Energy Trust Board of Directors Meeting

December 16, 2016

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147th Board Meeting

Friday, December 16, 2016
421 SW Oak Street, Suite 300, Portland, Oregon

	Agenda	Tab	Purpose
12:15 p.m.	**Board Meeting—Call to Order** (Debbie Kitchin) • Approve agenda		
	General Public Comment *The president may defer specific public comment to the appropriate agenda topic.*		
	Consent Agenda ..... *The consent agenda may be approved by a single motion, second and vote of the board. Any item on the consent agenda will be moved to the regular agenda upon the request from any member of the board.* • November 2, 2016 Board meeting minutes • Authorize the Executive Director to Approve a Contract with Affiliated Media, LLC– R787	**1**..... **1**.....	Action Action
12:20 p.m.	**President's Report**		
12:30 p.m.	**Final Proposed 2017 Annual Budget & 2017-2018 Action Plan** (Michael Colgrove)..... • Adopt 2017 Budget, 2018 Projection and 2017-2018 Action Plan—R788	**Separate Document**.. **2**……	Info Action
1:45 p.m.	**Break**		
2:00 p.m.	**Committee Reports** • Evaluation Committee (Alan Meyer) ..... • Finance Committee (Dan Enloe) ..... • Policy Committee (Roger Hamilton)	 **3**..... **4**..... **5**.....	 Info Info Info
2:30 p.m.	**Staff Report** • Three month report out (Michael Colgrove) • Residential sector update (Thad Roth) • Update on new website (Sloan Schlang) • Board Update on Intercultural Effectiveness Scale (IES) Results (Michael Colgrove)		
4:00 p.m.	**Adjourn**		

The next meeting of the Energy Trust Board of Directors will be held
Wednesday, February 22, 2017, at 12:15 p.m.
at Energy Trust of Oregon, 421 SW Oak Street, Suite 300, Portland, OR 97204

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Tab 1

Board Meeting Minutes—146th Meeting

November 2, 2016

Board members present: Susan Brodahl, Ken Canon, Melissa Cribbins, Dan Enloe, Roger Hamilton, Lindsey Hardy, Mark Kendall, Debbie Kitchin, John Reynolds, Anne Root, Eddie Sherman, Warren Cook (Oregon Department of Energy special advisor)

Board members absent: Heather Buesse Eberhardt, Alan Meyer, Stephen Bloom (OPUC ex officio)

Staff attending: Mike Bailey, Scott Clark, Amber Cole, Michael Colgrove, Hannah Cruz, Chris Dearth, Alison Ebbott, Juliet Eck, Elizabeth Fox, Fred Gordon, Mia Hart, Jed Jorgensen, Betsy Kauffman, Corey Kehoe, Oliver Kesting, Steve Lacey, Dave McClelland, Debbie Menashe, Spencer Moersfelder, Dave Moldal, Jay Olson, Pati Presnail, Lizzie Rubado, Thad Roth, Julianne Thacher, Jay Ward, Peter West

Others attending: Jim Abrahamson (Cascade Natural Gas), Dave Backen (Evergreen Consulting), JP Batmale (OPUC), Don Jones, Jr. (PacifiCorp), Wendy Gerlitz (NW Energy Coalition), Anne Snyder Grassmann (Portland General Electric), Adam Schultz (Oregon Department of Energy), Bob Stull (CLEAResult)

Business Meeting

Debbie Kitchin called the meeting to order and reminded board members that consent agenda items can be changed to regular agenda items at any time.

General Public Comments

The president may defer specific public comment to the appropriate agenda topic.

There were no public comments.

Consent Agenda

The consent agenda may be approved by a single motion, second and vote of the board. Any item on the consent agenda will be moved to the regular agenda upon the request from any member of the board.

MOTION: Approve consent agenda

Consent agenda includes:

1. September 28, 2016, Board meeting minutes

Moved by: Roger Hamilton		Seconded by: Anne Root
Vote:	In favor: 11	Abstained: 0
	Opposed: 0	

President's Report

Debbie Kitchin and the board welcomed Executive Assistant Corey Kehoe, and thanked Elizabeth Fox for her help during the hiring process. Debbie distributed a list of the 2016 committee assignments to board members for their review. The process for assigning committee membership for 2017 will start in the next month, and board members will be contacted. Final assignments will be presented during the February 2017 board meeting.

Draft 2017 Annual Budget & Draft 2017-2018 Action Plan

Executive Director Michael Colgrove (Mike) presented the draft 2017 budget and 2017-2018 action plan with Chief Financial Officer Mariet Steenkamp and Director of Energy Programs Peter West.

Mike reviewed results from Energy Trust activities since 2002, including nearly 600,000 sites served and 10,000 renewable energy systems installed. Investment of $1.3 billion in utility customer funds will result in $5.6 billion in utility bill savings over time and has avoided 17.4 million tons of carbon dioxide emissions. Mike and Peter verified bill savings over time is based on the weighted average measure life of 13-20 years.

Mike previewed projected 2016 results, and noted numbers may change as the year comes to a close. Energy Trust is expected to exceed savings for all four utilities at levelized costs lower than budgeted. Renewable generation forecasted will exceed goal in PGE territory; however, two large solar projects delayed in Pacific Power territory will impact reaching goal for Pacific Power and overall for the sector. The projects are the Ewauna 2 and Old Mill systems. Reserves will be drawn down to $36.8 million, $2.4 million more than estimated due to Existing Buildings, New Buildings, Production Efficiency, New Homes and Other Renewables activity. Expenditures are serving demand from the strong economy and development boom. Staff started planning with Avista to launch full Energy Trust services to its customers in 2017.

The board asked how staff will work with Avista staff after the transition. Staff noted they are working to ensure a smooth transition between the utility's programs and Energy Trust's programs. For the first year, Energy Trust will adopt portions of Avista's initiatives. Energy Trust will review their cost-effectiveness over 2017 to determine if they will continue to be supported in 2018. The Conservation Advisory Council now includes an Avista representative, and in general, Avista staff working on the efficiency programs at the utility have been transferred to other work.

Mike reviewed the four building blocks to Energy Trust's budget and action plan. The first building block is the five-year Strategic Plan. In the plan, the five-year energy-efficiency goals push Energy Trust to acquire all cost-effective energy efficiency. In setting those goals, the board and staff made room to go above what was identified at the time in utility Integrated Resource Plans (IRPs). The renewable energy goal retained the organization's focus on changing markets for projects and to lower their costs. The operations goal was new and brought more focus and attention to operational improvements.

The board asked about the recent American Council for an Energy-Efficiency Economy (ACEEE) 2016 state rankings and Oregon's ranking as the seventh most energy-efficiency state in the country, a lower ranking than last year. The board discussed whether the ranking is indicative of Oregon's progress and innovation or if other features are impacting the results. Mike said the rankings are given consideration by others, particularly when a state compares itself to others, and it's worthwhile to think about how to improve. It's important to keep in mind the considerations ACEEE uses when evaluating the states aren't all in Energy Trust's control. Considerations include state policy, funding availability and energy efficiency programs in consumer-owned utility territory. The board discussed these considerations, how the target ACEEE uses can move from year-to-year, the strong legacy programs Oregon has in place and the impact of Energy Trust's ability to acquire savings at a low levelized cost..

Mike reviewed the second budget building block, which is planning and coordination with utility IRPs. The intent is to identify achievable cost-effective energy efficiency in each utility's IRP, which results in annual IRP targets for Energy Trust. Mike noted the Energy Trust board-approved goal can be higher than the IRP target.

> The third building block is market context, as informed by staff, contractor and stakeholder experiences to identify trends and opportunities. For instance, economic health. Average income levels are improving in urban areas while in rural areas the average income level is still 3 percent below pre-recession levels. This means staff needs to put in extra work in some parts of the state where project opportunities are already fewer.

In addition, Oregon is continuing to see increasing project volume of 10-20 percent in the business sectors over last year. This puts pressure on delivery costs to serve more and more projects while savings per project are lower.

Another element of market context is creating a compelling business case to help customers go after projects with lower returns since many have installed upgrades with the highest return. At the same time, the free ridership rate is increasing as programs work deeper with customers, resulting in lower realization rates that impact the savings Energy Trust can claim.

Avoided costs, the price that otherwise would be paid for the energy that Energy Trust delivers, is stable for efficiency. For renewables, Mike described the impact of low qualifying facility (QF) rates. As QF rates fall, the above-market costs increase and a larger Energy Trust incentive is needed to support a project if the project is financially viable to move forward at the lower rate.

Oregon continues to diversify demographically. The minority population has grown from 6 percent to 22 percent in the last 35 years. Today, one-third of K-12 students are minorities, and Hispanic and Asian communities are the fastest growing in the state. These changes require changes in Energy Trust's program delivery. Energy Trust will continue the Diversity Initiative started under founding Executive Director Margie Harris. This entails improving the diversity of employees and who Energy Trust contracts with to be able to work more effectively with diverse customers and communities.

There is an active policy landscape in the form of OPUC dockets and legislative activities. This has resulted in high volumes of information and media requests to Energy Trust. The last piece of market context is working through key unknowns for 2018 programs. Specifically, solar policy changes at the OPUC and legislature, savings assessments from rapidly evolving markets, and lingering cost and delivery challenges for the residential sector. In response, staff built contingencies into the draft budget and action plan.

The board asked whether any federal policy issues will impact Energy Trust. Staff noted emerging standards for lighting are embedded in the budget, and the results of the presidential and federal congressional races may modify climate change and energy policies at the federal level.

Mike reviewed the fourth and final building block for the budget, which are areas of emphasis built into the draft action plans. Peter presented to the board in September the four areas of emphasis: expanding participation, new approaches and emerging technology, efficient and effective operations, and managing transitions. Mike highlighted changes or refinements made to the areas of emphasis since the September board meeting, largely the addition of operations highlights. Under expanding participation, staff will conduct more market research and planning, including additional IRP coordination with the utilities to research new areas of opportunity and incorporate Avista into the planning. Under new approaches and emerging technology, staff will take initial steps on developing educational efforts. This includes creating and testing educational content on the website, which relates to educating customers in how to work with the programs plus providing information for areas Energy Trust has exited.

The board commented on the importance of providing information on what customers can do even though there isn't an Energy Trust incentive. Trade allies have indicated for years that the availability of an incentive on a measure validates its importance to customers. When developing educational approaches, the board encouraged staff to look to where there are barriers to program effectiveness, like no incentive available.

Mike continued highlighting refinements and additions to the new approaches and emerging technology area of emphasis.

Staff will research what are root barriers to customers not acting, which is not always a lack of information. Energy Trust will expand support for rural workshops, including assessing past and current sponsorship of interns helping community initiatives, and will review ways to support K-12 schools. LivingWise energy-saver kits distributed through 6th grade classrooms will no longer be offered after 2016. Staff will look at substitutes to replacing that service.

The board noted the school efforts could be paired with private corporations supporting STEM activities for all age levels and girls.

Mike described the main change to the managing transitions areas of emphasis is the completion of the executive director search process. But managing transitions continue, and Mike will provide more details during his three-month report at the December board meeting. A refinement to the efficient and effective operations area of emphasis is fostering a diverse workforce. Mike reflected that developing Energy Trust's staff will enhance the organizations' ability to effectively deliver programs and reach a broader segment of the population. Mike's staff report next month will cover what staff have identified to pursue early in 2017; specifically, training, procurement and ensuring diverse perspectives are gained from staff and contractors.

Mike reviewed the draft 2017 budget. Savings are up 29.2 percent for natural gas and 3.3 percent for electricity with continued low levelized costs. In many ways, the budget is a continuation of past successes. The draft budget identifies investments of $201.2 million for savings of 56.88 average megawatts (aMW) and 7.74 million annual therms, and 2.75 aMW generation. Overall, generation is 33.4 percent lower than last year, while standard solar is up 2.7 percent.

The board asked what is behind the increase in gas savings. Peter said the savings will be from serving NW Natural's largest commercial and industrial customers. These customers were originally excluded from the public purpose charge negotiated in 2003. Incentives were adjusted in 2016 to better match the payback period customers respond to, and this drove the extra uptake. Also, year-over-year increases in gas savings are resulting from residential and commercial new construction.

The board noted the $201.2 million in expenditures includes reserve amounts set in agreement with each utility.

Mike said overall spending is up 6.4 percent due to increased project volume and slightly from delivery costs. Incentive spending is up 6.7 percent and represents 57.3 percent of total planned expenditures. Revenue is up significantly to keep reserve levels on target, which have been sufficiently spent down this year. Staffing, and administrative and program support, costs are both within the OPUC performance measures. Revenues are up 25.8 percent over last year to capture identified efficiency and keep reserves on target.

The board discussed overall expenses and the impact of needing to keep the reserves at sufficient levels. The board noted staff should communicate the effect the reserves have on the increased expenditures. Revenue is often related to the amount of money available to spend, where in this case, it includes reserves that can be carried over into subsequent years. Mariet clarified Energy Trust brought reserves down more than planned, and about $11 million of the increase in 2017 expenditures is for program spending while the rest is for reserves.

The board suggested comparing budgeted revenues to last year's revenues, plus what was collected and spent last year. Mariet agreed the increase can be split by reserve and non-reserve amounts. She noted there will still be a rate impact to all funding customers.
Mike reviewed reserves detail for each utility. Reserves have been brought down significantly from 2015 to the forecasted 2016, delivering on planned reductions.

The Pacific Power renewable energy reserve showing as negative on the chart is an error discovered in the draft budget and will be corrected for the final proposed budget. The board would like to see the amounts of the renewable energy reserves that are committed and not committed funds. Peter noted committed funds are for projects not yet constructed and for milestone payments on completed projects. The board asked if the financials can indicate this. Mariet noted it often is as a footnote.

Mike described total expenditures with 96 percent for direct acquisition of savings and generation. Electric efficiency expenditures are up $8.4 million or 6.2 percent over last year, gas efficiency expenditures are up $4 million or 15.9 percent over last, and renewable energy expenditures are down $1.7 million or 8.4 percent largely due to the saw tooth nature of large projects coming online. Peter said the renewable energy budget is a fixed amount based on the 17 percent allowed under the 3 percent public purpose charge. Additional money in any year is due from carryover of funds. The board requested the percent change from last year be added to the expenditures pie chart.

The board asked about possible changes to government subsidies for renewable energy next year, and whether staff is planning for a potential run on incentives for solar. Peter said the drop in the cost to install solar has been more than counterbalancing the reduced federal Investment Tax Credit, allowing Energy Trust to reduce incentives. Even though the 2017 budgeted expenditures for renewable energy is lower, the budget for standard solar is about equal. Staff expects more solar projects, especially if the Oregon Residential Energy Tax Credit expires at the end of 2017 as set in law. If that happens, staff will manage to the fixed budget by continuing to lower incentives. If a run happens, staff could also look at whether to bring forward funds that would be unspent in 2018 once the Residential Energy Tax Credit is set to expire.

Mike explained the remaining 4 percent of the total expenditures. Communications and outreach expenditures are up $823,000 or 26 percent over 2016 for conducting more market and customer insights research on our diverse customer base to support engagement strategies, expanding customer support through educational information, updating program advertising to reflect changes in offerings after three years in the market, adding a limited-term staff position to support expanded customer outreach and to enable timely response to information requests, which have increased due to the active policy landscape. Management and general expenditures are up $572,000 or 16 percent over 2016 for additional investment in the diversity initiative and additional staff in legal and Human Resources.

Providing greater detail on program-only expenditures, Mike explained 60 percent is for incentives, with the remainder to delivery. The biggest change over last year is in incentives, which are up $7.2 million or 6.7 percent. The incentive to external delivery ratio is good when compared to other states' programs.

The board asked for more information on what is included in internal costs and whether Energy Trust can benchmark itself against any industry standards or comparable companies on internal costs related to staffing costs. Mariet said internal costs include expenses like rent, phone and insurance. The board also noted comparing against other organizations is difficult as efficiency programs can be delivered by utilities or state agencies. The 2014 Management Review attempted to do this and it was found to be a difficult comparison to attain.

Mike reviewed savings by fuel type and program. Gas savings increased 29 percent, driven by Existing and New Homes, and Existing and New Buildings. In general, program contributions to goal are similar to last year. Electric savings increased 3.3 percent, driven by New Homes, Products and New Buildings. There are slight gas and electric savings decreases in Multifamily due to evaluation results.

The board discussed the elements contributing to the savings increases, like a healthy economy and technologies like LEDs. The board asked how long the trends will last. Peter said LEDs are a large cross-cutting element of program offerings.

LEDs in 2014 were 10 percent of the retail lighting incented and now they are 100 percent. Savings are expected through 2017, and Energy Trust could see the market transformed anywhere between mid-2018 and the end of 2019. On the business side, LEDs are an increasing portion of overall lighting savings; however, market transformation will lag behind residential because the LED component is a smaller portion of a business' overall lighting project costs.

The board commented the speed towards market transformation is driven by the manufacturing method aligning with high-volume electronic manufacturing like phones and laptops. On the engineering lifetime S curve, it usually takes years for multiple versions of a technology to come out; on LEDs it's much quicker. Peter said that's a good thing as the market will be transformed. From a ratepayer perspective, Energy Trust can claim success. Staff will explore a different design for the residential sector in 2018 to reflect that. The transition plan is scheduled to be ready at the end of Q1 2017 for rebidding contracts. The board suggested looking at the portions of a business lighting project that isn't the LED bulb to see if those costs can be decreased.

Peter said another cross-cutting element is the economy, which is both an opportunity and a risk. Overall, the Portland metro area is a low-cost competitor to Seattle and San Francisco, which adds an extra push to the economic recovery in OR. What's different about this market versus 2009 is that there isn't a financial bubble and lending is very low cost. So, there are more solid fundamental aspects to this cycle, this time. However, at some point however will be a peak. In this budget, staff have taken a moderate approach between, assuming the median in the economic forecasts and trends.

Mike reviewed the Energy Trust goals for the Northwest Energy Efficiency Alliance (NEEA) _and the budget increase of 2.3 percent over 2016 for our support of NEEA. For the renewable energy sector, generation is down 33 percent and expenses are down 8 percent over last year. The board asked what the state is for renewables overall in Oregon given the contributions from the utilities and Energy Trust. Peter noted the state's Renewable Portfolio Standard required 15 percent renewables by 2015 and the two utilities met that requirement. Staff will follow-up with more information.

Mike reviewed the breakout of budget, costs and savings/generation by utility. There is an increase in savings for all utilities. IRP targets for 2017 are lower than budgeted goals. Mike described the proposed additional staffing of 3.5 full-time equivalent (FTE). Staffing costs will be 6.78 percent, below the 7.75 percent three-year rolling average for the OPUC performance measure, and program and administrative support costs at 5.8 percent will be below the 8 percent performance measure. The board asked if the OPUC approved of the staffing request. Mike said staff had a meeting with OPUC staff on Monday reviewing each position in detail. The OPUC staff is working on a memo for the commissioners to review at a public meeting later in November. Some of the issues facing Energy Trust requires redirection of current staff to work on more strategic issues.

Mike reviewed benefits expected to flow to customers from meeting 2017 annual goals, a projection for the 2018 budget, and the rest of the budget outreach schedule. In concluding the draft budget presentation, Mike previewed a few possible changes the board may see when the final proposed budget is presented in December. Based on current estimates, the 2017 budget may result in rate impacts of about 1.5 percent for PGE customers and a little under 1 percent for Pacific Power customers. Energy Trust staff, the OPUC and the utilities are concerned and aware of the potential rate increases. The board asked if the budget falls within the levels in the IRPs. Mike said the utilities file their plans on a cyclical basis. Depending on what utility is being considered, the IRP target that has been filed and acknowledged by the OPUC may not be what Energy Trust is projecting for 2017. In many cases, Energy Trust's projection is higher. The draft budget reflects all the cost-effective savings Energy Trust has identified, which is the organization's primary mandate.

The board discussed the sensitivity of the rate impact and its intersection with Oregon's Measure 97 and whether the voters pass it or not on Election Day. The board asked if staff has received pushback from the utilities on the draft budget. Mike said staff has been having productive and open conversations on the budget. Staff is also digging through the projections in the draft budget to see if there is a way to pace our acquisition of the identified savings without losing savings. One path could include dipping into the contingency reserve for Pacific Power or drawing on a line of credit for PGE. Attention is on how to smooth out the rate impact when looking at the next two years and other investment factors the utilities are facing. Mike clarified for the board the last rate increase for PGE was in 2014 and in 2015 for Pacific Power. Mike concluded saying the board may see greater changes from the draft budget to the final proposed budget compared to past years.

The board asked if staff has received any indication from the OPUC on the direction of the budget. Mike said the OPUC expressed the same concern all parties feel. Energy Trust staff will regroup with OPUC staff next Thursday after the General Election and ballot results are determined.

The board took a break from 2:15 p.m. to 2:25 p.m.

Public comment

The board accepted public comment on the budget.

Wendy Gerlitz, policy director for the NW Energy Coalition (NWEC) said she is a member of the Energy Trust Conservation Advisory Council and has reviewed the budget materials. NWEC will submit formal comments. She expressed NWEC has initial support for the budget Energy Trust staff has put forward. It is important to pursue all cost-effective energy efficiency. When energy efficiency is thriving and people are finding high amounts of efficiency, it can be challenging to hold the line and the budgets, and pursue everything. In other states where utilities control the budget, NWEC has seen them walk backward. One of the things about Oregon, with its laws and systems, is the ability to pursue all the energy efficiency that is out there. Energy Trust has done a good job of putting forth a proposal to get all cost-effective energy efficiency. It's part of NWEC's mandate to advocate for affordable energy. Wendy said it is important when talking about rate increases to not just look at rate increases of energy efficiency in isolation from what's happening elsewhere at the utilities. NWEC is part of review and discussions on PGE's new IRP. PGE has identified tremendous need for new generating resources. Energy efficiency is much lower cost than any of PGE's other options. To forego or delay energy efficiency acquisition under those circumstances is unthinkable. If Energy Trust foregoes savings, it would be essentially be telling PGE to go forth and build a power plant that costs four to five times more. Sometimes there is pressure on the short term when looking at energy efficiency, but on the long term it will keep rates lower. NWEC wants to make sure people think about the broader, long-term impacts before making any final decisions on changes to the budget.

The board thanked Wendy for her comments, and noted it is important to also look at the bill, not the rate.

Energy Programs

Annual Renewable Energy Certificate Value and Cost Review—R785, Jed Jorgensen

Jed Jorgensen, renewable energy program manager, introduced Resolution 785, recommending the board approve current practices with Energy Trust's Renewable Energy Certificate (REC) policy. This time last year, the board approved changes to the REC policy after an 18-month review. The challenge that led to the review is it's not always cost effective to register RECs in the Western Renewable Energy Generation Information System (WREGIS). Under the policy modified and approved by the board last year, Energy Trust doesn't have to take title to RECs if it is determined to be cost-prohibitive to do so.

The modified policy also requires an annual review of the value of RECs in comparison to the costs to register them in WREGIS. Jed presented an annual update on REC values and registration costs. Based on that review, staff proposes that the board continue authority not to try and register RECs from standard solar systems and for Other Renewables program projects where neither the utility nor customer wanted to register them.

Jed said the renewable energy obligations for utilities have grown as the Renewable Portfolio Standard (RPS) increased this past year. As RPS obligations go up, Energy Trust's portfolio makes a smaller percentage of their compliance. If Energy Trust counted all RECs from systems supported, it would make up 3 to 4 percent of their obligations, and as the RPS goes up over the next 25 years that will drop to 1 percent or less. In addition, utilities continue to maintain high levels of REC sufficiency to continue to meet RPS obligations well into the future. Pacific Power is sufficient through January 2028 and PGE through January 2020. PGE also has an RFP out now which may lead to the purchase of RECs or renewable energy projects that could extend the utility's REC sufficiency period. REC prices remain low for both compliance and voluntary markets, and small transactions are not valued. Pacific Power stated the rate impact to its REC purchase would only impact rates by about one-half of a percent over the next 12 years.

Jed said Energy Trust continues to work with utilities to register RECs from custom projects, although in some cases utility interest has been low which staff takes that as a sign that the value isn't there for utilities when considering the transaction costs. Energy Trust is on track with current management practices and will continue to work with the utilities and OPUC, and will monitor the market.

RESOLUTION 785
ANNUAL DETERMINATION REGARDING REC REGISTRATION REQUIREMENTS

WHEREAS:

1. **RECs represent renewable energy values that should be protected for ratepayers in Energy Trust programs.**

2. **Energy Trust's board policy regarding RECs, as amended in 2015, requires that staff "track the cost and effort involved in registering RECs and report to the RAC and board at least annually in order for the board to determine whether the cost and effort entailed in registering RECs of a given type is disproportionate to the market and other values associated with RECs. . . ."**

3. **This REC policy provision recognizes that in protecting the renewable energy values for ratepayers, there may be circumstances in which the cost of registering RECs in WREGIS is prohibitive;**

4. **In 2015, with the approval of the board upon determination that the cost of WREGIS registration was disproportionate to their value, Energy Trust staff retained contractual title only to RECs generated through the Solar program and through Other Renewables program and custom solar projects where neither the project owner nor the utility are willing to pay for WREGIS registration costs;**

5. **Energy Trust staff continues to track the market value of RECs and the cost and effort in registering them, and reported on these conditions to the Policy Committee and the RAC in October 2016, and recommends a continuation of the current approach REC registration for the coming year.**

It is therefore RESOLVED that the Board of Directors hereby concludes that:

1. **The cost and effort of registering RECs are disproportionate to current REC market value for RECs generated through projects in the (a) Energy Trust Other Renewables program and through custom solar projects where, in both cases, neither the project owner nor the utility are willing to pay REC registration costs and (b) Energy Trust Solar program; and**
2. **For RECs generated in the types of projects described in #1 above, Energy Trust staff shall continue to retain contractual title to project RECs, but are not required to register such RECs in WREGIS.**

Vote on resolution

Moved by: John Reynolds Seconded by: Melissa Cribbins
Vote: In favor: 11 Abstained: 0
Opposed: 0

Committee Reports

Evaluation Committee, Susan Brodahl

The committee reviewed the 2015 Fast Feedback results. One-third of responses were from residential participants and another one-third from non-residential participants. Non-residential participant free ridership rates varied over the years by fuel and by programs. Years were combined to get a statistically significant result for gas free ridership. Residential free ridership was shown by measures for Existing Homes and Products. The rate is moving upward and programs are watching closely.

The Existing Buildings process evaluation results indicate the program is operating well; particularly, communication with Energy Trust, Program Management Contractors, Allied Technical Assistance Contractors and utilities. NW Natural and Cascade Natural Gas responded they would like more communication and input into commercial marketing, a change that has already happened.

An impact evaluation on large projects was reviewed by the committee. It's not included in the board packet due to the confidential nature of the projects.

A process evaluation for the Pay for Performance Pilot phases 1 and 2 was reviewed at the meeting. The pilot targeted office buildings for both capital and operations and maintenance improvements with incentives based on annual measured savings over three years. The pilot could help Energy Trust expand participation for customers not fitting into other offerings, like Strategic Energy Management.

Compensation Committee, Dan Enloe

The committee met last week where it reviewed an underperforming fund. The Standard recommended replacing it with a Wells Fargo fund. After learning the Wells Fargo investment division was not impacted by the banking division's recent issues, the committee accepted The Standard's recommendation. The committee also reviewed the benefits program and the planned employee compensation for 2017. There will be a slight increase, less than 1 percent, for the benefits packages for Energy Trust employees.

Finance Committee, Dan Enloe

The committee reviewed next year's budget. September financials show revenue is slightly down and expenses slightly up. Reserves were down $5.7 million due to increased spending, and the annual hockey stick where the majority of activity occurs in the last quarter is starting. Energy Trust is forecasted to end the year with few reserves left. According to the September financials, Existing Buildings, New Homes and Products spending is trending up for incentives. For the organization as a whole, it has already spent $13 million more on incentives than this time last year.

Cascade Natural Gas Temporary Funding Adjustment—R786, Steve Lacey
Steve Lacey, director of operations, introduced the resolution, which would allow staff to use a portion of contingency reserves for a forecasted Cascade Natural Gas shortfall at the end of year. Steve reviewed Energy Trust's two types of reserves, which is the program reserve on the energy efficiency side and the contingency reserve. The contingency reserve includes the emergency reserve at $5 million and the organizational reserve at $4.6 million to be used in case of revenue shortfalls due to weather and other factors. The organizational contingency reserve requires board approval for staff to access.

Steve said staff typically meets with all utilities in the summer to look at the year-end forecast for revenues and expenditures; the forecast is refined in October. When modeling this for 2016, the forecast shows $1.9 million in Cascade Natural Gas revenue and $2.3 million in planned expenditures. The budget for Cascade Natural Gas is $2.5 million. Even though Energy Trust expenditures for Cascade Natural Gas will come in lower than budged, the shortfall in revenue means Energy Trust will be about $177,000 short by year end for the planned expenditures. Energy Trust forecasted 113 percent of Cascade Natural Gas goal at a low levelized cost. Staff recommends continuing to get those savings, and to do so, needs to fill the short-term revenue shortfall. The revenue shortfall is due to the timing of the Cascade Natural Gas public purpose charge. Even though it was filed in February, Energy Trust didn't start receiving the funds until March and April. Compounding the delay, the majority of revenue for the gas utility is during the winter heating months of December to February. Also, over the summer, Cascade Natural Gas filed an approximately 14 percent rate decrease for the purchased gas adjustment.

Jim Abrahamson, Cascade Natural Gas, said the purchased gas adjustment was approved recently by the OPUC and the rates went into effect November 1. The decrease will affect the last two months of the year, when revenue typically comes in.

Steve said Cascade Natural Gas recently filed for Energy Trust's budget request for 2017 plus the shortfall in 2016. Jim explained the utility filed for a new public purpose charge on October 31. Cascade Natural Gas raised the overall public purpose charge 4.87 percent, including Energy Trust and two low-income programs. The portion flowing to Energy Trust is 4.27 percent. The request was built around the revenue needed for Energy Trust in 2017 plus the 2016 shortfall. If approved by the commission, rates will go into effect December 1. Energy Trust won't see new revenue from that until January.

Steven summarized the resolution. Energy Trust is forecasting a $177,000 shortfall for Cascade Natural Gas revenue and is asking the board to authorize the executive director to use up to $200,000 of contingency reserves should the programs need it to fill the shortfall with the understanding that Cascade Natural Gas has already put into place a request to the OPUC to pay Energy Trust back.

RESOLUTION 786
CASCADE NATURAL GAS FUNDING TEMPORARY ADJUSTMENT USING CONTINGENCY RESERVES ACCOUNT ORGANIZATION POOL

WHEREAS:

1. **The recent Energy Trust Quarter 4 expenses and revenue forecast shows CNG program expenditures to come in at $2.3 million or 92% of budget.**
2. **Revenue projections for 2016 show Energy Trust will receive approximately $192,000 less than anticipated at year-end, due in part to timing of the rate filing, and a 14% purchase gas adjustment tariff reduction, which has resulted in CNG under-collecting funds for energy efficiency programs, causing a shortfall in the 2016 Energy Trust operating budget and program reserves for CNG.**

3. **Energy Trust is on track to hit 113% of its goal if funded to the budgeted level, staff predicts any cessation of activity will have a negative impact on the momentum built in CNG territory, and CNG supports Energy Trust's continued efforts to hit 113% of goal.**
4. **Energy Trust's Contingency Reserves Account organization pool of approximately $4.6 million is adequate to temporarily fund the shortfall.**
5. **CNG has committed to repay fully any amount taken on its behalf from the Energy Trust organization pool not later than December 31, 2017.**
6. **Energy Trust's Using Reserve Accounts Policy requires prior board approval before utilizing the Contingency Reserves Account organization pool. Energy Trust staff recommends utilizing the organization pool for CNG because of a shortfall in CNG program reserves to cover continued efforts towards CNG savings goals in 2016.**

It is therefore RESOLVED that:

1. **Given the under-collection of CNG funds for energy efficiency programs, for reasons described above, and since CNG program reserves have been fully utilized, Energy Trust staff has demonstrated that the conditions for use of the Energy Trust Contingency Reserves Account organization pool have been met to continue current momentum in CNG energy efficiency program delivery through 2016.**
2. **The Executive Director is authorized to transfer up to $200,000 of Contingency Reserves Account organization pool funds to the CNG operations account to be used for program implementation for CNG ratepayers in 2016 and for reserve replenishment in 2017.**
3. **This transfer is authorized with the express understanding that CNG will repay fully the funds transfer not later than December 31, 2017.**

Moved by: Mark Kendall Seconded by: Anne Root
Vote: In favor: 11 Abstained: 0
Opposed: 0

Policy Committee, Roger Hamilton
The committee reviewed the REC policy and also discussed thermal RECs (TRECs). The results from the Oregon Department of Energy's TRECs rulemaking are expected sometime in November.

Audit Committee, Ken Canon
The committee reviewed the 401(k) plan, characterized as a small plan. At the end of end of 2016 it will become a large plan, which requires a limited scope audit of the plan's governance, contributions and distributions. The audit will cost $12,000-$13,000. Moss Adams will complete the audit and provide best practices as it relates to the 401(k) plan.

The committee discussed the 2015-2019 Strategic Plan consideration of whether Energy Trust should or could receive other, non-public purpose charge funding. Staff recommends investing $10,000 with Moss Adams for consulting on ensuring internal controls will comply. Through the review, Moss Adams will identify compliance requirements and provide a check list for staff to complete. Moss Adams will review the completed check list and recommend if any internal controls need to be added. The review will take about four months to complete. Ken clarified to the board the review would be a one-time review, while the 401(k) audit will be annual. Once the internal controls review is completed, staff will know if internal systems and processes meet standards for Energy Trust to engage with federal and other contracts.

Strategic Planning Committee, Mark Kendall
The committee met in October and reviewed the May strategic planning workshop from 2016 and upcoming in 2017. The 2017 retreat will be held again at Mercy Corps headquarters in Portland, and the strategic plan dashboard will be used again as a tool to assess the status of performance to the plan. The committee brainstormed initial topics for the agenda. Mark invited the board to review the topics in the meeting notes and submit other ideas. The committee briefly discussed the next five-year strategic plan. The workshop in May 2017 will be two years until development begins on the next plan.

Staff Report

Highlights, Michael Colgrove
Mike highlighted recent solar installations at Central Oregon Community College's Redmond Campus and the Devereux Center, a homeless shelter in Coos Bay. The board asked whether Energy Trust-supported solar systems include resilience requirements. Dave McClelland, solar program manager, described how solar systems are required to disconnect from the grid when the grid goes off-line. Technology is developing quickly, and resiliency features could become an opportunity. For the value of solar study, the OPUC looked at micro grids including solar systems that can stay on during a grid outage. There are "smart" inverters on the market that can automatically island from the grid and be used to keep the solar system on. Betsy noted resiliency is part of a lot of conversations staff is having with cities and community leaders. Energy Trust is starting to think about what type of role the organization might have in resilience and studying these systems. The board asked whether there is anything Energy Trust can do now for systems going in. Mike said the 2017 action plan includes exploration of how Energy Trust can play a role with electric vehicles, demand response or resilience. It's about understanding the overlapping areas when Energy Trust can promote these technologies.

