Energy Trust Board of Directors

June 6, 2018

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158th Board Meeting

Wednesday, June 6, 2018
421 SW Oak Street, Suite 300, Portland, Oregon

	Agenda	Tab	Purpose
9:30 a.m.	**Board Meeting—Call to Order** (Roger Hamilton) • 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.* • April 4, 2018, Board meeting minutes • Committee Assignments – R837	**1**	Action
9:35 a.m.	**President's Report** (Roger Hamilton)		Info
9:45 a.m.	**Staff Report** (Michael Colgrove) • July Board Meeting Update – Klamath Falls • Secretary of State (SOS) Audit Update		Info
9:50 a.m.	**Organizational Review Presentation** (Amber Cole, Betsy Kauffman, Debbie Menashe, Greg Stokes, Scott Swearingen)		Info
10:35 a.m.	**Budget Review Presentation** (Pati Presnail)		Info
11:20 a.m.	**Planning and Evaluation** • SBW Consulting Contract Amendment (Phil Degens) – R838……....	**2**	Action
11:30 a.m.	**Update on Irrigation Modernization Presentation** (Jed Jorgensen)		Info
12:00 p.m.	**Working Lunch** (lunch and reconvene)		
12:15 p.m.	**Energy Programs** • Red Rock Biofuels Project (Amanda Potter) – R839……..... • Willow Gas Biogas Project (Jed Jorgensen, Lily Xu, Dave Moldal) - R840... • New Buildings Program Management Contract (Jessica Iplikci) - R841……	**3** **4** **5**	Action Action Action
1:00 p.m.	**Committee and Advisory Council Reports** • Finance Committee (Susan Brodahl) …… • Compensation Committee (Debbie Menashe for Dan Enloe)…… • Evaluation Committee (Lindsey Hardy) …… • Policy Committee (Alan Meyer) ……..…... • Strategic Planning Committee (Mark Kendall) ……..….. • Board Nominating Committee (Debbie Kitchin) ……..…… • Conservation Advisory Council (Lindsey Hardy, Alan Meyer) ……..…… • Renewable Energy Advisory Council (Alan Meyer) ……..…….	**6** **7** **8** **9** **10** **11** **12** **13**	Info Info Info Info Info Info Info Info
2:20 p.m.	**Adjourn**		

The next meeting of the Energy Trust Board of Directors will be held on
Wednesday, July 25, 2018, at 9:30 a.m.
at 3201 Campus Drive, Klamath Falls, Ore. 97601.

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Tab 1

Board Meeting Minutes—157th Meeting

April 4, 2018

Board members present: Susan Brodahl, Dan Enloe, Roger Hamilton, Lindsey Hardy, Mark Kendall, Debbie Kitchin, Alan Meyer, John Reynolds, Anne Root, Eddie Sherman, Steve Bloom (Oregon Public Utility Commission ex officio), Janine Benner (Oregon Department of Energy ex officio)

Board members absent: Melissa Cribbins

Staff attending: Gwen Barrow, Kathleen Belkhayat, Shelly Carlton, Karen Chase, Scott Clark, Amber Cole, Michael Colgrove, Jack Cullen, Alison Ebbot, Andy Eiden, Becky Engel, Shannon Fabry, Sue Fletcher, Jeni Hall, Andy Hudson, Jessica Iplikci, Susan Jowaiszas, Oliver Kesting, Betsy Kauffman, Erika Kociolek, Steve Lacey, Dave McClellan, Debbie Menashe, Dave Moldal, Alex Novie, Pati Presnail, Becky Rein, Thad Roth, Lizzie Rubado, Zach Sippel, Kenji Spielman, Cameron Starr, Julianne Thacher, John Volkman, Jay Ward, Peter West, Whitney Winsor

Others attending: Jason Eisdorfer (OPUC), Kari Greer (Pacific Power), Rick Hodges (NW Natural), Whitney Rideout (Evergreen), BJ Monoham (Northwest Energy Efficiency Alliance), Elaine Prause (OPUC), Anne Snyder Grassman (Portland General Electric), Maria Alexandria Ramirez (NEEA), Becky Walker (CLEAResult)

Business Meeting

Debbie Kitchin called the meeting to order at 11:17 and asked for changes to the agenda.

Alan Meyer made a correction to the board notes to add that Ken Canon attended the meeting with the OPUC in January 2018.

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. February 22, 2018, Board meeting minutes (with amendment)
2. Authorizing Approved Bank Signers–R835

Moved by: Anne — Seconded by: Debbie

Vote: In favor: 10 — Abstained: 0

Opposed: 0

President's Report

Roger Hamilton reflected on how to assess the full benefits of energy efficiency, influenced by his 20-year term at the Regulatory Assistance Project. He discussed efficiency in an era of low-cost renewable energy. Energy efficiency investments are a foundation for renewable energy upgrades because they

reduce the overall energy load. Renewable energy is not emissions-free because the materials must be manufactured.

Eddie Sherman joined the meeting at 11:24 a.m.

Roger continued by describing the utility system benefits of energy efficiency, including reduced power supply costs, transmission and distribution system capacity increases, reduced environmental impacts and potential carbon tax liability, reduced wires losses and reserve requirements, reduced economic risk, and reduced credit and collection costs.

Participant benefits include avoiding costs of other fuels, lower electric bills, avoiding water and sewer costs, avoiding operations and maintenance costs, reducing health impacts, improving employee productivity and improving personal comfort.

Societal benefits of energy efficiency include improved air quality, improved water quality and stream flows, reduced solid waste disposal, improved energy security, economic development, and reduced health impacts of emissions and climate change.

Roger defined beneficial electrification, which is transitioning from fossil fuels to more efficient and renewable electricity generation. The U.S. power sector produces 30 percent more energy than in 1933 while emitting the same amount of carbon dioxide. Examples of beneficial electrification include pre-heating water when power demand is low at night and using water heaters as hidden batteries.

The board discussed the economic impact of the reduction of energy use, and noted that economic impact is an important metric for Energy Trust's success.

Staff Report

Introduction of Becky Rein, Energy Trust's new executive assistant

Mike Colgrove introduced Energy Trust's new executive assistant, Becky Rein. Mike and the board thanked Whitney Winsor for providing temporary executive assistance. Becky thanked the board for the opportunity and provided a brief background, describing her prior work as executive administrator with the Western U.S. Agricultural Trade Association. She grew up on a ranch in Eastern Washington and has a bachelor's degree in soil and environmental science.

