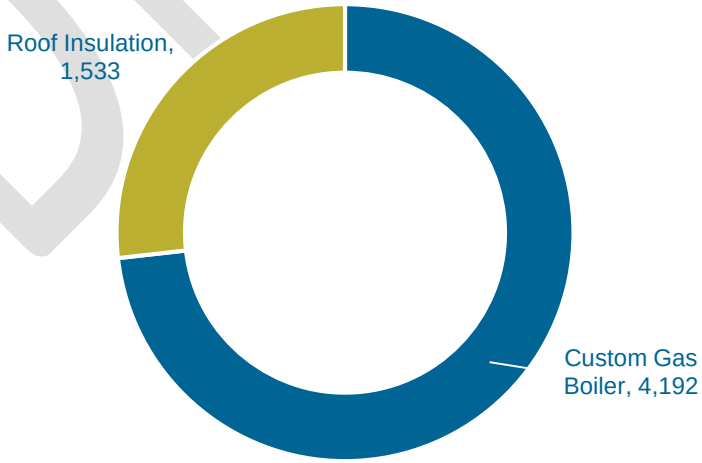
Gas Summary

Savings Estimates by Year (therms)

This summary shows only the projected first-year savings estimates for the projects outlined in this report. Estimated savings over time are included in the site overview on page 2.



Savings Estimates by Category (therms)



Completed Projects

Energy Trust reports on projects at a site after an incentive is paid. For technical information about a project, contact your program representative. Renewable energy projects with pending incentive payments may appear in both the completed and current project tables.

Year	Project Description	Annual Electric Savings or Generation Estimates (kWh)	Annual Gas Savings Estimates (therms)	Energy Trust Incentives Provided	Energy Trust ID
2004	Pneumatic Conveyance	185,630	-	$ 16,455	PE10224
2005	Pneumatic Conveyance	339,300	-	$ 105,562	PE10559
2005	Compressed Air	82,080	-	$ 5,472	1618745
2009	Compressed Air	598,764	-	$ 46,147	4794768
2009	Compressed Air	2,475	-	$ 375	336938
2009	Primary Process	73,892	-	$ 14,788	773037
2010	Compressed Air	456,221	-	$ 4,776	997786
2011	Process Pumping	320,352	-	$ 46,719	722523
2011	Multi-System	2,016,780	-	$ 40,336	775742
2012	Compressed Air	54,762	-	$ 6,826	796367
2013	Wood Waste Project Incentive	590,000		$ 70,000	453829
2014	Process Fans	19,431	-	$ 2,903	312409
2014	Irrigation	347	-	$ 56	696256
2015	Lighting	24,527	-	$ 6,060	458964
2015	Process Fans	150,965	-	$ 6,298	573034
2015	Roof Insulation	-	1,533	$ 3,808	1234478
2016	Custom Gas Boiler	-	4,192	$ 4,192	1234871
2016	Solar Photovoltaic Measure	14,161	-	$ 10,206	1234138
	Total	**4,930,687**	**5,725**	**$ 390,979**	

Technical Assistance and Other Services

In addition to cash incentives for energy-efficiency and renewable energy projects, Energy Trust also provides technical assistance to customers. These services can include scoping reports that identify energy and cost saving opportunities at a facility, and detailed technical studies to analyze cost-effective and energy-saving projects that may qualify for Energy Trust incentives.

Energy-saving products provided at no cost to the customer, such as lightbulbs or advanced power strips, are also included below.

Year	Technical Assistance	Value of Technical Assistance Provided
2003	Detailed Study – Secondary Process	$ 2,922
2004	Detailed Study – Pneumatic Conveyance	$ 1,890
2004	Industrial Technical Service	$ 1,365
2010	Grant Writing Assistance	$ 1,500
2011	Detailed Study – Air Abatement	$ 14,010
2011	Wood Waste Feasibility Analysis	$ 15,000
2015	Assistance	$ 8,197
2015	Service	$ 15,760
2016	Service	$ 6,925
2016	Detailed Study – Boiler*	$ 4,500
2016	Technical Study*	$ 5,500*
Total		**$ 72,069**

**Payment pending*

Current Projects

This summary includes the estimated energy savings or generation and cash incentives that are expected to result from projects currently underway. Technical services for current projects are also included in the summary below. Renewable energy projects with pending incentive payments may appear in both the completed and current project tables.