Mike said Energy Trust recently executed a memorandum of understanding between the Oregon Department of Energy, OPUC and Energy Trust. The discussion started last year, and the document talks about coordination at the higher levels of the organizations.

Debbie Kitchin left at 3:28 p.m.

Lizzie Rubado provided a review of solar-related dockets at the OPUC. Staff monitors and provides information during docket processes that are relevant to Energy Trust. UM 1758 is the solar incentives program review report developed for the legislature, at their request. The OPUC commissioners recently accepted the OPUC staff's latest report and submitted it to the legislature. The report recommends Energy Trust direct funds to systems that are identified as high-value applications, providing features such as system reliability, voltage regulation and deferred or eliminated need for system upgrades. Energy Trust is also to continue work to reduce the soft costs of solar. Next steps are to work with the OPUC on if, when and how the recommendations to the legislature will impact the Solar program. Any changes are expected to take more time to be developed.

Lizzie reviewed UM 1716, the resource value of solar docket. The first phase of the docket involves examining what elements to consider when determining the resource value of solar and the methodology for determining their values. The second phase will look at subsequent values for each utility. Energy Trust is not engaged as an intervener in this contested case process, but is providing market knowledge and data when asked. Possible impacts are to be determined and will rest heavily on the final methodology. The final resource value of solar is expected to be the basis for the bill credit for the community solar program, and in the solar incentive report in UM 1758, the OPUC plans to investigate switching from a net-metering program to a resource value of solar. Ultimately, any changes may impact above-market costs. Lizzie clarified for the board that currently under net-metering, a customer offsets electricity on site at their retail rate. The resource value of solar would replace the retail rate and/or mechanism on how a customer is compensated.

Lizzie described AR 603, community solar rulemaking to implement SB 1547 provisions. The OPUC is establishing rules for a community solar program. The OPUC is holding four stakeholder workshops by year-end to gather feedback on the structure and considerations for the program, with additional workshops expected in early 2017. Formal rulemaking will commence in spring 2017 with final rules wrapped up by July 2017. Staff is providing information and expertise. It's too soon to tell the impact to Energy Trust and it's unclear if projects will be eligible for incentives. The board thanked Lizzie and requested ongoing updates on these proceedings.

Thad Roth, residential sector lead, provided an update on the residential sector assessment. The assessment is in response to challenges the sector is facing from the low cost of natural gas, tighter codes and standards and market transformation of lighting and showerheads. The sector is forecasting significant changes in savings from lighting and showerheads, and how that impacts the current sector structure. The assessment also intersects with the work staff has been engaged in over the last few years to improve the cost of delivery and performance on delivering savings cost effectively. Thad said staff is assessing the current residential sector structure, its performance and how the sector would perform with significantly lower savings from key areas. Staff will recommend changes to internal leadership in early December, and will provide an update to the board on the findings of the assessment and the staff recommendation at the February board meeting.

Anne Root left at 3:46 p.m.

Thad noted 2017 will be the fifth year of the Existing Homes Program Management Contract with CLEAResult. The outcome of the assessment will likely have impact on next year's Request for Proposals to rebid the contract. Currently, there are three residential programs and three contracts held by two companies. The transition to a new sector structure would take place over 2018 and last through that year, and potentially into 2019. Thad reviewed the engagement plan overall and with major stakeholders like the board, Conservation Advisory Council, utilities and OPUC.

The board noted it looks forward to a detailed report, potentially in December, and would like to see what staff considered when developing the recommendation. Thad clarified the detailed report could be ready in December or in February, depending on feedback from internal leadership in early December.

Mike concluded his report by announcing Betsy Kauffman, renewable energy sector lead, recently receive a Women of Vision Award from the Daily Journal of Commerce.

Adjourn

The meeting adjourned at 3:50 p.m.

The next regular meeting of the Energy Trust Board of Directors will be held Friday, December 16, 2016, at 12:15 p.m. at Energy Trust of Oregon, Inc., 421 SW Oak Street, Suite 300, Portland, Oregon.

Alan Meyer, Secretary

PINK PAPER

Board Decision
Authorizing the Executive Director to approve a contract with Affiliated Media, LLC to purchase advertising in excess of $500,000 in 2017

December 16, 2016

Summary

Authorize executive director to a sign a new contract with Affiliated Media, LLC (Affiliated Media) for expenditure of up to $680,000 for purchasing advertising on behalf of Energy Trust in 2017. This contract would engage Affiliated Media to purchase advertising at approximately 25 media companies in Oregon.

Background and Discussion

- By purchasing advertising at media companies in Oregon, Energy Trust is able to reach customers through print, radio, TV and online channels, creating program awareness, and promoting services, programs, and products throughout our service territory.
- Advertising is how the majority of participating customers first hear of Energy Trust and directly supports the acquisition of savings and generation.
- Advertising represents the greatest portion of overall marketing costs and is a focus of ongoing cost-efficiency efforts. Each year program objectives and observed outcomes from prior year advertising investments are assessed. Staff adjust plans as needed to meet business goals, increase reach and identify cost efficiencies.
- Advertising investment has remained at roughly the same level over the last few years. The mix of advertising purchased has changed to make sure we are reaching all customers, achieving goals and maintaining visibility in all parts of the service territory. This has meant increased advertising spending for radio and TV reaching rural communities, and adding advertising in online channels.
- Staff have explored various methods to manage planning and procurement of advertising using staff and contracted resources. Several years ago, Energy Trust tried using an advertising agency service, and later discontinued the service due to the agency commission rates that were required in addition to the media commission. Currently, the majority of Energy Trust advertising in Oregon print, radio, TV and online publications is purchased by internal Energy Trust staff executing contracts with each media company. This is a time-consuming process, especially for advertising purchases with broadcast TV and radio. In addition to planning and purchasing advertising placements, time is spent by Communications and Customer Service and Finance staff each month processing invoices.
- In 2015, Energy Trust staff again sought ways to reduce advertising costs and free up staff time for other priorities. Staff conducted a review of media buying companies in the Oregon market and determined that one company, Affiliated Media, offers media planning and buying service with no fee to its clients. Affiliated Media is paid on commission by media companies, rather than by clients such as Energy Trust.

Other media buying services charge a fee on top of commission. Affiliated Media leverages over $11 million in media buying power of clients like OMSI, Legacy Health and Spirit Mountain Casino to increase the value of advertising placements. Their experience, practices and planning capabilities stem from decades of work in media sales, and there are no associated service fees for their work.

- In 2016, as part of a trial approach, staff contracted with Affiliated Media to purchase Energy Trust radio advertising at 14 media companies, rather than Energy Trust executing individual contracts with each company. The maximum contracted amount was $240,000, an amount which did not require board approval.
- The change reduced staff time, resulted in no increase in overall advertising costs, and increased Energy Trust's buying power by leveraging Affiliated Media's market knowledge, and expertise. Under the contract terms, Energy Trust staff pay one invoice to Affiliated Media monthly, and are sent copies of invoices from each media company so that all monthly costs can be recorded and referenced.
- Staff proposes to expand its work with Affiliated Media in 2017 to include TV advertising, which would increase the total amount spent on advertising purchased by Affiliated Media to $680,000 in 2017. This will help us to improve media reach generally, but also specifically in communities in southern and eastern Oregon where we have traditionally had lower levels of awareness and participation.
- The amount available for advertising each year is determined through the budget process. The proposed contract amount with Affiliated Media in 2017 is consistent with the advertising budget amount proposed for approval through the 2017 budget process.
- Energy Trust board approval is required to provide the executive director with contract signing authority since the amount proposed for the 2017 contract exceeds $500,000. Because Affiliated Media is the only company offering this service with no fees to clients, no Request for Proposals was executed for this service.
- Energy Trust can terminate a contract with Affiliated Media at any time and revert to current practices of purchasing advertising directly from media companies.

Recommendation

Authorize the executive director to sign a contract with Affiliated Media for up to $680,000 for purchase of broadcast radio and TV media in 2017.

RESOLUTION 787
AUTHORIZING A CONTRACT WITH AFFILIATED MEDIA, LLC

WHEREAS:

1. **Media buying at Energy Trust allows programs to advertise in print, radio, TV and online, creating program awareness, and promoting services, programs, and products.**
2. **Advertising is how the majority of participating customers first hear of us, and there is a clear connection between advertising and customer awareness and engagement, leading to savings and generation. Increased advertising would allow Energy Trust to expand customer participation by increasing the number of times people see our message.**
3. **Media planning and buying is currently done on an annual basis, requiring staff time in Communications & Customer Service and Finance over several months to plan and process invoices for roughly 70 contracts.**
4. **A test in the first half of 2016 indicated that there is cost savings associated with using the consolidated model presented by Affiliated Media, enabling Energy Trust to buy more advertising with no increase in budget. Given the resources involved in completing separate contracts with media outlets, a contract with Affiliated Media permits the redirection of staff resources to other priority projects in web-based and social media marketing, market research and other initiatives to expand and diversify participation.**
5. **Affiliated Media is able to leverage $11 million in media buying power of its many and varied clients such as OMSI, Legacy Health and Spirit Mountain Casino to increase our visibility in our service territory. Their media planning capabilities stem from decades of work in media sales, and there are no associated fees for their work.**
6. **Staff proposes to execute a contract with Affiliated Media to authorize up to $680,000 in funding, consistent with the 2017 board approved budget, for the purchase of broadcast radio and TV in 2017.**
7. **Staff believe Affiliated Media is uniquely suited to do this work and has demonstrated skill in media buying without the fees that other media buyers in the market charge to clients.**

It is therefore RESOLVED, that the board of directors of Energy Trust of Oregon, Inc. authorizes the executive director to:

- **Sign a contract with Affiliated Media authorizing up to $680,000 for the purchase of broadcast radio and TV media on behalf of Energy Trust in 2017.**

Moved by: Seconded by:

Vote: In favor: Abstained:

Opposed: [list name(s) and, if requested, reason for "no" vote]

Tab 2

Board Decision
Adopt 2017 Budget, 2018 Projection and 2017-2018 Action Plan

December 16, 2016

Summary

To adopt the Energy Trust 2017 Annual Budget, 2018 Annual Budget Projection, and 2017-2018 Action Plan.

Background

- The Energy Trust grant agreement with the Oregon Public Utility Commission requires Energy Trust to update its two-year Action Plan annually and describe the activities the organization will undertake to accomplish over the coming two years.
- This updating occurs each year in connection with the preparation and finalization of the following year's budget.
- The 2017-2018 Action Plan outlines activities Energy Trust will undertake in 2017 and 2018 to achieve its strategic goals.

Discussion

- The Draft 2017 Annual Budget and 2018 Projections (the draft budget) and the Draft 2017-2018 Action Plan (the action plan) were presented to and discussed by the board at its meeting on November 2, 2016.
- The draft budget and action plan were posted on the Energy Trust website on October 24, 2016.
- The Conservation and Renewable Energy Advisory Councils were presented highlights from the draft budget and action plan at their respective meetings on November 16, 2016,
- The Finance Committee reviewed the draft budget and the action plan on October 20, 2016.
- The Oregon Public Utility Commission was briefed on the draft budget and action plan on November 18, 2016 and heard public comment on both the draft budget and action plan on November 22, 2016.
- Portland General Electric, Pacific Power, NW Natural, and Cascade Nature Gas were engaged by Energy Trust in budget concept development starting in July. Utility representatives reviewed and discussed draft budget and action plan information through subsequent individual coordination meetings in late summer and fall, and via Conservation and Renewable Energy Advisory Council presentations on November 16, 2016.
- A live public webinar was conducted on November 4, 2016.
- Public comments were due November 9, 2016.
- The board will hear public comment and discuss the final proposed budget and action plan at its meeting on December 16, 2016.

Recommendation

Staff recommends adoption of the Energy Trust 2017 Budget, 2018 Projection and 2017-18 Action Plan.

RESOLUTION 788
ADOPT 2017 BUDGET, 2018 PROJECTION AND 2017-18 ACTION PLAN

BE IT RESOLVED That Energy Trust of Oregon, Inc. Board of Directors approves the Energy Trust 2017 Budget, 2018 Projection and 2017-18 Action Plan as presented in the board packet.

Moved by: Seconded by:
Vote: In favor: Abstained:
Opposed:

Tab 3

Evaluation Committee Meeting

October 28, 2016 12:00 pm-3:00 pm

Attendees

Evaluation Committee Members
Alan Meyer, Board Member, Committee Chair
Susan Brodahl, Board Member
Heather Eberhardt, Board Member
Anne Root, Board Member (phone)
Lindsey Hardy, Board Member (phone)
Jennifer Light, Expert Outside Reviewer

Energy Trust Staff
Steve Lacey, Director of Operations
Fred Gordon, Director of Planning and Evaluation
Mike Bailey, Engineering Manager, Planning (phone)
Phil Degens, Evaluation Manager
Sarah Castor, Evaluation Sr. Project Manager
Dan Rubado, Evaluation Project Manager
Erika Kociolek, Evaluation Project Manager
Spencer Moersfelder, Planning Manager
Andy Eiden, Planning Project Manager
Elise Breshears, Planning Intern
Sue Fletcher, Sr. Manager, Communications and Customer Service
Peter West, Director of Programs
Marshall Johnson, Sr. Program Manager, Residential
Susan Jamison, Marketing Manager, Residential
Andrew Shephard, Sr. Project Manager, Residential
Kathleen Belkhayat, Program Manager, Commercial
Betsy Kauffman, Renewables Sector Lead
Dave McClelland, Program Manager, Solar
Lizzie Rubado, Program Strategies Manger, Renewables

Other Attendees
JP Batmale, Oregon Public Utility Commission (phone)
Scott Broten, ICF International (phone)

1. Short Take: Heat Pumps in Manufactured Homes Pilot Evaluation

Presented by Dan Rubado

Background: This Existing Homes pilot began late 2015. The idea was to replace electric furnaces in existing manufactured homes with heat pumps for a fixed price ($1,000). This is a lagging market; we have not seen the needle move in terms of getting old, inefficient electric furnaces out of manufactured homes. This represents a big opportunity in terms of savings, as there are approximately 80,000 electric furnaces in manufactured homes in Oregon. The goal of the pilot was to put together an offer at a good price, and to create a simple process that eliminates as many hurdles to participate as possible. The program put out an RFP announcing the concept of fixed price installations, and four contractors were selected to deliver this offering. The idea was that participants would pay $1,000 and Energy Trust would pick up the

remainder of the cost by providing incentives to contractors. Contractors were paid a flat fee for installations based on the size of the heat pump. Homes had to be good candidates – that is, they had to be a certain configuration, and be fairly new (built after 1985). Alan commented that he was surprised to see that the requirement was for newer homes – why was that the case? Dan responded that the program didn't want to see a new heat pump go into a home that would likely be torn down in the next ten years – this requirement was in place to ensure that the equipment would stick around. Steve asked about the total cost of these installations. Dan responded that on average, the total cost was $4,500.

Evaluation Objectives: One of the evaluation objectives is to document the pilot, including looking at successes and gathering lessons learned. This was done through data and document review, and staff interviews. Another evaluation objective is to assess participant and contractor motivations to participate; the evaluator conducted contractor interviews and a participant survey. The final objective is to determine energy savings; the evaluator will perform billing analysis in 2017. Cadmus is the evaluator – they completed the first two evaluation objectives, and are on retainer to do billing analysis next year. This presentation presents preliminary results from the data and document review, staff interviews, contractor interviews, and the participant survey; we will be reporting out on the final results from the pilot next year.

Pilot Results: Through the pilot, 109 heat pumps were installed; two of the four contractors installed 96% of them. The table below shows the counties where contractors were installing heat pumps, along with the sales volume. Most heat pumps were installed in the Portland Metro area and in Bend.

Heat pump volume by region

County Installed	Sales Volume	Heat Pump Installation Count
Deschutes	High	53
Clackamas and Multnomah	High	52
Washington	Low	3
Klamath	Low	1
Total		**109**

Heather asked why only one heat pump was installed in Klamath county. Dan responded that one of the participating contractors was located there, and just didn't push the offer hard. Marshall added that part of the strategy with the pilot was to engage contractors actively working with manufactured homes; having a history of serving this market was one of the selection criteria for the RFP. Two of the four contractors were marketing the offering to past customers, and the other two were not as active, and only submitted a handful of projects.

Housing Characteristics: Ninety-four percent of homes were double-wide, and 80% were built in the 1990s (by design). Just over three-quarters were located in mobile home parks (a result of the two active contractors targeting mobile home parks). The heat pumps installed through the pilot ranged in price from $4,500 and $5,500, although most were at the low end of the range. The capacity of the installed units was 1.5 to 3 tons; almost all were two tons. The heating seasonal performance factor (HSPF) of these units (8.0-9.0; most were 8.2 or 8.5) is much lower than what Energy Trust typically incentivizes. The reason for this is, since they are replacing very inefficient electric furnaces, they do not have to be the most efficient units to save

energy, and, higher efficiency units are bigger and don't fit in the utility closest of most manufactured homes (this was feedback received from contractors when the program was just starting to design the pilot). Lower efficiency units were also cheaper, which was a plus. Strip heat ranged from 10-20 kW; most were 15 kW.

Staff Interviews: All staff interviewed felt the pilot was successfully implemented, and were excited by the rapid market response (all installs were completed in two months). They felt that the low price and heavy promotion by the two active contractors got people excited. Staff reported that they revised the pilot heat pump requirements based on contractor feedback. They felt that contractors heavily benefitted from the simple sizing requirements and fixed price for each size of heat pump. This made it easy for them to buy in bulk at different price points (knowing what incentive they were going to receive). Staff felt that the similar housing stock made the flat fee feasible, since there was not a lot of variability in the installations. The program was unsure about the $1,000 participant fee – they didn't know where the right spot was going to be, but based on feedback from contractors and participants, this price point seemed to work well.

Alan commented that we must have some idea about the expected savings to know that this price could be cost-effective. Dan responded that we did engineering analysis using information about what we have seen in single family homes to determine savings, and the measure was cost-effective at that price. However, there are not many studies on heat pumps in manufactured homes specifically, so we are still waiting on the billing analysis results. Given what we know about heat pump performance in single family, the savings should be sufficient to make this cost-effective. Alan commented that he was surprised that the report did not mention savings. Dan responded that this report was primarily a process evaluation; the impact evaluation results will be ready in 2017.

Contractor Interviews: Contractors reported being satisfied with the pilot and the price schedule. They reported that their profits decreased due to the recruitment effort required and the variable complexity of installations, but this was made up, in part, by the volume of installs. They reported using differing promotion tactics, including canvassing and word of mouth. All contractors offered financing, but it was not utilized. Contractors felt that the participant fee was just right, and they said that if it was higher, they worried that it would reduce participation significantly. Contractors said that the timing of the pilot worked well for them – it was done in winter, which is their "slow season" in terms of installing heating equipment.

Participant Survey: The evaluator conducted phone surveys in July 2016, and offered a $10 gift card as an incentive for completing the survey. Sixty-one surveys were completed (out of a total of 109).

On average, there were 2.3 residents per home (4 or 5 at the most). Ninety percent were white, and 100% indicated that English was their primary language. A third completed more than 2 years of college, and 90% had wireless internet, which was surprising. Fifty-seven percent had annual household income less than $50,000, and 30% met low-income criteria.

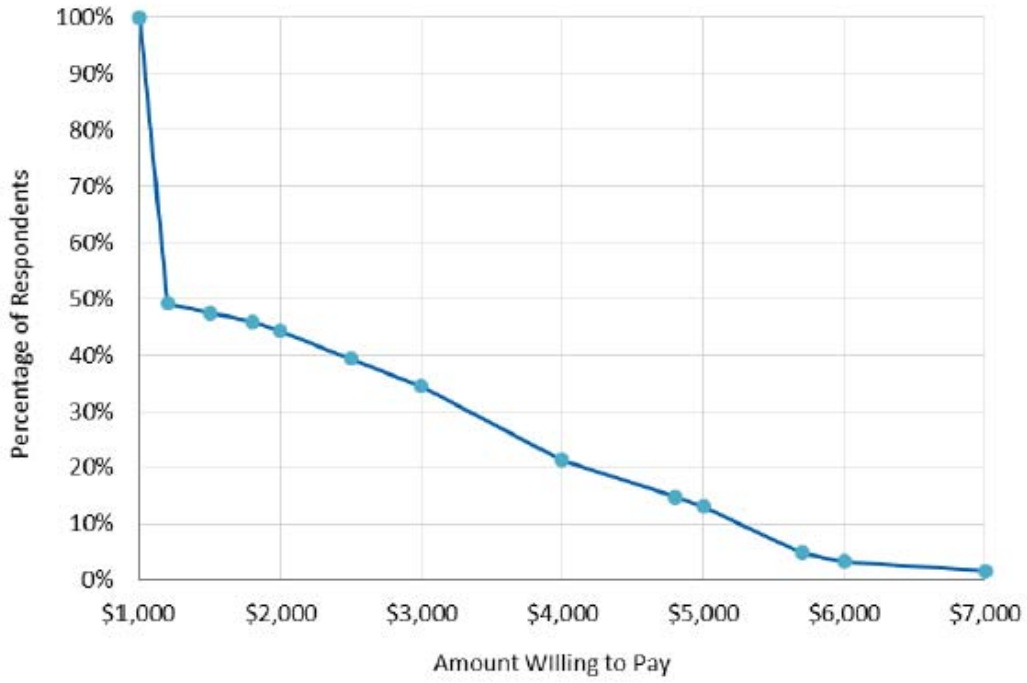
Marshall commented that the majority of Energy Trust participants have an annual household income of $75,000 or more. Part of the reason for less participation among low- and moderate-income households is that they are not participating in market interactions in the same way. That's why this pilot was designed the way it was – to serve a lagging market. Dan commented that these results aren't representative of all households in manufactured homes; these are

households that have $1,000 to spend, so we wouldn't expect to be serving the lowest income group.

Susan Brodahl asked why we were surprised that 90% of respondents had wireless internet. Dan and Marshall responded that as part of the first Nest Heat Pump study, we found lower rates of wi-fi in homes (although that was a few years ago) and rates of wi-fi may have changed.

Many participants said the best part of the pilot was that $1,000 is a good value for a heat pump. Two-thirds said they considered a heat pump prior to the pilot, but that cost was the key barrier. When asked about their willingness to pay, half said they would have paid more, and the rest said they would not have paid more or didn't know. Of the respondents found to be low-income, 38% said they would have paid more, compared to 67% of non-low-income respondents.

Willingness to pay for heat pump installation



The graph above shows what percent of people would have been willing to pay for the heat pump installation at various price points. This shows that there is significant falloff above price points of $1,500-$2,000.

People were very satisfied with the quality of their contractor, the performance of their heat pump, and their overall experience with the pilot – for each of these elements, more than 90% of respondents said they were very satisfied. Ninety-eight percent of respondents said their home was more comfortable than before the heat pump was installed; some of this is likely due to the fact that these households now have cooling, which they didn't have before, and the surveys were conducted in the summer.

Conclusions and Recommendations (so far): The pilot implementation was a success. Alan emphasized that this conclusion is based on the results to date – we still don't have any evidence regarding savings. Marshall commented that the Regional Technical Forum (RTF) has

a measure for heat pumps in manufactured homes, and they have pretty good confidence in the savings based on average loads of manufactured homes with electric furnaces, weatherization levels, and the savings from adding a compressor to a furnace. Fred added that the RTF numbers were based on good engineering analyses. Alan noted that some of these pilot participants did not previously have air conditioning, which they now have – given this, do we expect the overall usage to go up or down? Dan commented that when heat pumps are installed, many people start cooling, which increases usage, but cooling loads are small relative to heating loads, so heating savings usually far outweigh the increase in usage for summer cooling. The average cooling load is approximately 200-400 kWh, while the average heating load for an electric furnace is somewhere between 8,000-10,000 kWh. Jennifer commented that in the RTF data for this measure, we did see a cooling penalty, and some heating take-back. It would be interesting to look at the insulation levels of the homes in the pilot, to see how that affects take-back (if at all). The RTF has found that with more limited income homes, they heat more than they did before. However, overall, there are savings.

Alan commented that without seeing evidence of savings (and therefore, some assurance that the offering would be yielding cost-effective savings), it would make him uncomfortable to see the program move forward. Dan commented that electric furnaces are extremely inefficient, and the savings potential is large when a compressor replaces those systems. The engineering estimates say the savings are large, but we will have to wait for the exact amount until 2017. Marshall commented that the program is waiting for the results of the billing analysis before moving forward. The manufactured homes program has served approximately 22,000 sites through air and duct sealing, and feels that the market is saturated. The program is looking for other ways to reduce energy use in those homes; the program is anxious to finish up this pilot study and figure out how to replace those weatherization measures with an offering that addresses HVAC systems and includes controls as part of the strategy. Alan commented that getting the results would appear to be a priority, since it appears that to date, this pilot was very successful.

Other conclusions: participants and contractors were very happy with the pilot, especially with the simplicity. Good contractor selection was a key factor; contractors that knew the target audience in the market were able to reach out to customers efficiently. The pilot didn't see as many low income residents as expected. Overall recommendation is to work with weatherization agencies to target low income participants.

Next Steps: Billing analysis will be completed in 2017. The results from a sub-pilot that CLEAResult is doing will be available; Nest thermostats were installed in 19 homes as a way to determine if this is a cheaper way to do quality control checks on heat pump installs. Heather asked why these were not installed in all homes. Dan commented that all homes received advanced controls, but not all advanced controls were Nest. Nest provides five-minute interval data on the compressor and back-up heat, which is far more granular than the monthly utility billing data we receive. That granular data would allow the program to see if the system is performing poorly or not.

Marshall noted that the prior year, the program tested ductless heat pumps in manufactured homes. As part of the billing analysis for this pilot the program is hoping to get a sense of whether ductless heat pumps or heat pumps save more, and get a sense of which one costs less. That information will inform the design of the program moving forward. The program is also exploring, with PGE, the demand response benefits of having smart thermostats in these homes, which are at the end of the line in terms of infrastructure (in some cases).

Heather asked if the savings are for the perceived life, or if they are first-year savings. Dan responded that we are often looking at first-year savings, and then we estimate a measure life for how long we expect the measure to be in place. Heather asked if we have ever looked at an individual site's contribution to the public purpose charge versus the benefit they receive. Fred commented that from a marketing perspective, we look at participant payback, but that is not part of the investment criteria from the OPUC's perspective.

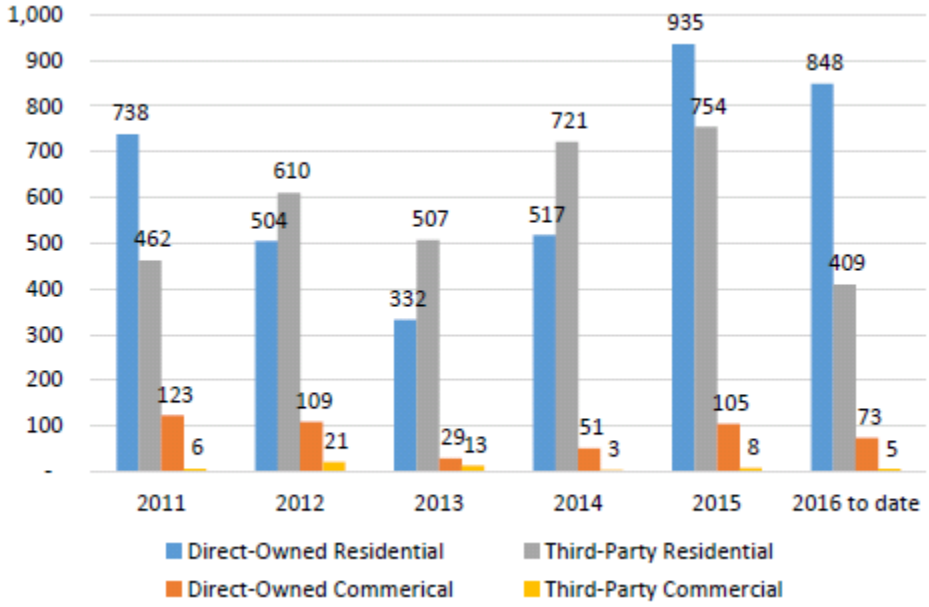
2. Solar Impact Evaluation

Presented by Sarah Castor

Background: The solar program has a history of collecting meter readings from customers to verify production. The program had a sense that their estimates of production were conservative; they wanted to take a look at actual production to understand the sources of difference. Cadmus was hired in late 2015 to estimate actual solar production from systems installed between 2011 and 2014. However, as the work got underway, and the results came in, we decided to add projects from 2015, so this evaluation covers systems installed between 2011 and 2015.

This information isn't in the report, but we wanted to provide a quick overview of the prevalence of direct-owned and third-party-owned systems. The graph below shows the number of solar PV systems installed during 2011-2016 to date, showing residential and commercial as well as direct-owned and third-party-owned systems. Several years ago, third-party systems comprised the majority of installations seen in the program. In 2015, direct-owned systems were more common; this is a result of the two main third-party solar contractors getting out of doing these types of installations. The volume on the commercial side is much lower relative to residential, and third-party-owned systems have never been a big part of commercial solar.

Number of solar PV systems, 2011-2016 (to date)



Evaluation Objectives: The evaluation objectives were to estimate realization rates for the program population; look at trends in realization rates by sector, system age, region, inverter type, and total solar resource fraction (TSRF). TSRF is the ratio of actual available solar

irradiance to the maximum solar irradiance the array could get. If TSRF is 1, then the array is getting the maximum solar irradiance possible; if it is less than 1, it is not getting the maximum solar exposure. Another evaluation objective was to provide information and evidence for updating Energy Trust's annual energy production (AEP) calculation method, if applicable.

Methods: A web-based survey was sent to residential and commercial participants (all but third-party-owned commercial systems). In addition, production data for residential systems was obtained from the two largest third-party installers. Finally, once the survey results were collected and analyzed, the commercial web survey results gave us some pause, so site visits were completed for direct-owned commercial systems. The results from these activities were then extrapolated to the program population.

Estimating AEP requires an estimate of the local production capacity, which is based on local weather for a site (Energy Trust uses TMY2 - typical meteorological year data). TMY2 gives the average daily solar irradiance, and is based on years 1961-1990, which is a little dated, and this will come up again when we talk about the evaluator's recommendation to move to TMY3 data. AEP also requires the total installed capacity and TSRF. The program requires that TSRF be taken from the most shaded portion of the array, which is designed to be conservative. Energy Trust applies a 5% derating factor to estimate the final AEP. Energy Trust requires systems to have a revenue-grade meter, or an inverter with revenue-grade metering built in.

Heather asked for clarification about TSRF and how it compares to PVWatts and PVSyst. [PVWatts and PVSyst are software packages that are used to calculate AEP, using assumptions about TSRF.] Dave responded that TSRF is a summary of shading loss – it's based on looking at every hour during the year, and determining how much of the array is shaded during that hour, and incorporates a tilt and orientation factor. Lizzie commented that many of the methods used by the program were developed in conjunction with the University of Oregon Solar Monitoring Lab; we can share the methods and rationale if desired.

Data Collection & Analysis: An online survey collected data on meter readings, as well as whether there had been any change in ownership and/or warranty work performed. Survey invitations were distributed via e-mail to customers in two rounds. The first round was residential and commercial, and the second round only included residential systems installed in 2015. Response rates varied, from 13% for direct-owned commercial to 24% for direct-owned residential. In total, there were 352 completed web surveys.

Production data was obtained from two trade allies for 1,401 third-party-owned residential systems. Results from the 28 commercial web surveys suggested issues with the readings, so 38 site visits were conducted by Energy Trust verifiers. Visits revealed that 40% of the meters rolled over at least once since the systems were installed, meaning that the meter readings were not capturing the true production of the systems. Alan asked how the production was obtained if the meter values had rolled over. Sarah responded that the meters on the inverters don't roll over at 100,000, so we could use data from these meters. Realization rates were calculated for each system and aggregated by customer type and data source.

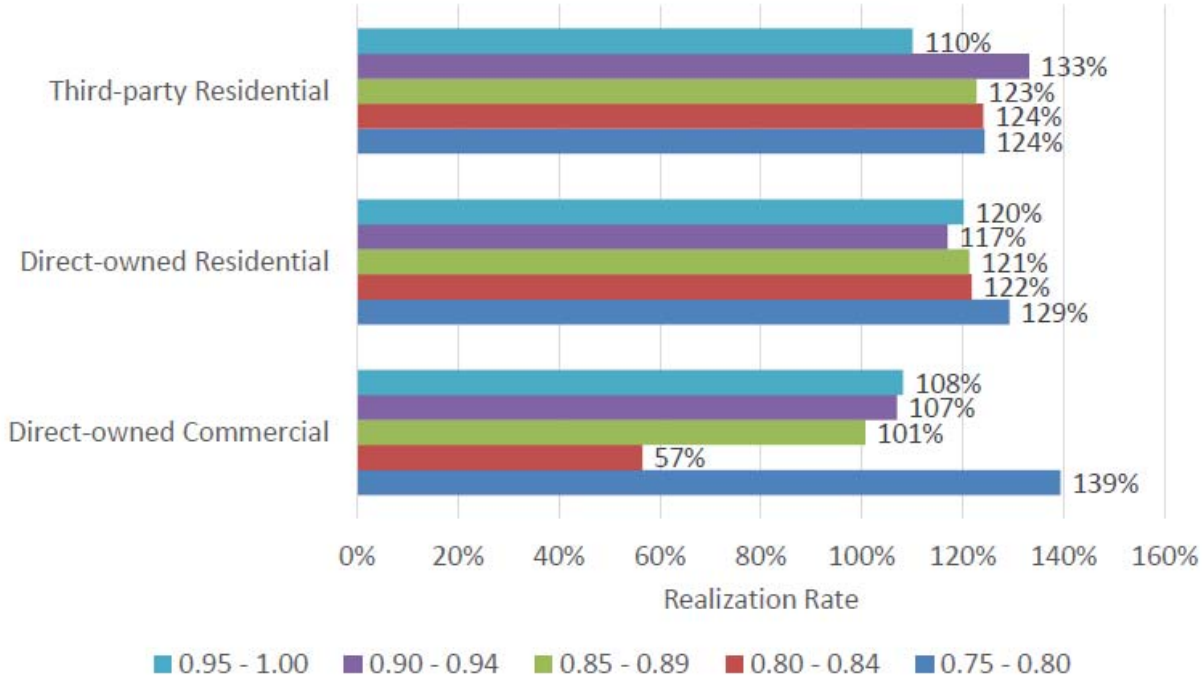
Results: The table below shows the overall realization rates.

Overall realization rates

Evaluation Group	Data Collection Method	Count	Sum of Meter Reading kWh	Sum of Energy Trust Expected kWh	Realization Rate
Direct-Owned Commercial	Site Visits	38	4,524,447	4,349,925	104%
Direct-Owned Residential	Surveys	180	2,301,277	1,897,068	121%
Third-Party Residential	Surveys	144	1,914,839	1,550,442	124%
Third-Party Residential	Production Data	1,401	19,901,081	16,987,464	117%

Direct-owned commercial had a realization rate of 104% (based on site visits for 38 sites). Direct-owned residential had a 121% realization rate (based on web surveys) and depending on the source, third-party residential had a 117% realization rate (based on production data for a large number of sites) or a 124% realization rate (based on web surveys). The evaluator ended up using the 117% realization rate for third-party residential due to the large number of sites and in an effort to be conservative.