Preliminary 2017 Results

Mike presented Energy Trust's official 2017 annual results. The full 2017 Annual Report will be submitted to the OPUC on April 13, 2018, along with audited financial statements. Mike described a recent project, Patriot Hall at Clatsop Community College in Astoria, which is enrolled in Energy Trust's Path to Net Zero offering. The board added that even Astoria, one of the rainiest places in Oregon, has great capacity for solar energy.

Mike continued that in 2017, Energy Trust helped customers save more electricity than ever before and save as much gas as in any other year, achieving 112 percent of electric efficiency goal and 95 percent of gas efficiency goal. Shortfalls in NW Natural and Cascade Natural Gas territories were largely due to an agreement with NW Natural to slow acquisition of savings from some customer types, plus delay of some large custom Existing Buildings projects.

The board asked if Energy Trust's contract with Cascade Natural Gas will end in 2019. Mike explained that Energy Trust renews all utility agreements on an annual basis.

Mike continued that the organization achieved 157 percent of its renewable energy generation goal, bolstered by the expiration of Renewable Energy Tax Credit at the end of 2017 that influenced customers to complete solar projects by year-end. Energy Trust also continued work to develop a pipeline of renewable energy projects.

The board asked about the RETC expiration timeline, noting customers had until April 1, 2018, to complete projects and receive the tax credit. Jay Ward, senior community relations manager, added that Energy Trust expects to see a significant decline in solar projects in 2018.

Mike provided a breakdown of energy savings and generation by sector. Energy Trust saw more small- to medium-sized businesses participate in 2017. Energy Trust also supported its largest megaproject in 2017, which brought in a high volume of savings earlier than expected. It was also an outstanding year for LEDs and NEEA.

Mike shared Energy Trust's expenditures and revenues for 2017. Energy Trust received slightly more revenue than budgeted and spent about 8 percent less than budgeted. This was due to lower-than-expected incentive spending given a large volume of very low-cost savings from LEDs and the industrial megaproject. Energy Trust spent $10.1 million or 5.2 percent of total budgeted revenue on administrative and program support costs.

Energy Trust served fewer sites were served in 2017 compared to 2016, which was deliberate and due to fewer Energy Saver Kits.

Mike provided progress to Energy Trust's 2015-2019 Strategic Plan goals. Through 2017, the organization has achieved 74 percent of electric goal of 240 aMW, 83 percent of gas goal of 24 million therms and 114 percent of renewable generation goal of 10 aMW. The board noted Energy Trust could have set even higher Strategic Plan goals.

Mike added that Energy Trust pursued innovative new program strategies while taking steps to prepare the organization for future years, when market and policy changes will likely require new ways of working with customers to accomplish energy efficiency and renewable energy results.

The board congratulated Energy Trust on tremendous 2017 results.

2018 Legislative Summary, Jay Ward

Jay Ward answered questions about 2018 state legislation. The board asked for some background on the Portland Clean Energy Fund. The initiative would levy a 1 percent supplemental business license fee for the largest retailers in Portland. The fund would invest in energy efficiency and renewable energy projects plus workforce development. The initiative is described as supplemental to Energy Trust's efforts. The board noted that a number of potentially significant bills failed to pass, and asked if any of them may return. Jay acknowledge the cap and invest bills resulted in a joint committee on carbon reduction, with members yet to be announced. In addition, $1.4 million was designated to start a carbon reduction task force. The HB 2141 residential energy efficiency home wrap bill is expected to return in the next legislative session. The board discussed a bill capping the rate of returns for utilities, which was determined to have unconstitutional elements. Janine added that it is too soon to say if

Oregon Department of Energy bills will come up again at the next session, and noted a bill that would make it easier for state agencies to install more electric vehicle charging stations.

The board suggested Energy Trust consider alternative carbon equivalency statements. At Intel, Dan Enloe came up with an equivalency of fleets of Hundai Excels.

The board asked if Jay works with other state agencies. Energy Trust staff sometimes participate in advisory committees and interacts with a number of agencies from the Oregon Liquor Control Commission to the Department of Agriculture.

Portland General Electric Control Room Site Visit Options
Mike asked for board member interest in taking a tour of the PGE control room either before or after the May board retreat. The board preferred Friday afternoon.

July Board Meeting Proposal
Mike proposed that Energy Trust explore holding its July board meeting in Klamath Falls, which could include a visit to Oregon Institute of Technology. Oregon Institute of Technology has invested in energy efficiency and renewable energy, and has expressed interest in a deeper partnership with Energy Trust.

Mike asked if board members would be able to attend a meeting in Klamath Falls. If board members could arrive early afternoon the day before, Energy Trust could arrange some customer site tours. The board liked a remote board meeting as a way to increase Energy Trust's presence in other areas of the state. Debbie, Janine, Susan, Steve and Dan would have to participate in the July meeting by phone. Anne noted that in her role on the Oregon Economic Development Commission, she travelled around the state for meetings and met with communities. It was enriching and supported stakeholder relationships. Mike added that Oregon Institute of Technology has offered to host the meeting. This is a test to see if Energy Trust could have one board meeting a year outside of Portland. Susan added that if the meeting is scheduled in January, it should not be a problem to travel for one meeting.

Mike emailed board members yesterday regarding re-examining Energy Trust's budget process and calendar to create additional opportunities for utility, OPUC and stakeholder engagement. Mike proposed two options to change board meetings dates to accommodate the budget schedule. Both options include pushing back the November board meeting one week to November 14. The first option is to add an additional meeting on October 17 to focus on the budget, and move the September 26 board meeting to September 12. The second option is to cancel the September 26 board meeting and replace it with an October 17 board meeting. With option two, the board would not meet in August or September. The board preferred the second option to cancel the September 26 board meeting and replace it with an October 17 board meeting.

The board took a break at 12:24.

Board Learning Papers Presentations

Community Engagement, Sue Fletcher
Sue Fletcher, communications and customer service senior manager, introduced Lee Rahr, energy programs director at Sustainable Northwest, and Carolina Iraheta Gonzalez, community energy advocate at Verde. Sue described the key topics in the paper and introduced Lee and Carolina to provide case studies.

Communities can be defined as a group, a system or a culture. Groups are united by a common characteristic. Organizing features for communities could be geographic and national, demographic and cultural, organizational, and social and political. Community engagement is the process by which individuals and organizations work collaboratively to identify community needs and priorities, build relationships, mobilize resources, and catalyze change in structures, policies, programs and practices. The paper describes a continuum of community engagement, from informing to empowering.

Sue described benefits of community engagement, including expanding participation, leveraging other resources, generating momentum, growing credibility and trust, ensuring resilience and maximizing impact. Challenges could include resources, ramp up time, customization, measurement, applicability to offers and alignment with structure.