Estimated Completion Date	Project Description	Estimated Savings (kWh)	Estimated Incentive	Energy Trust ID
12/2016	Compressed Air	1,738,233	$ 434,558	0340566
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Total		**3,438,233**	**$ 499,558**	

Additional requirements apply to receive incentives. See the terms and conditions of your applicable Energy Trust incentive agreement(s) for details.

Retail Lighting Strategy Update

Conservation Advisory Council

June 21, 2017

EnergyTrust of Oregon

Findings from Bonneville Power Administration

Residential Lighting

Understanding the past and looking into the future

Bonneville
POWER ADMINISTRATION

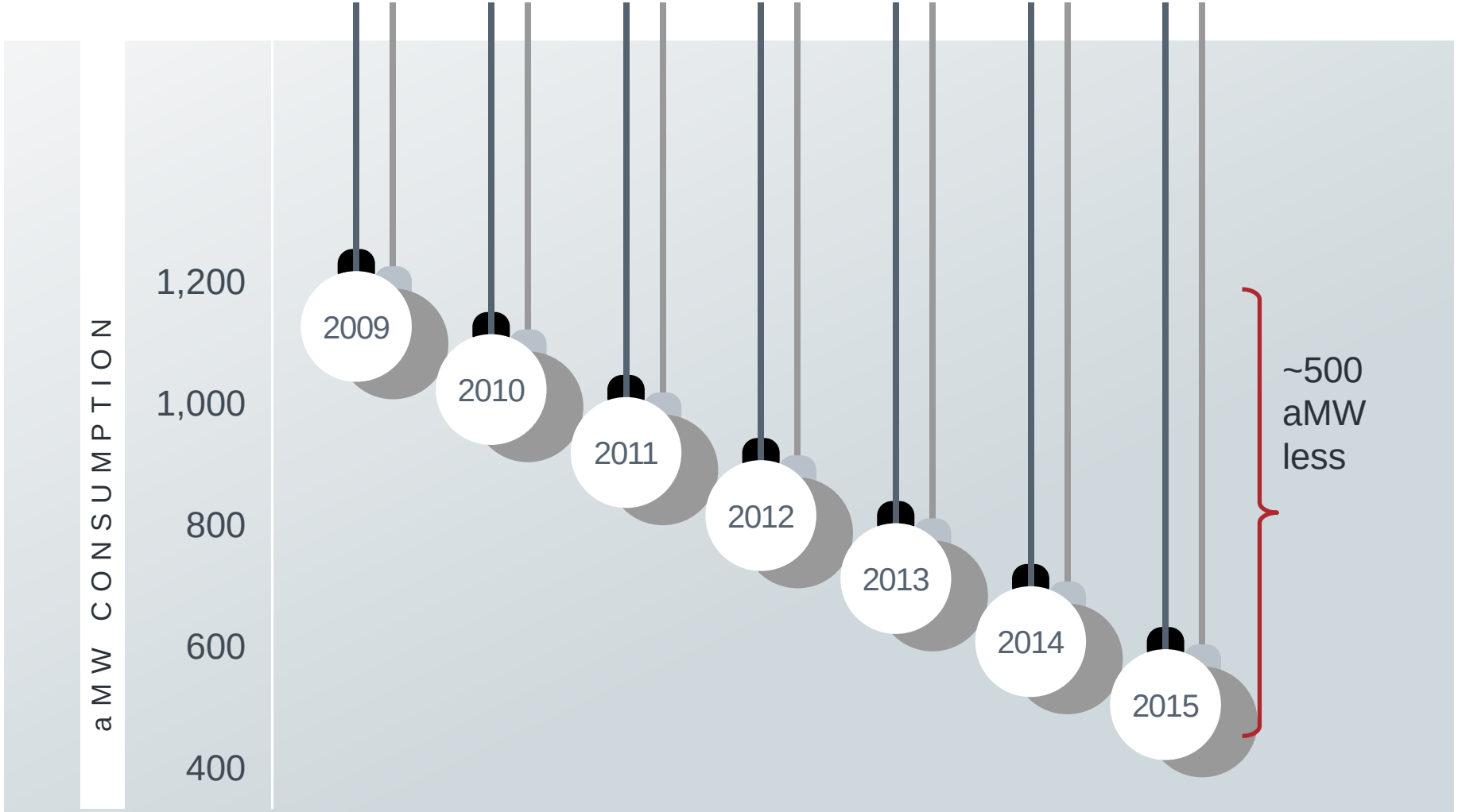
By the numbers

More than
300 million
lamps in NW homes

3rd largest
residential end-use

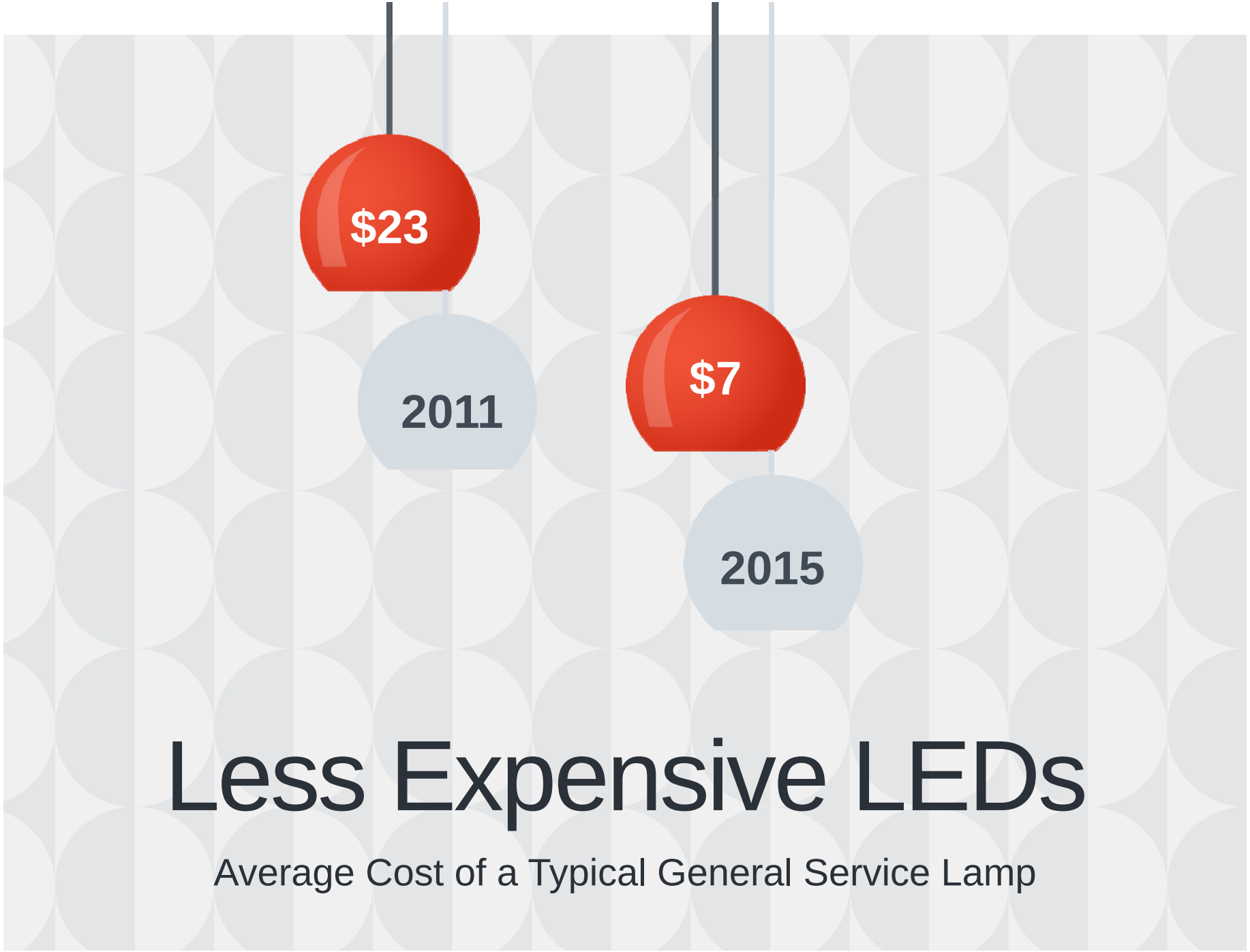
Approximately
6%
of total regional
energy use (all sectors)

More than
25%
of the region's residential
program energy and
demand savings



39% decline in lighting consumption

What caused the drop?