Realization rates from web surveys and site visits by TSRF



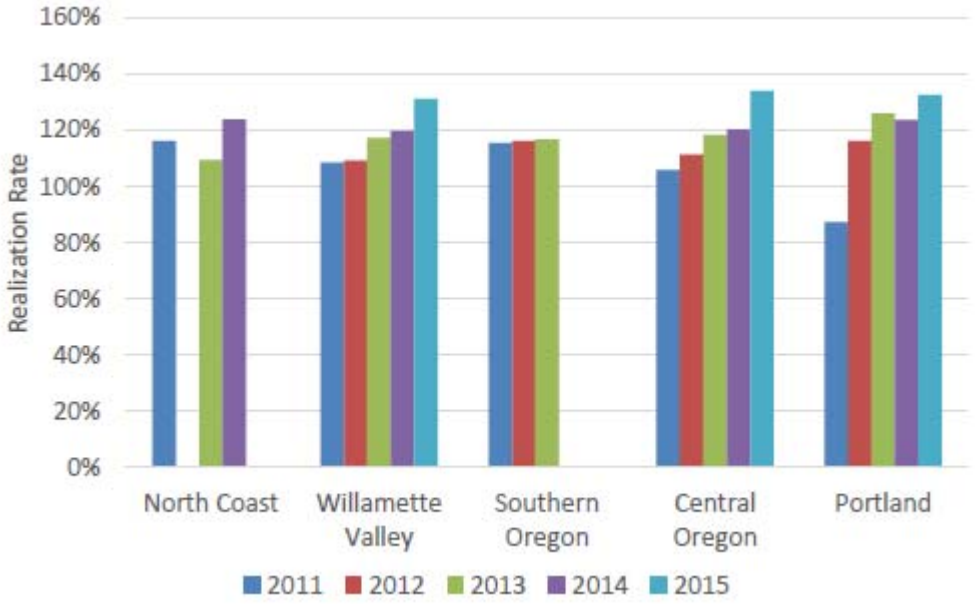
The graph above shows realization rates by TSRF bin. As you can see, there is a slight trend of higher realization rates for lower TSRF bins, meaning that using a more conservative estimate of TSRF results in an underestimate of system performance. This is not a consistent trend; we see that for direct-owned commercial, there is one TSRF bin with a very low realization rate; we

are investigating this further with Cadmus, as there appears to be one system that is driving that result in that TSRF bin.

Looking at the data from the web surveys and site visits, we found that realization rates are relatively consistent across various regions of the state (the majority of the systems are in the Portland Metro area). We also found that realization rates are relatively consistent across the years the systems were installed, although there was more variability in commercial due to the small sample size. Microinverters perform better than string inverters (125% realization rate versus 110%), which was anticipated; one of the sales claims about microinverters is that they yield better performance. There is one particular type of string inverter called a DC optimizer that is said to perform better than other string inverters; we were not able to investigate this as part of this study, but hope to look into it in the future. Heather asked if we plan to do this type of evaluation in the future, as it would be interesting to see if realization rates stay relatively constant over time. Sarah responded that we haven't yet discussed with the program when we might do this again. Dave added that we may not be able to afford to do this annually, but feel there is value in periodically checking on the performance of these systems. JP asked if there would be any impact on what the program reports to the Oregon Public Utilities Commission. Sarah responded that information about how these results will be used will come later in the presentation. Jennifer asked if we analyzed the results by contractor. Andy Eiden responded that the evaluator did look into that, but there were many contractors (leading to small sample sizes) and other nuances, so the results were not particularly valuable.

Looking at the production data from the third-party providers, we first looked at results regionally, by year, as shown in the graph below.

Realization rates from production data by region and year



Looking across regions, there are not many differences in realization rates, but within regions, we do see a slight upward trend in realization rates over time – that is, systems installed in 2011 tend to have lower realization rates than systems installed in 2014 and 2015. We are not sure what is driving this result, but there are a number of possible explanations, including the increasing use of microinverters (which we know have better realization rates), changes in siting

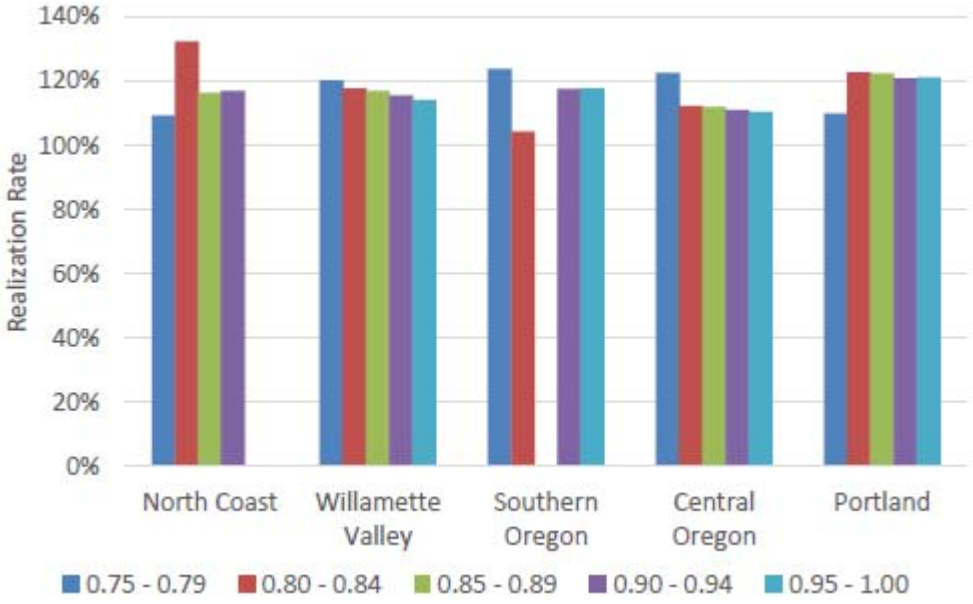
practices, or PV module rating bias. This is an area that we might want to investigate further in the future.

Alan asked why there were no systems installed in Southern Oregon in 2014 and 2015. Dave responded that in 2011-2013, some third-party providers served customers all over the state, but in recent years, they have pulled back.

Sarah commented that it's interesting that this trend over time is not observed in the web survey data, which calls into question whether this is really a trend. Dave commented that it may be changes in trade ally practices with regards to measuring TSRF. They may have gotten more conservative lower time. If they use a lower TSRF value, that has Energy Trust assuming lower production, which could lead to a higher realization rate.

The graph below shows realization rates from production data by region and TSRF. There is a slight trend where lower TSRF values have higher realization rates. The web survey and site visit data yielded the same result.

Realization rates from production data by region and TSRF



Heather asked about the assumptions built into TSRF. Dave responded that TSRF only includes the derating factors associated with non-ideal tilt and orientation, and shading; TSRF can be measured with a tool. Lizzie commented that these results are not surprising given the eligibility criteria for the program. If a site has less than 75% TSRF, it is not eligible. There is a strong incentive for contractors to be conservative due to the eligibility criteria, and because they want to under promise to customers, and have customers be pleasantly surprised. So the trend is not surprising – as long as sites meet the eligibility criteria, they tend to err on the lower end of things.

As with the web survey and site visit data, production data indicated that realization rates were relatively consistent across regions.

The table below shows how the evaluator extrapolated the realization rates to the population. For each of the three groups – direct-owned commercial, direct-owned residential, and third-party residential – it shows the total number of systems installed between 2011 and 2015, along with the expected generation, the estimated realization rates, and the application of the realization rates to the expected generation amounts. The evaluation suggests that the actual generation is closer to 63 million kWh, versus the expected 57 million kWh.

Realization rates extrapolated to the population

Sector	Quantity	Expected Generation (kWh per year)	Realization Rate	Evaluated Generation (kWh per year)
Commercial	407	31,981,092	104%	33,260,336
Direct-Owned Residential	2,570	11,681,789	121%	14,134,965
Third-Party Residential	2,753	13,602,688	117%	15,915,145
Total	**5,730**	**57,265,569**	**111%**	**63,310,445**

Conclusions and Recommendations: Residential systems are over performing by 17-24% relative to expectations. The evaluator recommends considering changes to the TSRF value used to estimate AEP, considering an adjustment for microinverters, and using TMY3 data instead of TMY2 data.

Cadmus felt that using surveys to gather information about meter readings produced reliable data for residential systems. Microinverters outperformed string inverters; Cadmus recommends conducting further research into performance by inverter type, especially by TSRF.

Steve asked about differences between the two inverter types, particularly in terms of efficiency. Lizzie responded that with string inverters, if one module is shaded, the whole string is out. With microinverters, if one module is shaded, all non-shaded modules are providing power. The difference is more about on-time versus efficiency. All inverters are highly efficient. Lizzie commented that for systems with low TSRF, there is more opportunity for microinverters to improve the system overall; for a system with 96% TSRF (effectively unshaded) microinverters don't provide as much benefit.

Cadmus notes that commercial systems are performing closer to expectations. Meter rollover makes surveys inappropriate; we would be better served to perform site visits or obtain production data from tracking software. Finally, consider requiring meters with 6 digits to reduce rollover.

Next Steps: The program realizes that the TSRF methodology is conservative, and in the future, will be more flexible regarding the values that contractors can provide – for example, there are a number of new remote analysis tools coming onto the market, which are based on LIDAR and satellite imagery that enable remote analysis of roofs. The program will start accepting the average TSRF based on those remote models. This is a great opportunity for soft cost reduction – it means that contractors do not need to get up on roofs to do a preliminary assessment. Also,

PowerClerk, the application the solar program uses, will be upgraded in 2017. At that time, we will be looking at new performance models and may be making some changes, such as upgrading to TMY3 data looking at a way to incorporate adjustments for inverter type, and removing the 5% derating factor. The program will also be working with Planning and Evaluation to true-up program generation next year.

Jennifer commented that it would be useful to keep an eye on how well new modeling software is working in terms of estimating production – those tools can provide really different estimates. Dave commented that the program has production data for 20 sites, along with TSRF values. In the future, if a contractor wants to use a new tool, we can have them use the tool for those 20 sites and see how close their estimates are as a way of judging the acceptability of the tool. There are 2-3 tools that the program has examined and accepted over the years, and the program is currently working to expand that suite of tools.

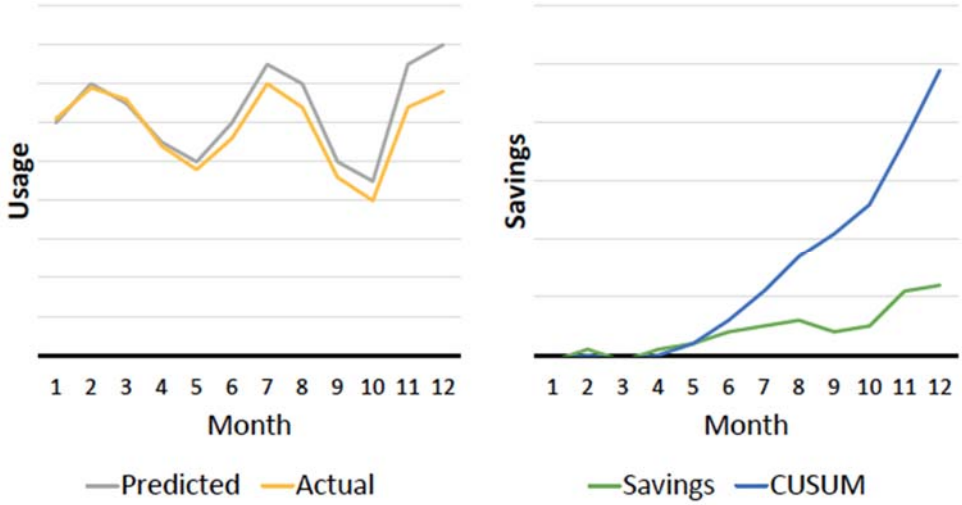
3. Commercial Strategic Energy Management Impact Evaluation

Presented by Dan Rubado

Background: Strategic Energy Management (SEM) is about building organizational energy management capabilities. In the past there were year-long cohort and corporate (one-on-one) engagements with an SEM coach. SEM coaches lead workshops with their assigned group of participants (commercial building owners), do one-on-one organizational and building assessments, and coach participants on how to save energy, find energy-saving opportunities, and track progress over time. Participants develop energy teams led by an Energy Champion. A key element of SEM is obtaining executive support for, and engaging employees in, the SEM initiative.

Energy models are used to calculate savings and the associated incentives for participating sites. The most common energy model is the baseline model. The idea is that one looks at the period immediately preceding participation in SEM, and uses whole-facility regression analysis to predict energy usage in the absence of program participation. Once the model predicts energy usage at a facility during the engagement period or after, one compares that predicted usage (accounting for weather conditions and other variables) to actual usage during the same time period. You can see in the graph on the left (below) that around month 5, the two lines diverge as the sites starts implementing SEM. The graph on the right aggregates the savings that occur each month (the blue line labeled “CUSUM” represents the cumulative sum of savings). In the past, the last few months during the engagement period were considered to be most representative of the coming year; implementers used the last three to four months to estimate the annual savings for the subsequent year.

Examples of a baseline energy model and computing savings



Alan asked if that modeling approach was called into question as part of past evaluations. Dan responded that the program is not continuing to use that methodology, but this evaluation covered years where that methodology was employed.

Between 2012 and 2014, commercial SEM engaged 4 cohorts of participants and 3 corporate SEM participants. In total, this represented 27 organizations and 167 sites that saved electricity and 126 sites that saved gas. Over this time period, 27 million kWh and 930,000 therms were claimed; in 2014, savings from SEM represented 27% of gas savings and 13% of electric savings for the Existing Buildings program.

Later in the time period covered by the evaluation, the program started offering more ongoing support, called SEM continuation. For participants that have gone through the first year and want additional support and resources thereafter, the program makes resources available in the form of check-ins, assistance maintaining the modeling tools, and helping to identify additional energy savings opportunities. Participants could also enroll additional buildings in their portfolios into SEM.

The table below shows annual savings by cohort – i.e., the additional savings achieved within each cohort in additional years. You can see that savings trail off, as there is not as much to do each subsequent year. Fred clarified that these are savings on top of the savings from the first year. Dan commented that we don't see incremental savings when we look at meter data – we can only look in the aggregate, so we start out by looking at cumulative savings, and subtract back to get incremental annual savings.

Annual savings by cohort

			Incremental Annual Savings		
Fuel	Cohort	Site Count	2012	2013	2014
Electric (kWh)	1	45	5,299,318	2,174,159	680,604
	2	38		6,090,749	2,432,492
	3	30			2,830,422
	4	23			6,761,472
	Corporate	31		460,031	230,242
	Total	167	5,299,318	8,724,939	12,935,232
Gas (therms)	1	30	126,942	119,518	120,380
	2	25		186,524	18,787
	3	22			178,543
	4	12			94,215
	Corporate	37		63,293	18,764
	Total	126	126,942	369,335	430,689

Study Goals: The overall goal of this impact evaluation was to develop reliable estimates of realized gas and electric savings over several years, accounting for capital project savings. In addition, we wanted the evaluator to determine the level of participant engagement, assess SEM-related changes made to organizations and buildings, and recommend improvements to the way savings are estimated.

Methods: This evaluation involved interviews with staff and Program Delivery Contractors (PDCs) delivering SEM, interviews with participants (20), drawing a sample of sites (86), reviewing models and tracking tools, conducting site visits (19), and performing impact analysis. The evaluator used two different modeling methods – one method uses the original model the implementer created to estimate the first-year savings and adds the data collected since that time to get an updated savings estimate. Given some of the challenges with the models developed during this time period, the other method involves creating a new, independent model to calculate savings. We'll take a look at how the results from these two models line up. For both models, the evaluator subtracted capital projects and rolled up the savings at individual sites to obtain overall estimates of annual program realized gas and electric savings.

Sampling The sample frame was 167 sites with electric savings (58 were ultimately selected for the sample) and 126 with gas savings (28 were ultimately selected for the sample). Alan asked if the number of sites with gas savings was enough to get statistically significant results. Dan responded that initially we thought that would be enough sites to get 10% precision, but there ended up being more variability between sites than originally thought, so we didn't end up getting the precision level we were looking for with gas.

Staff Interview Findings: Staff reported that in order to be cost-effective, customers operating multiple sites must be engaged. Staff felt that the big drivers of savings are educational campaigns, adjustments to schedules and set points (lighting, building controls, HVAC) and policies (e.g., eliminating space heaters). Alan commented that the drivers mentioned so far are not necessarily related to management, but, based upon his experience, management support

is an important ingredient for success. Dan responded that management support is critical – without executive support, none of this happens. A central tenant of SEM is getting buy-in and support at the executive level, because once you have that, the rest can happen. Staff felt that energy champions are the key to achieving savings and persistence of savings. They also felt that SEM continuation is a good way to maintain SEM activities and savings, as well as identify new opportunities. Staff felt that the energy models have evolved, but reported that they are still based on temperature (since for commercial buildings, weather is a primary driver of energy use). Tracking tools have evolved to simplify user experience, but it is difficult to adjust for capital projects and renovations happening during or after the SEM engagement.

Participant Interviews: The evaluator interviewed 20 participants. All but one reported regularly tracking their energy use. Most indicated that they have an energy policy, energy goals, executive support for this work, and that they are continually striving to reduce energy use. One quarter did not have an active energy team at the time of the interview – there is always turnover in organizations, and this affects the energy teams. Those with active teams reported meeting at least monthly. Turnover also impacted energy champions – 4 of 20 reported turnover in this role, which had an impact on their SEM activities. In many cases, the participants reported being able to find a replacement for the energy champion role.

Half reported that they transferred the SEM activities learned to other sites not included in the program. This is a great example of spillover. We did not collect information about where those sites were located, whether or not they were located in Energy Trust's service territory, what types of activities were transferred, and how much energy was saved; these questions were exploratory and aimed at getting a sense of whether spillover was happening. We learned that spillover is happening, and we could probably quantify this at some point, if desired. Finally, most participants thought the program was helpful in tracking and saving energy.

JP asked if participants were questioned about the log of ideas for energy-saving activities. Dan responded that yes, participants were asked about their opportunity registers. However, we asked each participant about only a handful of individual sites. Participants used their opportunity registers, and most reported that they completed the activities identified during their initial SEM engagement. Half of sites completed capital projects as well; a few of these projects were not in Energy Trust's Project Tracking database (either because they were not cost-effective, or for another reason). Alan asked if these projects were a direct result of the SEM engagement. Dan responded that they were likely identified as part of SEM. One site had a solar PV system, so the evaluator collected generation data. Many sites reported factors other than weather driving energy use – primarily occupancy-related – which were captured in models.

Site Visits: Site visits were conducted at select sites with high SEM savings and large capital projects to see how these facilities were using energy, to identify the big drivers of energy that the models were potentially not capturing, to verify SEM activities saving energy, and to verify large capital projects impacting energy use.

Capital Projects: The evaluator identified all Energy Trust-incentivized capital projects that occurred at each site. Three sites completed projects during the baseline period (this was accounted for by shrinking the baseline period) and 23 sites completed projects during the intervention period. Savings from capital projects were removed from SEM savings every year post-install. We used gross savings for capital projects, since we did not want to say that all capital projects received a 100% realization rate.

Susan Brodahl asked about spillover and whether we can count those savings. Fred responded that if customers say that SEM activities spilled over to other sites that are in Energy Trust's service territory, and we collect data and have a clear sense from the customers that SEM caused the adoption of those activities, we could claim the savings.

Alan asked about the measure life for SEM. Dan commented that first-year savings have a measure life of three years. Each year of incremental savings also have a three-year measure life. Fred commented that we are still learning about measure life. We have been experimenting with what program designs create persistence. Kathleen noted that now, SEM has a five-year measure life. Phil noted that a three-year measure life means that half of the savings are still there three years later. Phil added that we hope to do research next year on operations and maintenance (O&M) measures that will help us understand what drives SEM savings and how long these measures last.

Jennifer asked at what point treatment is "turned off" for these sites. Kathleen responded that there is no definitive end date – some participants are in their sixth year, and we continue to find energy savings. Fred commented that when participants stop, we will likely take a look at what happens when they stop. Phil added that in some cases, with larger customers that have many buildings, you can imagine an almost endless engagement.

Fred commented that when we talk about spillover, a lot comes down to trying to get reliable data from sites we have no relationship with (e.g., non-participants) and the results are expensive to obtain and often inconclusive. Where there are strong indicators that spillover is large, we claim conservative savings. To date we have not found ways to narrow the uncertainty band. Alan asked about spillover beyond participant sites. Dan clarified that as part of this study, we gained some information about participant spillover (an indication that practices and activities spread to other buildings owned by the participating organizations) but that we did not learn anything about non-participant spillover.

Model Review Findings: The models relied on average temperature variables. Often, the models used the last three months of savings to forecast annual savings. The evaluator found that one-quarter of models did not use a standard baseline period (a site could have non-standard baseline periods for a variety of reasons, such as the completion of a capital project or a change at the facility). However, the evaluator commented that the models had extremely high correlation coefficients (R-squareds), meaning the implementer may have tried to maximize the fit of the model by moving the baseline period around and over-fitting the data. To forecast or predict energy use, it's better to model the underlying trend in the data, rather than exactly fit the model to the data. An over-fit model will not do as good of a job at predicting future energy use.

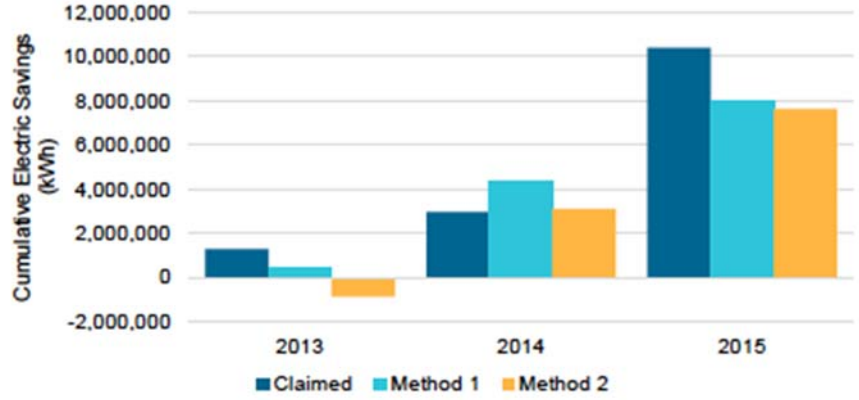
The evaluator found that important non-weather variables were sometimes ignored in baseline models. For example, there were clear drop-offs in energy use during the summer that implementers did not attempt to control for in the models. A fair number of models were based on PGE's Energy Expert tool, which the evaluator stated appears to be robust; however, the evaluator was not able to assess individual models. As a result of these concerns, the evaluator did not use program models to evaluate savings, which is why the report details results from two methods: one using the program models, and one using independently-developed models.

Method 1 Findings: The first method involved incorporating more recent data into the original program models. Forty-six of 86 sampled sites were analyzed, and not all models could be recreated (the most common reason was because the models were done using PGE's Energy Expert, a web-based tool, and the model specification could not be easily extracted). In a few

other cases, the evaluator did not have data used in the original models, or could not recreate them for some other reason. The results from this work are not representative of the entire program; they are just for comparative purposes.

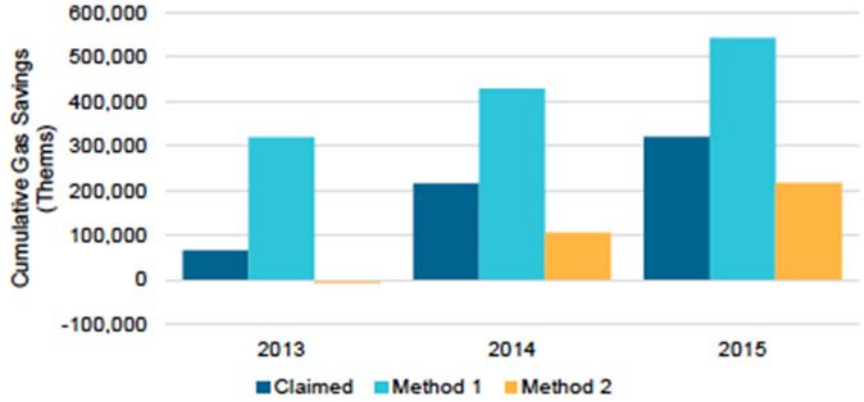
The chart below shows a comparison between the claimed electric savings, an estimate of electric savings obtained using method 1, and an estimate of electric savings obtained using method 2. The years represent the years following participation – so for example, 2012 savings were evaluated using 2013 data. It looks like savings estimated using method 1 were higher than savings estimated using method 2.

Comparison of electric savings estimated by program staff, and using methods 1 and 2



The chart below shows the same comparison, but for gas savings – again, there are big differences between the claimed savings, and between methods 1 and 2.

Comparison of gas savings estimated by program staff, and using methods 1 and 2



Method 2 Findings: Method 2 involved creating standardized models based on heating degree-days (HDD), cooling degree-days (CDD), and non-weather variables (if applicable).

The table below shows the cumulative savings over time across all sample strata (combining cohort and corporate). The table shows the number of sites, the claimed and evaluated savings, the realization rates, and the savings represented in terms of percent of total usage.

Cumulative savings estimated using method 2

Fuel	Savings Year	Evaluated Sites	Claimed Savings	Evaluated Savings	Realization Rate	% Savings
Electric (kWh)	2013	12	5,299,318	7,350,568	139%	4.2%
	2014	36	14,024,257	16,338,244	116%	5.1%
	2015	58	26,959,489	27,852,207	103%	7.1%
Gas (therms)	2013	7	126,942	-18,452	-15%†	-0.5%
	2014	20	496,277	155,938	31%	2.1%
	2015	28	926,966	846,577	91%	6.5%

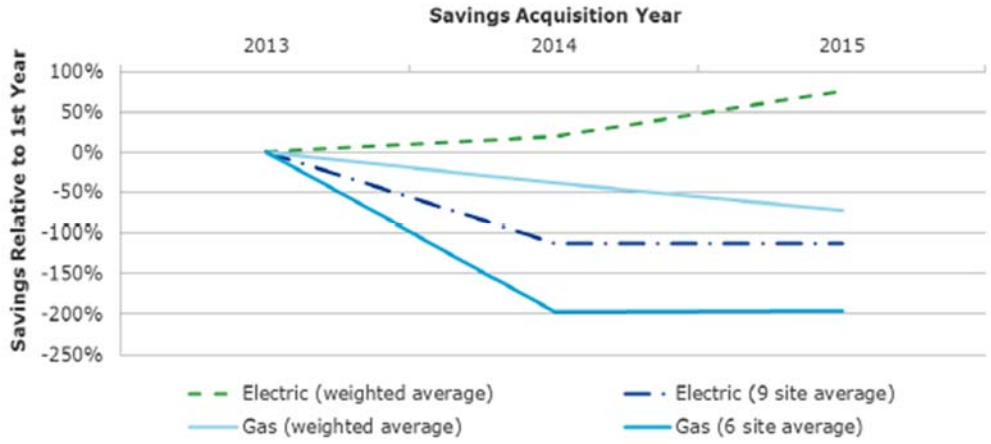
For the most recent year, 2015, the evaluator estimated a 103% electric realization rate and a 91% gas realization rate, which equates to an average of 7% electric savings and 6% gas savings. The first two years, the evaluator essentially did not find any evidence of gas savings. There are good reasons for that, including: gas savings are more seasonal, and since the implementer was predicting annual savings based on three months of data, gas savings were overestimated. As shown in the table below, the estimates of incremental savings show similar patterns to the estimates of cumulative savings.

Incremental savings estimated using method 2

Fuel	Program Year	Claimed Savings	Evaluated Sites	Evaluated Savings	Realization Rate
Electric (kWh)	2012	5,299,318	12	7,350,568	139%
	2013	8,724,939	36	8,987,675	103%
	2014	12,935,232	58	11,513,963	90%
	Total	26,959,489	58	27,852,207	104%
Gas (therms)	2012	126,942	7	(18,452)	-15%
	2013	369,335	20	174,390	47%
	2014	430,689	28	690,639	160%
	Total	926,966	28	846,577	91%

The evaluator looked at persistence of savings for 15 sites in the first cohort that had three years of data. As shown in the graph below, average savings decreased after the first year for many sites. However, looking at weighted average savings indicates that savings look to be increasing over time. With so few data points, there is not a good story to tell at this point. However, we think this indicates that a three-year measure life is reasonable.

Persistence results for cohort 1 participants



Jennifer commented that as the sample size grows, it would be interesting to look at sites that participated in SEM continuation and see how they compare to sites that dropped out.

Conclusions: Commercial SEM achieved significant energy savings that were generally in line with program estimates, although there was a lot of variability. Overall realization rates were 103% for electric and 91% for gas, equating to 7% electric savings and 6.5% gas savings. Savings persistence requires more research, but the available data indicates that a three-year measure life was reasonable. Participants are highly engaged in SEM, tracking energy, and continuing to save. Energy teams and energy champions appear to be key to organizations' success.

Recommendations: The evaluator recommends that the modeling methods be modified to use HDD and CDD instead of average temperature, stop using polynomial variables (e.g., temperature squared), and implement a standardized modeling methodology. The evaluator also recommends that savings calculation methods be changed such that savings are calculated at the end of each engagement year, and savings from the initial engagement are captured (these were not being captured under the previous paradigm). The evaluator recommended improving the tracking of SEM sites in Energy Trust's Project Tracking database, and tracking participating utility account information.

Energy Trust Take: Commercial SEM achieved great realization rates overall. The results will be used for True-Up and for forecasting. New energy modeling guidelines are being finalized; the guidelines incorporate recommendations from the evaluator regarding the models. The forecast method is no longer used for savings – now, savings are calculated at the end of the year. Sites are now being tracked individually in our systems, making it easier to match capital projects to sites participating in SEM. Commercial SEM is getting big in Oregon: there are currently 60 participants and about 500 of these participants' buildings are or have been enrolled in SEM at some point in time. Fifty-two participants are still involved. To date, there have been eight commercial SEM cohorts, with two more launching in 2017. Starting in 2017, the management of SEM will be transferred to the Existing Buildings PMC.

4. Existing Homes Process Evaluation

Presented by Sarah Castor

Background: The last evaluation of the Existing Homes program was completed in early 2014, and was focused on the Program Management Contractor (PMC) transition. Illume was hired in February 2016 to complete a process evaluation of the Existing Homes program; this evaluation covers Oregon and Washington, as well as New Homes and Products in Washington because these programs are implemented by the same PMC. Andrew commented that initially, the program proposed doing a Washington-focused evaluation separately from the one for Oregon, but after presenting the budget for that work, and discussing other options with the Washington Utilities and Transportation Commission, they were more in favor of this approach. The focus of this evaluation was on changes made since the last evaluation, checking on installation rates for Energy Saver Kit (ESK) devices, and looking at the bigger picture for the residential sector, which is in the middle of contemplating changes. Marshall noted that the residential sector is currently involved in a project (Residential Sector Assessment project) to analyze how to organize as a sector; the goal was to use some of the results from this evaluation to inform how we might structure components of the sector in the future and obtain insights into how we might transition our approach in the future.

Evaluation Objectives: The overall objective of this process evaluation, like all process evaluations, is to obtain feedback and recommendations to help Energy Trust more effectively and efficiently deliver the Existing Homes program, and the New Homes and Products programs in Washington. The specific objectives of the evaluation were to document program delivery and coordination processes, evaluate the effects of recent program changes, assess ESK effectiveness, and conduct a strategic review of the residential portfolio.

Evaluation Tasks: The evaluator reviewed data and documents, and conducted many interviews, including with Energy Trust and CLEAResult staff (7), utility representatives (6 from 5 utilities, including Clark Public Utilities), 27 trade allies (22 in Oregon and 5 in Washington), distributors (2) and New Home verifiers in Washington (2). Finally, the evaluator surveyed 201 recipients of ESKs.

Results – Program Delivery and Coordination: There is effective coordination between Energy Trust and the PMC. Trade allies and other market actors reported good communication with Energy Trust. There are effective relationships with the electric utilities, including Clark Public Utilities (although this is a different relationship from the relationships Energy Trust has with our two funding electric utilities – the one with Clark is more focused on coordination). The gas utilities reported wanting more communication and collaboration; we also heard this through the Existing Buildings process evaluation. Marshall asked for clarity about whether this desire for greater communication and collaboration raised by the evaluation is related to the Existing Homes program solely or is broader. Sarah responded that the evaluation asked about their interaction with Energy Trust's residential programs in general and Existing Homes does represent significant communication and collaboration with the utilities. These comments could be related to other residential programs. Marshall commented that Fred, Peter, and Steve have been working on addressing communication improvements with the gas utilities, both at the program and organizational level.

Trade allies reported using a variety of methods to market our incentives. Most regularly suggest energy-efficient equipment and services to customers, even when not specifically

requested by customers this is not surprising, given that interviewees are primarily highly rated and more active trade allies.

Results – Recent Program Changes: There have been a number of program changes, including the introduction of distributor sales performance incentive funds (SPIFs) and information sessions; moving to online Home Energy Reviews (which were previously in-home); changes to incentives for single family rental homes; changes to trade ally support (including the introduction of account managers, instant incentives, web forms, and a new web portal); the introduction of desk reviews for quality assurance; and EPS for new homes in Washington.

Trade allies reported that they like the account manager approach (a few did not notice a change). Instant incentives and web forms are working well for those who choose to use them, Experience with the trade ally web portal is positive. The transition to desk reviews for quality assurance (replacing some site visits) has been successful, and we have seen consistent pass rates along with decreases in quality assurance costs.

The program is in the process of moving midstream for some measures, particularly HVAC equipment and water heaters. The program currently offers a $25 SPIF for distributors to track qualifying equipment sales, which are then compared to applications submitted through other channels. Alan asked if we are tracking where all the equipment is being installed. Marshall responded that distributors report sales of qualifying equipment by serial number. Since we capture serial numbers on all of our applications, we can compare to the information on applications submitted through other channels and then pay distributors for sales that show up in our system. This encourages increased sales of qualifying equipment, encourages distributors to encourage trade allies to submit qualifying projects to Energy Trust, and, in some cases, we get full category sales data, which is valuable. In future designs, we may worry less about where the equipment is being installed (other than ensuring that it is installed in our service territory). Sarah noted that we asked distributors if we moved to paying them the full incentive (rather than paying this to customers), would they be able to collect and provide information about where the equipment was installed? One said yes, and one said no. The two interviewed distributors provided mixed feedback on the value of the contractor information sessions – one said they hadn't participated, and the other felt that it was not as productive as they would have liked. The program has received feedback from other distributors not interviewed as part of this process evaluation and they like these sessions and think they are helpful to contractors.

A recent program change in Washington is the move from builder option packages to EPS; the Axis database is used to submit applications. The two interviewed verifiers provided mixed reviews on the Axis database. One verifier suggested that builders of smaller homes were more receptive to EPS, and the other did not yet have enough experience with EPS in Washington to provide feedback. There was a suggestion to provide support for design charrettes with builders and contractors, which is done in Oregon but not Washington.