Lee Rahr described Sustainable Northwest, which has four program areas: energy, water, forest and range. Sustainable Northwest's Making Energy Work coalition is a network of Oregon communities advancing innovative clean energy programs, projects and policies across the state. In 2015, Sustainable Northwest partnered with Energy Trust to launch a series of workshops, tours and symposiums in communities around the state. Workshops focused on community priorities and assets.

Sustainable Northwest believes that empowering local communities is the best way to reduce climate change. It believes in a bottom-up process. The Making Energy Work coalition has been successful by using the continuum of community engagement, including informing, collaborating and empowering. In addition to Energy Trust, Sustainable Northwest works with the U.S. Department of Agriculture, Resource Assistance for Rural Environments and Oregon Department of Energy. Leveraging public-private partnerships is key because parties can bring multiple funding sources and trusted relationships.

Carolina described Living Cully. Cully is a neighborhood in Northeast Portland and one of the most diverse neighborhoods in Oregon. It has 14,000 residents, with 17 percent of households below the federal poverty line. About 45 percent of households are renters. There are six mobile home parks. Living Cully was formed by Verde, Habitat for Humanity, Hacienda Community Development Corporation, and the Native American Family and Youth Initiative. The Living Cully partners believe that sustainability can be reinterpreted as an anti-poverty strategy to address multiple disparities in health, income, education, community engagement and natural resources by concentrating environmental investments and pairing those investments with traditional community development resources.

Living Cully developed a neighborhood-scale Community Energy Plan that identifies energy conservation and generation pilots for the Cully neighborhood. It was developed with technical energy experts including Energy Trust staff, community partners and neighborhood residents. All pilots must support Living Cully's anti-displacement strategies.

Carolina described how Living Cully worked with Energy Trust staff. Energy Trust provided energy consumption and renewable energy data for the neighborhood. One of the partners, St. Vincent De Paul, worked on Energy Trust's mobile home replacement initiative. Living Cully also ran a ductless heat pump cooperative for low-income families.

Carolina noted that collaboration with Energy Trust has felt very transactional. There are many Energy Trust staff contacts, which has been time consuming. Verde hopes to move toward strategic and programmatic alignment with both organizations, and to more easily access Energy Trust resources. Verde is working with Energy Trust staff to identify a model for greater alignment.

Steve asked if Living Cully will explore the state's community solar opportunities. Carolina responded that Living Cully has a vision for a community solar project specifically focused on low-income participation, and has already conducted surveys and focus groups with residents. The next step is to get technical assistance to identify a site and financing. It is important to provide meaningful bill savings

to low-income participants. Steve observed Living Cully could be appropriate for a community solar project.

The board asked about the Living Cully ductless heat pump cooperative. Some low-income families are slightly above the threshold to receive free low-income weatherization services. Verde is hoping to work with Energy Trust to make the rebates more accessible for these low-income families. Living Cully will explore creative solutions, such as bulk discounts or opportunities for people to join the coop and donate their rebate to a family that needs more support.

Eddie asked why Living Cully is such a successful community engagement effort. Carolina noted the commitment to support the community's potential. Energy is new to Living Cully, but Living Cully has successfully implemented several projects. Examples include the Cully Park, a multi-million dollar public-private partnership and community campaign. Living Cully listens to community members and keeps them involved through the whole process. Another example is the Living Cully plaza, which will be affordable housing.

The board would like to see Energy Trust partner with organizations like Living Cully to meet mutual goals.

Janine asked if Energy Trust has analyzed the cost-effectiveness of standard energy-efficiency measures compared to services delivered as part of community collaborations. Sue responded that all of Energy Trust's measures are cost-effective, and Energy Trust has used community engagement as an outreach strategy. Lee added that she is interested in measuring the rate of energy-efficiency upgrades in engaged communities before and after being involved in collaboration.

The board noted that projects can be more cost-effective with multiple benefits. An example is irrigation modernization projects with other benefits like water savings. Community solar is also a good opportunity for community engagement.

The board asked if there are standard community engagement best practices. Lee responded that there's a high demand from communities for help with baselines and energy planning. If Energy Trust could create templates or a toolkit that could be replicable for all communities, it would go a long way to support this need. Many small communities have a lot of interest but very little capacity and very few staff.

Solar Plus Storage, Dave McClelland, Jeni Hall

Dave McClelland, senior program manager, and Jeni Hall, senior project manager, summarized their Solar Plus Storage learning paper. Dave acknowledged Todd Olinsky-Paul with Clean Energy States Alliance for contributing to the paper.

Janine asked if solar plus storage systems all island. Dave explained that islanding is not inherent in all solar plus storage systems. There are systems where the focus is not resilience or backup power. Additional equipment is required to isolate from the grid.

Energy Trust's solar program has worked with solar plus storage for 15 years. Solar plus storage was the norm 15 years ago, because most systems were off grid. Inverters that connected to the grid had not yet been invented.

Since then, Energy Trust has seen an increase in customer demand for solar plus storage systems. Energy Trust does not offer an additional incentive for solar plus storage. Customers can only receive Energy Trust's standard solar incentive. Increased interest in solar plus storage systems is driven by new technologies and dropping prices have made solar plus storage more accessible, such as Tesla batteries. A new technology is advanced solar plus storage, which has larger capabilities. Another factor driving demand for solar plus storage is interest in resilience, such as from a large Cascadia earthquake. Solar plus storage also provides flexibility to meet peak demand.

Solar plus storage can provide greater benefits than either solar or storage alone, both to customers and to the grid. Solar plus storage still faces technical, market and informational barriers. Energy Trust is working with utilities, trade allies and customers to address these barriers in Oregon.

Mike asked how the solar system and batteries relate to each other. Do people put in bigger solar systems to meet their electricity needs and charge the battery at the same time? The board responded that a customer can program a controller to use the cheapest power source by hour as its default mode. Dave confirmed that there is technical capability to do this, but it depends on policies, rate structures and market.

The board asked if there is interconnection control uniformity across utilities. Jeni explained that capabilities to safely disconnect from the grid and island are built into equipment, so it is standardized. However, there's variability for utilities to implement different requirements for interconnecting with the grid. That's an opportunity for Energy Trust to work with the utilities to help standardize interconnection to meet everyone's needs.

The board asked about automatic transfer switch capability. It's built into the equipment, depending on the scale of the system, but there's opportunity for improvement in utility alignment.