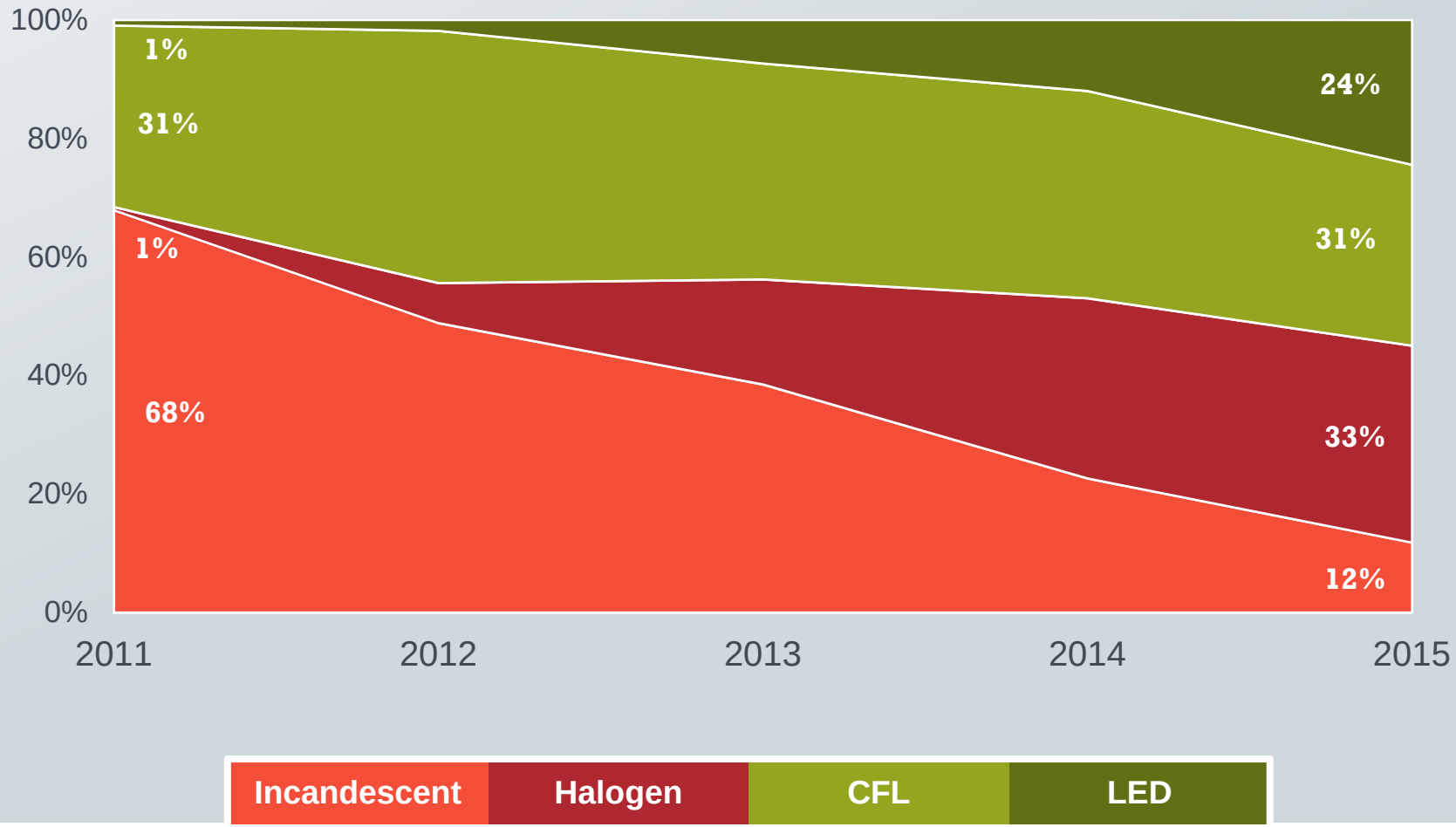


Less Expensive LEDs

Average Cost of a Typical General Service Lamp