Results - ESK Survey: In 2015, the program replaced CFLs with LEDs, and moved kits back to a more "static" formula (previously, the kits were completely customizable). The program has been distributing about 35,000 kits per year; since the last evaluation, the online order form has remained the same. The respondents to the survey completed as part of this process evaluation ordered a kit between mid-November 2016 and mid-March 2016; they were surveyed in mid-June 2016. Many reported learning about kits from people they know (40%), which is surprising given that we know many kit orders are triggered by campaigns advertising ESKs sent by the

utilities. Susan Jamison commented that during this time period, there were not any campaigns through the utilities.

Installation rates for ESKs

	PGE	Pacific Power	NW Natural	Cascade Natural Gas	Overall 2016	2013	2010 /2011
Bath Aerator	44%	51%	51%	39%	46%	63%	22%
Kitchen Aerator	34%	32%	26%	27%	30%	46%	42%
Showerhead	46%	49%	53%	49%	49%	62%	44%
A-lamp	69%	80%	--	--	74%	74%	72%
Reflector	56%	62%	--	--	59%	57%	--

The table above shows installation rates for ESKs for 2016, along with the results from 2013 and from 2010-2011. The highlights are: about 74% of A-lamps and just under 60% of reflectors are installed within 2-6 months of kit receipt, regardless of whether customers received LEDs (2016) or CFLs (2013 and 2010-2011). We saw much lower install rates for water measures in 2016 relative to 2013. These rates increased between 2010-2011 and 2013, but went back down in 2016, and it's not clear what is driving this result, since the ordering process (which allows customers to decline these measures if they don't want them) has remained the same since 2013 (it was not possible to decline items in 2011/2011). It seems that people do not realize that they can decline these items.

As noted previously, lighting installation rates remained steady relative to the previous evaluation; LEDs were a motivating factor for many respondents, and satisfaction with LED performance was high. Water measure installation rates are down; many respondents did not recognize that they could decline water measures. There is still a lot that we don't know about installation rates, including what happens after 2-6 months, if respondents that say they intend to install eventually do, and what happens to the products that are not installed. To research these and other questions, we are planning to do some follow-up research in 2017.

Other findings included that a high number of respondents intended to install all lightbulbs received, but a lower number of respondents intended to install all water devices received. Many respondents said they were waiting because current items are still working. Respondents were highly satisfied with ESK experience and individual components – 95% said that overall, it met or exceeded their expectations. Twenty-nine percent reported that they purchased additional LEDs as a result of the kit and 75% said they investigated additional home improvements as a result of the kit.

Results – Strategic Portfolio Review: The next bit of content is not in the report, but we wanted to include it to provide some context. The Existing Homes program has discontinued several measures over the last three years, including air and duct sealing in single family homes, duct insulation, Home Performance assessments, in-home Home Energy Reviews, solar water heating, and personal energy reports. Other measures have seen declining volume or cost-effectiveness constraints, including ceiling, wall, and floor insulation; air and duct sealing in manufactured homes; and heat pumps and ductless heat pumps. New measures have been

added, including smart thermostats, pool pumps, tier 3 heat pump water heaters, and higher incentives for rentals. Additionally, the program has modified income requirements to expand moderate income participation, and the program has piloted a variety of new measures, including ductless heat pumps and heat pumps in manufactured homes, air sealing and attic insulation for single family homes (which did not ultimately pan out), and advanced power strips.

Susan Brodahl asked for clarity in the income requirements for moderate income. Marshall responded that the program raised the limits defining moderate income; the program aligned with the state's definition, which was 80-120% of the state median income. This resulted in a doubling of activity this year.

Given all of this change, we asked Illume to look at what is happening in other states, to see if we can borrow any learnings from their programs. Illume looked at the states ranked in the top 10 of ACEEE's Energy Efficiency Score Card; they found that eight of them do cost-effectiveness screening at the program or portfolio level, while Energy Trust does this at a measure level. That doesn't mean that these states are not facing cost-effectiveness challenges, as it can still be challenging to get a portfolio to be cost-effective.

Other utilities report facing cost-effectiveness challenges, and are looking at reorganizing residential programs. Illume suggests using propensity modeling to target customers likely to take up projects and investigate more financing offers.

Conclusions and Recommendations: Illume's recommendations are to enhance the communication and collaboration approach with the gas utilities, remind trade allies of the availability of marketing tools and information, explore incentive structures to motivate distributors, investigate the ESK ordering process with an eye to improving installation rates, and consider different program and marketing approaches, such as expanding financing offers and using propensity modeling.

Next Steps: The program will align insights from this process evaluation with work happening as part of the Residential Sector Assessment project, which is exploring organizing principles for programs – e.g., should they be aligned with technologies, market channels, something else? In addition, the program will assess the additional values of financing and moderate income offerings. Marshall commented that financing requires a lot of resources to develop and run, which has a negative impact on the portfolio from the perspective of cost, but it can allow certain customers to participate. Alan commented that at some point the board may need to get involved; there is a benefit to allowing broad participation, but when cost-effectiveness is driven down to get more participation, that could lead to less savings for everybody. Those two objectives can run counter.

Finally, the program will be modifying the ESK order form, moving to "opt-in" rather than "opt-out", and will be offering LED-only kits for past ESK participants. The program will continue to pursue midstream incentives for water heaters and improve communications with the gas utilities.

5. Short Take: Planned 2017 Evaluation Activities

Presented by Phil Degens

This topic will be covered at the next committee meeting.

Wrap-Up & Next Steps

We are thinking about scheduling another evaluation committee meeting in December. Erika will send out a Doodle poll to see what days would work best for folks.

PINK PAPER

Impact Evaluation of Selected 2011-2014 New Buildings Projects

Energy Trust of Oregon

December 31, 2015

DNV GL – Energy
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MEMO

Date: November 30, 2016
To: Board of Directors
From: Dan Rubado, Evaluation Project Manager
Jessica Iplikci, New Buildings Program Manager
Subject: Staff Response to the Impact Evaluation of Selected 2011-2014 New Buildings Projects

Energy Trust commissioned this impact evaluation to examine the energy performance of five sites that represented a significant portion of New Buildings program savings from 2011 through 2014. The evaluated savings will be used in Energy Trust's true-up process to adjust the savings claimed for these projects. In addition to evaluating energy savings, Energy Trust wanted to learn if there were any aspects of its project analysis that could be improved to make estimation of savings more accurate in the future, and how to most effectively evaluate multi-phase projects to be more effective.

While there was variation in individual site realization rates, most projects saved more electricity than expected. In particular, one large site with three projects had realization rates of 122%, 111, and 96% between years one and three, very close to the original estimates by the final phase. The evaluated savings added more than 4.5 million kWh to the estimated savings at this facility. The program worked very effectively with the project team and successfully applied early learnings to the next two projects. This was noted by the evaluator as a program best practice.

One small-savings site with potential for a variable or phased electric load showed low load in the first two years of operation, as predicted by the program. The evaluator ultimately concluded low evaluated savings due to the information available at the time of the evaluation. The evaluator noted the program's initial estimate of savings was reasonable. The program uses capacity of a facility and other information to forecast the energy use and loading over time. There was no reason to expect lower loads and the facility could still further ramp up.

A large custom gas savings project performed very close to the program's original estimates. A prescriptive gas savings site, however, had lower than expected heating loads causing a decrease in gas savings. Ahead of this evaluation, the program had already identified and improved prescriptive gas heating measures. A heat recovery measure on one large gas savings project drove lower project savings than estimated and provided a good learning opportunity for the program, although other gas and electric measures on this project had very strong realization rates.

One issue that arose during this evaluation, which was a concern for both the evaluator and program staff, was that in a few cases the customers were uncomfortable with the

amount and detail of data requested by the evaluator. In these cases the customers were either unable to provide all of the data points requested or unwilling to provide it because they didn't have the time and resources. Because the evaluator was relying on highly detailed, customer-provided data from EMS systems for these projects, some measure details could not be verified. In these cases, the evaluator had to take a higher level look at the loads driving program assumptions for energy saved. This led the evaluator to have lower confidence in the evaluated savings for these sites compared to the others.

Another issue that arose was the timing of the site visits and concluding final, evaluated project savings. In one case, the evaluation was too late to properly verify a measure because it had already been replaced with newer equipment, since the site visit occurred around the end of that measure's expected life. In another case, program staff noted that the final evaluated savings were concluded before the facility was fully loaded. In these situations, interim check-ins might prove beneficial so that savings can be evaluated once facilities are operating as designed.

Program and Evaluation staff have created a process and set of criteria to address large or phased projects. The evaluation team will create an evaluation plan at the outset. The program team will support implementation of the evaluation plan. Key objectives of the plan address customer engagement, data collection, evaluation scope and timing.

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1 PROJECT SUMMARY

This document summarizes DNV GL's evaluation of the energy savings achieved by five selected projects which participated in Energy Trust of Oregon's Commercial New Buildings program between 2011 and 2014. The five project sites involved two data centers, two schools, and one hospital. The objective of this document is to only summarize the results and findings. Site-specific EM&V reports are attached in Appendix A.

1.1 Evaluation Goals

The primary goal for this evaluation was to develop an independent estimate of ex-post (evaluated) energy savings for each of the five selected sites. The evaluated savings estimated will be used to true up the savings recorded by the program.

In addition, the evaluation expected to achieve these additional goals:

1. Verify the installation and operation of the equipment supported by the program.
2. Document the building and system level changes that have occurred since the beginning of the project, and evaluate the impact of any changes to the scope of project measures, building operations and loads over the years. In order to account for the building operation dynamics, the evaluation reports the observed modifications for various building types and their impact on the ex-ante claimed savings.
3. Review of baseline conditions, system configurations, and control strategies considered for developing the ex-ante savings estimation for new building projects. The evaluation reviews the consistency of these baseline definitions and documents their sources for future projects.
4. Respond to requested Evaluation Questions (below).

1.2 Evaluation Questions

In order to provide feedback to Energy Trust on how its programs or evaluation processes could be improved in the future, this evaluation answered the following questions on a site-specific basis. A summary of DNV GL's responses to these questions is in the evaluation results section of this document. Site-specific responses are included in the attached site reports.

- Are there any aspects of the models used in the energy savings analyses by the Program Management Contractor (PMC) or program allies that may be of concern to Energy Trust?
- Are there any obvious errors in any of the assumptions used in energy savings analyses, either in the original savings estimates or in verification of energy savings?
- What factors result in large variances in measures savings (assumptions too conservative, incorrect hours of operation, loads differ from expectations, etc.)?
- How can Energy Trust most effectively evaluate projects that involve multiple phases or commissioning that takes place over multiple years?
- Do you have any recommendations regarding energy savings analysis approaches and assumptions, or customer behavior or decision-making that would be helpful to Energy Trust in designing, implementing or evaluating its programs in the future?

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1.3 Technical Approach to Site Evaluation

DNV GL followed a standard approach to evaluate gross savings at projects' site level or for measures that require a site-specific M&V analysis.

Figure 1 shows the five basic steps in this process.

Figure 1. Site-Specific Project M&V Process

The following section summarizes the objectives and activities of each step:

1. **Project Review:** DNV GL completed a thorough engineering review of the project files, in particular the energy savings calculations and assumptions, feasibility study reports, and other supporting documentation. This review identified the key uncertainty parameters and any concerns with the original estimation methodology. This review of the engineering estimates helped the evaluation team identify relevant project data, and key parameters.

2. **Project EM&V Plan:** DNV GL created site-specific EM&V plans. These plans documented the project: the baseline and expected installed conditions, the data to be collected through the evaluation process, and the anticipated analysis method. In general, our M&V plans followed the framework provided in the International Performance Measurement & Verification Protocol (IPMVP). In support of these site-specific EM&V plans, DNV GL also prepared site-specific communication plans, building type data collection forms, and building type interview questions.

3. **Data Collection**: DNV GL collected data during this evaluation to verify equipment installation, understand equipment operating conditions and control sequencing, and estimate achieved energy savings. The following data collection activities were completed:
   - DNV GL interviewed all sites on the telephone prior to our site visit.
   - DNV GL visited four of the five sites to observe equipment and complete additional interviews.
   - DNV GL utilized email communication with all sites to acquire additional information. In multiple cases, sites provided documentation of current and historical operation through email.
   - DNV GL received monthly utility meter data for each site and logs of biomass consumption from applicable sites.

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- DNV GL received "blessing memos" documenting the estimation of deemed savings. However, in some cases only current blessing memos were received instead of the memos in place at the time of each project.

4. **Analysis:** DNV GL utilized the data collected and documentation review to develop site-specific estimates of achieved savings. In general, the analysis methodology followed the calculation approach utilized for the claimed savings estimation unless DNV GL determined that there were major flaws in the ex-ante savings methodology or the data collected supported a different approach.

5. **Site Reporting:** DNV GL produced one report for each site. The site report documents the data collected through the evaluation, the methodology used to estimate savings, and the results of the analysis. These reports are attached in Appendix A. Draft site reports were commented on by Energy Trust evaluation staff, Energy Trust Program staff, and the PMC. Included in the site reports are site-specific answers to the evaluation questions.

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2 EVALUATION RESULTS

Overall, the reported equipment was verified to be installed and operating at each of the five sites evaluated. The differences between the claimed savings and evaluated savings are primarily due to differences between the actual load served by the operating equipment and the load assumed by the program. In one case, the load was much lower than would have been reasonable for the program to assume. In another case, the program claimed deemed savings associated with equipment that exists as back-up during normal operations. In another case, the actual load was higher than originally assumed. In all cases, DNV GL found the program's original estimates to be reasonable within the context of the program, projects, and measures involved.

Table 1 shows the site-specific results of the evaluation for electricity savings. Table 2 shows the site-specific results of the evaluation for natural gas savings. Site 01 was completed in phases across multiple years. Each phase was documented as a unique project within the program.

Table 1: Evaluation Results, Electricity Savings

Evaluation Site	Claimed Savings (kWh)	Evaluated Savings (kWh)	Realization Rate (kWh)
Site 01, Phase 1, Part A & B	15,975,049	19,495,698	122%
Site 01, Phase 1, Part C & D	25,862,615	28,734,595	111%
Site 01, Phase 2	42,247,919	40,348,233	96%
Site 02	4,238,118	1,889,082	45%
Site 03	160,814	114,746	71%
Site 04	N/A	N/A	N/A
Site 05	390,833	390,833	100%

Table 2: Evaluation Results, Natural Gas Savings

Evaluation Site	Claimed Savings (Therms)	Evaluated Savings (Therms)	Realization Rate (Therms)
Site 01, Phase 1, Part A & B	N/A	N/A	N/A
Site 01, Phase 1, Part C & D	N/A	N/A	N/A
Site 01, Phase 2	N/A	N/A	N/A
Site 02	N/A	N/A	N/A
Site 03	37,619	14,556	39%
Site 04	51,240	55,006	107%
Site 05	47,339	22,470	47%

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2.1 Evaluation Questions

DNV GL provided site-specific answers to the evaluation questions within each site report. The following responses are provided here are relevant to more than one of the projects reviewed or include recommendations to improve programs and evaluations in the future.

1) Are there any aspects of the models used in the energy savings analyses by the PMC or program allies that may be of concern to Energy Trust?

a) None of the models used in the energy savings analysis should be a matter of concern for Energy Trust. The savings analyses used custom spreadsheet calculations, deemed measure savings or simulation models and utilized transparent inputs and assumptions for baseline and installed conditions.

2) Are there any obvious errors in any of the assumptions used in energy savings analyses, either in the original savings estimates or in verification of energy savings?

a) No obvious errors were observed during our review of the energy savings. The baseline and installed case energy consumptions were estimated using standard engineering formula.

3) What factors result in large variances in measures savings (assumptions too conservative, incorrect hours of operation, loads differ from expectations, etc.)?

a) The primary driver of large savings variance was differences between the actual load (heating, cooling, and/or IT) and the load assumed for claimed savings calculations. In all cases, the site-specific loads assumed by the program were reasonable given the information available to the program.

b) Two projects involved the operation and conditioning of IT equipment. In neither case was the actual load determined through this evaluation the same as the load estimated by the program. In both cases, the program used the reasonable estimate of 50% of design capacity for the initial estimate. The program improved the accuracy of its estimate at one site as additional phases were completed by using the load in earlier phases to forecast the load in phases under construction. This evaluation further demonstrates the difficulty in forecasting IT load at facilities.

4) How can Energy Trust most effectively evaluate projects that involve multiple phases or commissioning that takes place over multiple years?

a) In the future, Energy Trust program documentation should clearly state the basis for the baseline assumptions used in each phase, especially if the baseline or measure mix changes from one phase to the next. Future evaluation costs should be controlled if a more concise set of documentation was collected specific to the final assumptions and calculations used to estimate claimed gross energy savings for each phase.

b) Evaluation of projects completed in phases should pay attention to the measure life assumed and the evaluation should be completed before the measure life ends. This is especially relevant in technology sectors where equipment improvements occur regularly. One of the measures installed had a three year measure life and was already removed by the time this evaluation began. Program administrators often do not want to overburden customers with evaluation when they are already involved in program activity. This will be a constant issue when projects are completed in phases or new projects are initiated each

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year. Evaluation activity requirements should be prioritized over other program activity if the measure life is nearing completion and the acquisition of primary data is at risk.

5) Do you have any recommendations regarding energy savings analysis approaches and assumptions, or customer behavior or decision-making that would be helpful to Energy Trust in designing, implementing or evaluating its programs in the future?

a) Energy Trust should consider the volume and organization of project files compiled for new construction projects. When there are a large number of project files it can be time consuming to go through and determine the final as-built specifications compared to design iterations. Reducing the volume of documents and creating a consistent structure to identify final specifications and calculations will lower evaluation costs and shorten timelines for M&V planning and analysis. This evaluation received over 500 files supporting the five projects. A number of these files were found to be duplicates or associated with non-final estimates of claimed savings. The time required to review files and understand each project was longer than originally anticipated and resulted in project delays.

b) Energy savings estimation for deemed measures delivered by the program were documented in "blessing memos". These memos documented the sources and methodology of the measures' savings estimates. While the blessing memos did provide meaningful and consistent information for the measure savings, DNV GL recommends that Energy Trust invest time to improve the structure of the measure documentation and supplemental calculation workbooks. Multiple memos reviewed for this evaluation did not provide the criteria for measure qualification and calculation methodology for measure savings in a transparent and easily understand manner. Additionally, the supplemental calculation workbooks could be updated to provide a repository for all sources used in the savings calculation and clearly document (using cell equations and formulas) the method used to calculate deemed savings. These changes to the deemed measure documentation will provide improved measure transparency for stakeholders and evaluators alike. The goal should be to create a consistent medium for Energy Trust to update the measures when appropriate. For this evaluation, Energy Trust was able to provide a memo for each measure reviewed, but in some cases the memo associated with the program year could not be found and only the current memo was provided.

c) This evaluation, along with many others before it, demonstrated the difficulty associated with estimating the future operating load (kW) of data centers. Energy Trust should consider options that reduce the uncertainty in claimed savings estimates, especially when projects are large within the program's portfolio. Opportunities to more accurately estimate savings and incentives levels may exist.

d) Energy Trust should consider requiring improved documentation of baseline decisions made by the program for site-specific analyses. Often, site-specific new construction baseline assumptions are based on an interpretation of the energy code, but in some cases are end-user or technology specific. This evaluation suggests that the program is appropriately developing baselines, especially when a site-specific alternative baseline must be created, but the documentation of these decisions is difficult to follow. The program and evaluation process should improve if project summary documentation includes information on the applicable code or baseline, any relevant interpretation of the code, and why the assumed baseline is an appropriate alternative for the project.

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Tab 4

Notes on October 2016 Financial Statements

November 23, 2016

Revenue

Revenues are close to budgeted amounts. Last month's variance was $2.4 million; the gap is shrinking.

	YTD Actual	YTD Budget	YTD Var	YTD %	PY
PGE	65,551,639	66,157,788	(606,149)	-0.9%	67,254,439
PAC	44,304,524	43,805,403	499,121	1.1%	40,823,471
NWN	15,992,099	17,498,099	(1,506,000)	-8.6%	15,929,362
CNG	1,307,484	1,463,269	(155,786)	-10.6%	1,044,427
Avista	140,400		140,400		
Investment Income	486,967	250,000	236,967	94.8%	534,611
Total	127,783,112	129,174,559	(1,391,446)	-1.1%	125,586,310

Reserves

Reserves decreased almost $2 million from last month. At this time last year Reserves were $94.6 million. We have drawn down our reserves by $31.5 million (33%) since October 2015.

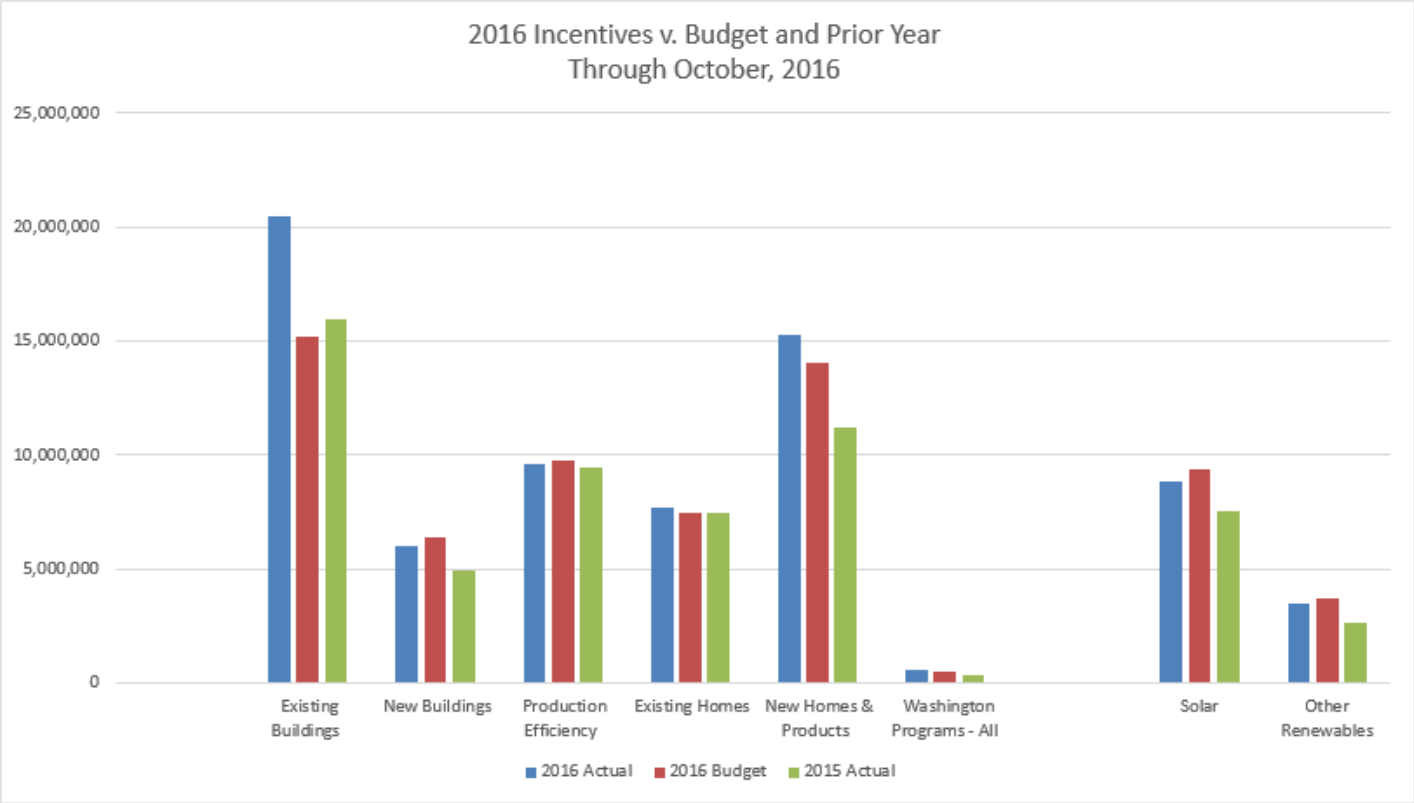
Reserves

	10/31/16 Amount	Actual 12/31/15 Amount	YTD % Change
PGE	20,085,259	23,006,282	-13%
PacifiCorp	6,904,933	7,481,735	-8%
NW Natural	4,857,199	6,430,002	-24%
Cascade	22,741	229,935	-90%
Avista	92,084	0	
NWN Industrial	2,115,465	1,032,752	105%
NWN Washington	465,542	257,872	81%
PGE Renewables	8,709,125	10,144,624	-14%
PAC Renewables	8,867,869	10,910,203	-19%
Program Reserves	52,120,217	59,493,405	-12%
Contingency Reserve	5,000,000	5,000,000	0%
Contingency Available	4,226,853	3,739,885	13%
Total	61,347,078	68,233,284	-10%

Expenses

Total expenses for October were $14.6 million, $1.4 million below budget. Incentives were $1 million below budget for the month ($8 spent vs. $9 million budgeted), which accounted for most of the variance.

Year to date incentives are above budget by $5.5 million (8%). We have spent $12 million more (21%) on incentives than we did at this time last year.



Total Incentives
Year-to-Date 2016

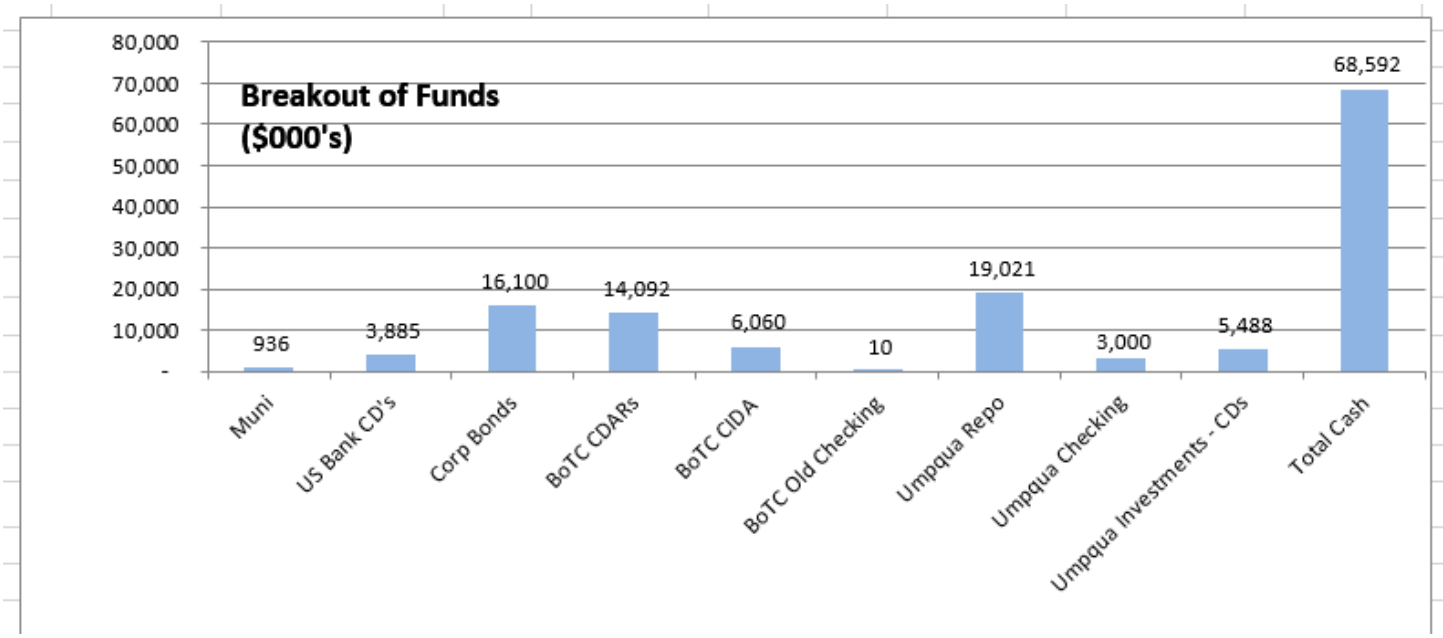
Incentives thru October 2016	Actual	Budget	Variance	Var %
Existing Buildings	20,441,119	15,213,730	(5,227,389)	-34%
New Buildings	6,021,935	6,400,538	378,603	6%
Production Efficiency	9,631,466	9,729,268	97,802	1%
Existing Homes	7,678,037	7,476,411	(201,626)	-3%
New Homes & Products	15,262,549	14,013,521	(1,249,028)	-9%
Washington Programs - All	581,813	525,217	(56,595)	-11%
Solar	8,854,573	9,349,133	494,560	5%
Other Renewables	3,457,471	3,698,832	241,360	7%
Total Incentives	71,928,963	66,406,650	(5,522,313)	-8%
Energy Efficiency Only	**59,616,919**	**53,358,685**	**(6,258,234)**	**-12%**

Total Incentives
Year-to-Year Comparison

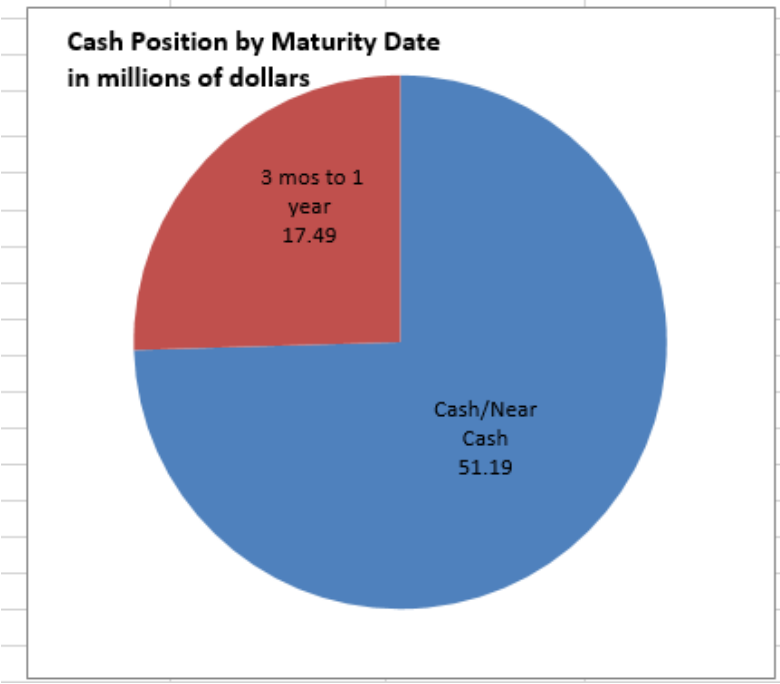
October 2016 vs. October 2015	Current Year	Prior Year	Variance	Var %
Existing Buildings	20,441,119	15,962,921	(4,478,198)	-28%
New Buildings	6,021,935	4,959,933	(1,062,002)	-21%
Production Efficiency	9,631,466	9,424,010	(207,456)	-2%
Existing Homes	7,678,037	7,482,653	(195,384)	-3%
New Homes & Products	15,262,549	11,206,137	(4,056,412)	-36%
Washington Programs - All	581,813	373,655	(208,158)	-56%
Solar	8,854,573	7,531,906	(1,322,667)	-18%
Other Renewables	3,457,471	2,676,328	(781,144)	-29%
Total Incentives	71,928,963	59,617,543	(12,311,424)	-21%
Energy Efficiency Only	**59,616,919**	**49,409,310**	**(10,207,609)**	-21%

Investment Status

The graphs below show the type of investments we hold and the locations where our funds are held at the end of the month. We are reinvesting most of the CDARs into short term (4 week) options until we need the money to meet year end incentive demand. This has required a reclass on the balance sheet from "investments" to "cash", which is why there's a swing in those two categories (+$10 million in cash and -$10 million in longer term investments).