Financial Audit Results

Jennifer Price, audit partner at Moss Adams, Ashley Osten, senior accountant at Moss Adams, reviewed Energy Trust's audit report. Energy Trust received a clean, unmodified audit opinion. There were no material weaknesses or significant deficiencies. Energy Trust is has very strong controls, and it was an extremely clean audit.

The board asked for a survey of Moss Adams' overall clients. Moss Adams has surveyed its nonprofit clients and prospects, and this survey is included in the board packet.

The board acknowledged that the audit is very detailed and thorough, and congratulated Energy Trust's Finance staff on consistently excellent performance.

Budget Review Project Update

Pati Presnail, controller and interim chief financial officer, presented an update on Energy Trust's budget review project proposal. Staff already shared the proposal with the OPUC and received feedback and ideas. Next steps will be to share the proposal with Energy Trust's utility partners and advisory committees. Staff will report back to board in June.

Board Learning Papers Presentations, Continued

Opportunities from Data, Scott Clark, Erika Kociolek, Alex Novie

Scott Clark, IT director, introduced Erika Kociolek, evaluation project manager, and Alex Novie, senior project manager.

The board asked if Energy Trust could pull a list of all Portland residents without any Energy Trust measures installed and overlay that data with maps. Staff responded that this is possible and new tools have been introduced to allow mapping without advanced geographic information system (GIS) skills. Energy Trust has rooftop accuracy for most addresses, which increases the accuracy of mapping.

The board asked about the Solar program's rooftop mapping data. Lizzie Rubado explained that Energy Trust collaborated with a company, Mapdwell, to offer a customer tool to estimate solar energy potential at specific properties. Energy Trust ended that partnership because many other technologies are now available for customers.

The board asked about getting access to big data, and encouraged Energy Trust to explore growing its data. Erika explained that Energy Trust receives data from utilities, and also contracts with several vendors to receive data that supports data analysis. Data security is critical for all of these datasets. Proprietary data is very valuable. Energy Trust is exploring the cost and value of various proprietary datasets.

The board asked if Energy Trust has data about the demographics of residents and participants. Energy Trust can use its data in conjunction with Census information to identify geographic areas with certain demographic characteristics. Energy Trust is also looking into firmographic information to understand the demographics of businesses.

The board noted that Energy Trust may need more granular energy usage information about customers for targeted marketing as it seeks new sources of savings. The board asked if that information is proprietary. Erika explained that there is more Energy Trust can do with data already available from utilities. For now, Energy Trust's focus is on maximizing its currently available data.

Community Resilience, Lizzie Rubado, Jessica Iplikci

Lizzie Rubado, program strategies manager, introduced a guest speaker, Dan Bihn. Dan is a former engineer who spent several years living in Japan.

Dan presented on Japan's relationship with energy efficiency. In 2011, Japan was hit with a 9.0 magnitude earthquake. Japan's power plants are designed to shut down during an earthquake, which was effective during the 2011 earthquake. However people were still using energy, so the electric grid collapsed. More than 20 million people were without power. People couldn't turn on TVs or cell phones. Traffic lights went out. Train crossings automatically closed. Three minutes after the earthquake, a tsunami warning was issued. Most of the devastation was from the tsunami, with 18,000 people killed from the tsunami compared to 300 people killed directly from the earthquake. Because the grid collapsed, people could not escape the tsunami quickly. The earthquake also kicked off the Fukushima meltdown.

It took about one week for Japan to get power back, but there was not enough energy during peak periods so the power companies operated a rolling blackout. Every few hours, a different location would go dark. Elevators, traffic lights and trains stopped working. It took another year to restore generation capacity because the plants were damaged in the tsunami. The earthquake occurred in March, which is a low month for energy demand. Utilities predicted a 15 percent energy shortage in summer, when energy use peaks. To avoid rolling blackouts in summer, Japan mandated energy efficiency. Daily news included an energy report, stating whether there would need to be a blackout that day. This provided real-time visibility of energy use and gave residents the ability to immediately respond. People bought LEDs and replaced air conditioners with fans. The country exceeded 15 percent and achieved 18 percent reduction.

The earthquake also affected Japan's energy policies. Japan started getting rid of nuclear power and installing solar, increasing from 0.5 percent of energy from solar to 5 percent energy from solar. Resilience became a major energy priority for Japan. Utilities were able to get people to shift their energy use by communicating the value and availability of energy, and measuring, monetizing and mechanizing energy use. All of Tokyo now has smart meters.

To prepare for a natural disaster, Oregon could prepare to take on more solar power from California by interconnecting the grids. Last year, California threw away 3 percent of our solar energy generated.

Mike asked how Japan mobilized so quickly after the disaster. Japan had three months to prepare for the summer energy shortage. Many of these activities had already been in the works on a much slower timeline. Japan has directed and centralized disaster response, whereas the United States' disaster response lies with states and local governments.

The board asked if the smart meters in Japan are two-way or interactive. Japan's smart meters are the same technology as in the U.S. Japan focused more on energy flexibility than overall reduction.

The board observed that demand response and flexibility could be more important tools than battery storage. Dan prefers the term demand over demand response. If everyone cut power use by half instantly after the Japan earthquake, Japan would have kept the lights on. Automation and mechanization are needed for that.

The board noted that U.S. systems are designed to island. Dan responded that Japan's systems are also designed to island, but it didn't work very well after the earthquake.

The board observed that some of the changes in Japan were very simple, such as growing trees and shrubs for shading buildings and switching from air conditioning to fans.

Cost-Effectiveness, Fred Gordon

Fred Gordon, director of planning and evaluation, provided a high-level summary of his cost-effectiveness paper. Cost-effectiveness is a regulatory pass/fail test for efficiency investments. It is a ratio of benefits divided by costs. If the ratio is above one, Energy Trust may invest. If the ratio is below one, Energy Trust may not invest.

State utility commissions govern cost-effectiveness. In Oregon, cost-effectiveness is evaluated on a measure-by-measure basis and for programs as a whole. In Washington, cost-effectiveness is primarily evaluated at the portfolio level.

Societal benefits, such as economic benefits to the state as a whole that do not go directly to the utility or participants, are not included in Oregon's cost-effectiveness tests. In Oregon, efficiency investments must pass the utility cost test, which focuses on costs and benefits to the utility system, and the total resource cost test, which considers benefits to the system and to the participants. In Washington, the primary focus is on the total resource cost test. Twenty states use the total resource cost test. The societal cost test (with varying definitions of societal) is used by 14 states. Twelve states use the utility cost test. Eleven states use ratepayer impact as a measure. Eight states use a participant cost test. Some states use more than one test.