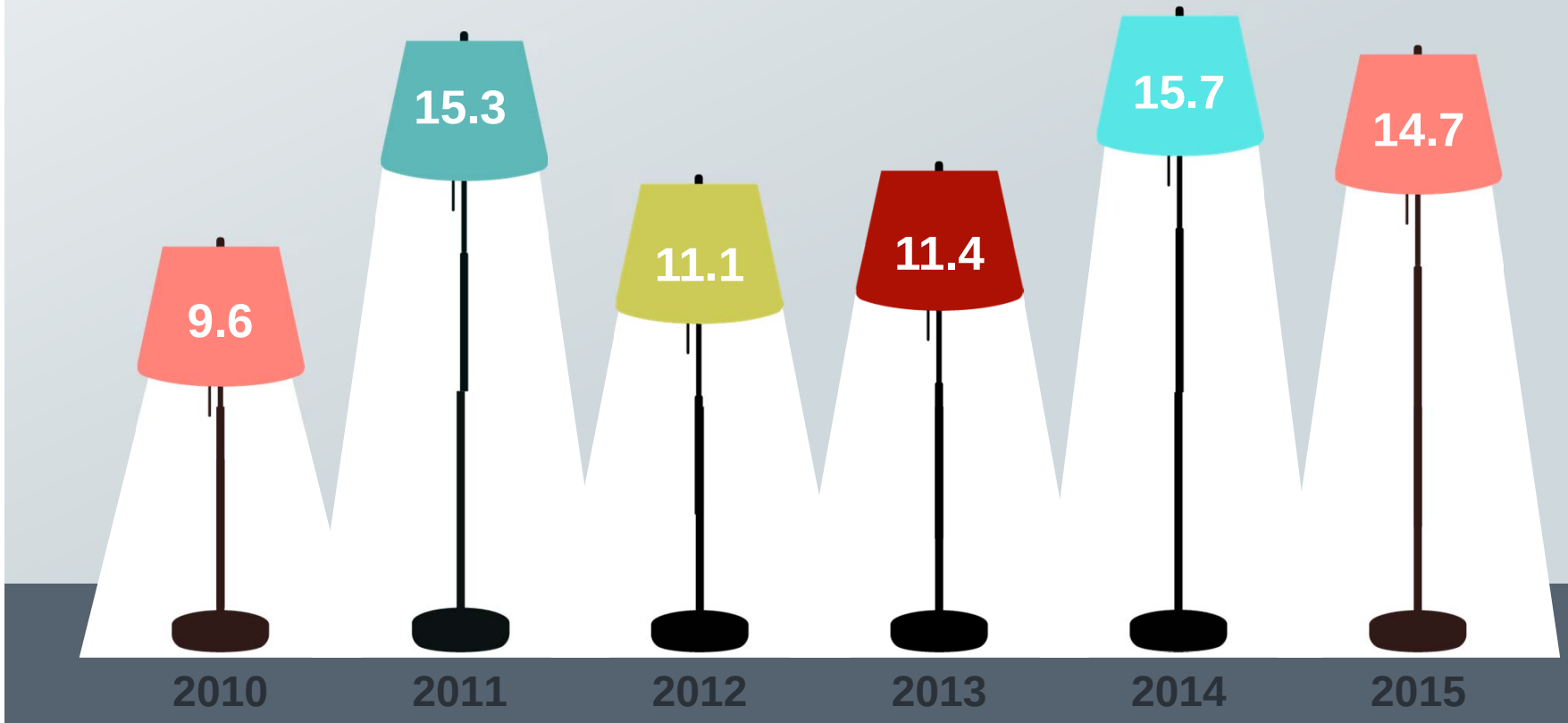
EISA came into effect

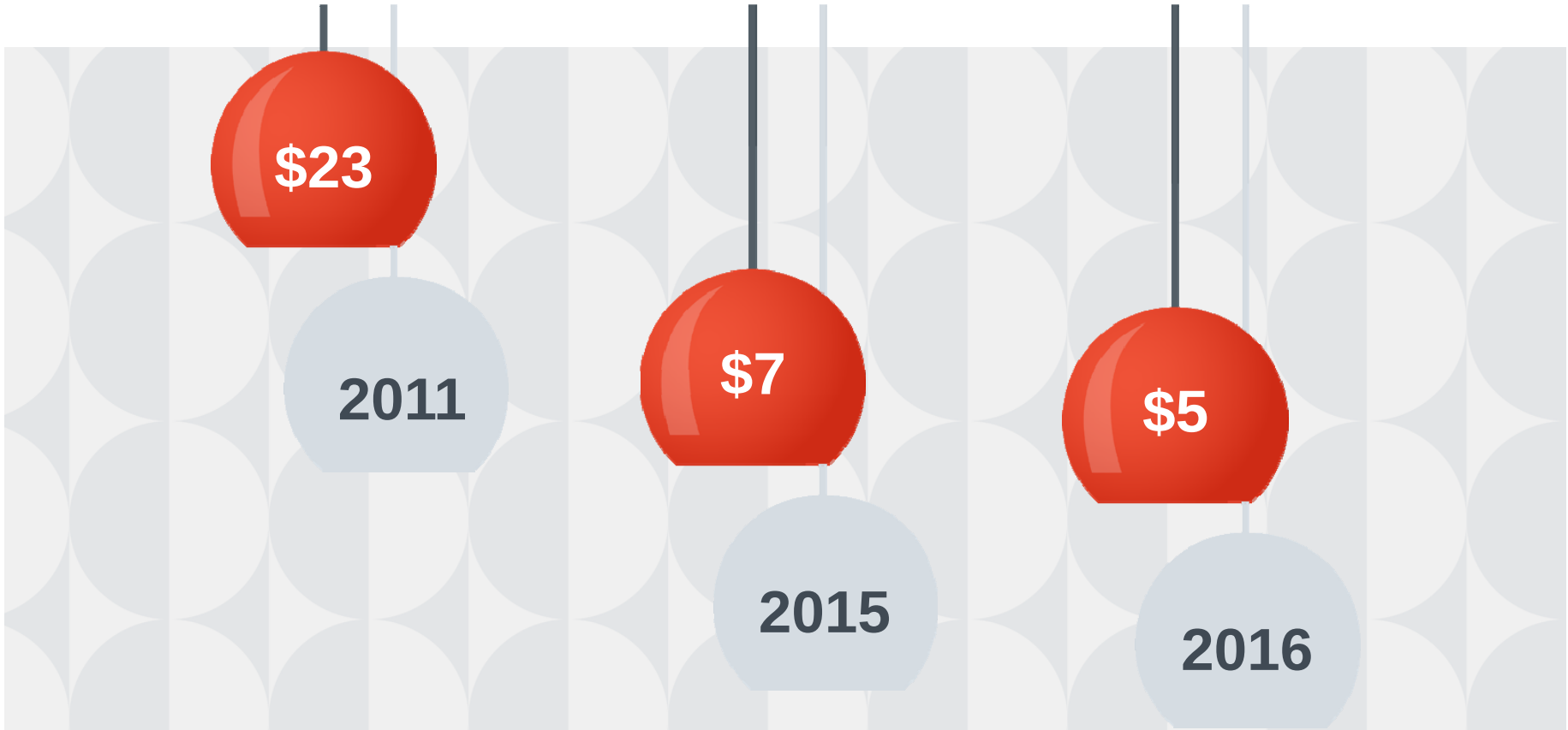
General Service Lamps Market Share



Persistent region-wide utility programs

Incentivized Lamps/Year (Millions)