Average Days to Maturity:	56
Average Portfolio Yield:	0.54%



PINK PAPER

Energy Trust of Oregon
BALANCE SHEET
October 31, 2016
(Unaudited)

	October 2016	September 2016	December 2015	October 2015	Change from one month ago	Change from Beg. of Year	Change from one year ago
Current Assets							
Cash & Cash Equivalents	35,113,903	25,404,894	27,186,505	36,763,122	9,709,009	7,927,398	(1,649,219)
Investments	33,386,758	43,908,093	63,884,187	63,074,649	(10,521,334)	(30,497,428)	(29,687,891)
Receivables	127,160	127,192	374,615	314,752	(32)	(247,455)	(187,592)
Prepaid Expenses	408,892	451,839	479,349	522,558	(42,947)	(70,458)	(113,666)
Advances to Vendors	1,428,365	2,042,069	2,049,018	1,700,028	(613,704)	(620,653)	(271,663)
Total Current Assets	**70,465,079**	**71,934,087**	**93,973,675**	**102,375,110**	**(1,469,009)**	**(23,508,596)**	**(31,910,031)**
Fixed Assets							
Computer Hardware and Software	3,671,135	3,671,135	3,509,829	3,487,578	-	161,305.83	183,557
Software Development in Progress	0	0	150,148	124,618	-	(150,148)	(124,618)
Leasehold Improvements	318,964	318,964	318,964	318,964	-	-	-
Office Equipment and Furniture	701,604	701,604	701,604	698,874	-	-	2,730
Total Fixed Assets	**4,691,703**	**4,691,703**	**4,680,545**	**4,630,034**	**-**	**11,158**	**61,669**
Less Depreciation	(3,457,260)	(3,378,519)	(2,672,098)	(2,519,404)	(78,741)	(785,163)	(937,856)
Net Fixed Assets	**1,234,443**	**1,313,184**	**2,008,447**	**2,110,630**	**(78,741)**	**(774,004)**	**(876,187)**
Other Assets							
Deposits	223,339	223,339	132,340	132,340	-	90,999	90,999
Deferred Compensation Asset	796,877	788,418	724,981	710,257	8,460	71,896	86,620
Note Receivable, net of allowance	288,909	288,909	85,609	86,789	-	203,300.00	202,120
Total Other Assets	**1,309,125**	**1,300,666**	**942,930**	**929,386**	**8,460**	**366,195**	**379,739**
Total Assets	**73,008,647**	**74,547,937**	**96,925,052**	**105,415,126**	**(1,539,290)**	**(23,916,405)**	**(32,406,479)**
Current Liabilities							
Accounts Payable and Accruals	9,513,280	9,309,069	26,910,003	9,008,078	204,211	(17,396,723)	505,203
Salaries, Taxes, & Benefits Payable	819,919	830,087	735,510	740,796	(10,169)	84,409	79,123
Total Current Liabilities	**10,333,199**	**10,139,156**	**27,645,513**	**9,748,874**	**194,043**	**(17,312,314)**	**584,326**
Long Term Liabilities							
Deferred Rent	529,383	514,402	314,472	321,908	14,981	214,911	207,475
Deferred Compensation Payable	796,877	791,218	727,781	713,057	5,660	69,096	83,820
Other Long-Term Liabilities	2,110	4,290	3,990	3,990	(2,179.50)	(1,880)	(1,880)
Total Long-Term Liabilities	**1,328,370**	**1,309,910**	**1,046,243**	**1,038,954**	**18,461**	**282,127**	**289,416**
Total Liabilities	**11,661,569**	**11,449,066**	**28,691,756**	**10,787,828**	**212,503**	**(17,030,187)**	**873,742**
Net Assets							
Unrestricted Net Assets	61,347,078	63,098,871	68,233,296	94,627,298	(1,751,793)	(6,886,218)	(33,280,220)
Total Net Assets	**61,347,078**	**63,098,871**	**68,233,296**	**94,627,298**	**(1,751,793)**	**(6,886,218)**	**(33,280,220)**
Total Liabilities and Net Assets	**73,008,647**	**74,547,937**	**96,925,052**	**105,415,126**	**(1,539,290)**	**(23,916,405)**	**(32,406,479)**

Energy Trust of Oregon
Cash Flow Statement-Indirect Method
Monthly 2016

	January	February	March	April	May	June	July	August	September	October	Year to Date
Operating Activities:											
Revenue less Expenses	8,446,762	6,323,151	300,614	(342,524)	(1,950,876)	(9,444,407)	699,656	(3,405,143)	(5,761,657)	(1,751,794)	$ (6,886,218)
Non-cash items:											
Depreciation	76,179	75,997	76,143	80,055	79,660	79,660	79,660	79,660	79,407	78,741	$ 785,162
Change in Reserve on Long Term Note	-	-	-	-	-	-		-	-	-	-
Loss on disposal of assets											-
Receivables	(0)	18,000	(9,000)	-	12,191	7,230	3,579	(2,008)	31,710	2,000	63,702
Interest Receivable	14,398	(18,742)	103,825	(31,503)	(33,151)	107,300	16,499	21,540	5,555	(1,968)	183,753
Advances to Vendors	626,135	626,136	(1,232,162)	644,727	676,296	(1,357,111)	620,573	688,325	(1,285,970)	613,704	620,653
Prepaid expenses and other costs	47,275	(241,163)	56,960	88,757	(60,342)	126,395	(79,437)	102,180	(13,115)	42,947	70,457
Accounts payable	(17,410,869)	(2,320,614)	303,039	1,936,464	(921,656)	5,642,030	(5,259,156)	(246,235)	674,449	204,210	(17,398,338)
Payroll and related accruals	54,950	24,319	119,657	(42,788)	26,784	26,125	(39,666)	(155)	(9,604)	(4,509)	155,113
Deferred rent and other	(15,317)	(20,616)	(98,216)	(10,318)	63,094	65,393	35,253	10,211	(186,990)	4,342	(153,164)
Cash rec'd from / (used in) Operating Activities	(8,160,486)	4,466,467	(379,140)	2,322,869	(2,107,999)	(4,747,385)	(3,923,039)	(2,751,625)	(6,466,215)	(812,327)	(22,558,880)
Investing Activities:											
Investment Activity (1)	3,750,021	45,768	4,263,600	(1,479,036)	2,021,989	3,578,771	2,010,266	765,751	5,018,964	10,521,335	30,497,429
(Acquisition)/Disposal of Capital Assets	(166)	-	(691)	(370)	(9,931)				-		(11,158)
Cash rec'd from / (used in) Investing Activities	3,749,855	45,768	4,262,909	(1,479,406)	2,012,058	3,578,771	2,010,266	765,751	5,018,964	10,521,335	$ 30,486,271
Cash at beginning of Period	27,186,505	22,775,874	27,288,109	31,171,878	32,015,382	31,919,401	30,750,789	28,838,017	26,852,144	25,404,894	27,186,505
Increase/(Decrease) in Cash	(4,410,631)	4,512,235	3,883,769	843,504	(95,981)	(1,168,614)	(1,912,773)	(1,985,874)	(1,447,251)	9,709,008	7,927,392
Cash at end of period	$ 22,775,874	$ 27,288,109	$ 31,171,878	$ 32,015,382	$ 31,919,401	$ 30,750,789	$ 28,838,017	$ 26,852,144	$ 25,404,894	$ 35,113,903	$ 35,113,903

(1) As investments mature, they are rolled into the Repo account.
Investments that are made during the month reduce available cash.

Energy Trust of Oregon
Cash Flow Projection
January 2016 - December 2017

	Actual										2016 Adjusted Budget	
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Cash In:												
Public purpose and Incr funding	14,818,951	15,914,519	13,829,079	13,092,884	10,950,974	10,292,719	11,760,638	11,451,085	12,300,458	12,884,839	11,200,000	14,500,000
Trsfr from maturing investments	3,750,021	45,768	4,263,600		2,021,989	3,578,771	2,010,266	765,751	5,018,964	10,521,335	4,495,000	9,350,000
Investment Income	110,687	28,809	180,066	11,289	24,534	136,120	58,610	45,180	43,182	32,243	25,000	25,000
From Other Sources		18,000			12,191	7,230	3,579	(2,008)	31,710	2,000		
Total cash in	18,679,659	16,007,096	18,272,745	13,104,173	13,009,688	14,014,840	13,833,093	12,260,008	17,394,314	23,440,417	15,720,000	23,875,000
Cash Out:	(23,090,291)	(11,494,861)	(14,388,972)	(10,781,678)	(13,105,625)	(15,183,447)	(15,745,862)	(14,245,878)	(18,841,562)	(13,731,405)	(14,600,000)	(16,700,000)
Trsfr to investments				(1,479,036)								
Net cash flow for the month	(4,410,631)	4,512,235	3,883,773	843,459	(95,981)	(1,168,607)	(1,912,769)	(1,985,870)	(1,447,248)	9,709,011	1,120,000	7,175,000
Beginning Balance: Cash & MM	27,186,505	22,775,874	27,288,109	31,171,882	32,015,382	31,919,401	30,750,789	28,838,017	26,852,144	25,404,894	35,113,903	36,233,903
Ending cash & MM	**22,775,874**	**27,288,109**	**31,171,882**	**32,015,382**	**31,919,401**	**30,750,789**	**28,838,017**	**26,852,144**	**25,404,894**	**35,113,903**	**36,233,903**	**43,408,903**
Future Commitments												
Renewable Incentives	15,000,000	16,800,000	14,900,000	13,400,000	12,300,000	12,000,000	12,000,000	11,300,000	13,700,000	12,900,000	13,400,000	12,100,000
Efficiency Incentives	67,200,000	65,600,000	70,700,000	65,900,000	59,200,000	54,800,000	77,100,000	77,100,000	78,600,000	70,000,000	68,400,000	60,300,000
Emergency Contingency Pool	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Total Commitments	87,200,000	87,400,000	90,600,000	84,300,000	76,500,000	71,800,000	94,100,000	93,400,000	97,300,000	87,900,000	86,800,000	77,400,000

(1) Included in "Ending cash & MM" above

Dedicated funds adjustment: reduction in available cash for commitments to Renewable program projects with board approval, or when board approval not required, with signed agreements
Committed funds adjustment: reduction in available cash for commitments to Efficiency program projects with signed agreements
Cash reserve: reduction in available cash to cover cashflow variability and winter revenue risk
Escrow: dedicated funds set aside in separate bank accounts

Energy Trust of Oregon
Cash Flow Projection
January 2016 - December 2017

	2017 Projected Amounts											
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Cash In:												
Public purpose and Incr funding	18,600,000	22,100,000	16,300,000	15,100,000	13,600,000	12,700,000	15,800,000	14,100,000	14,300,000	17,800,000	14,500,000	17,700,000
Trsfr from maturing investments	2,000,000	5,500,000	250,000	2,500,000	2,900,000	4,750,000	750,000			500,000		
Investment Income	30,000	30,000	30,000	20,000	20,000	20,000	10,000	10,000	10,000	10,000	10,000	10,000
From Other Sources												
Total cash in	20,630,000	27,630,000	16,580,000	17,620,000	16,520,000	17,470,000	16,560,000	14,110,000	14,310,000	18,310,000	14,510,000	17,710,000
Cash Out:	(32,300,000)	(11,200,000)	(13,100,000)	(13,300,000)	(13,700,000)	(17,700,000)	(14,200,000)	(13,200,000)	(16,200,000)	(15,400,000)	(16,400,000)	(19,100,000)
Trsfr to investments												
Net cash flow for the month	(11,670,000)	16,430,000	3,480,000	4,320,000	2,820,000	(230,000)	2,360,000	910,000	(1,890,000)	2,910,000	(1,890,000)	(1,390,000)
Beginning Balance: Cash & MM	43,409,000	31,739,000	48,169,000	51,649,000	55,969,000	58,789,000	58,559,000	60,919,000	61,829,000	59,939,000	62,849,000	60,959,000
Ending cash & MM	**31,739,000**	**48,169,000**	**51,649,000**	**55,969,000**	**58,789,000**	**58,559,000**	**60,919,000**	**61,829,000**	**59,939,000**	**62,849,000**	**60,959,000**	**59,569,000**
Future Commitments												
Renewable Incentives	11,800,000	12,100,000	12,300,000	12,700,000	12,900,000	13,400,000	13,800,000	13,800,000	13,800,000	13,800,000	13,800,000	13,800,000
Efficiency Incentives	62,500,000	59,600,000	58,100,000	59,400,000	68,600,000	70,200,000	71,000,000	73,100,000	87,200,000	87,200,000	87,200,000	87,200,000
Emergency Contingency Pool	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Total Commitments	79,300,000	76,700,000	75,400,000	77,100,000	86,500,000	88,600,000	89,800,000	91,900,000	106,000,000	106,000,000	106,000,000	106,000,000

(1) Included in "Ending cash & MM" above

Dedicated funds adjustment: reduction in available cash for commitments to Renewable program projects with board approval, or when board approval not required, with signed agreements
Committed funds adjustment: reduction in available cash for commitments to Efficiency program projects with signed agreements
Cash reserve: reduction in available cash to cover cashflow variability and winter revenue risk
Escrow: dedicated funds set aside in separate bank accounts

Energy Trust of Oregon
Income Statement - Actual and Budget Comparison
For the Ten Months Ending October 31, 2016
(Unaudited)

	October				YTD			
	Actual	**Budget**	**Budget Variance**	**Variance %**	**Actual**	**Budget**	**Budget Variance**	**Variance %**
REVENUES								
Public Purpose Funds-PGE	3,141,999	3,042,977	99,022	3%	30,645,551	31,305,978	(660,427)	-2%
Public Purpose Funds-PacifiCorp	2,246,967	2,175,264	71,703	3%	23,308,114	22,520,702	787,411	3%
Public Purpose Funds-NW Natural	483,338	470,930	12,408	3%	11,427,367	12,541,139	(1,113,772)	-9%
Public Purpose Funds-Cascade	74,731	125,311	(50,580)	-40%	1,307,484	1,463,269	(155,786)	-11%
Public Purpose Funds-Avista	31,200		31,200		140,400		140,400	
Total Public Purpose Funds	**5,978,236**	**5,814,483**	**163,753**	**3%**	**66,828,915**	**67,831,088**	**(1,002,173)**	**-1%**
Incremental Funds - PGE	3,432,116	3,096,521	335,595	11%	34,906,088	34,851,810	54,278	0%
Incremental Funds - PacifiCorp	2,465,470	1,891,752	573,718	30%	20,996,410	21,284,701	(288,290)	-1%
NW Natural - Industrial DSM	1,009,018	1,071,908	(62,890)		3,027,053	3,215,724	(188,671)	-6%
NW Natural - Washington					1,537,679	1,741,236	(203,557)	-12%
Revenue from Investments	34,212	25,000	9,212	37%	486,967	250,000	236,967	95%
TOTAL REVENUE	**12,919,052**	**11,899,664**	**1,019,388**	**9%**	**127,783,114**	**129,174,559**	**(1,391,445)**	**-1%**
EXPENSES								
Program Subcontracts	4,805,024	5,087,868	282,843	6%	44,221,266	45,780,506	1,559,240	3%
Incentives	8,086,560	9,054,680	968,120	11%	71,928,963	66,406,650	(5,522,313)	-8%
Salaries and Related Expenses	1,030,554	1,087,032	56,478	5%	10,047,331	10,671,715	624,384	6%
Professional Services	488,173	556,466	68,294	12%	5,997,282	7,202,604	1,205,322	17%
Supplies	2,156	3,871	1,715	44%	23,976	38,708	14,733	38%
Telephone	4,968	6,267	1,298	21%	50,171	62,667	12,496	20%
Postage and Shipping Expenses	1,500	1,375	(125)	-9%	8,839	13,750	4,911	36%
Occupancy Expenses	73,470	64,278	(9,193)	-14%	656,439	642,777	(13,662)	-2%
Noncapitalized Equip. & Depr.	104,150	122,052	17,902	15%	1,035,625	1,186,938	151,313	13%
Call Center	11,878	15,617	3,739	24%	137,335	156,167	18,831	12%
Printing and Publications	327	8,208	7,881	96%	5,448	82,083	76,635	93%
Travel	19,627	16,678	(2,949)	-18%	162,237	173,445	11,208	6%
Conference, Training & Mtng Exp	13,365	25,802	12,437	48%	130,616	233,036	102,420	44%
Interest Expense and Bank Fees		708	708	100%	1,621	2,583	962	37%
Insurance	12,046	9,167	(2,879)	-31%	88,400	91,667	3,266	4%
Miscellaneous Expenses	619	229	(390)	-170%	80,152	2,292	(77,861)	-3398%
Dues, Licenses and Fees	16,428	17,849	1,422	8%	93,631	110,552	16,921	15%
TOTAL EXPENSES	**14,670,845**	**16,078,146**	**1,407,301**	**9%**	**134,669,331**	**132,858,137**	**(1,811,194)**	**-1%**
TOTAL REVENUE LESS EXPENSES	**(1,751,793)**	**(4,178,482)**	**2,426,689**	**58%**	**(6,886,218)**	**(3,683,579)**	**(3,202,639)**	**-87%**

Energy Trust of Oregon
Income Statement - Actual and Prior Year Comparison
For the Ten Months Ending October 31, 2016
(Unaudited)

	October				YTD			
	Actual	Actual Prior Year	Prior Year Variance	Variance %	Actual	Actual Prior Year	Prior Year Variance	Variance %
REVENUES								
Public Purpose Funds-PGE	3,141,999	3,077,586	64,413	2%	30,645,551	31,384,261	(738,710)	-2%
Public Purpose Funds-PacifiCorp	2,246,967	2,193,912	53,056	2%	23,308,114	22,898,500	409,613	2%
Public Purpose Funds-NW Natural	483,338	446,208	37,130	8%	11,427,367	11,415,415	11,952	0%
Public Purpose Funds-Cascade	74,731	48,969	25,763	53%	1,307,484	1,044,427	263,057	25%
Public Purpose Funds-Avista	31,200		31,200		140,400		140,400	
Total Public Purpose Funds	**5,978,236**	**5,766,674**	**211,562**	**4%**	**66,828,915**	**66,742,603**	**86,313**	**0%**
Incremental Funds - PGE	3,432,116	3,390,237	41,879	1%	34,906,088	35,870,178	(964,091)	-3%
Incremental Funds - PacifiCorp	2,465,470	1,646,161	819,309	50%	20,996,410	17,924,971	3,071,439	17%
NW Natural - Industrial DSM	1,009,018	1,026,144	(17,126)	-2%	3,027,053	3,078,432	(51,379)	-2%
NW Natural - Washington		757,123	(757,123)		1,537,679	1,435,515	102,164	7%
Contributions		500	(500)			1,550	(1,550)	-100%
Revenue from Investments	34,212	70,798	(36,587)	-52%	486,967	534,611	(47,643)	-9%
TOTAL REVENUE	**12,919,052**	**12,657,638**	**261,414**	**2%**	**127,783,114**	**125,587,860**	**2,195,253**	**2%**
EXPENSES								
Program Subcontracts	4,805,024	4,460,287	(344,737)	-8%	44,221,266	42,053,392	(2,167,874)	-5%
Incentives	8,086,560	9,020,549	933,990	10%	71,928,963	59,617,543	(12,311,420)	-21%
Salaries and Related Expenses	1,030,554	904,737	(125,817)	-14%	10,047,331	8,906,811	(1,140,520)	-13%
Professional Services	488,173	580,106	91,934	16%	5,997,282	5,358,418	(638,865)	-12%
Supplies	2,156	1,973	(183)	-9%	23,976	27,779	3,804	14%
Telephone	4,968	4,888	(80)	-2%	50,171	48,856	(1,314)	-3%
Postage and Shipping Expenses	1,500	653	(848)	-130%	8,839	10,309	1,470	14%
Occupancy Expenses	73,470	54,939	(18,532)	-34%	656,439	537,285	(119,154)	-22%
Noncapitalized Equip. & Depr.	104,150	97,784	(6,366)	-7%	1,035,625	1,001,116	(34,509)	-3%
Call Center	11,878	14,290	2,412	17%	137,335	127,145	(10,190)	-8%
Printing and Publications	327	2,483	2,156	87%	5,448	54,989	49,541	90%
Travel	19,627	10,260	(9,367)	-91%	162,237	125,556	(36,681)	-29%
Conference, Training & Mtng Exp	13,365	5,493	(7,872)	-143%	130,616	119,692	(10,923)	-9%
Interest Expense and Bank Fees			-		1,621	1,774	153	9%
Insurance	12,046	8,486	(3,559)	-42%	88,400	86,890	(1,510)	-2%
Miscellaneous Expenses	619	22,212	21,593		80,152	22,665	(57,487)	
Dues, Licenses and Fees	16,428	6,952	(9,476)	-136%	93,631	87,465	(6,166)	-7%
TOTAL EXPENSES	**14,670,845**	**15,196,092**	**525,247**	**3%**	**134,669,331**	**118,187,684**	**(16,481,647)**	**-14%**
TOTAL REVENUE LESS EXPENSES	**(1,751,793)**	**(2,538,454)**	**786,661**	**31%**	**(6,886,218)**	**7,400,176**	**(14,286,395)**	**-193%**

Energy Trust of Oregon
Statement of Functional Expenses
For the Ten Months Ending October 31, 2016
(Unaudited)

	Energy Efficiency	Renewable Energy	Total Program Expenses	Management & General	Communications & Customer Service	Total Admin Expenses	Avista Development	Total	Budget	Variance	% Var
Program Expenses											
Incentives	59,616,919	12,312,044	71,928,963					71,928,963	66,406,650	$ (5,522,313)	-8%
Program Management & Delivery	43,867,185	352,626	44,219,811				1,455	44,221,266	45,780,506	$ 1,559,240	3%
Payroll and Related Expenses	2,855,572	866,936	3,722,508	1,924,802	1,104,879	3,029,681	22,113	6,774,301	7,154,117	379,816	5%
Outsourced Services	3,783,029	783,873	4,566,902	299,676	739,482	1,039,158		5,606,061	6,858,354	1,252,293	18%
Planning and Evaluation	1,913,158	63,593	1,976,751	1,413		1,413		1,978,164	2,106,873	128,709	6%
Customer Service Management	427,083	104,876	531,958					531,958	418,908	(113,050)	-27%
Trade Allies Network	233,376	15,884	249,260					249,260	298,929	49,669	17%
Total Program Expenses	**112,696,321**	**14,499,832**	**127,196,154**	**2,225,891**	**1,844,361**	**4,070,252**	**23,568**	**131,289,974**	**129,024,338**	**(2,265,636)**	**-2%**
Program Support Costs											
Supplies	5,772	1,985	7,757	6,320	3,110	9,430		17,187	28,311	11,124	39%
Postage and Shipping Expenses	2,058	708	2,767	2,550	1,019	3,569		6,336	8,817	2,481	28%
Telephone	2,344	807	3,151	1,269	903	2,172		5,323	14,374	9,051	63%
Printing and Publications	1,611	73	1,685	3,362	82	3,445		5,129	78,982	73,853	94%
Occupancy Expenses	196,807	67,740	264,547	106,566	75,806	182,372		446,919	438,782	(8,137)	-2%
Insurance	26,503	9,122	35,626	14,351	10,209	24,559		60,185	62,575	2,390	4%
Equipment	6,297	54,326	60,623	3,409	2,425	5,835		66,458	117,267	50,809	43%
Travel	44,086	19,210	63,296	29,747	39,684	69,430		132,727	140,445	7,718	5%
Meetings, Trainings & Conferences	27,408	11,158	38,566	37,583	13,470	51,053		89,620	182,036	92,416	51%
Interest Expense and Bank Fees				1,621		1,621		1,621	2,583	962	37%
Depreciation & Amortization	43,786	15,071	58,857	23,709	16,866	40,575		99,432	99,386	(46)	0%
Dues, Licenses and Fees	57,375	10,367	67,742	7,802	9,116	16,919		84,661	86,578	1,917	2%
Miscellaneous Expenses	66,815	170	66,984	267	12,377	12,643		79,628	1,564	(78,064)	-4991%
IT Services	1,510,930	199,316	1,710,246	339,914	233,974	573,888		2,284,134	2,572,099	287,965	11%
Total Program Support Costs	**1,991,793**	**390,053**	**2,381,846**	**578,470**	**419,041**	**997,511**	**-**	**3,379,358**	**3,833,799**	**454,441**	**12%**
TOTAL EXPENSES	**114,688,114**	**14,889,885**	**129,578,000**	**2,804,362**	**2,263,401**	**5,067,763**	**23,568**	**134,669,331**	**132,858,137**	**(1,811,194)**	**-1%**

OPUC Measure vs. 8%	**5.9%**
Program Support Costs	2,381,846
l Administrative Expenses + Avista Development	5,091,331
Total Support and Administrative	7,473,177
Divded By	
Total Utility Revenue (without Int Income)	127,296,147
OPUC %	**5.9%**

ENERGY TRUST OF OREGON
Year to Date by Program/Service Territory
For the Ten Months Ending October 31, 2016
Unaudited

	ENERGY EFFICIENCY									
	PGE	PacifiCorp	Total	NWN Industrial	NW Natural	Cascade	Avista	Oregon Total	NWN WA	ETO Total
REVENUES										
Public Purpose Funding	23,777,549	18,181,722	41,959,271	-	11,427,367	1,307,484	75,600	54,769,721	-	54,769,721
Incremental Funding	34,906,088	20,996,410	55,902,498	3,027,053				58,929,551	1,537,679	60,467,230
Contributions										
Revenue from Investments										
TOTAL PROGRAM REVENUE	**58,683,637**	**39,178,132**	**97,861,769**	**3,027,053**	**11,427,367**	**1,307,484**	**75,600**	**113,699,272**	**1,537,679**	**115,236,951**
EXPENSES										
Program Management (Note 3)	2,533,114	1,667,265	4,200,378	154,415	506,331	81,019	1010	4,943,152	86,438	5,029,590
Program Delivery	20,082,811	13,228,906	33,311,716	525,274	3,742,018	514,555	6627	38,100,191	417,277	38,517,468
Incentives	30,970,962	19,548,445	50,519,407	1,081,372	6,693,894	726,653	13782	59,035,106	581,813	59,616,919
Program Eval & Planning Svcs.	1,919,304	1,291,250	3,210,554	53,003	340,778	38,402	549	3,643,286	58,340	3,701,626
Program Marketing/Outreach	2,150,612	1,434,041	3,584,654	20,773	673,815	53,905	928	4,334,077	42,044	4,376,121
Program Legal Services	0	0	0	0	0	0	0	0	0	0
Program Quality Assurance	22,402	10,974	33,376	0	8,136	825	31	42,368	0	42,368
Outsourced Services	345,427	211,316	556,742	8,518	170,920	9,729	240	746,148	5,625	751,773
Trade Allies & Cust. Svc. Mgmt.	303,440	207,032	510,474	3,927	114,671	8,821	206	638,100	22,358	660,458
IT Services	722,007	496,478	1,218,484	15,801	222,589	18,978	366	1,476,215	34,714	1,510,929
Other Program Expenses - all	235,922	162,941	398,863	8,077	37,722	4,782	78	449,521	31,341	480,862
TOTAL PROGRAM EXPENSES	**59,286,001**	**38,258,648**	**97,544,648**	**1,871,160**	**12,510,874**	**1,457,669**	**23,817**	**113,408,164**	**1,279,950**	**114,688,114**
ADMINISTRATIVE COSTS										
Management & General (Notes 1&2)	1,283,082	828,004	2,111,086	40,496	270,763	31,547	516	2,454,409	27,702	2,482,111
Communications & Customer Svc (Notes 1&2)	1,035,578	668,284	1,703,859	32,684	218,534	25,462	415	1,980,955	22,357	2,003,312
Total Administrative Costs	**2,318,660**	**1,496,288**	**3,814,945**	**73,180**	**489,297**	**57,009**	**931**	**4,435,364**	**50,059**	**4,485,423**
TOTAL PROG & ADMIN EXPENSES	**61,604,661**	**39,754,936**	**101,359,593**	**1,944,340**	**13,000,171**	**1,514,678**	**24,748**	**117,843,528**	**1,330,009**	**119,173,537**
TOTAL REVENUE LESS EXPENSES	**(2,921,024)**	**(576,804)**	**(3,497,824)**	**1,082,713**	**(1,572,804)**	**(207,194)**	**50,852**	**(4,144,256)**	**207,670**	**(3,936,586)**
NET ASSETS - RESERVES										
Cumulative Carryover at 12/31/15	23,006,283	7,481,737	30,488,020	1,032,752	6,430,003	229,935		38,180,711	257,872	38,438,582
Change in net assets this year	(2,921,024)	(576,804)	(3,497,824)	1,082,713	(1,572,804)	(207,194)	50,852	(4,144,256)	207,670	(3,936,586)
Ending Net Assets - Reserves	**20,085,259**	**6,904,933**	**26,990,196**	**2,115,465**	**4,857,199**	**22,741**	**50,852**	**34,036,455**	**465,542**	**34,501,996**
Ending Reserve by Category										
Program Reserves (Efficiency and Renewables)	20,085,259	6,904,933	26,990,196	2,115,465	4,857,199	22,741	50,852	34,036,455	465,542	34,501,996
Operational Contingency Pool										
Emergency Contingency Pool										
TOTAL NET ASSETS CUMULATIVE	20,085,259	6,904,933	26,990,196	2,115,465	4,857,199	22,741	50,852	34,036,455	465,542	34,501,996

ENERGY TRUST OF OREGON
Year to Date by Program/Service Territory
For the Ten Months Ending October 31, 2016
Unaudited

	RENEWABLE ENERGY					TOTAL			
	PGE	PacifiCorp	Total	Avista Development	Other	All Programs	Approved budget	Change	% Change
REVENUES									
Public Purpose Funding	6,868,003	5,126,391	11,994,394	64,800	0	66,828,915	67,831,088	($1,002,173)	-1%
Incremental Funding						60,467,230	61,093,471	(626,241)	-1%
Contributions									
Revenue from Investments					486,968	486,968	250,000	236,968	95%
TOTAL PROGRAM REVENUE	**6,868,003**	**5,126,391**	**11,994,394**	**64,800**	**486,968**	**127,783,114**	**129,174,559**	**(1,391,445)**	**-1%**
EXPENSES									
Program Management (Note 3)	437,693	432,576	870,269	23,568		5,923,427	6,627,115	703,688	11%
Program Delivery	205,027	144,266	349,293			38,866,761	39,868,449	1,001,688	3%
Incentives	6,772,246	5,539,798	12,312,044			71,928,963	66,406,651	(5,522,312)	-8%
Program Eval & Planning Svcs.	63,661	54,384	118,044			3,819,670	4,107,120	287,450	7%
Program Marketing/Outreach	99,966	76,248	176,212			4,552,333	4,942,613	390,280	8%
Program Legal Services	4,071	2,814	6,885			6,885	0		
Program Quality Assurance	0	507	507			42,875	38,889	(3,986)	
Outsourced Services	137,443	408,374	545,817			1,297,590	1,826,507	528,917	29%
Trade Allies & Cust. Svc. Mgmt.	71,193	49,567	120,760			781,218	709,503	(71,715)	-10%
IT Services	101,575	97,741	199,316			1,710,245	1,973,141	262,896	13%
Other Program Expenses - all	98,103	92,635	190,737			671,599	742,336	70,737	10%
TOTAL PROGRAM EXPENSES	**7,990,978**	**6,898,910**	**14,889,885**	**23,568**	**-**	**129,601,568**	**127,242,324**	**(2,359,244)**	**-2%**
ADMINISTRATIVE COSTS									
Management & General (Notes 1&2)	172,943	149,308	322,251			2,804,362	2,978,069	173,707	6%
Communications & Customer Svc (Notes 1&2)	139,582	120,507	260,089			2,263,401	2,637,747	374,346	14%
Total Administrative Costs	**312,525**	**269,815**	**582,340**			**5,067,763**	**5,615,816**	**548,053**	**10%**
TOTAL PROG & ADMIN EXPENSES	**8,303,503**	**7,168,725**	**15,472,224**	**23,568**		**134,669,331**	**132,858,137**	**(1,811,194)**	**-1%**
TOTAL REVENUE LESS EXPENSES	**(1,435,500)**	**(2,042,334)**	**(3,477,830)**	**41,232**	**486,968**	**(6,886,218)**	**(3,683,579)**	**(3,202,638)**	**87%**
NET ASSETS - RESERVES									
Cumulative Carryover at 12/31/15	10,144,625	10,910,203	21,054,828		8,739,885	68,233,295	65,564,916	2,668,379	4%
Change in net assets this year	(1,435,500)	(2,042,334)	(3,477,830)	41,232	486,968	(6,886,218)	(3,683,579)	(3,202,639)	87%
Ending Net Assets - Reserves	**8,709,125**	**8,867,869**	**17,576,998**	**41,232**	**9,226,853**	**61,347,078**	**61,881,337**	**(534,259)**	**-1%**
Ending Reserve by Category									
Program Reserves (Efficiency and Renewables)	8,709,125	8,867,869	17,576,998	41,232		52,120,226			
Operational Contingency Pool					4,226,853	4,226,853			
Emergency Contingency Pool					5,000,000	5,000,000			
TOTAL NET ASSETS CUMULATIVE	8,709,125	8,867,869	17,576,998	41,232	9,226,853	61,347,078	61,881,337	(534,259)	-1%

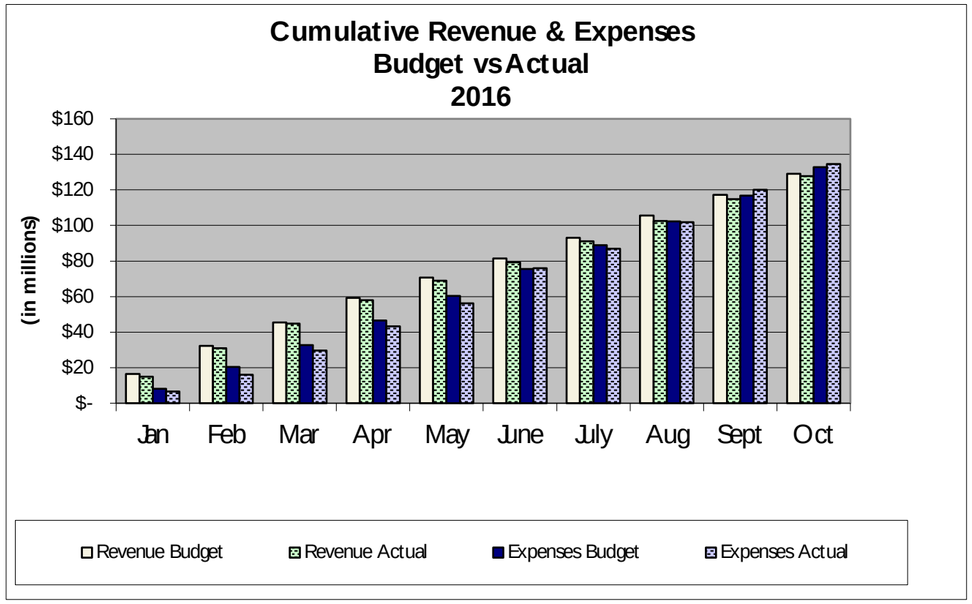
Energy Trust of Oregon
Program Expense by Service Territory
For the Ten Months Ending October 31, 2016
(Unaudited)

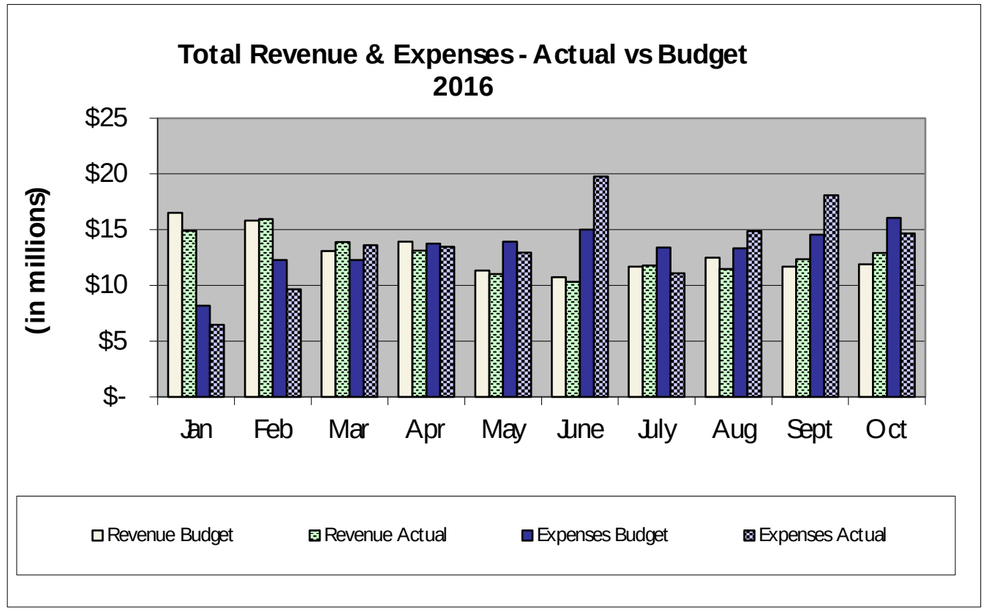
	PGE	Pacific Power	Subtotal Elec.	NWN Industrial	NW Natural Gas	Cascade	Avista	Subtotal Gas	Oregon Total	NWN WA	ETO Total	YTD Budget	Variance	% Var
Energy Efficiency														
Commercial														
Existing Buildings	20,817,056	13,954,399	34,771,455	943,459	2,533,995	412,882	-	3,890,337	38,661,792	383,899	39,045,691	35,837,494	(3,208,197)	-9%
New Buildings	7,524,464	3,624,002	11,148,466	33,580	1,181,253	230,999	5,717	1,451,549	12,600,015		12,600,015	13,063,008	462,993	4%
NEEA	1,130,480	785,589	1,916,069		207,474	22,212		229,686	2,145,755	23,361	2,169,116	2,242,640	73,524	3%
Total Commercial	**29,472,000**	**18,363,990**	**47,835,990**	**977,039**	**3,922,723**	**666,093**	**5,717**	**5,571,572**	**53,407,562**	**407,260**	**53,814,822**	**51,143,142**	**(2,671,680)**	**-5%**
Industrial														
Production Efficiency	11,328,582	7,975,548	19,304,130	967,301	341,093	179,906		1,488,301	20,792,431		20,792,431	21,706,642	914,211	4%
NEEA	158,762	110,325	269,087						269,087		269,087	355,728	86,641	24%
Total Industrial	**11,487,343**	**8,085,874**	**19,573,217**	**967,301**	**341,093**	**179,906**	**-**	**1,488,301**	**21,061,518**	**-**	**21,061,518**	**22,062,370**	**1,000,852**	**5%**
Residential														
Existing Homes	6,107,006	5,722,325	11,829,330	-	3,779,019	163,028	2,345	3,944,393	15,773,723	296,102	16,069,825	16,220,224	150,399	1%
New Homes/Products	12,290,962	6,021,020	18,311,982	-	4,446,118	450,919	16,685	4,913,721	23,225,703	569,083	23,794,786	23,165,096	(629,690)	-3%
NEEA	2,247,355	1,561,721	3,809,075		511,220	54,732		565,952	4,375,027	57,563	4,432,590	3,990,833	(441,757)	-11%
Total Residential	**20,645,322**	**13,305,065**	**33,950,387**	**-**	**8,736,357**	**668,679**	**19,030**	**9,424,066**	**43,374,453**	**922,748**	**44,297,201**	**43,376,153**	**(921,048)**	**-2%**
Energy Efficiency Costs	**61,604,661**	**39,754,936**	**101,359,593**	**1,944,340**	**13,000,171**	**1,514,678**	**24,748**	**16,483,939**	**117,843,528**	**1,330,009**	**119,173,537**	**116,581,665**	**(2,591,876)**	**-2%**
Renewables														
Solar Electric (Photovoltaic)	6,434,056	4,447,699	10,881,755						10,881,755		10,881,755	11,442,414	560,659	5%
Other Renewable	1,869,447	2,721,023	4,590,470						4,590,470		4,590,470	4,834,058	243,588	5%
Renewables Costs	**8,303,503**	**7,168,725**	**15,472,224**	**-**	**-**	**-**	**-**	**-**	**15,472,224**	**-**	**15,472,224**	**16,276,472**	**804,247**	**5%**
Program Cost Total	**69,908,169**	**46,923,650**	**116,831,819**	**1,944,340**	**13,000,171**	**1,514,678**	**24,748**	**16,483,939**	**133,315,758**	**1,330,009**	**134,645,766**	**132,858,137**	**(1,787,629)**	**-1%**
Avista Development							**23,568**	**23,568**	**23,568**		**23,568**		**(23,568)**	
Cost Grand Total	**69,908,169**	**46,923,650**	**116,831,819**	**1,944,340**	**13,000,171**	**1,514,678**	**48,316**	**16,507,507**	**133,339,326**	**1,330,009**	**134,669,331**	**132,858,137**	**(1,811,194)**	**-1%**