In their cost-effectiveness rule, the Oregon Public Utility Commission provides some cost-effectiveness exceptions in Oregon, such as for difficult-to-quantify benefits or measures that are forecast to be cost-effective in the future with market development. Energy Trust requests exceptions on a measure basis from the OPUC. Energy Trust receives a small portion of annual savings from measures currently under exception criteria.

There are four types of non-energy benefits: incremental measures (building on something the customer would do anyway), quantifiable customer or utility benefits (such as water savings), difficult-to-quantify benefits (such as comfort) and societal benefits. In Oregon, quantifiable customer or utility benefits are included in cost-effectiveness calculations. Difficult-to-quantify benefits are not included in Energy Trust's cost-effectiveness calculations, but the OPUC may consider them when making exceptions. Societal benefits are not used in Oregon or Washington.

Carbon dioxide emissions present a special case of non-energy benefits. In Oregon, utilities are required to consider the potential future cost of carbon regulation to the utility in forecasts of gas and electric costs. Thus, these carbon compliance costs are included in the avoided costs used in the utility cost test and the total resource cost test to show the benefits of efficiency. If passed, carbon legislation might have a modest additional impact of Energy Trust's efficiency cost-effectiveness calculations if the resulting value is larger than these forecasts.

The board asked about the most likely destination of a carbon tax dollar. That would be a legislative decision.

An advocacy group published an update to the California Standard Practice Manual, called the National Standard Practice Manual. Oregon and Washington comply in many respects, except Oregon uses exceptions to balance costs and benefits.

Historically, most of the value of electric savings came from reducing energy generated by fossil fuel plants, regardless of the time of day, week or year. Most of the savings were from reduced generation, while small portions were from reduced losses on power lines and transformers, and from reduced transmission and distribution construction due to smaller loads. Likewise, almost all of the value of gas savings was associated with a therm of gas savings, regardless of the timing. Additionally, OPUC permits an additional 10 percent adder to value based on the premise that not all efficiency benefits can be quantified.

More recently, there's less value from energy use from reduced generation on average and more value in reduced generation during peak energy use times. There's locational value from reduced construction of transmission and distribution systems for both electricity and gas. The OPUC is working on guidance for locational value through the resource value of solar docket. It's not yet clear how much will be applicable to energy efficiency.

The Pacific Northwest is catching up to the rest of the country in quantifying peak savings. For many years, the Pacific Northwest used dams as batteries to meet peak demand. The region has outgrown that resource, so power during peak times costs more. Increasingly, demand for power has shifted to summer, when water in rivers is low.

Energy Trust is working to improve estimates and quantification of peak savings. The Northwest Power Council's Seventh Power Plan shows that efficiency can save more demand than demand management over the next 20 years because efficiency follows load shape.

The board asked for a simpler explanation of how efficiency saves more energy than demand management. Fred explained that energy efficiency saves energy all the time, including during peak times. If efficiency is increased, it automatically reduces peak load. Efficiency is an automatic every day peak control. There are also opportunities to build demand management into control systems for efficiency measures. The board added that demand management implies shifting the timing of energy use, not reducing the energy use. Demand response is paying an industrial consumer to use less energy during peak.

Fred continued that Energy Trust is working to improve how we value efficiency based on both when it saves energy and how much energy it saves.

The board stated that Energy Trust should use only the utility cost test, not the total resource cost test because the customer is better suited to define benefit than the OPUC.

The board asked about the timeframe for improving estimates of the load shape of efficiency. There will be some improvements in 2018, but improvements will continue for three to five years.

Committee Reports

Audit Committee, Anne Root
The only opportunity for improvement identified in the financial audit is to look into cyber security risks. Debbie Menashe is exploring cyber security policies.

The board asked about the Secretary of State audit. Mike explained it is still underway and there are no new updates. The audit committee requested more frequent updates on the Secretary of State audit.

Compensation Committee, Dan Enloe

Energy Trust is transitioning management of its retirement plan form The Standard to Principal and Cable Hill. There will be a blackout period from May 24 to June 24. The committee reviewed a business plan to transition employee investments. After transition, participants will have online access to manage their accounts and make adjustments. The costs of new funds are much lower than with The Standard. The committee approved the qualified default investment alternative.

Evaluation Committee, Lindsey Hardy
The committee looked at an evaluation of cannabis efficiency, which indicated that ost customers were interested in and valued energy efficiency as something to set their business apart.

The committee reviewed an operations and maintenance persistence study. The study concluded that operations and maintenance measures are estimated to last three years, and made recommendations to increase the persistence of savings.

Another study looked at the load shape of water heaters and explored heating water to a higher temperature to shift energy use from peak periods. Savings were minimal.

The board commented that the cannabis market is over capacity on production and asked how Energy Trust ensures investment in viable cannabis businesses. Mike explained that Energy Trust anticipates that cannabis facilities will persist even if the company does not. The board suggested that the cannabis industry is volatile, and noted that insurance regulation will increase for cannabis growers.

Policy Committee, Alan Meyer
The policy committee discussed strategic planning. There were a few routine policy reviews. No changes were recommended.

The committee discussed how Energy Trust uses reserve funds, and made progress to develop policies to govern Energy Trust's use of reserve funds. A policy is in development stating steps needed before pursuing new business. This policy will come to the full board when ready.

Mike added that he shared this thinking regarding the reserve funds with Avista and Cascade Natural Gas, and both utilities were receptive.

Strategic Planning Committee, Mark Kendall
The committee reviewed the agenda for the board retreat and reviewed board learning topic papers. A board retreat agenda will go out soon to the full board.

Conservation Advisory Council, Lindsey Hardy, Alan Meyer
There were three new members added to the Conservation Advisory Council. At the last meeting, the Conservation Advisory Council saw presentations from staff, discussed potential topics for 2018 meetings and discussed how the role of the council has evolved over time.

Renewable Energy Advisory Council, Alan Meyer, John Reynolds
The renewable energy sector exceeded goals in 2017 due to two large custom solar projects moving from 2016 to 2017. The solar program had its busiest year ever, with almost 1,800 solar systems installed. Energy Trust reached 100 MW of installed solar capacity at homes and business. Energy Trust also has a contract with Oregon Department of Energy to support increasing access to solar for low- and moderate-income customers.

The board asked about the impact of solar tariffs, and noted that steel or aluminum tariffs could also impact solar systems. Energy Trust expects the tariffs to have minimal impact on commercial and residential solar markets.