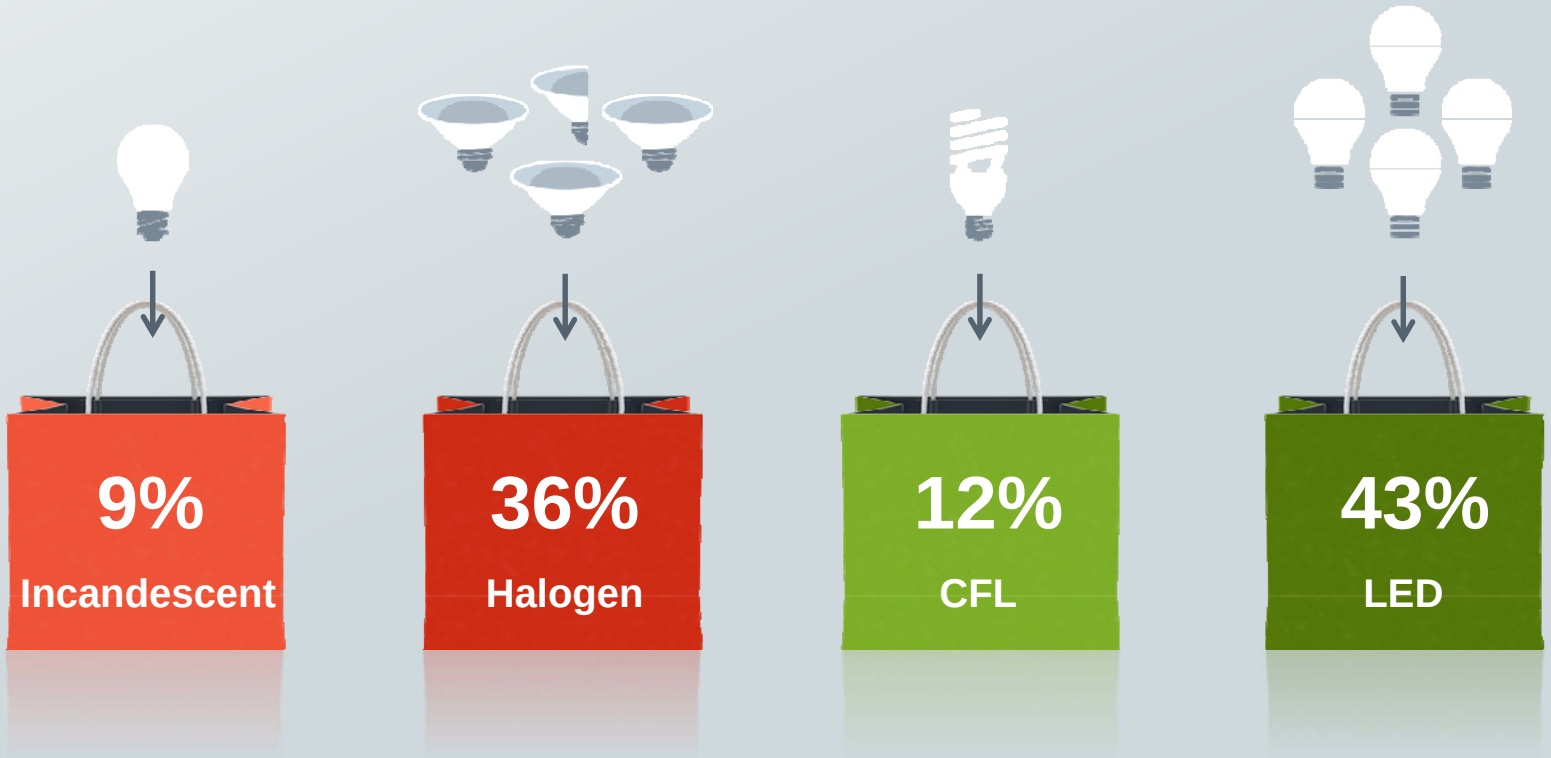


LED Prices Continue to Decline

Average Cost of a Typical A-Type Lamp

Data provided by neea

LEDs were the top seller in 2016



Data provided by neea

Energy Trust
Retail Lighting Update

Retail Lighting Market Landscape

- Quickly changing
- Complex
- High volume

Decision-making Framework

1. Track LED market share
2. Characterize max market-share indication point
3. Track incremental cost
4. Adaptive measure approval and budget management
5. Improve industry stakeholder engagement

Data Sources

- Nielsen Sales Data
- Residential Building Stock Assessment (NEEA)
- Retail Lighting Market Tracking (NEEA)
- PMC Shelf Surveys

Goals

- Achieve available cost-effective savings
- Minimize over-incentivizing and free-ridership
- Avoid prematurely exiting the market
- Allow for flexibility and innovative program design
- Grow relationships with retailers, manufacturers and other market actors

Thank You

Ryan Crews
Residential Program Manager

EnergyTrust of Oregon