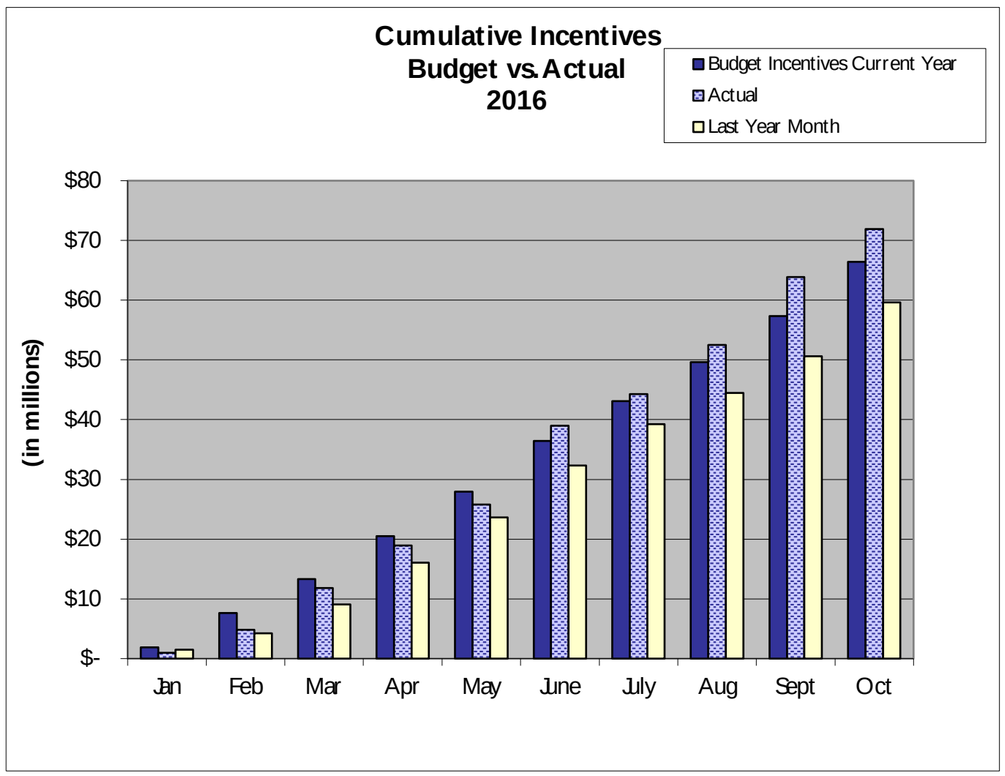
Energy Trust of Oregon
Administrative Expenses
For the Ten Months Ending October 31, 2016
(Unaudited)

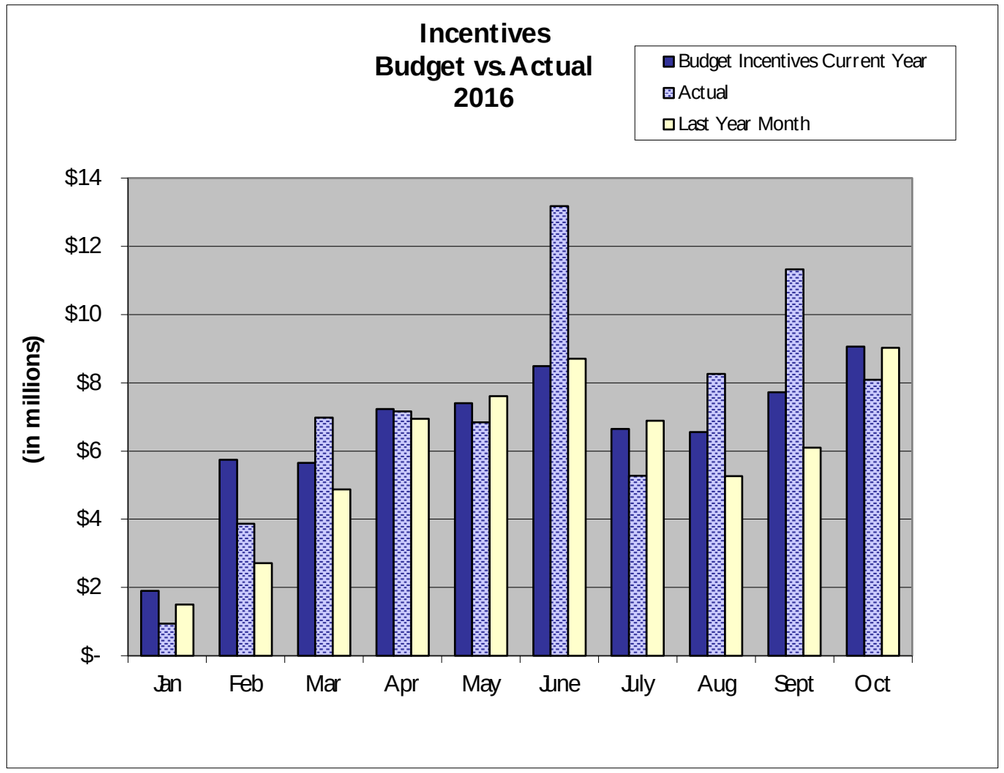
	MANAGEMENT & GENERAL						COMMUNICATIONS & CUSTOMER SERVICE					
	QUARTER			YTD			QUARTER			YTD		
	ACTUAL	BUDGET	REMAINING	ACTUAL	BUDGET	VARIANCE	ACTUAL	BUDGET	REMAINING	ACTUAL	BUDGET	VARIANCE
EXPENSES												
Outsourced Services	$20,580	$45,375	$24,795	$296,044	$328,458	$32,415	$59,033	$261,125	$202,092	$739,482	$918,917	$179,435
Legal Services	1,543	2,500	957	3,633	8,333	4,701						
Salaries and Related Expenses	207,171	674,027	466,856	1,924,802	1,940,821	16,020	125,988	387,338	261,350	1,104,879	1,291,127	186,248
Supplies		1,337	1,337	3,197	4,458	1,261	55	250	195	889	833	(56)
Postage and Shipping Expenses	146		(146)	1,435		(1,435)				227		(227)
Printing and Publications	173	1,125	952	3,247	3,750	503		550	550		1,833	1,833
Travel	1,693	11,988	10,295	29,747	39,958	10,211	4,540	11,250	6,710	39,684	37,500	(2,184)
Conference, Training & Mtngs	2,023	44,610	42,587	37,552	114,050	76,498	1,065	4,000	2,935	13,448	13,333	(114)
Interest Expense and Bank Fees		2,125	2,125	1,621	2,583	962						
Miscellaneous Expenses							367		(367)	12,187		(12,187)
Dues, Licenses and Fees	40	2,175	2,135	7,802	8,430	628	485	4,000	3,515	9,116	13,333	4,217
Shared Allocation (Note 1)	17,997	47,985	29,987	153,955	170,558	16,603	14,376	32,938	18,562	109,517	117,076	7,559
IT Service Allocation (Note 2)	33,584	107,457	73,873	339,914	355,164	15,250	23,117	73,761	50,644	233,974	243,794	9,821
Planning & Eval	134	445	312	1,413	1,503	89						
TOTAL EXPENSES	**285,084**	**941,149**	**656,065**	**2,804,362**	**2,978,069**	**173,707**	**229,027**	**775,213**	**546,185**	**2,263,401**	**2,637,747**	**374,346**

Note 1) Represents allocation of Shared (General Office Management) Costs
Note 2) Represents allocation of Shared IT Costs


Cumulative Revenue & Expenses
Budget vs Actual
2016
(in millions)
$160
$140
$120
$100
$80
$60
$40
$20
$-
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Revenue Budget
Revenue Actual
Expenses Budget
Expenses Actual


Total Revenue & Expenses - Actual vs Budget
2016
(in millions)
$25
$20
$15
$10
$5
$-
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Revenue Budget
Revenue Actual
Expenses Budget
Expenses Actual


Cumulative Incentives
Budget vs. Actual
2016
Budget Incentives Current Year
Actual
Last Year Month
(in millions)
$80
$70
$60
$50
$40
$30
$20
$10
$-
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct


Incentives
Budget vs. Actual
2016
Budget Incentives Current Year
Actual
Last Year Month
(in millions)
$14
$12
$10
$8
$6
$4
$2
$-
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct

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CONTRACTOR	Description	City	EST COST	Actual TTD	Remaining	Start	End
Administration							
		Administration Total:	**12,944,817**	**3,795,955**	**9,148,862**		
Communications							
		Communications Total:	**3,895,334**	**3,060,855**	**834,479**		
Energy Efficiency							
Northwest Energy Efficiency Alliance	Regional EE Initiative Agmt	Portland	33,662,505	13,199,505	20,463,000	1/1/2015	7/1/2020
ICF Resources, LLC	2016 BE PMC	Fairfax	10,592,349	7,836,930	2,755,419	1/1/2016	12/31/2016
CLEAResult Consulting Inc	2016 HES PMC	Austin	6,634,665	4,867,377	1,767,288	1/1/2016	12/31/2016
Northwest Energy Efficiency Alliance	Regional Gas EE Initiative	Portland	6,200,354	1,153,058	5,047,296	1/1/2015	7/1/2020
CLEAResult Consulting Inc	2016 NBE PMC	Austin	5,878,253	4,788,632	1,089,621	1/1/2016	12/31/2016
Lockheed Martin Corporation	2016 MF PMC	Grand Prairie	4,496,935	3,553,762	943,173	1/1/2016	12/31/2018
Ecova Inc	2016 Products PMC	Spokane	3,756,714	2,612,853	1,143,861	1/1/2016	12/31/2016
Energy 350 Inc	PDC - PE 2016	Portland	3,148,000	2,383,372	764,628	1/1/2016	12/31/2016
CLEAResult Consulting Inc	2016 NH PMC	Austin	2,868,582	2,233,529	635,053	1/1/2016	12/31/2016
Intel Corporation	EE Project Incentive Agmt	Hillsboro	2,400,000	0	2,400,000	11/13/2015	12/31/2019
Portland General Electric	PDC - PE 2016	Portland	2,153,000	1,821,628	331,372	1/1/2016	12/31/2016
Northwest Power & Conservation Council	RTF Funding Agreement		1,825,000	647,560	1,177,440	2/25/2015	12/31/2019
Cascade Energy, Inc.	PDC - PE 2016 Small Industrial	Walla Walla	1,699,518	1,347,390	352,128	1/1/2016	12/31/2016
RHT Energy Inc.	PDC - PE 2016	Medford	1,690,000	1,294,433	395,567	1/1/2016	12/31/2016
Evergreen Consulting Group, LLC	PE Lighting PDC 2016	Tigard	1,396,500	1,086,519	309,981	1/1/2016	12/31/2016
CLEAResult Consulting Inc	PDC - SEM 2016	Austin	1,356,564	599,413	757,151	1/1/2016	12/31/2016
HST&V, LLC	PDC - SEM 2016	Portland	1,185,354	1,030,456	154,898	1/1/2016	12/31/2016
Clean Energy Works, Inc.	EE Incentive & Services Agmt	Portland	492,570	402,010	90,560	7/1/2014	12/31/2016
Cascade Energy, Inc.	SEM Curriculum	Walla Walla	464,080	421,360	42,721	5/1/2014	12/31/2016
SBW Consulting, Inc.	PE Program Impact Evaluation	Bellevue	450,000	100,483	349,517	5/1/2016	4/30/2017
ADM Associates, Inc.	EB 2013/2014 Impact Evaluation	Seattle	422,000	410,008	11,992	1/1/2016	12/31/2016
Stillwater Energy LLC	Commercial SEM curriculum	Portland	360,101	342,760	17,341	6/27/2014	12/31/2016
Michaels Energy, Inc.	New Buildings '14 Impact Evalu	La Crosse	328,000	188,031	139,969	5/23/2016	3/31/2017
Craft3	SWR Loan Origination/Loss Fund	Portland	305,000	227,269	77,731	6/1/2014	12/31/2016
Craft3	Loan Agreement	Portland	300,000	100,000	200,000	6/1/2014	6/20/2025
CLEAResult Consulting Inc	2016 HES WA PMC	Austin	289,600	220,525	69,075	1/1/2016	12/31/2016
EnergySavvy Inc.	Optix Engage Online Audit Tool	Seattle	273,600	64,167	209,433	6/1/2016	5/31/2018
Pivotal Energy Solutions LLC	License Agreement	Gilbert	270,500	93,361	177,139	3/1/2014	12/31/2017

Alternative Energy Systems Consulting, Inc.	PE Mobile App Scoping Tool	Carlsbad	229,830	95,250	134,580	6/1/2016	5/31/2017
ICF Resources, LLC	2016 BE NWN WA PMC	Fairfax	200,724	169,763	30,961	1/1/2016	12/31/2016
Balanced Energy Solutions LLC	New Homes QA Inspections	Portland	174,000	67,835	106,165	4/27/2015	12/31/2016
ICF Resources, LLC	2016 BE DSM PMC	Fairfax	129,019	70,630	58,389	1/1/2016	12/31/2016
Illume Advising, LLC	Existing Homes Process Eval	Verona	90,400	90,397	3	2/20/2016	11/30/2016
1000 Broadway Building L.P.	Pay-for-Performance Pilot	Portland	88,125	29,375	58,750	10/17/2014	11/1/2018
Hitachi Consulting Corporation	SOW #19 Program Design Support	Dallas	82,500	63,000	19,500	7/31/2016	11/29/2016
CLEAResult Consulting Inc	Professional Services/Trans	Austin	70,613	59,735	10,878	10/15/2014	10/15/2017
Research Into Action, Inc.	Multifamily Process Evaluation	Portland	68,242	68,236	6	3/18/2016	12/31/2016
The Cadmus Group Inc.	Solar PV Impact Evalution	Watertown	67,730	60,952	6,778	10/26/2015	11/30/2016
Abt SRBI Inc.	Fast Feedback Surveys 2016	New York	62,200	0	62,200	7/8/2016	4/15/2017
Apex Analytics LLC	Nest Seasonal Savings Eval	Boulder	56,000	7,950	48,050	8/29/2016	12/31/2017
The Cadmus Group Inc.	Existing Homes Pilot Eval	Watertown	53,000	41,321	11,679	2/18/2016	12/31/2017
MetaResource Group	Intel DX1 Mod 1&2 Megaproject	Portland	45,000	22,540	22,460	4/1/2015	5/1/2017
Consortium for Energy Efficiency	Program Performance Benchmark		40,379	0	40,379	9/23/2016	12/31/2017
Portland General Electric	2016 EE Workshop Sponsorship	Portland	40,000	40,000	0	1/1/2016	12/31/2016
KEMA Incorporated	Billing Analysis Review	Oakland	35,000	2,146	32,855	3/15/2015	12/31/2016
WegoWise Inc	benchmarking license 2015	Boston	35,000	26,412	8,588	6/15/2014	12/31/2016
The Cadmus Group Inc.	Air Conditioning Measures	Watertown	32,950	6,177	26,774	8/22/2016	8/22/2018
Northwest Energy Efficiency Council	Tool Lending Lbry Sponsorship	Seattle	30,500	0	30,500	9/21/2016	12/31/2017
Abt SRBI Inc.	NH Gas Fireplace Survey 16-17	New York	25,697	0	25,697	4/12/2016	7/31/2017
Energy Center of Wisconsin	Billing Analysis Review	Madison	25,000	1,330	23,670	3/15/2015	12/31/2016
Northwest Food Processors Association	NW Industrial EE Summit 2017	Portland	25,000	0	25,000	1/1/2017	12/31/2017
Sheepscot Creative LLC	SEM Videos	Portland	24,500	24,000	500	2/12/2016	11/30/2016
Collaborative Efficiency, LLC	EECLP Utility Outreach	Spokane	20,000	10,384	9,616	6/1/2016	12/31/2016
Ecotope, Inc.	NB VRF Pilot Evaluation	Seattle	20,000	9,540	10,460	1/1/2016	5/31/2017
Michaels Energy, Inc.	NB '11-'12 Impact Evaluation	La Crosse	20,000	2,240	17,760	7/1/2016	3/31/2017
Consortium for Energy Efficiency	Membership Dues - 2016		19,392	19,392	0	1/1/2016	12/31/2016
Northwest Food Processors Association	NW Industrial EE Summit 2016	Portland	18,710	18,710	0	1/1/2016	12/31/2016
Clark Public Utilities	Living Wise Kits Coop Agmt	Vancouver	15,000	0	15,000	11/1/2015	12/31/2016
Portland General Electric	Workshop Payment Agreement	Portland	15,000	0	15,000	3/18/2016	12/31/2016
Energy 350 Inc	Professional Services	Portland	14,920	14,920	0	12/10/2014	12/10/2016
EES Consulting, Inc	Professional Services Agmt	Kirkland	14,800	1,440	13,360	10/1/2016	9/30/2018
Bridgetown Printing Company	January 2016 Bill Insert	Portland	14,677	14,573	104	1/1/2016	12/31/2016
Flink Energy Consulting	Smart Grid Modeling	Portland	12,120	12,120	0	7/12/2016	7/30/2017

BASE zero LLC	Quality Assurance Services	Bend	11,625	10,488	1,138	3/1/2016	12/31/2016
Earth Advantage, Inc.	2016 Sponsorship	Portland	10,250	10,250	0	3/1/2016	2/28/2017
American Council for and Energy Efficient Economy	Intelligent Eff. Baseline		10,000	10,000	0	1/1/2016	12/31/2016
American Council for and Energy Efficient Economy	Smart Buildings		10,000	10,000	0	1/1/2016	12/31/2016
American Council for and Energy Efficient Economy	Small Business EE		10,000	10,000	0	1/1/2016	12/31/2016
Research Into Action, Inc.	Professional Services	Portland	9,590	9,570	20	9/1/2014	8/31/2017
Evergreen Economics	NH Gas Fireplace Survey	Portland	9,020	1,875	7,145	4/12/2016	7/31/2017
City of Portland Bureau of Planning & Sustainability	Sponsorship - 2016	Portland	8,000	8,000	0	1/1/2016	12/31/2016
Northwest Environmental Business Council	Future Energy Conference 2016	Portland	7,450	3,950	3,500	1/1/2016	12/31/2016
FMYI, INC	Subscription Agreement	Portland	5,150	5,150	0	4/25/2016	3/1/2017
Social Enterprises Inc.	GoGreen Sponsorship - 2016	Portland	5,000	5,000	0	4/22/2016	12/31/2016
	Energy Efficiency Total:		**96,911,857**	**54,161,038**	**42,750,818**		

Joint Programs

Portland State University	Technology Forecasting		153,808	126,990	26,818	11/7/2011	12/31/2016
E Source Companies LLC	E Source Service Agreement	Boulder	93,750	93,750	0	2/1/2014	1/31/2017
The Cadmus Group Inc.	Evaluation Consultant	Watertown	90,305	78,737	11,569	6/20/2013	12/31/2016
CoStar Realty Information Inc	Property Data	Baltimore	40,820	34,799	6,021	6/1/2011	5/31/2017
D&R International LTD	Better Data Project	Silver Spring	14,250	14,250	0	6/30/2016	12/31/2016
Navigant Consulting Inc	Resource Assessment Updates	Boulder	10,600	0	10,600	8/26/2016	8/26/2018
	Joint Programs Total:		**403,533**	**348,525**	**55,008**		

Renewable Energy

Clean Water Services	Project Funding Agreement		3,000,000	1,013,106	1,986,894	11/25/2014	11/25/2039
JC-Biomethane LLC	Biogas Plant Project Funding	Eugene	2,000,000	1,500,000	500,000	10/18/2012	10/18/2032
Steel Bridge Solar, LLC	Project Funding Agreement	Seattle	2,000,000	1,000,000	1,000,000	3/27/2015	12/15/2040
Oregon Institute of Technology	Geothermal Resource Funding	Klamath Falls	1,550,000	1,550,000	0	9/11/2012	9/11/2032
Farm Power Misty Meadows LLC	Misty Meadows Biogas Facility	Mount Vernon	1,000,000	750,000	250,000	10/25/2012	10/25/2027
Three Sisters Irrigation District	TSID Hydro	Sisters	1,000,000	900,000	100,000	4/25/2012	9/30/2032
Farmers Irrigation District	FID - Plant 2 Hydro	Hood River	900,000	900,000	0	4/1/2014	4/1/2034
Klamath Falls Solar 2 LLC	PV Project Funding Agreement	San Mateo	850,000	0	850,000	7/11/2016	7/10/2041
Farmers Conservation Alliance	Irrigation Collaboration Initi	Hood River	633,000	604,070	28,930	1/2/2015	12/31/2016
Old Mill Solar, LLC	Project Funding Agmt Bly, OR	Lake Oswego	490,000	0	490,000	5/29/2015	5/28/2030
City of Medford	750kW Combined Heat & Power	Medford	450,000	450,000	0	10/20/2011	10/20/2031
City of Pendleton	Pendleton Microturbines	Pendleton	450,000	150,000	300,000	4/20/2012	4/20/2032
RES - Ag FGO LLC	Biogas Manure Digester Project	Washington	441,660	441,660	0	10/27/2010	10/27/2025
RES - Ag FGO LLC	Biogas Manure Digester - FGO	Washington	441,660	438,660	3,000	10/27/2010	10/27/2025

Clean Power Research, LLC	PowerClerk License	Napa	383,068	380,398	2,670	7/1/2014	6/30/2017
SunE Solar XVI Lessor, LLC	BVT Sexton Mtn PV	Bethesda	355,412	355,412	0	5/15/2014	12/31/2034
CIty of Gresham	City of Gresham Cogen 2		350,000	334,523	15,477	4/9/2014	7/9/2034
City of Astoria	Bear Creek Funding Agreement	Astoria	143,000	143,000	0	3/24/2014	3/24/2034
BSA Enterprises Inc	Solar Verifier Services	Sisters	100,000	19,277	80,723	8/1/2016	7/31/2018
Gary Higbee DBA WindStream Solar	Solar Verifier Services	Eugene	100,000	18,064	81,936	8/1/2016	7/31/2018
Luxurious Plumbing and Heating, Inc.	Solar Verifier Services	West Linn	100,000	27,930	72,070	8/1/2016	7/31/2018
RHT Energy Inc.	Verifier Services Agmt - Solar	Medford	100,000	21,053	78,948	8/1/2016	7/31/2018
Solar Oregon	2015 Outreach Agreement	Portland	72,800	62,000	10,800	1/1/2015	12/31/2016
Kendrick Business Services LLC	Solar TA Business Consulting	Albany	64,200	51,260	12,940	10/8/2015	12/31/2016
SPS of Oregon Inc	Project Funding Agreement	Wallowa	60,000	488	59,513	10/15/2015	10/31/2036
State of Oregon Dept of Geology & Mineral Industries	Lidar Data	Portland	40,000	40,000	0	11/7/2014	12/1/2016
Clean Energy States Alliance	2017 CESA Sponsorship		39,500	39,500	0	7/1/2016	6/30/2017
University of Oregon	UO SRML Contribution - 2016	Eugene	25,000	25,000	0	3/9/2016	3/8/2017
Wallowa Resources Community Solutions, Inc.	Renewables Field Outreach		24,999	3,563	21,437	2/1/2016	1/30/2018
Robert Migliori	42kW wind energy system	Newberg	24,125	22,352	1,773	4/11/2007	1/31/2024
Oregon Solar Energy Industries Association	Solar Technical Training Class	Portland	13,500	3,000	10,500	12/10/2015	12/31/2016
Warren Griffin	Griffin Wind Project	Salem	13,150	9,255	3,895	10/1/2005	10/1/2020
Oregon Solar Energy Industries Association	Sponsorship 2016	Portland	7,500	7,500	0	1/1/2016	12/31/2016
Magneto Advertising, LLC	Irrigation Infographic	Portland	5,950	5,950	0	7/6/2016	12/31/2016
Clean Energy States Alliance	2016 CESA ITAC Sponsorship		5,000	5,000	0	1/1/2016	12/31/2016
Bonneville Environmental Foundation	REC/WRC Purchase 2016	Portland	2,430	0	2,430	1/1/2016	12/31/2016
		Renewable Energy Total:	**17,235,954**	**11,272,018**	**5,963,936**		
		Grand Total:	**131,391,494**	**72,638,392**	**58,753,103**		

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Financial Glossary

(for internal use) - updated May 31, 2016

Administrative Costs

Costs that, by nonprofit accounting standards, have general objectives which enable an organization's programs to function. The organization's programs in turn provide direct services to the organization's constituents and fulfill the mission of the organization (i.e. management and general and general communication and outreach expenses).

I. **Management and General**
- Includes governance/board activities, interest/financing costs, accounting, payroll, human resources, general legal support, and other general organizational management costs.
- Receives an allocated share of indirect costs.

II. **General Communications and Outreach**
- Expenditures of a general nature, conveying the nonprofit mission of the organization and general public awareness.
- Receives an allocated share of indirect costs.

Allocation
- A way of grouping costs together and applying them to a program as one pool based upon an allocation base that most closely represents the activity driver of the costs in the pool.
- Used as an alternative to charging programs on an invoice-by-invoice basis for accounting efficiency purposes.
- An example would be accumulating all of the costs associated with customer management (call center operations, Energy Trust customer service personnel, complaint tracking, etc.). The accumulated costs are then spread to the programs that benefited by using the ratio of calls into the call center by program (i.e. the allocation base).

Allocation Cost Pools
- Employee benefits and taxes.
- Office operations. Includes rent, telephone, utilities, supplies, etc.
- Information Technology (IT) services.
- Planning and evaluation general costs.
- Customer service and trade ally support costs.
- General communications and outreach costs.
- Management and general costs.
- Shared costs for electric utilities.
- Shared costs for gas utilities.
- Shared costs for all utilities.

Auditor's Opinion
- An accountant's or auditor's opinion is a report by an independent CPA presented to the board of directors describing the scope of the examination of the organization's books, and certifying that the financial statements meet the AICPA (American Institute of Certified Public Accountants) requirements of GAAP (generally accepted accounting principles).

- Depending on the audit findings, the opinion can be unmodified or modified regarding specific items. Energy Trust strives for and has achieved in all its years an unmodified opinion.
- An unmodified opinion indicates agreement by the auditors that the financial statements present an accurate assessment of the organization's financial results.
- The OPUC Grant Agreement requires an unmodified opinion regarding Energy Trust's financial statements.
- Failure to follow generally accepted accounting principles (GAAP) can result in a qualified opinion.

Board-approved Annual Budget

- Funds approved by the board for *expenditures* during the budget year (subject to board approved program funding caps and associated policy) for the stated functions.
- Funds approved for *capital* asset expenditures.
- Approval of the general allocation of funds including commitments and cash outlays.
- Approval of expenditures is based on assumed revenues from utilities as forecasted in their annual projections of public purpose collections and/or contracted revenues.

Reserves

- In any one year, the amount by which revenues exceed expenses for that year in a designated category that will be added to the cumulative balance and brought forward for expenditure to the next budget year.
- In any one year, if expenditures exceed revenues, the negative difference is applied against the cumulative carryover balance.
- Does not equal the cash on hand due to noncash expense items such as depreciation.
- Tracked by major utility funder and at high level program area--by EE vs RE, not tracked by program.

Committed Funds

- Represents funds obligated to identified efficiency program participants in the form of signed applications or agreements and tracked in the project forecasting system**.**
- If the project is not demonstrably proceeding within agreed upon time frame, committed funds return to incentive pool. Reapplication would then be required.
- Funds are expensed when the project is completed.
- Funds may be held in the operating cash account, or in escrow accounts.

Contract obligations

- A signed contract for goods or services that creates a legal obligation.
- Reported in the monthly Contract Status Summary Report.

Cost-Effectiveness Calculation

- Programs and measures are evaluated for cost-effectiveness.
- The cost of program savings must be lower than the cost to produce the energy from both a utility and societal perspective.
- Expressed as a ratio of energy savings cost divided by the presumed avoided utility and societal cost of energy.
- Program cost-effectiveness evaluation is "fully allocated," (i.e. includes all of the program costs plus a portion of Energy Trust administrative costs).

Dedicated Funds

- Represents funds obligated to identified renewable program participants in the form of signed applications or agreements and tracked in the project forecasting system.

- May include commitments, escrows, contracts, board designations, master agreements.
- Methodology utilized to develop renewable energy activity-based budgets amounts.

Direct Program Costs

- Can be directly linked to and reflect a causal relationship to one individual program/project; or can easily be allocated to two or more programs based upon usage, cause, or benefit.

Direct Program Evaluation & Planning Services

- Evaluation services for a specific program rather than for a group of programs.
- Costs incurred in evaluating programs and projects and included in determining total program funding caps.
- Planning services for a specific program rather than for a group of programs.
- Costs incurred in planning programs and projects and are included in determining program funding expenditures and caps.
- Evaluation and planning services attributable to a number of programs are recorded in a cost pool and are subsequently allocated to individual programs.

Escrowed Program (Incentive) Funds

- Cash deposited into a separate bank account that will be paid out pursuant to a contractual obligation requiring a certain event or result to occur. Funds can be returned to Energy Trust if such event or result does not occur. Therefore, the funds are still "owned" by Energy Trust and will remain on the balance sheet.
- The funds are within the control of the bank in accordance with the terms of the escrow agreement.
- When the event or result occurs, the funds are considered "earned" and are transferred out of the escrow account ("paid out") and then are reflected as an expense on the income statement for the current period.

Expenditures/Expenses

- Amounts for which there is an obligation for payment of goods and/or services that have been received or earned within the month or year.

Project Tracking Projects Forecasting

Module developed in Project Tracking system (PT) to provide information about the timing of future incentive payments, with the following definitions**:**

- Estimated-Project data may be inaccurate or incomplete. Rough estimate of energy savings, incentives and completion date by project and by service territory.
- Proposed-Project that has received a written incentive offer but no agreement or application has been signed. Energy savings, incentives and completion date to be documented by programs using this phase. For Renewable projects-project that has received Board approval.
- Accepted-Used for renewable energy projects in second round of application; projects that have reached a stage where approval process can begin.
- Committed-Project that has a signed agreement or application reserving incentive dollars until project completion. Energy savings/generations, incentives and completion date by project and by service territory must be documented in project records and in PT. If project not demonstrably proceeding within agreed upon time frame, committed funds return to incentive pool. Reapplication would then be required.
- Dedicated-Renewable project that has been committed, has a signed agreement, and if required, has been approved by the board of directors.

Incentives

I. **Residential Incentives**

- Incentives paid to a residential program participant (party responsible for payment for utility service in particular dwelling unit) exclusively for energy efficiency and renewable energy measures in the homes or apartments of such residential customers.

II. **Business Incentives**

- Incentives paid to a participant other than a residential program participant as defined above following the installation of an energy efficiency or renewable energy measure.
- Above market cost for a particular renewable energy project.

III. **Service Incentives**

- Incentives paid to an installation contractor which serves as a reduction in the final cost to the participant for the installation of an energy efficiency or renewable energy measure.
- Payment for services delivered to participants by contractors such as home reviews and technical analysis studies.
- End-user training, enhancing participant technical knowledge or energy efficiency practices proficiency such as Strategic Energy Management programs, where some level of tracking of particular sites and participants is part of the program design.
- Lighting, hot water, and energy control devices through retailer buy down, on line fulfillment, and direct installation.

Indirect Costs

- Shared costs that are “allocated” for accounting purposes rather than assigning individual charges to programs.
- Allocated to all programs and administration functions based on a standard basis such as hours worked, square footage, customer phone calls, etc.
- Examples include rent/facilities, supplies, computer equipment and support, and depreciation.

IT Support Services

- Information technology costs incurred as a result of supporting all programs.
- Includes energy savings and incentive tracking software, data tracking support of PMCs and for the program evaluation functions.
- Includes technical architecture design and physical infrastructure.
- Receives an allocation of indirect shared costs.
- Total costs subsequently allocated to programs and administrative units.

Outsourced Services

- Miscellaneous professional services contracted to third parties rather than performed by internal staff.
- Can be incurred for program or administrative reasons and will be identified as such.

Program Costs

- Expenditures made to fulfill the purposes or mission for which the organization exists and are authorized through the program approval process.
- Includes program management, incentives, program staff salaries, planning, evaluation, quality assurance, program-specific marketing and other costs incurred solely for program purposes.
- Can be direct or indirect (i.e. allocated based on program usage.)

Program Delivery Expense

- This will include all PMC labor and direct costs associated with: incentive processing, program coordination, program support, trade ally communications, and program delivery contractors.
- Includes contract payments to NEEA for market transformation efforts.
- Includes performance compensation incentives paid to program management contractors under contract agreement if certain incentive goals are met.
- Includes professional services for items such as solar inspections, anemometer maintenance and general renewable energy consulting.