The board asked if the Renewable Energy Advisory Council also discussed its role and influence on the board. Renewable Energy Advisory Council did not have that discussion, because it is a smaller group

with a different approach. Mike added that Renewable Energy Advisory Council did a similar examination a few years ago.

The board asked if Don Jones is retired from Pacific Power. Kari Greer, Pacific Power, responded that Don is not retired. Don is focusing primarily on Washington and California. The board recognized Don's participation.

Adjourn

The board adjourned at 3:56 p.m.

The next meeting of the Energy Trust Board of Directors will be on Thursday, May 17, 2018, and Friday, May 18, 2018, at 8:00 a.m. at Mercy Corps, 45 SW Ankeny St, Portland, Ore. 97204.

_____

Mark Kendall, Secretary

PINK PAPER

Board Decision
Committee Assignments

June 6, 2018

RESOLUTION 837
BOARD COMMITTEE APPOINTMENTS
(*SUPERSEDES RESOLUTION 833)*

WHEREAS:

1. **Energy Trust of Oregon, Inc. Board of Directors are authorized to appoint by resolution committees to carry out the Board's business.**
2. **The Board President has nominated new directors to serve on the following committees.**

It is therefore RESOLVED:

1. **This resolution supersedes Resolution 833, adopted by the board at its February 22, 2018, meeting.**
2. **That the Board of Directors hereby appoints the following directors to the following committees for terms that will continue until a subsequent resolution changing committee appointments is adopted:**

Audit Committee
Anne Root, Chair
Melissa Cribbins
Mark Kendall
Karen Ward, outside expert
Roger Hamilton *(ex officio)*
Pati Presnail, staff liaison
Board Nominating Committee
Debbie Kitchin, Chair
Alan Meyer
Anne Root
Eddie Sherman
Steve Bloom, OPUC *(ex officio)*
Roger Hamilton *(ex officio)*
Greg Stokes, staff liaison
Compensation Committee *(formerly 401(k) Committee)*
TBD, Chair
Melissa Cribbins
Mark Kendall
Roger Hamilton *(ex officio)*
Debbie Goldberg Menashe, staff liaison
Executive Director Review Committee
Melissa Cribbins, Chair
Debbie Kitchin
Roger Hamilton *(ex officio)*
Finance Committee
Susan Brodahl, Chair
Ernesto Fonseca

Debbie Kitchin
Anne Root
Roger Hamilton *(ex officio)*
Pati Presnail, staff liaison
Policy Committee
Alan Meyer, Chair
Ernesto Fonseca
Eddie Sherman
Elaine Prause *(ex officio)*
Roger Hamilton *(ex officio)*
Debbie Goldberg Menashe, staff liaison
Program Evaluation Committee
Lindsey Hardy, Chair
Susan Brodahl
Alan Meyer
Ken Keating, expert outside reviewer
Jennifer Light, expert outside reviewer
Dulane Moran, expert outside reviewer
Jamie Woods, expert outside reviewer
Warren Cook *(ex officio)*
Roger Hamilton *(ex officio)*
Sarah Castor, staff liaison
Strategic Planning Committee
Mark Kendall, Chair
Susan Brodahl
Lindsey Hardy
Janine Benner, ODOE *(ex officio)*
Elaine Prause, OPUC *(ex officio)*
Roger Hamilton *(ex officio)*
Debbie Goldberg Menashe, staff liaison

3. **The executive director, general counsel, or chief financial officer are authorized to sign routine 401(k) administrative documents on behalf of the board, or other documents if authorized by the Compensation Committee.**
4. **The board also acknowledges that the following board members have committed to attend advisory council meetings:**
    a. **Conservation Advisory Council: Lindsey Hardy and Alan Meyer**
    b. **Renewable Energy Advisory Council: Alan Meyer and Ernesto Fonseca**

Moved by: Seconded by:

Vote: In favor: Abstained:

Opposed:

Tab 2

Board Decision
Execute an Amendment to a Contract with SBW Consulting

June 2018

Summary

Authorize up to $573,000 in budgeted funds for an amended contract with SBW Consulting for the 2013-2014 impact evaluation of the Energy Trust Production Efficiency program.

Background and Discussion

- In March 2016, following a competitive bidding process, Energy Trust selected SBW Consulting to complete an impact evaluation of the Production Efficiency program for the years 2013 and 2014. Out of seven proposals received, SBW Consulting was selected for its qualifications with industrial impact evaluation, the quality of the proposed sample design, and the value of the number of sites evaluated for the proposed budget, which was competitive with the budgets proposed by other firms. The original contract budget was $450,000, which was increased to $540,000 (approved at the July 27, 2017, board meeting). The budget increase previously approved enabled the evaluation of an additional 16 custom projects, for a total of 40 custom projects.

- The drivers for the current requested budget increase ($33,000) are described below. These activities were not part of the original scope of the impact evaluation, and were not known at the time of the previous contract amendment.

    - The evaluator assumed that results from a prior pilot evaluation could be used for seven Strategic Energy Management (SEM) projects. However, the evaluator discovered that detailed write-ups were not available for six SEM projects, which requires the evaluator to do a more detailed review of project files and create project-specific reports.

    - Seven of the sampled custom and SEM sites implemented other projects, which required the evaluator to obtain and review details about these other project details to assess whether or not they impacted the projects selected for evaluation.

- The additional scope will ensure high-quality project-level realization rates. Project-level realization rates are aggregated to produce program-level realization rates, which are key outputs used in program planning, budgeting, and in true up. In addition, evaluator review and feedback on the savings estimates will help program staff refine savings estimates in the future.

- The 2009-2011 Production Efficiency impact evaluation had a total cost of $548,000 and the 2012 Production Efficiency impact evaluation had a total cost of $348,410. Energy Trust Evaluation staff feel that $573,000 for this evaluation of two program years is reasonable.

- This evaluation is just under 1 percent of total industrial expenses in 2013 and 2014 combined. In 2013, savings from the industrial sector represented 20 percent of total gas savings and 29 percent of total electric savings, and in 2014, savings from the industrial sector represented 18 percent of total gas savings and 32 percent of total electric savings.

Recommendation

Authorize the executive director to execute an amendment to a contract with SBW Consulting to increase the contract budget by $33,000 for a total contract budget of up to $573,000 to complete the impact evaluation of Energy Trust's Production Efficiency program for the program years 2013 and 2014.

PROPOSED RESOLUTION 838

AUTHORIZING THE EXECUTIVE DIRECTOR TO EXECUTE AN AMENDMENT TO A CONTRACT WITH SBW CONSULTING

WHEREAS:

1. **Following a competitive solicitation process conducted in March 2016, SBW Consulting was awarded the contract to conduct an impact evaluation for Energy Trust's Production Efficiency program, covering program years 2013-2014.**
2. **The Board of Directors of Energy Trust approved an amendment of the contract to authorize funding of up to $540,000 for the impact evaluation services to be provided by SBW Consulting in July 2017.**
3. **SBW Consulting has continued to conduct the impact evaluation for Energy Trust's Production Efficiency program, but the scope of the evaluation has expanded to include additional activities that were not known at the time of the previous contract amendment. The added scope and budget of the proposed amended impact evaluation contract is to cover unanticipated additional detailed impact analysis for Strategic Energy Management (SEM) and custom projects in the Production Efficiency program in order to complete and report on impact evaluation savings results, and make observations and recommendations for program improvement.**
4. **The expected not-to-exceed maximum budget for completion of the amended services under the contract with SBW Consulting would be $573,000, which increases the current contract budget by $33,000, exceeds the executive director's signature authority and requires board of directors' approval.**

It is therefore RESOLVED that the Board of Directors of Energy Trust of Oregon, Inc., hereby authorizes the executive director to sign an amendment to the contract for evaluation services for the 2013-2014 Production Efficiency program impact evaluation with SBW Consulting authorizing additional scope and added budget of up to $33,000 for a total maximum budget cap of $573,000.

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

Tab 3

Board Decision

Waive Program Incentive Cap and Authorize Incentives for Red Rock Biofuels LLC Efficiency Project

June 6, 2018

Summary

Waive the Production Efficiency program incentive cap and authorize incentives of up to $2 million for an energy efficiency project associated with a biofuels production facility in Lakeview, Oregon, estimated to save at least 48,000,000 kilowatt hours (5.5 average megawatts) per year.

Background

Energy Trust staff previously submitted a proposed Red Rock Biofuels LLC (Red Rock) energy efficiency project to Energy Trust's board of directors at its April 6, 2016 meeting. At that time, the board waived the Production Efficiency program incentive cap and authorized Energy Trust's executive director to sign an incentive agreement for Red Rock's proposed energy efficiency project for up to $2 million, subject to certain conditions. One of those conditions was that Red Rock was required to secure sufficient debt and equity investment for the proposed project, as a part of its proposed biofuel production facility construction project by November 30, 2016. Red Rock was not able to meet that deadline and contracting negotiations were never finalized. Red Rock has now secured funding for its new biofuels production facility and has reached out again to request Energy Trust incentives for a proposed energy efficiency project at the site.

Project Description

- Red Rock proposes to design, install and operate an energy-efficiency project as a component of Red Rock's new biofuels production facility, to be constructed and operated in Lakeview, Oregon.
  - The new facility will convert 400 bone dry tons (BDT) of waste woody biomass per day into approximately 1,069 barrels per day of liquid products consisting of jet, diesel and gasoline blendstock (naphtha) fuels. The (cellulosic) jet fuel produced from this biofuel production process is expected to appeal to airlines seeking to meet sustainability and clean energy goals.
  - The biofuel production facility will be fueled (for process heat) by natural gas and biomass (for feedstock).
  - The most recent project schedule anticipates that Red Rock will complete the facility and begin operations in March 2020.
- Red Rock's proposed energy-efficiency project, as presented to Energy Trust's Production Efficiency program for review and analysis, would use waste heat from the biofuel production facility's gasification process to generate electricity via a steam generator and condensing turbine, offsetting the facility's need to otherwise purchase power.
  - The steam generator would recover most of the waste heat in the form of useful steam and send it to a condensing turbine to produce power.

- The steam generator, condensing turbine and parasitic loads would be expected to operate whenever the plant is in operation (8,160 hours/year), which translates to 93 percent availability. The condensing turbine is rated at 8.5 MW, but normal power production is estimated at 6.4 MW based on design parameters.
- Red Rock would use the generated power from the project onsite to offset a portion of the facility's electrical usage.
- Attachment 1 features a simplified one-line diagram of the proposed energy-efficiency project and how it fits into the facility's overall biofuel production process.

Project Participants

- Red Rock Biofuels LLC (Red Rock), a single purpose entity, was established in 2011 to develop, construct, install, equip, commission, own and operate an advanced biofuels production facility in Lake County, Oregon. Red Rock would contract with Energy Trust for incentive funding for the proposed energy efficiency project.
- Red Rock is a Colorado limited liability company. As of the date of Energy Trust's review, 100 percent of the units representing the membership interest in Red Rock are wholly owned by Red Rock Biofuels Lakeview, LLC, which is wholly owned by Red Rock Biofuels Holdings, Inc (RRBH). RRBH is majority owned by IR1 Group LLC (IR1), headquartered in Fort Collins, Colorado.
- Red Rock has entered into an engineering, procurement and construction (EPC) agreement with IR1 to engineer and construct the project, and an operation and management (O&M) agreement with RRBH to operate and manage the project.

Financing Status

- The project has a total budget of $337 million, which includes construction costs ($208 million), development costs ($16.5 million), other project costs ($29.3 million), construction contingency ($10.9 million), debt service and working capital reserves ($59.5 million), and cost of bond issuance ($12.8 million).
- Red Rock has secured funding from multiple sources: State of Oregon sponsored economic development bonds ($245.5 million), equity contributions ($9.9 million), contributions from Red Rock affiliates ($7.5 million) and Department of Defense awards ($74.1 million).

Key Activities Completed

Red Rock has completed the following key pre-construction milestones and activities for its new biofuels production facility:

- Project site has been purchased;
- All major pre-construction permitting has been completed;
- Major construction and technology contracts have been executed;
- Red Rock has entered into offtake agreements with FedEx and Southwest Airlines for the purchase of a minimum of six (6) MGPY of unblended biofuel that qualifies under the EPA Renewable Fuel Standard Program guidelines. These agreements represent 100% of the project's planned jet fuel production, which is 40% of the project's total annual production of 15 MGPY.
- Red Rock has entered into long-term feedstock agreements for 95,300 BDT per year of woody biomass for eight years from the commencement of operations and has plans to purchase approximately 30% of its required feedstock on the spot market. This is consistent with Red Rock's feedstock assessment consultant's recommendation that no

more than 70% of annual feedstock consumption be procured through long-term agreements.

- An independent engineer's report was completed for Red Rock on February 24, 2018. The report reviews the organization, management, financial and environmental aspects of Red Rock's planned facility. It provides observations and conclusions that support the current design, project plan, projected costs, operations and maintenance (O&M), contracts, third party agreements, environmental requirements, site conditions and the overall financial model of the proposed biofuels production facility as realistic and achievable.