Program Legal Services

- External legal expenditures and internal legal services utilized in the development of a program-specific contract.

Program Management Expense

- PMC billings associated with program contract oversight, program support, staff management, etc.
- ETO program management staff salaries, taxes and benefits.

Program Marketing/Outreach

- PMC labor and direct costs associated with marketing/outreach/awareness efforts to communicate program opportunities and benefits to rate payers/program participants.
- Awareness campaigns and outreach efforts designed to reach participants of individual programs.
- Co-op advertising with trade allies and vendors to promote a particular program benefit to the public.

Program Quality Assurance

- Independent in-house or outsourced services for the quality assurance efforts of a particular program (distinguished from program quality control).

Program Reserves

- Negotiated with utilities annually, with a goal of providing a cushion of approximately 5% above funds needed to fulfill annual budgeted costs. Management may access up to 50% of annual program reserve without prior board approval (resolution 633, 2012).

Program Support Costs

- Source of information is contained in statement of functional expense report.
- Portion of costs in OPUC performance measure for program administration and support costs.
    - Includes expenses incurred directly by the program.
    - Includes allocation of shared and indirect costs incurred in the following categories: supplies; postage and shipping; telephone; printing and publications; occupancy expenses; insurance; equipment; travel; business meetings; conferences and training; depreciation and amortization; dues, licenses,

subscriptions and fees; miscellaneous expense; and an allocation of information technology department cost.

Project Specific Costs (for Renewable Energy)

- Expenses directly related to identified projects or identified customers to assist them in constructing or operating renewable projects. Includes services to prospective as well as current customers.
- Must involve direct contact with the project or customer, individually or in groups, and provide a service the customer would otherwise incur at their own expense.
- Does not include general program costs to reach a broad (unidentified) audience such as websites, advertising, program development, or program management.
- Project-Specific costs may be in the categories of; Incentives, Staff salaries, Program delivery, Legal services, Public relations, Creative services, Professional services, Travel, Business meetings, Telephone, or Escrow account bank fees.

Savings Types

- **Working Savings/Generation:** the estimate of savings/generation that is used for data entry by program personnel as they approve individual projects. They are based on deemed savings/generation for prescriptive measures, and engineering calculations for custom measures. They do not incorporate any evaluation or transmission and distribution factors.
- **Reportable Savings/Generation:** the estimate of savings/generation that will be used for public reporting of Energy Trust results. This includes transmission and distribution factors, evaluation factors, and any other corrections required to the original working values. These values are updated annually, and are subject to revision each year during the "true-up" as a result of new information or identified errors.
- **Contract Savings**: the estimate of savings that will be used to compare against annual contract goals. These savings figures are generally the same as the reportable savings at the time that the contract year started. For purposes of adjusting working savings to arrive at this number, a single adjustment percentage (a SRAF, as defined below) is agreed to at the beginning of the contract year and is applied to all program measures. This is based on the sum of the adjustments between working and reportable numbers in the forecast developed for the program year.
- **Savings Realization Adjustment Factors (SRAF):** are savings realization adjustment factors applied to electric and gas working savings measures in order to reflect more accurate savings information through the benefit of evaluation and other studies. These factors are determined by the Energy Trust and used for annual contract amendments. The factors are determined based on the best available information from:
  - Program evaluations and/or other research that account for free riders, spill-over effects and measure impacts to date; and
  - Published transmission and distribution line loss information resulting from electric measure savings.

Total Program and Admin Expenses (line item on income statement)

- Used only for cost effectiveness calculations, levelized cost calculations and in management reports used to track funds spent/remaining by service territory.
- Includes all costs of the organization--direct, indirect, and an allocation of administration costs to programs.
- Should not be used for external financial reporting (not GAAP).

Total Program Expenses (line item on income statement)

- All indirect costs have been allocated to program costs with the exception of administration (management and general costs and communications & outreach).
- Per the requirements of Generally Accepted Accounting Principles (GAAP) for nonprofits, administrative costs should not be allocated to programs.
- There is no causal relationship—costs would not go away if the program did not exist.

Trade Ally Programs & Customer Service Management

- Costs associated with Energy Trust sponsorship of training and development of a trade ally network for a variety of programs.
- Trade Ally costs are tracked and allocated to programs based on the number of allies associated with that program.
- Costs in support of assisting customers which benefit all Energy Trust programs such as call center operations, customer service manager, complaint handling, etc.
- Customer service costs are tracked and allocated based on # of calls into the call center per month.

True Up

- True-up is a once-a-year process where we take everything we've learned about how much energy programs actually save or generate, and update our reports of historic performance and our software tools for forecasting and analyzing future savings.
- Information incorporated includes improved engineering models of savings (new data factor), anticipated results of future evaluations based on what prior evaluations of similar programs have shown (anticipated evaluation factor), and results from actual evaluations of the program and the year of activity in question (evaluation factor).
- Results are incorporated in the Annual Report (for the year just past) and the True-up Report (for prior years).
- Sometimes the best data on program savings or generation is not available for 2-3 years, especially for market transformation programs. So for some programs, the savings are updated through the annual true-up 2 or 3 times

Tab 5

Policy Committee Meeting

November 21, 2016, 3:30–5:00 pm

Attending by teleconference
Roger Hamilton, Ken Canon, Debbie Kitchin, Alan Meyer, John Reynolds, Eddie Sherman

Attending at Energy Trust offices
Shelly Carlton, Amber Cole, Mike Colgrove, Corey Kehoe, Steve Lacey, Debbie Menashe, Mariet Steenkamp

Policies for Review

No policies to review.

Board Meeting Presentation Previews

Preview of Proposal to Authorize a Contract with Affiliated Media, LLC
Staff provided an overview of the proposed contract with Affiliated Media, LLC for the Policy Committee (Committee) to present as a resolution to the Board of Directors at the December 16, 2016 meeting. The resolution would authorize the Executive Director to sign a contract for $680,000 for the purchase of broadcast radio and TV media on behalf of Energy Trust in 2017. Staff opined that Affiliated Media is able to leverage $11 million in media buying power of its many large clients to increase Energy Trust's visibility in its service territory. Their media planning capabilities encompass many years of expertise in media sales and charge no fees for their work. A contract of this nature saves staff resources and approximately $100,000 by not having to complete separate media contracts with various outlets, and allows for a more concentrated effort in web-based and social media marketing, market research and other initiatives to expand and diversify participation. Shelly Carlton said that she prepares an annual year-to-year cost comparison between Affiliated Media purchases and what Energy Trust could purchase on its own. Shelly will continue this practice in 2017 to ensure the benefits of this contract continue. Staff noted that Affiliated Media would also be able to reach diverse populations through their existing channels of Spanish TV/radio and Asian publications. The Committee supported the staff recommendation to present this resolution to the Board and directed that it be included as part of the consent agenda at the December meeting.

Short Updates

Preview of Three-Month Report Out
Mike Colgrove gave an overview of his initial three-month report out which includes recommendations for areas of exploration moving forward with an emphasis on the Diversity Initiative.

Key elements will be a business case that would justify a number of test approaches to explore in 2017 with the intent to gain knowledge to use to inform suggestions for the 2018 strategic planning retreat and, eventually, two inform the next five-year strategic plan. Some topics that Mike expects to cover:

1. Career Development and Diversity Initiatives – How to incorporate this work into the Energy Trust workplace. Can Energy Trust build resiliency and redundancy for a stable and supportive workplace?
2. Budget process – We are looking toward sunset of SB1149. What types of strategies and considerations related to this do we need to entertain related to forecasted IRPs and potential budget discussions. Staff is working on a plan for external funding and anticipating associated challenges. How does Energy Trust become more resilient in the future?
3. Customer development approach utilizing market back strategies. To expand participation in Energy Trust programs, we must broaden our appeal to a wider audience.

4. Using a market-back approach could reveal new opportunities that may not have been forecast in a long range view.

Mike expects to include a proposal to assemble a pilot group of staff to perform initial training on market-back approaches over course of the year. Management Team will receive initial training beginning in January.

Discussion of Board Involvement in Energy Trust's Diversity Initiative
Board members have expressed a desire to be a more active participant and engage in the process of the Diversity Initiative implementation. Staff would like to convene a small group of Board members to participate in a workshop to educate, provide updates, and to examine baseline diversity measurements for Energy Trust employees, trade allies and customers. Board members involved would help structure a discussion to share work already started and anticipate outcomes to create a platform for ongoing diversity work. A core group of Board members will be identified to provide ongoing input on the diversity initiative and to attend the workshop. All Board members will be welcome to join the upcoming workshop.

Debbie reported on work already underway. Recruiting and retention strategies have already resulted in greater gender diversity in the IT group, bringing in interns from De LaSalle High School, added language for Request for Proposals (RFPs) for large contracts to give responses that include experience in working to reach diverse groups, and contracting with a diversity project manager at least through the end of 2016.

The Committee and staff discussed ways to engage the Board on an ongoing basis after the planned workshop. After some discussion of Board committee involvement, the group concluded that the most appropriate forum for Board involvement would be through the Policy Committee with an expectation of adopting a Board level policy to underpin the Diversity Initiative for the organization.

Other Updates
It was noted that there are some Board policies to be reviewed and developed in 2017.

Adjourn
The meeting adjourned at 4:30 pm. The next meeting of the Policy Committee is scheduled for January 26, 2017.

Tab 6

Renewable Energy Advisory Council Meeting Notes

November 16, 2016

Attending from the council:
Erik Anderson, Pacific Power
Bruce Barney, Portland General Electric
JP Batmale, Oregon Public Utility Commission
Kendra Hubbard, Oregon Solar Energy Industries Association
Suzanne Leta-Liou, SunPower
Adam Schultz, Oregon Department of Energy
Frank Vignola, Solar Monitoring, University of Oregon
Dick Wanderscheid, Bonneville Environmental Foundation
Jeni Hall
Mia Hart
Andy Hudson
Jed Jorgensen
Betsy Kauffman
Steve Lacey
Dave McClelland
Debbie Menashe
Joshua Reed
Gayle Roughton
Lizzie Rubado
Kenji Spielman
Peter West
Lily Xu

Attending from Energy Trust:
Amber Cole
Mike Colgrove
Chris Dearth
Sue Fletcher
Matt Getchell
Fred Gordon

Others attending:
Jeff Bissonnette, Oregon Solar Energy Industries Association
Alan Meyer, Energy Trust board
John Reynolds, Energy Trust board
Ethan Sprague, Kevala

1. Welcome, introductions and updates

Betsy Kauffman convened the meeting at 9:30 a.m. The agenda, notes and presentation materials are available on Energy Trust's website at: www.energytrust.org/About/public-meetings/REACouncil.aspx.

Jeff Bissonnette announced that Oregon Solar Energy Industries Association (OSEIA) is working on its Oregon Solar Business Plan to define the potential for growth in solar. The research and final report will be available in January 2017.

Lizzie Rubado announced that Energy Trust is working with Oregon Department of Energy and four other states to develop strategies to expand solar more effectively in low- and moderate-income communities, funded by a three-year grant from the U.S. Department of Energy. Energy Trust assembled a stakeholder working group to help inform this effort, including members from Portland General Electric, Pacific Power, Bonneville Environmental Foundation and Community Action Partnership of Oregon. Energy Trust is also participating in a second grant opportunity to support low-income solar strategies in Oregon that was awarded to Northwest SEED. We are coordinating with the Oregon Public Utility Commission on efforts that may intersect with the low-income participation requirement that is part of its community solar rulemaking docket (AR 603).

2. Kevala

Ethan Sprague presented on Kevala's energy systems mapping tool that improves visibility into the interaction between distributed energy resources and the grid. The energy analytics business focuses on smart mapping and data analytics to support energy decision making across the country, including their grid assessor tool used to reveal where demand and grid value for solar and storage potential are most beneficial and to lower the cost of solar deployment.

> Funded by a U.S. Department of Energy grant, Kevala is working with Energy Trust to map existing solar systems and overlay them with substations in Oregon. Energy Trust customer information will be protected. After the map is validated and tested for accuracy, Kevala will provide Energy Trust access to a platform that includes census data, demographics and air quality data in Oregon.

Bruce Barney: Without hard data, the load profile would vary and one outlier could impact load.
Ethan: Our approach is to build the best methodology that can be broadly applied and validated with field testing. We are working with utilities to determine load and tighten up the algorithm to be more accurate.

Alan Meyer: Kevala's work with California used wholesale rates. Will the map also use retail rates for Oregon customers?
Ethan: We can add retail rates. There's high demand for that feature.

John Reynolds: How do you stay current with changing information?
Ethan: It's a challenge. Our hope is that by serving all market participants, we have a broader and better perspective. As we interact with different market participants, they share information and we can refine for more accuracy.

Frank Vignola: Are you factoring in seasonality of systems?
Ethan: Several tools, like solar production profiles, are looking at meteorological events. We can load wind profiles by locations. Our hope is that people will start using the tool to assess projects, then tie in interconnection queues so we know when systems come online.

Betsy: The OPUC might find this tool helpful for its work on resource value of solar, but this isn't creating a parallel process to the resource value of solar docket or replicating the resource value of solar work. Specific numerical values that come out of resource value of solar work may eventually be used as inputs into the tool.
Suzanne Leta-Liou: The tool isn't just looking at retail value. Studies look at different scales of the market segment.
Ethan: Kevala will take whatever comes out of the OPUC dockets and include it in the tool.

Bruce: Are the utilities being asked for data?
Betsy: Energy Trust is providing the project information we have. If utilities want to provide more information, it would make the tool more robust.

Suzanne: In Oregon, there's a different dynamic in terms of distributed energy resources penetration. It would be great if utilities could partner with Energy Trust and Kevala to see what's possible, especially given the storage rulemaking docket (UM 1751), and encourage better collaboration given those dynamics. What is the purpose of Kevala's product for Energy Trust customers?
Ethan: Kevala is trying to bring transparency to distributed energy systems across the country. Mapping feeder lines and voltage alone is a huge benefit. Every market is different, but we think

we provide value to Oregon and solar developers. Energy Trust will help validate data, encouraging users to use the tool.
Betsy: The original concept for the collaboration was data visualization—to map 10,000 systems and see what we're doing and where. We're leveraging the federal grant money, and Energy Trust's contribution is in-kind. We can use the data to look at low- and moderate-income solar opportunity in Oregon and be more strategic with high-value locations, what we're doing and where we're going.
Jed Jorgensen: There are a lot of potential ways to design and site the hydropower systems associated with irrigation modernization, and this data could also support that decision making process.

JP Batmale: For how long does Energy Trust have access to the map?
Ethan: 18 months.

3. Solar trade ally rating system

Matt Getchell provided an overview of the new solar trade ally rating system. The three-star rating system was built off of the Existing Homes trade ally rating system with feedback incorporated from the OSEIA and other stakeholders. We have already provided a current star rating report to each solar trade ally to review before it becomes visible on the online Find a Contractor tool in February 2017. Ratings are refreshed quarterly and each report evaluates performance for the past year. One star can be awarded for each of the following categories: customer service, program service and quality service.

Suzanne: What if a contractor is new to Oregon?
Matt: Solar trade allies have a probation period of 10 active projects to give them an opportunity to understand the Oregon market. For new allies, we would have a conversation with the contractor before the rating is posted online.
Dave McClelland: If we have insufficient information to provide a rating for a contractor due to low project volume, it will show as "no rating" on the web.
Matt: Quarterly ratings also provide a gauge to see when contractors drop out the market.

Bruce: What if the ally has a recent complaint and isn't able to reconcile it before a new rating?
Matt: We would handle that situation on a case-by-case basis. We wouldn't penalize them if they haven't had an opportunity to address the complaint.

Bruce: How do you expect a customer to see a two-star rating?
Matt: We hope that the market will be self-policed. The rating is meant to motivate the ally. Feedback from contractors was overwhelmingly positive, and contractors were interested in learning how to improve their score.

JP: If customers can't see the distribution of stars across all trade allies, they won't have that context through the Find a Contractor tool.
Bruce: Are we going to allow customers to see how many allies have one to three stars?
Matt: We are not planning to show that to customers.
JP: I think customers should be able to see that breakout.

Dave: The Existing Homes program has been using the three-star rating system for years.
Dick: Has Existing Homes seen an increase in three-star allies since the rating began?
Sue Fletcher: I'm not sure, but my guess is that there has been some change.
Matt: Existing Homes also has a lot more trade allies in their network.

Alan: As an objective rating, I see value for consumers and trade allies. It seems like the rating shouldn't be paid for with ratepayer dollars, but funded by contractors. A trade ally rating service is broader than our original mission.
JP: Energy Trust is empowering customers and continuing to reduce soft costs, which helps reduce above-market costs. The OPUC sees the rating as completely in Energy Trust's purview as it benefits ratepayers.
Betsy: This is also part of our strategic plan of improving operations and processes, and one intent of the rating is to improve paperwork.

4. Update on 2017 budget and 2017-2018 action plan
Betsy provided an overview of adjustments made to the 2017 budget for renewable energy programs. There was one change that led to an 11-percent reduction in solar generation in Pacific Power territory. There are no large projects in Other Renewables scheduled for completion in 2017, meaning that we are largely running a standard program. There's less funding for solar, but that's offset by lower incentives allowing us to support more capacity per dollar. Project development assistance funding will be available, especially for irrigation modernization projects. Public comments on the renewables budget were largely supportive.

JP: What caused the reduction in Pacific Power territory?
Betsy: There was a miscalculation in the round one budget.

5. Public comment
There was no additional public comment.

6. Meeting adjournment
The next scheduled meeting of the Renewable Energy Advisory Council is on Wednesday, February 8, 2017, at 9:30 a.m.

PINK PAPER

Conservation Advisory Council Meeting Notes

November 16, 2016

Attending from the council:
Brent Barclay, Bonneville Power Administration
JP Batmale, Oregon Public Utility Commission
Holly Braun, NW Natural
Warren Cook, Oregon Department of Energy
Tony Galluzzo, Building Owners and Manager Association
Wendy Gerlitz, NW Energy Coalition
Charlie Grist, Northwest Power and Conservation Council
Julia Harper, Northwest Energy Efficiency Alliance
Andria Jacob, City of Portland
Don Jones, Pacific Power
Don MacOdrum, Home Performance Guild of Oregon
Brendon McCarthy, Portland General Electric
Lisa McGarity, Avista
Jeff Mitchell, Northwest Energy Efficiency Alliance
Tyler Pepple, Industrial Customers of Northwest Utilities
Allison Spector, Cascade Natural Gas

Attending from Energy Trust:
Mike Bailey
Tom Beverly
Amber Cole
Kim Crossman
Juliett Eck
Sue Fletcher
Fred Gordon
Mia Hart
Susan Jamison
Marshall Johnson
Corey Kehoe
Steve Lacey
Scott Leonard
Spencer Moersfelder
Thad Roth
Julianne Thacher
Peter West

Others attending:
Alan Meyer, Energy Trust board
Amanda Potter, CLEAResult
Bob Stull, CLEAResult

1. Welcome and introductions

Kim Crossman convened the meeting at 1:30 p.m. The agenda, notes and presentation materials are available on Energy Trust's website at: www.energytrust.org/About/public-meetings/CACMeetings.aspx.

2. Old business and announcements

Members approved previous meeting minutes. The draft schedule for 2017 was made available.

3. Update on 2017 budget and 2017-2018 action plan

Peter West presented Energy Trust's round 2 changes to the 2017 budget and 2017-2018 action plan.

Wendy Gerlitz: Did you receive comments directed at sectors about more savings than identified in the budget? I'm wondering if that can be highlighted.
Amber Cole: We are still summarizing the comments, but I don't recall seeing that theme.
Wendy: I'm thinking of indoor agriculture and lost opportunities.

Peter West: We have completed 24 indoor agriculture projects, and its part of our action plan to accelerate in that area.

> As we look at the budget, keep in mind that our current economic recovery is different from other recoveries. Portland is a cheap and convenient location compared to Seattle and San Francisco. This draws more people and businesses to move to the area, including the high-tech software sector.
>
> Energy Trust's reserves exist to cover changes. Reserves ensure we can still get savings when savings exceed expectations, such as in an economic boom. We try to set reserves between 3 and 10 percent depending on the utility. The more variable the service area for savings, the more reserves are needed.

Brendon McCarthy: of the total $95 or $98 million request for PGE, how much is for reserves?
Peter: We are targeting a reserve of 2 percent for PGE.
Steve Lacey: We will be at about $4 million at the end of 2017, and we are working it down.

Wendy: Is there a board policy about the reserve level we should have at any given time? What are the guiding principles behind that decision?
Peter: We do have a written policy on using reserves.
Steve: It's a negotiation between Energy Trust and the utilities. Some utilities need more and some less. The spread was 2 to 10 percent.

Brendon: Does rebuilding the reserves have a big influence on the budget request?
Peter: We made a decision to bring down the reserves, and we asked the utilities for less money and used excess reserves to cover the full amount needed to get the savings we have achieved in the past few years. Now, with the reserves depleted, we need the revenue budgeted to meet the savings goals for 2017. We don't have reserves to cover part of the budget, so the budget this year is larger than in the past.

Brendon: So you don't intend to rebuild the reserves. Is the request more about the economy changing and that you've already spent the reserve?
Peter: That's correct. If we don't ask for the full amount, we would have to cut savings forecasts.

Don MacOdrum: In 2013, were the reserves 38 percent of expenses?
Kim Crossman: Here's an example of how that happens: 2013 was an anomalous year for Production Efficiency. We had big projects and cheap savings relative to the historical costs we used to budget. Strategic Energy Management (SEM) was far more successful than we expected. So, we saved more energy at a lower cost than expected, which led to carryover.
Peter: Production Efficiency and SEM were contributors, but there were multiple sources.

Wendy: We felt this information was missing in earlier materials, and it is important context. This should be shared with a broader audience than this committee. The reason the reserves were built up to begin with was that Energy Trust obtained a lot of savings at lower costs than planned. It's important for people to understand that this is a positive story. You saved people a lot of money, but now it's spent out. In the end, it's a great thing for everyone.
Peter: As much as we want our programs steadily acquiring savings, we also want steady revenue collection.

Charlie Grist: This looks like a management cash flow projection. You are always going to have lumpiness from multiple sources. If you can learn how wrong your forecasts can be, you can

perhaps temper that reserve. If you can get a scale, like how fast the economy rebounded, you can do better.
Peter: Agreed. You have to look at your process. This is an extreme event perhaps, and we don't want to replicate it.

JP Batmale: So it sounds like the lesson isn't about trying to improve revenue forecasting. Is it more about savings?
Peter: Our forecast seems pretty accurate within the current year and first year of the budget, but the second year of the budget isn't as accurate. When we forecasted 2017 in 2015, it wasn't what you see now. The variances in the second year and how we communicate these variabilities and uncertainties need attention.

Alan: Reducing reserves was intentional, but happened faster than expected.
Peter: Yes. Substantial shifts can happen. The action plan lays out that we will monitor savings and spending in multiple ways. For example, lighting savings in 2018 will be dependent on what we learn in 2017.

Don Jones: Have you gone back and compared your revenue to our revenue forecasts sis?
Peter: Once we set the revenue asks, we will.
Don Jones: The revenue is within 1 percent of your projections. It's a challenge to set forward-looking revenue.

Peter: Revenue over the last two years was close to predictions. Prior to 2015, there were years when revenue varied more.

Brendon: Did you spend more on what you acquired than you planned? Reserves seemed to all disappear suddenly.
Peter: When we decided to spend down reserves between 2014 and 2017, the economic recovery was not expected to be as strong as it has been. The 2016 budget was larger, and we saved more energy than expected. The utilities were surprised, and we learned that we could have communicated with them more effectively.
Don Jones: Pacific Power increased collections, and had hoped to get through 2017 without another ask. It doesn't look like that will happen.
Charlie: It's like managing things based on hydroelectric production. You have a minimum impound behind a dam, and the snow is variable. You have a negotiated settlement here, but having some known boundaries on it would limit surprises.

Don MacOdrum: How do you define transport customers for natural gas?
Lisa McGarity: A transport customer purchases their own gas but uses our pipelines to move it.

Charlie: These budgets look at measures and programs. Do they look at reserves?
Peter: These are the savings and expenditure side. The budget doesn't include reserves and is what we need to reach these savings numbers.

Spencer Moersfelder: We have historically reported net savings. Beginning in 2017, we will also report gross savings. Gross savings are important to the utilities because they reflect the savings they see at the generator. The OPUC requested that Energy Trust report on gross savings in 2017. It aligns with regional and national reporting, along with meeting utility needs. It shows all savings we see regardless of if we deem them to be free riders later. Free riders are program participants who would have done the measures regardless of us or our incentives. They still receive an incentive, but they would have done the work anyway.
JP: There are other factors involved.

Kim: Technical realizations are in the first number.
JP: Gross shows what was achieved beyond free ridership.
Spencer: Engineering realization rates are factored into gross.

Alan: As an example, if you save 100 units, and after adjustments it decreases to 90, would this new way of reporting mean that you report 90 either way? If free riders brought it to 80, you used to report that. Now you won't?

Allison Spector: You also have people who don't file for incentives but did the work. Do you factor that in?
Spencer: We call that spillover, but it is not included in gross savings. It's a matter of definition. We are using a nationally accepted standard, which doesn't include spillover.

Kim: Both spillover and free ridership are part of market effects, which are all in net. Neither of those categories are in gross. Is that right?
Spencer: Free riders and spillover aren't in gross. Realization rates are in gross.

Peter: The impact evaluation and technical realization rate both take into account baselines and changes in how equipment is used over time.

Tyler Pepple: How do you identify the amount of spillover?
Spencer: We look at impact evaluations. We get information from customers, non-participants and national studies.

Tyler: Is spillover defined as people who took an action but didn't claim an incentive?
Spencer: Spillover describes are customers who were influenced to take action because we are in the market. These customers didn't receive an incentive.

Alan Meyer: This is a topic at the evaluation committee. We can determine free ridership because they used our program. Spillover is harder to judge because they didn't use our program. We don't know who they are.

Allison: I wonder if there are similar strategies in how market transformation is quantified.

Charlie: This is a good move to reporting gross. A lot of money can be spent trying to quantify these things that are very hard to quantify. It's important to look at overall market uptake outside of programs. Lighting is the poster child. We should look at what's going on in the marketplace.
Spencer: We are taking note of retail lighting, and helping our utility partners make adjustments based on baselines.

Allison: It's great you are going in this direction.

Holly: Are you moving to gross only, or showing both?
JP: Showing both.

Holly: I've wondered if maybe the notion of free riders is narrow or misguided. Because you are here, contractors do advertising and install measures. They wouldn't have advertised without the incentive, so the customer might not have understood that we made them act. But the contractor acted because of you. This is more of a full market picture.
Don MacOdrum: We know a little of that is going on in terms of wall and floor insulation right now. Incentives are low, but the signal from Energy Trust is that it's something good to do. Going back to the idea of spillover in the introduction to reporting gross savings, the number is

related to what utilities are generating. Spillover also means the generators are generating less, so savings are higher. We should have that number just as much as gross. The delta is important in terms of forecasting.
Peter: On one level it makes sense to include spillover. What Spencer presented conforms to some regional definitions of gross savings. Spillover doesn't change the needle much.
Fred Gordon: Where we can forecast a baseline and we can show a market shift or cause, we call it market transformation. Our estimates tend to be conservative when people didn't participate but they tell us they installed efficiency measures. It's difficult to know what they installed, what it saved and if it's in our territory.

Holly: In the presentation, is Washington marked N/A because we only report gross up there?
Peter: Yes.

Don Jones: We appreciate you reporting both.

Warren Cook: Where along the savings realization adjustment factor (SRAF) continuum is levelized cost calculated?
Spencer: Levelized cost is typically calculated using net savings.

Wendy: I also wanted to announce that the NW Energy Coalition Fall Conference is tomorrow at the Doubletree Hotel in Portland.

4. Residential sector assessment project
Thad provided a brief overview of the residential assessment project, and asked for input from Conservation Advisory Council members.

Don MacOdrum: Are there time limits for OPUC exceptions like wall and floor insulation?
JP: It varies by measure, but the baseline is about two years.

Brent Barclay: With Bonneville Power Administration, there are some similarities in consolidation of services. There could be potential gains from consolidating duplicative activities. However, relying on a single program management contract increases risk if something goes wrong.

Warren Cook: What kind of benchmarking did you do? Using a really wide net in benchmarking other programs will be helpful because other programs could teach us something.
Marshall Johnson: As part of an Existing Homes evaluation, we are asking evaluators to look at the top 10 American Council for an Energy-Efficient Economy (ACEEE) states for energy efficiency. Who are the leaders and how did we rank compared to them? The policy environment may be different, so it's not a perfect comparison. We've looked at utilities thinking of consolidating their residential programs. We've found that there is a trend toward consolidation.

Allison: It would be helpful to see scenarios mapped out with options, costs, pros and cons.

Lisa: With the explosion of Home Performance contractors, Avista has seen costs skyrocketing. Invoices are lumped together so it's hard to break costs out. American Recovery and Reinvestment Act funding is also part of it.

JP: I appreciate the professionalism of your team to bring this issue forward for discussion. It would be nice to have some scenarios. Warren brought up a good point about ACEEE at the

last meeting, and why we would be number five in rankings instead of seven. What does it mean to increase flexibility to target new opportunities?
Thad: We have been developing measures across multiple programs for about two years, including Nest thermostats and midstream water heating. It adds complexity to try and advance things across multiple PMCs or programs.

Marshall: We currently manage annual contracts, expenditures and benefits for three programs. Between 2014 and 2015, we developed an incentive for smart thermostats through Existing Homes and Products programs. We have a program manager for each program. There might be a better way to streamline oversight of contracting and measure development.

Julia Harper: Could you break the program into products versus services? For a product, the supply chain channel would be pretty similar whether purchased or put in a new home. Services cross boundaries between new and existing homes.
Thad: Would that be New Homes and another program that accommodates retail and Existing Homes approaches?
Julia: You need New Homes to deal with builders, but everything else splits into products or services. A product isn't unique to a builder.
Thad: Is there a necessity to have a unique contract and is that the best way to capture those savings, or could it work with a single PMC?
Julia: I don't know enough about your work with PMCs to have a strong opinion. I think of supply channels, but your contractors may work with both of them seamlessly.

Marshall: Each program portfolios rolls up into a single sector portfolio. We encourage cross-program referrals. You can sort customers by serving a builder or resident, shopper, multifamily resident, load profiles, technologies and other ways. We are trying to deliver in the most efficient way possible.

JP: Do you see the possibility of following the renewable energy and industrial sectors by making program management internal? Maybe you have a Program Delivery Contractor (PDC) contract to allow more ability to move things around. PMCs work well, but PDCs would allow more direct control. A PDC implements but you design. A PMC implements and designs.
Thad: We have looked at that and how we could use a PDC for targeted expertise. It does help spread the risk. We are still trying to define what role they would play. In the mapping described earlier, it was compelling that there was a lot of work we do with each PMC that is consistent. We want their capacity to deliver services, like field services. That's part of our consideration with this model. With a single PMC, we would expect a need for additional technical resources.

Brendon: There are people meeting about energy efficiency initiatives for the 2017 legislative session. One idea is to bolster codes and standards. We are going into an environment where we mandate and adopt a reach code. That may shrink acquisition even more. The Residential Energy Tax Credit is set to expire and it's not in the governor's budget to be extended. Given the failure of Measure 97, it may not be renewed.

Don MacOdrum: As structures get considered, we don't have any strong feelings about consolidating under one PMC. That's up to you to manage. If you want trade allies to continue helping deliver savings and be true allies, you need to maintain that they are special compared to other contractors in terms of what they can sell homeowners. Maybe you still have a business development fund and logo, but the trade allies don't necessarily have as many excuses to discuss Energy Trust with customers. If all incentives get buried upstream, it undermines the relationship with trade allies.

Thad: There are some opportunities related to the challenges we are facing. Relationships with customers remain our top priority and will be top of mind as we make program delivery decisions. We have to demonstrate our ability to drive customers to make efficient decisions.

Brent: Another thought is stepping back asking the service providers to tell us what they can do. A performance contract would be a possibility. Think of the sector as a meter.
Marshall: A request for proposals does encourage that, but you have to know that what's on paper can be done to our standards. Pay-for-performance may be good, but you have to think about free riders and spillover.

Brent: Bonneville Power Administration is thinking about how we define commercial versus residential. The program delivery mechanism may be one and the same. Maybe don't constrain this to what's in the residential sector now.

Holly: If the goal is to get all homes up to a certain level of performance, and the City of Portland's proposed home energy scoring requirement passes, it's for listing purposes. If you use that same mechanism and tie the incentive to a score, it may move the market up. You can measure how many homes are at a certain level each year and make that the goal. I applaud you for taking on this exercise.

Thad: We do need to go for bid, but do we take advantage of going to bid to make the changes? That's the feedback we're looking for. There are risks because of issues beyond our control. We've tried to identify the risks. We are taking a five-year look instead of a one- or two-year budget look. We have to be conscious of anticipating and managing opportunities. How do we use our PMCs to that end? Please email me directly with additional feedback. The next update on this will be at the February 2017 Conservation Advisory Council meeting.

5. Public comment
Don MacOdrum: Portland is exploring a home energy score ordinance using a scoring tool. It is going to city council on November 23. The policy is modeled from pilots that have been done in Berkeley, Austin and with Energy Trust. This is built from all of them and well designed.
Warren Cook: Home energy scoring could be a shot in the arm for the residential sector. New Homes and Existing Homes contractors aren't talking to each other, but this could cross programs. A combined management contractor could see both sides.

JP: A report came out this summer regarding mandatory scoring driving more energy efficiency to improve scores.
Thad: Would that forecast more work for us?
Holly: What we've done is push people to voluntarily do projects. You might not need as many incentives if it's being pulled instead of pushed.
Marshall: It could drive more awareness for higher-cost measures like insulation.

Tyler: How do you get a home energy score? Who pays for it?
Don MacOdrum: It's similar to a home inspection or radon test. The cost is estimated to be about $200.
Warren: Home inspections are performed by a licensed assessor through the state.

Holly: Attendees need to be ready to testify, but letters are welcome.

6. Meeting adjournment
The next scheduled meeting of the Conservation Advisory Council will be on February 8, 2017 at 1:30 p.m.

Tab 7

Glossary of Terms Related to Energy Trust of Oregon's Work

Glossary provided to the Energy Trust Board of Directors for general use. Definitions and acronyms are compiled from a variety of resources. Energy Trust policies on topics related to any definitions listed below should be referenced for the most current and comprehensive information. Last updated December 2016.

Above-Market Costs of New Renewable Energy Resources
The portion of the net present value cost of producing power (including fixed and operating costs, delivery, overhead and profit) from a new renewable energy resource that exceeds the market value of an equivalent quantity and distribution (across peak and off-peak periods and seasonally) of power from a nondifferentiated source, with the same term of contract. Energy Trust board policy specifies the methodology for calculating above-market costs. *Reference the Board Cost-Effectiveness Policy and General Methodology*

Aggregate
Combining retail electricity consumers into a buying group for the purchase of electricity and related services. "Aggregator" is an entity that aggregates.

Air Sealing
Conservation measures, such as caulking, efficient windows and weatherstripping, which reduce the amount of cold air entering or warm air escaping a building.

Ampere (Amp)
The unit of measure that tells how much electricity flows through a conductor. It is like using cubic feet per second to measure the flow of water. For example, a 1,200 watt, 120-volt hair dryer pulls 10 amperes of electric current (watts divided by volts).

Anaerobic Digestion
A biochemical process by which organic matter is decomposed by bacteria in the absence of oxygen, producing methane and other byproducts.

Average Megawatt (aMW)
One megawatt of capacity produced continuously over a period of one year. 1 aMW equals 1 megawatt multiplied by the 8,760 hours in a year. 1 aMW equals 8,760 MWh or 8,760,000 kWh.

Avoided Cost
(Regulatory) The amount of money that an electric utility would need to spend for the next increment of electric generation it would need to either produce or purchase if not for the reduction in demand due to energy-efficiency savings or the energy that a co-generator or small-power producer provides. Federal law establishes broad guidelines for determining how much a qualifying facility (QF) gets paid for power sold to the utility.

Base Load
The minimum amount of electric power delivered or required over a given period of time at a steady rate.

Benefit/Cost Ratios
By law, Oregon public purpose funds may be invested only in cost-effective energy-efficiency measures—that is, efficiency measures must cost less than acquiring the energy from conventional sources, unless exempted by the OPUC. Energy Trust ensures investment in cost-effective energy efficiency by using the Total Resource Cost Test benefit/cost ratio and the Utility Cost Test benefit/cost ratio. Together, the tests assess the value of the energy-efficiency investment compared to a utility supplying the same amount of energy and determine whether energy efficiency is the best energy buy for a utility and for all utility customers.

Energy Trust calculates benefit/cost ratios on a prospective and retrospective basis. Looking forward, all prescriptive measures and custom projects must have a total resource cost test BCR > 1.0 unless the OPUC has approved an exception. As required in the OPUC grant agreement, Energy Trust reports annually how cost-effective programs were by comparing total costs to benefits, which also need to exceed 1.0.

Biomass
Solid organic wastes from wood, forest or field residues which can be heated to produce energy to power an electric generator.

Biomass Gas
A medium Btu gas containing methane and carbon dioxide, resulting from the action of microorganisms on organic materials such as a landfill.

British Thermal Unit (Btu)
The standard measure of heat energy. The quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature at which water has its greatest density (approximately 39 degrees Fahrenheit).

Cogeneration (Combined Heat and Power, CHP)
The sequential production of electricity and useful thermal energy, often by the recovery of reject heat from an electric generating plant for use in industrial processes, space or water heating applications. Conversely, may occur by using reject heat from industrial processes to power an electricity generator. *Reference the Board Combined Heat and Power Policy*

Compact Fluorescent Light Bulb (CFL)
CFLs combine the efficiency of fluorescent lighting with the convenience of a standard incandescent bulb. There are many styles of compact fluorescent, including exit light fixtures and floodlights (lamps containing reflectors). CFLs are designed for residential uses; they are also used in table lamps, wall sconces, and hall and ceiling fixtures of hotels, motels, hospitals and other types of commercial buildings with residential-type applications.

Conservation
While not specifically defined in the law or OPUC rules on direct access regulation, “conservation” is defined in the OPUC rule 860-027-0310(1)(a) as follows: Conservation means any reduction in electric power or natural gas consumption as the result of increases in efficiency of energy use, production or distribution. Conservation also includes cost-effective fuel switching.

Although fuel switching is part of the definition, this aspect of the rule has not been operationalized as of March 2013.

Cost Effective
The OPUC has a definition that refers to ORS 469.631 (4) stating that an energy resource, facility or conservation measure during its lifecycle results in delivered power costs to the ultimate consumer no greater than the comparable incremental cost of the least-cost alternative new energy resource, facility or conservation measure. Cost comparison under this definition shall include but not be limited to: (a) cost escalations and future availability of fuels; (b) waste disposal and decommissioning cost; (c) transmission and distribution costs; (d) geographic, climatic and other differences in the state; and (e) environmental impact. ORS 757.612 (4) (SB 1149) exempts utilities from the requirements of ORS 469.631 to 469.645 when the public purpose charge is implemented.

By law, Oregon public purpose funds may be invested only in cost-effective energy-efficiency measures—that is, efficiency measures must cost less than acquiring the energy from conventional sources, unless exempted by the OPUC. *Reference the Board Cost-Effectiveness Policy and General Methodology*

Cumulative Savings
Sum of the total annual energy savings over a certain time frame while accounting for measure savings “lives.” (For example, if a measure is installed for each of two years, the cumulative savings would be the sum of the measure installed in the first year, plus the incremental savings from the savings installed in the second year plus the savings in the second year from the measure installed in the first year.)

Decoupling
A rate provision which reduces or eliminates the degree to which utility profits are driven by the volume of electricity or gas sold. Decoupling is thought by its proponents to reduce utility disincentives to support efficiency. There are many specific variants employed in different states and with different utilities.

Demand Response
A load management strategy, it is the reduction in electricity consumption by end-use customers from their normal pattern of consumption during times of peak energy use, when wholesale electricity prices are high and/or when system reliability is jeopardized. Customers are often compensated for participating in demand response programs.

Direct Access
The ability of a retail electricity consumer to purchase electricity and certain ancillary services from an entity other than the distribution utility.

Economizer Air
A ducting arrangement and automatic control system that allows a heating, ventilation and air conditioning (HVAC) system to supply up to 100 percent outside air to satisfy cooling demands, even if additional mechanical cooling is required.

Energy Management System (EMS)
A system designed to monitor and control building equipment. An EMS can often be used to monitor energy use in a facility, track the performance of various building systems and control the operations of equipment.

ENERGY STAR®
ENERGY STAR is a joint Environmental Protection Agency and Department of Energy program that encourages energy conservation by improving the energy efficiency of a wide range of consumer and commercial products, enhancing energy efficiency in buildings and promoting energy management planning for businesses and other organizations.

Energy Use Intensity (EUI)
A metric that describes a building's energy use relative to its size. It is the total annual energy consumption (kBtu) divided by the total floor space of the building. EUI varies significantly by building type and by the efficiency of the building.

Enthalpy
Enthalpy is the useful energy or total heat content of a fluid. Ideally, the total enthalpy of a substance is the amount of useful work that substance can do. Enthalpy is used in fluid dynamics and thermodynamics when calculating properties of fluids as they change temperature, pressure and phase (e.g. liquid to liquid-vapor mixture). In HVAC, refrigeration and power cycle processes, enthalpy is used extensively in calculating properties of the refrigerant or working fluid. Additionally, in HVAC applications, enthalpy is used in calculations relating to humidity. An enthalpy economizer is a piece of HVAC equipment that modulates the amount of outdoor air entering into a ventilation system based on outdoor temperature and humidity.

Environmental Protection Agency (EPA)
Founded in 1970, this independent agency was designed to "protect human health and safeguard the natural environment." It regulates a variety of different types of emissions, including greenhouse gases emitted in energy use. It runs several national end-use programs, like ENERGY STAR, SmartWay, Smart Growth programs and green communities programs.

Evaluation
After-the-fact analysis of the effectiveness and results of programs. *Process and Market Evaluations* study the markets to be addressed and the effectiveness of the program strategy, design and implementation. They are used primarily to improve programs. *Impact evaluations* use post-installation data to improve estimates of energy savings and renewable energy generated.

Feed-in Tariff
A renewable energy policy that typically offers a guarantee of payments to project owners for the total amount of renewable electricity they produce, access to the grid and stable, long-term contracts. In Oregon, the pilot program was called the Volumetric Incentive Rate program and each investor-owned utility in the state ran separate programs. Solar systems receiving a feed-in tariff rate were not eligible for Energy Trust incentives or a state tax credit.

Footcandle
A unit of illuminance on a surface that is one foot from a uniform point source of light of one candle and is equal to one lumen per square foot

Free Rider
This evaluation term describes energy efficiency program participants who would have taken the recommended actions on their own, even if the program did not exist. Process evaluations include participant survey questions, which lead to the quantification of the level of free rider impacts on programs that is applied as a discounting factor to Energy Trust reported results.

Geothermal
Useful energy derived from the natural heat of the earth as manifested by hot rocks, hot water, hot brines or steam.

Gross Savings
Gross savings represent all savings from program participants, regardless of whether they are free riders. Energy Trust reports all savings in net terms, not gross terms, unless otherwise stated in the publication.

Heat Pump
An HVAC system that works as a two-way air conditioner, moving heat outside in the summer and reusing heat from the cold outdoors with an electrical system in the winter. Most systems use forced warm-air delivery systems to move heated air throughout the house.

Heating, Ventilation and Air Conditioning (HVAC)
Mechanical systems that provide thermal comfort and air quality in an indoor space. They are often grouped together because they are generally interconnected. HVAC systems include central air conditioners, heat pumps, furnaces, boilers, rooftop units, chillers and packaged systems.

Hydroelectric Power (Hydropower)
The generation of electricity using falling or pressurized water to turn turbo-electric generators.

Incremental Annual Savings
Energy savings in one year corresponding to the energy-efficiency measures implemented in that same year.

Incremental Cost
The difference in cost relative to a base case, including equipment and labor cost.

Instant-savings Measure (ISM)
Inexpensive energy-efficiency products installed at no charge, such as LEDs, low-flow showerheads, high-performance faucet aerators and advanced power strips. Predominately used by the Existing Homes program and multifamily track to provide homeowners and renters with easy-to-install, energy-saving products.

Integrated Resource Planning (Least-Cost Planning)
A power-planning strategy that takes into account all available and reliable resources to meet current and future loads. This strategy is employed by each of the utilities served by Energy Trust, and for the region's electric system by the Northwest Power and Conservation Council. The term "least-cost" refers to all costs, including capital, labor, fuel, maintenance, decommissioning, known environmental impacts and difficult to quantify ramifications of selecting one resource over another.

Interconnection
For all distributed generation—solar, wind, combined heat and power, fuel cells, etc.—interconnection with the local electric grid provides back-up power and an opportunity to participate in net-metering and sell-back schemes when they are available. It's important to most distributed generation projects to be interconnected with the grid, but adding small generators at spots along an electric grid can produce a number of safety concerns and other operational issues for a utility. Utilities, then, generally work with their state-level regulatory

bodies to develop interconnection standards that clearly delineate the manner in which distributed generation systems may be interconnected.

Joule
A unit of work or energy equal to the amount of work done when the point of application of force of 1 newton is displaced 1 meter in the direction of the force. It takes 1,055 joules to equal a Btu. It takes about 1 million joules to make a pot of coffee.

Kilowatt
One thousand (1,000) watts. A unit of measure of the amount of electricity needed to operate given equipment.

Large Customers (with reference to SB 838)
Customers using more than 1 aMW of electricity a year are not required to pay electric conservation charges under SB 838. Includes commercial and industrial customers. Additionally, Energy Trust may not provide them with services funded under SB 838 provisions.

LEDs
LEDs, or light–emitting diodes, are semiconductor devices that produce visible light when an electrical current passes through them. LEDs are a type of solid-state lighting. ENERGY STAR qualified LEDs use up to 85 percent less energy than incandescent bulbs and maintain a constant, well-distributed light output over their entire rated lifetime. While incandescent and fluorescent bulbs emit light in all directions, LEDs can emit light in a specific direction, increasing efficiency and effectiveness by only producing light where it's needed. LEDs are suited for a variety of uses, including indoor and outdoor spaces in residential and commercial buildings.

Least Cost
The term "least cost" refers to all costs, including capital, labor, fuel, maintenance, decommissioning, known environmental impacts and difficult to quantify ramifications of selecting one resource over another.

Levelized Cost
The level of payment necessary each year to recover the total investment and interest payments (at a specified interest rate) over the life of a measure.

Load Management
The process of structuring and/or scheduling the use of energy among a group of customers to best match demand to available supplies. It includes a variety of strategies that either reduce the demand for energy at peak times or shift the energy use to periods of lower demand.

Local Energy Conservation
Conservation measures, projects or programs that are installed or implemented within the service territory of an electric company.

Low-income Weatherization
Repairs, weatherization and installation of energy-efficient appliances and fixtures for low-income residences for the purpose of enhancing energy efficiency. In Oregon, SB 1149 directs a portion of public purpose funds to Oregon Housing and Community Services to serve low-income customers. Energy Trust coordinates with low-income agencies and refers eligible customers.

Lumen
A measure of the amount of light available from a light source equivalent to the light emitted by one candle.

Lumens/Watt
A measure of the efficacy of a light fixture; the number of lumens output per watt of power consumed.

Market Transformation
Lasting structural or behavioral change in the marketplace and/or changes to energy codes and equipment standards that increases the adoption of energy-efficient technologies and practices. Market transformation is defined in the Oregon Administrative Rules.

Megawatt
The electrical unit of power that equals one million watts (1,000 kW).

Megawatt Hour
One thousand kilowatt hours, or an amount of electrical energy that would power approximately one typical Oregon household for one month. (Based on an average of 11,600 kWh consumed per household per year.)

Methane
A light hydrocarbon that is the main component of natural gas and marsh gas. It is the product of the anaerobic decomposition of organic matter, enteric fermentation in animals and a greenhouse gas.

Monitoring, Targeting and Reporting (MT&R)
A systematic approach to measure and track energy consumption data by establishing a baseline in order to establish reduction targets, identify opportunities for energy savings and report results.

Municipal Solid Waste
Refuse offering the potential for energy recovery. Technically, residential, institutional and commercial discards. Does not include combustible wood by-products included in the term “mill residue.”

Net Metering
An electricity policy for consumers who own (generally small) renewable energy facilities (such as wind, solar power or home fuel cells). "Net," in this context, is used in the sense of meaning "what remains after deductions.” In this case, the deduction of any energy outflows from metered energy inflows. Under net metering, a system owner receives retail credit for at least a portion of the electricity they generate.

Net-to-Gross
Net-to-gross ratios are important in determining the actual energy savings attributable to a particular program, as distinct from energy efficiency occurring naturally (in the absence of a program). The net-to-gross ratio equals the net program load impact divided by the gross program load impact. This factor is applied to gross program savings to determine the program's net impact.

Net Savings
Savings that are adjusted for evaluation factors of free riders, spillover and savings realization rates. Energy Trust reports all savings in net terms, not gross terms, unless otherwise stated in the publication.

Nondifferentiated Source (Undifferentiated Source)
Power available from the wholesale market or delivered to retail customers.

Non-energy Benefit (NEB)
The additional benefits created by an energy-efficiency or renewable energy project beyond the energy savings or production of the project. Non-energy benefits often include water and sewer savings (e.g. clothes washers), improved comfort (e.g. air sealing, windows), sound deadening (e.g. insulation, windows), property value increase (e.g. windows, solar electric), improved health and productivity and enhanced brand.

Oregon Public Utility Commission (OPUC)
Energy Trust operates under a grant agreement with the OPUC and reports quarterly and annually to the state agency. Reports include quarterly presentations to the commission and an annual update on progress to OPUC minimum annual performance measures. The OPUC is a state agency that regulates, among others, investor-owned utilities operating in the state with a protected monopoly to supply power in assigned service territories.

Path to Net Zero
Offer that provides increased design, technical assistance, construction, and measurement and reporting incentives to new commercial construction projects that aim to exceed energy code by 40 percent through a combination of energy-efficiency and renewable energy features.

Pay for Performance
Provides commercial customers incentives for capital and operations and maintenance improvements over a multiyear period to help achieve additional energy savings for more comprehensive projects.

Photovoltaic
Direct conversion of sunlight to electric energy through the effects of solar radiation on semi-conductor materials. Photovoltaic systems are one type of solar system eligible for Energy Trust incentives.

Program Management Contractor (PMC)
Company Energy Trust contracts with to deliver and implement a program or major program track. PMCs keeps costs low for utility customers, draw from existing expertise and skills in the market, and allow Energy Trust to remain flexible and nimble as the market changes. PMC contracts are competitively selected, reviewed by a committee with internal staff and external representatives, and approved by the board.

Program Delivery Contractor (PDC)
Company Energy Trust contracts with to implement a specific program track. PDCs keeps costs low for utility customers, draw from existing expertise and skills in the market, and allow Energy Trust to remain flexible and nimble as the market changes. PDC contracts are competitively selected, reviewed by a committee with internal staff and external representatives, and approved by the board.

Public Purpose Charge
Established in SB 1149, the public purpose charge is a 3 percent charge from PGE and Pacific Power Oregon customers. Three fund administrators distribute the ratepayer dollars: Energy Trust of Oregon for energy efficiency, market transformation and renewable energy programs; the Oregon Department of Energy for energy efficiency in schools; and Oregon Housing and Community Services for low-income weatherization and housing assistance. Energy Trust is funded through the public purpose charge (SB 1149), supplemental funding (SB 838) and contracts with three gas utilities.

Public Utility Commissions
State agencies that regulate, among others, investor-owned utilities operating in the state with a protected monopoly to supply power in assigned service territories.

Public Utility Regulatory Act of 1978 (PURPA)
Federal legislation that requires utilities to purchase electricity from qualified independent power producers at a price that reflects what the utilities would have to pay for the construction of new generating resources. The Act was designed to encourage the development of small-scale cogeneration and renewable resources.

Qualifying Facility (QF)
A power production facility that generates its own power using cogeneration, biomass waste, geothermal energy, or renewable resources, such as solar and wind. Under PURPA, a utility is required to purchase power from a QF at a price equal to that which the utility would otherwise pay to another source, or equivalent to the cost if it were to build its own power plant.

Renewable Energy Certificates (REC)
A Renewable Energy Certificate is a tradable commodity that represents the contractual rights to claim the environmental attributes of a certain quantity of renewable electricity. The environmental attributes include the reductions in emissions of pollutants and greenhouse gases that result from the delivery of the renewably-generated electricity to the grid.

Here’s how emission reductions occur: When a renewable energy system generates electricity, the grid operators allow that electricity to flow into the grid because it is less expensive to operate, once it has been built, than generators that burn fossil fuels. But the electricity grid cannot have more electricity flowing into it than is flowing out to electricity users, so the grid operators have to turn down other generators to compensate. They generally turn down those that burn fossil fuels. By forcing the fossil fuel generators to generate less electricity, the renewable energy system causes them to generate fewer emissions of pollutants and greenhouse gases. These reductions in emissions are the primary component of RECs.

RECs were developed as a separate commodity by the energy industry to boost construction of new wind, solar, landfill gas and other renewable energy power plants. RECs allow owners of these power plants to receive the full value of the environmental benefits their plants generate. They also allow consumers to create the same environmental benefits as buying green electricity, or to neutralize the pollution from their consumption of fossil fuels.

RECs are bought and sold every day in the electricity market. They are measured in units, like electricity. Each kilowatt hour of electricity that a renewable energy system produces also creates a one-kilowatt hour REC. *Reference the Board Renewable Energy Certificate Policy*

Renewable Energy Resources

a) Electricity-generation facilities fueled by wind, waste, solar or geothermal power or by low-emission nontoxic biomass based on solid organic fuels from wood, forest and field residues
b) Dedicated energy crops available on a renewable basis
c) Landfill gas and digester gas
d) Hydroelectric facilities located outside protected areas as defined by federal law in effect on July 23, 1999

Renewable Portfolio Standard

A legislative requirement, including in Oregon, for utilities to meet specified percentages of their electric load with renewable resources by specified dates, or a similar requirement. May be referred to as a Renewable Energy Standard.

Retrofit

A retrofit involves the installation of new, usually more efficient equipment into an existing building or process prior to the existing equipment's failure or end of its economic life. In buildings, retrofits may involve either structural enhancements to increase strength, or replacing major equipment central to the building's functions, such as HVAC or water heating systems. In industrial applications, retrofits involve the replacement of functioning equipment with new equipment.

Roof-top Units (RTU)

Packaged heating, ventilating and air conditioning unit that generally provides air conditioning and ventilating services for zones in low-rise buildings. Roof-top units often include a heating section, either resistance electric, heat pump or non-condensing gas (the latter are called “gas-paks”). Roof-top units are the most prevalent comfort conditioning systems for smaller commercial buildings. Generally small (<10 ton) commodity products, but very sophisticated high-efficiency versions are available, as are units larger than 50 tons.

R-Value

A unit of thermal resistance used for comparing insulating values of different material. It is basically a measure of the effectiveness of insulation in stopping heat flow. The higher the R-Value number for a material the greater its insulating properties and the slower the heat flow through it. The specific value needed to insulate a home depends on climate, type of heating system and other factors.

SB 1149

Oregon legislation enacted in 1999 allowing for the creation of a third party, nonprofit organization to receive approximately 74 percent of a 3 percent utility surcharge (public purpose charge) and deliver energy-efficiency and renewable energy programs to the funding Oregon ratepayers of Portland General Electric and Pacific Power. Energy Trust was approved by the OPUC to deliver the services. The rest of the surcharge is distributed to school districts through the Oregon Department of Energy and to low-income customers through Oregon Housing and Community Services. SB 1149 is one stream of funding for Energy Trust, which is also funded through SB 838 to deliver achievable energy efficiency above the 3 percent and identified in utility integrated resource planning processes, and individual contracts with NW Natural, Cascade Natural Gas and Avista to deliver natural gas efficiency programs.

SB 838
SB 838, enacted in 2007, augmented Energy Trust's mission in many ways. It provided a vehicle for additional electric efficiency funding for customers under one aMW in load by allowing PGE and Pacific Power to fund cost-effective energy efficiency above the 3 percent, and restructured the renewable energy role to focus on renewable energy systems that are 20 MW or less in size. SB 838 is also the legislation that extended Energy Trust's sunset year from 2012 to 2026.

SB 838 is often categorized as supplemental funding in Energy Trust budget documents.

Sectors
For energy planning purposes, the economy is divided into four sectors: residential, commercial, industrial and irrigation. At Energy Trust, programs are divided into four sectors: residential, commercial (including multifamily), industrial (including irrigation) and renewable energy.

Self-Directing Consumers
A retail electricity consumer that has used more than one aMW of electricity at any one site in the prior calendar year or an aluminum plant that averages more than 100 aMW of electricity use in the prior calendar year, that has received final certification from the Oregon Department of Energy for expenditures for new energy conservation or new renewable energy resources and that has notified the electric company that it will pay the public purpose charge, net of credits, directly to the electric company in accordance with the terms of the electric company's tariff regarding public purpose credits.

Solar Power
Using energy from the sun to make electricity through the use of photovoltaic cells.

Solar Thermal
The process of concentrating sunlight on a relatively small area to create the high temperatures needed to vaporize water or other fluids to drive a turbine for generation of electric power.

Spillover
Additional measures that were implemented by the program participant for which the participant did not receive an incentive. They undertook the project on their own, influenced by prior program participation.

Strategic Energy Management (SEM)
A program offering for both commercial and industrial customers: commercial Strategic Energy Management and industrial Strategic Energy Management. Through SEM, customers engage with Energy Trust for a year or more in a systematic and ongoing approach to lowering energy usage. Energy Trust helps customers track and monitor energy use and performance, identify and implement no-cost and low-cost operations and maintenance changes, develop an energy management plan and more. SEM creates culture change around energy, training employees at all levels that energy use can be tracked, reduced and managed.

Therm
One hundred thousand (100,000) British thermal units (1 therm = 100,000 Btu).

Total Resource Cost Test
The OPUC has used the total resource cost (TRC) test as the primary basis for determining conservation cost-effectiveness as determined in Order No. 94-590 (docket UM 551). This is the

main test that determines whether Energy Trust can offer an incentive for a project. Benefits include the value of energy savings to the ratepayers of the utility system over the expected life of the energy-efficiency resource (otherwise known as the avoided cost of energy), and in some cases benefits also include quantifiable non-energy benefits, such as water savings and operations and maintenance benefits. Costs include the total cost of the energy-efficiency resource, including Energy Trust incentives and the project cost paid by the participating customer. SB 1149 allows "self-directing consumers" to use a simple payback of one to 10 years as the cost-effectiveness criterion. *Reference the Board Cost-Effectiveness Policy and General Methodology*

Tidal Energy
Energy captured from tidal movements of water.

Trade Ally Contractor (Trade Ally)
Energy Trust trade allies are valued ambassadors in the field. The network of independent contractors and other allied professionals helps homeowners, businesses, public and nonprofit entities, developers and others complete energy-efficiency and renewable energy projects across Oregon and in southwest Washington. Quite often, trade allies are the first, last and only Energy Trust representative a customer will see.

Trade Ally Network
Energy Trust statewide network of trained contractors and other allied businesses.

Utility Cost Test
This test is used to indicate the incentive amount for a project. It helps Energy Trust determine whether providing an incentive is cost-effective for the utility system. Benefits include the value of energy savings to ratepayers of the utility system over the expected life of the energy-efficiency resource (otherwise known as the avoided cost of energy). Costs include the Energy Trust incentive. *Reference the Board Cost-Effectiveness Policy and General Methodology*

U-Value (U-Factor)
A measure of how well heat is transferred by the entire window—the frame, sash and glass—either into or out of the building. U-Value is the opposite of R-Value. The lower the U-Value number, the better the window will keep heat inside a home on a cold day.

Wave Energy
Energy captured by the cyclical movement of waves in the ocean or large bodies of water.

Watt
A unit of measure of electric power at a point in time, as capacity or demand. One watt of power maintained over time is equal to one joule per second.

Wind Power
Harnessing the energy stored in wind via turbines, which then convert the energy into electricity. Mechanical power of wind can also be used directly.

Weatherization
The activity of making a building (generally residential) more energy efficient by reducing air infiltration, improving insulation and taking other actions to reduce the energy consumption required to heat or cool the building. In practice, "weatherization programs" may also include other measures to reduce energy used for water heating, lighting and other end uses.

Acronyms Related to Energy Trust of Oregon's Work

A/C	Air Conditioning	
ACEEE	American Council for an Energy-Efficient Economy	Environmental Advocacy, Researcher
AEE	Association of Energy Engineers	
AESP	Association of Energy Services Professionals	Energy services and energy efficiency trade organization
AFUE	Annual Fuel Utilization Efficiency	The measure of seasonal or annual efficiency of a furnace or boiler
AIA	American Institute of Architects	Trade organization
AOC	Association of Oregon Counties	
aMW	Average Megawatt	A way to equally distribute annual energy over all the hours in one year; there are 8,760 hours in a year
AOI	Associated Oregon Industries	
APEM	Association of Professional Energy Managers	
ASE	Alliance to Save Energy	Environmental advocacy organization
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers	Technical (engineers) association
ASME	American Society of Mechanical Engineers	Professional organization
BACT	Best Achievable Control Technology	
BCR	Benefit/Cost ratio	
BEF	Bonneville Environmental Foundation	Nonprofit that funds renewable energy projects
BETC	Business Energy Tax Credit	Former Oregon tax credit
BOC	Building Operator Certification	Trains and certifies building operators
BOMA	Building Owners and Managers Association	
BPA	Bonneville Power Administration	Federal power authority
BPS	Bureau of Planning and Sustainability	City of Portland government agency
CAC	Conservation Advisory Council	Energy Trust advisory council to the board
CCS	Communications and Customer Service	A group within Energy Trust
CCS	Carbon Capture and Storage	
CCCT	Combined Cycle Combustion Turbine	
CEE	Consortium for Energy Efficiency	National energy efficiency group
CFL	Compact Fluorescent Light bulb	
CHP	Combined Heat and Power	
CNG	Cascade Natural Gas	Investor-owned utility
CHT	Coefficient of Heat Transmission (U-Value)	A value that describes the ability of a material to conduct heat. The number of Btu that flow through 1 square foot of material, in one hour. It is the reciprocal of the R-Value (U-Value = 1/R-Value.

COU	Consumer-Owned Utility	
COP	Coefficient of Performance	The ratio of heat output to electrical energy input for a heat pump
CR	CLEAResult	Program Management Contractor for Existing Homes, New Homes and New Buildings
CRM	Customer Relationship Management system	Energy Trust's system to capture information on program participants and non-participants that have communicated with us
CT	Combustion Turbine	
CUB	Citizens' Utility Board of Oregon	Public interest group
Cx	Commissioning	
DG	Distributed Generation	
DSI	Direct Service Industries	Direct Access customers to BPA
DOE	Department of Energy	Federal agency
DSM	Demand Side Management	
EA	Environmental Assessment	
EA	Earth Advantage	
ECM	Electrically Commutation Motor	Also known as a variable-speed blower motor, can vary the blower speed in accordance with the needs of the system
EE	Energy Efficiency	
EER	Energy Efficiency Ratio	The cooling capacity of the unit (in Btu/hour) divided by its electrical input (in watts) at standard peak rating conditions
EF	Energy Factor	An efficiency ratio of the energy supplied in heated water divided by the energy input to the water heater
EIA	Energy Information Administration	
EMS	Energy Management System	
EPA	Environmental Protection Agency	Federal agency
EPRI	Electric Power Resource Institute	Utility organization
EPS™	Energy Performance Score	Energy Trust rating that assesses a newly built home's energy use, carbon impact and estimated monthly utility costs
ESS	Energy Services Supplier	
EUI	Energy Use Intensity	See definition in text
EWEB	Eugene Water & Electric Board	Utility organization
FEMP	Federal Energy Management Program	
FERC	Federal Energy Regulatory Commission	Federal regulator
GHG	Greenhouse gas	

GP	Great Plains	Energy Trust's financial tracking system
HBA	Home Builders Association	
HER	Home Energy Review	Online review of a residential customer's home
HSPF	Heating Season Performance Factor	
HVAC	Heating, Ventilation and Air Conditioning	
IBEW	International Brotherhood of Electrical Workers	
ICNU	Industrial Customers of Northwest Utilities	Trade interest group
ICF	ICF International	Existing Buildings Program Management Contractor
IEEE	Institute of Electrical and Electronic Engineers	Professional association
IOU	Investor-Owned Utility	
IRP	Integrated Resource Plan	
ISM	Instant-Savings Measure	
ITC	Investment Tax Credit	Federal
kW	Kilowatt	
kWh	Kilowatt Hours	8,760,000 kWh = 1 aMW
LBNL	Lawrence Berkeley National Laboratory	
LED	Lighting Emitting Diode	Solid state lighting technology
LEED	Leadership in Energy & Environmental Design	Building rating system from the U.S. Green Building Council
LIHEAP	Low Income Housing Energy Assistance Program	
LIWA	Low Income Weatherization Assistance	
LM	Lockheed Martin	Existing Multifamily Program Management Contractor
LOC	League of Oregon Cities	Local government organization
MT&R	Monitoring, Targeting and Reporting	
MW	Megawatt	Unit of electric power equal to one thousand kilowatts
MWh	Megawatt Hour	Unit of electric energy, which is equivalent to one megawatt of power used for one hour
NEB	Non-Energy Benefit	
NEEA	Northwest Energy Efficiency Alliance	
NEEC	Northwest Energy Efficiency Council	Trade organization
NEEI	Northwest Energy Education Institute	Training organization
NEEP	Northeast Energy Efficiency Partnership	Northwest market transformation organization
NEMA	National Electrical Manufacturer's Association	Trade organization
NERC	North American Electricity Reliability Council	
NFRC	National Fenestration Rating Council	
NRC	National Regulatory Council	Federal regulator
NRCS	Natural Resources Conservation Service	
NRDC	Natural Resources Defense Council	

NREL	National Renewable Energy Lab	
NRTA	Northwest Regional Transmission Authority	
NWEC	Northwest Energy Coalition	Clean energy advocacy organization
NWBOA	Northwest Building Operators Association	Trade organization
NWFPA	Northwest Food Processors Association	Trade organization
NWN	NW Natural	Investor-owned utility
NWPPA	Northwest Public Power Association	Trade organization
NWPCC	Northwest Power and Conservation Council	Regional energy planning organization, "the council"
NYSERDA	New York State Energy Research & Development Authority	New York energy efficiency and renewable energy organization funded by a systems benefit charge
OBA	Oregon Business Association	Business lobby group
OEFSC	Oregon Energy Facility Siting Council	Authority to site energy facilities in Oregon
ODOE	Oregon Department of Energy	Oregon state energy agency and one of three public purpose charge administrators
OHCS	Oregon Housing and Community Services	Oregon state agency and one of three public purpose charge administrator
OPUC	Oregon Public Utility Commission	
ORECA	Oregon Rural Electric Cooperative Association	Utility trade organization
OSEIA	Solar Energy Industries Association of Oregon	Volunteer nonprofit organization dedicated to education/promotion
P&E	Planning and Evaluation	A group within Energy Trust
PAC	Pacific Power	
PDC	Program Delivery Contractor	Company contracted with Energy Trust to identify and deliver industrial and agricultural services, and commercial Strategic Energy Management services, to Energy Trust customers
PGE	Portland General Electric	Investor-owned utility
PG&E	Pacific Gas & Electric	California investor-owned utility
PMC	Program Management Contractor	Company contracted with Energy Trust to deliver a program
PPL	Pacific Power	Formerly Pacific Power and Light
PSE	Puget Sound Energy	Investor-owned utility
PT	Project Tracking	Energy Trust’s database that tracks details on customer projects
PTC	Production Tax Credit	Federal incentive that provides financial support for the first 10 years of a renewable energy facility's operation
PTCS	Performance Tested Comfort Systems	Promotes the efficiency of air-systems in residential homes
PTNZ	Path to Net Zero	

PUC	Public Utility Commission	
PUD	Public Utility District	
PURPA	Public Utility Regulatory Policies Act	
QF	Qualifying Facility	
RAC	Renewable Energy Advisory Council	Energy Trust advisory council to the board
RE	Renewable Energy	
RETC	Residential Energy Tax Credit	Oregon tax credit
RFI	Request for Information	
RFP	Request for Proposal	
RFQ	Request for Qualification	
RNW	Renewable Northwest	Renewable energy advocacy group
RSES	Refrigeration Service Engineers Society	Trade association
RTF	Regional Technical Forum	Advisory body to NW Power and Conservation Council
RTU	Rooftop HVAC Unit Tune Up	Rooftop HVAC unit tune up
SCCT	Single Cycle Combustion Turbine	
SCL	Seattle City Light	Public utility
SEED	State Energy Efficient Design	Established in 1991, requires all state facilities to exceed the Oregon Energy Code by 20 percent or more
SEER	Seasonal Energy Efficiency Ratio	A measure of cooling efficiency for air conditioners; the higher the SEER, the more energy efficient the unit
SIS	Scientific Irrigation Scheduling	Agricultural information program
SNOPUD	Snohomish Public Utility District	Washington State PUD
SEIA	Solar Energy Industries Association	Volunteer nonprofit organization dedicated to education/promotion
T&D	Transmission & Distribution	
TRC	Total Resource Cost	
U-Value		The reciprocal of R-Value; the lower the number, the greater the heat transfer resistance (insulating) characteristics of the material
USGBC	U.S. Green Building Council	Sustainability advocacy organization responsible for LEED
VFD	Variable Frequency Drive	An electronic control to adjust motion
WUTC	Washington Utilities and Transportation Commission	
Wx	Weatherization	
W	Watt	