Project Review

- Energy Trust's Production Efficiency program followed a rigorous technical review process, as is standard for custom projects of this size and complexity.
    - Energy 350, Inc. is a Production Efficiency program allied technical assistance contractor with expertise in waste heat recovery, industrial process efficiency and power generation. Energy 350 worked with Red Rock to define the proposed energy efficiency project, develop the baseline and quantify savings potential and preliminary cost estimates in a technical analysis study.
    - The technical analysis study includes a preliminary monitoring and verification plan that will inform the final monitoring and verification requirements used to determine the energy savings.
    - Energy Trust's senior technical manager and energy engineering personnel from RHT Energy, Inc., the Production Efficiency PDC, reviewed the technical analysis study for the proposed energy efficiency project and found it reasonable.
- Energy Trust has reviewed the project against its combined heat and power criteria and determined it is an efficiency project, not a combined heat and power project. The project, without any increased consumption of natural gas, will generate electricity from waste heat and will use the generated electricity on-site, thereby reducing the facility's consumption of grid electrical energy.
- By capturing otherwise wasted heat to generate power, the technical analysis study estimates that Red Rock's proposed energy-efficiency project would save about 48,000,000 kWh per year compared to the standard design and construction that Red Rock would utilize at the facility absent Energy Trust's incentives, significantly increasing the efficiency of the overall system. Generation from the project would be used on-site.
- Waste heat recovery is not always done on large projects with this technology. The process of converting biomass to biofuel will work just the same with or without waste heat recovery. In addition, the pre-incentive payback is four to five years, a range where industrial projects often do not move forward without incentives. Given these facts and the lack of similar plants of this scale in production in the U.S., Energy Trust is proposing to make incentives available to make certain that the energy-efficient heat recovery portion of the Red Rock project will move forward as proposed.
- In addition to its technical review, Energy Trust engaged an independent third-party consultant, Wynde Consulting, to assist with a financial analysis review of the proposed Red Rock biofuel production facility and associated energy efficiency project. Red Rock was very responsive to requests for information, and provided Energy Trust with additional documentation to inform this review, including financial statements, the bond offering memorandum and other confidential, sensitive and proprietary information of Red Rock.
- Wynde Consulting's review indicated that there is nothing in the financial support and structure of the Red Rock project to prevent Energy Trust from providing the incentives under consideration given the timing and structure proposed.

- Red Rock's energy- efficiency project would be impacted if the biofuels production facility is not constructed as planned, does not reach operation at the anticipated levels of production or otherwise operate as planned, or the facility does not survive long enough for Energy Trust to realize the projected energy savings.
- Energy Trust's proposed incentive payment structure, including annual caps and the timing for payment(s), is designed to mitigate potential risks associated with the facility construction and production levels/operation.
- According to our analysis, the Red Rock energy efficiency project meets both the societal and utility benefit cost ratios with the proposed incentive payments. The utility benefit cost ratio is above one, even down to 12,000,000 kWh and one year measure life.

Proposed Incentive Payment

- At over 48,000,000 kWh in savings, staff propose Energy Trust incentives of $0.0417/first-year kWh, capped at 25 percent of eligible project costs, with a maximum incentive of $2 million.
- The proposed incentive would exceed the program incentive cap of $500,000 per project. The board's policy on waiving program incentive caps allows such incentives if: (1) self-direction is suspended for at least three years; (2) there is available incentive budget; and (3) the project is expected to save energy at a cost per energy unit saved that is less than the current incentive levels for the program.
    - The proposed incentive funding would be contingent on Red Rock's agreement to suspend self-direction at the site for at least three years;
    - Incentives would be paid in annual payments not to exceed $1 million in any year, tied to energy savings performance, with the first energy savings verification and payment following completion of the first year of operation. If the full $2 million is not paid at the end of the second year, additional incentive payment could be made for additional energy savings achieved in years three and four up to $2 million total payments.
    - The project will be much more cost-effective than other sources of savings. Currently, custom capital projects average $0.13/first-year kWh, or about 2-3 cents levelized cost. The levelized cost for savings from the Red Rock project would be less than ½ cent.
- As proposed by staff, actual incentive payments would be determined based upon verification of commercial operation and costs, and annual energy savings verifications conducted by Energy Trust consistent with post-installation measurement, verification and evaluation plans. Changes in the as-built state or in operating performance that reduces savings or costs would reduce the incentive in accordance with established custom track procedures.
- Energy Trust would require that certain minimum energy savings thresholds be met each year before calculating an incentive payment (for example, Red Rock would need to reach a minimum of 24,000,000 kWh in the first year of operation to be eligible to receive any incentive payment).
- Red Rock would need to meet certain key construction milestones and a construction completion date in order for Energy Trust to continue to hold the incentives dollars.

Recommendation

Waive the Production Efficiency Program incentive cap and authorize the executive director or his designee to sign a contract committing up to $2 million in incentives to the Red Rock energy-efficiency project on terms and conditions consistent with the resolution below. A copy of the proposed board resolution is attached.

RESOLUTION 839
WAIVING PROGRAM INCENTIVE CAP AND APPROVING INCENTIVES
FOR THE RED ROCK EFFICIENCY PROJECT

WHEREAS:

1. **The Energy Trust Production Efficiency program has worked with Red Rock Biofuels, LLC (Red Rock) to identify a custom waste heat to energy system project (the Project) in connection with the gasification process at Red Rock's new biofuel production facility, to be constructed and located in Lakeview, Oregon.**

2. **Energy efficiency aspects of the Project were reviewed through standard Energy Trust processes for complex custom-track industrial projects, including a technical energy analysis study commissioned by Energy Trust and carried out by a waste heat to power expert.**

3. **The Project's energy savings will be very cost-effective compared to the cost of savings from the average Production Efficiency program custom project. The incentive for the Project is projected and would be budgeted at $.0417/first-year kWh, a levelized cost of <0.5 cent/kWh; while Production Efficiency program custom capital projects average $.13/first-year kWh, or about 2-3 cents levelized.**

4. **Energy Trust funding would be contingent on Red Rock's agreement to suspend self-direction at the facility site where the Project is located for at least three years.**

5. **Electric energy generated by the Project will be used by Red Rock on-site to reduce the amount of electricity purchased for the facility.**

6. **Energy Trust funding would be conditioned on Red Rock's construction completion by September 2021 and would be payable annually based on savings performance.**

It is therefore RESOLVED that the board of directors of Energy Trust of Oregon:

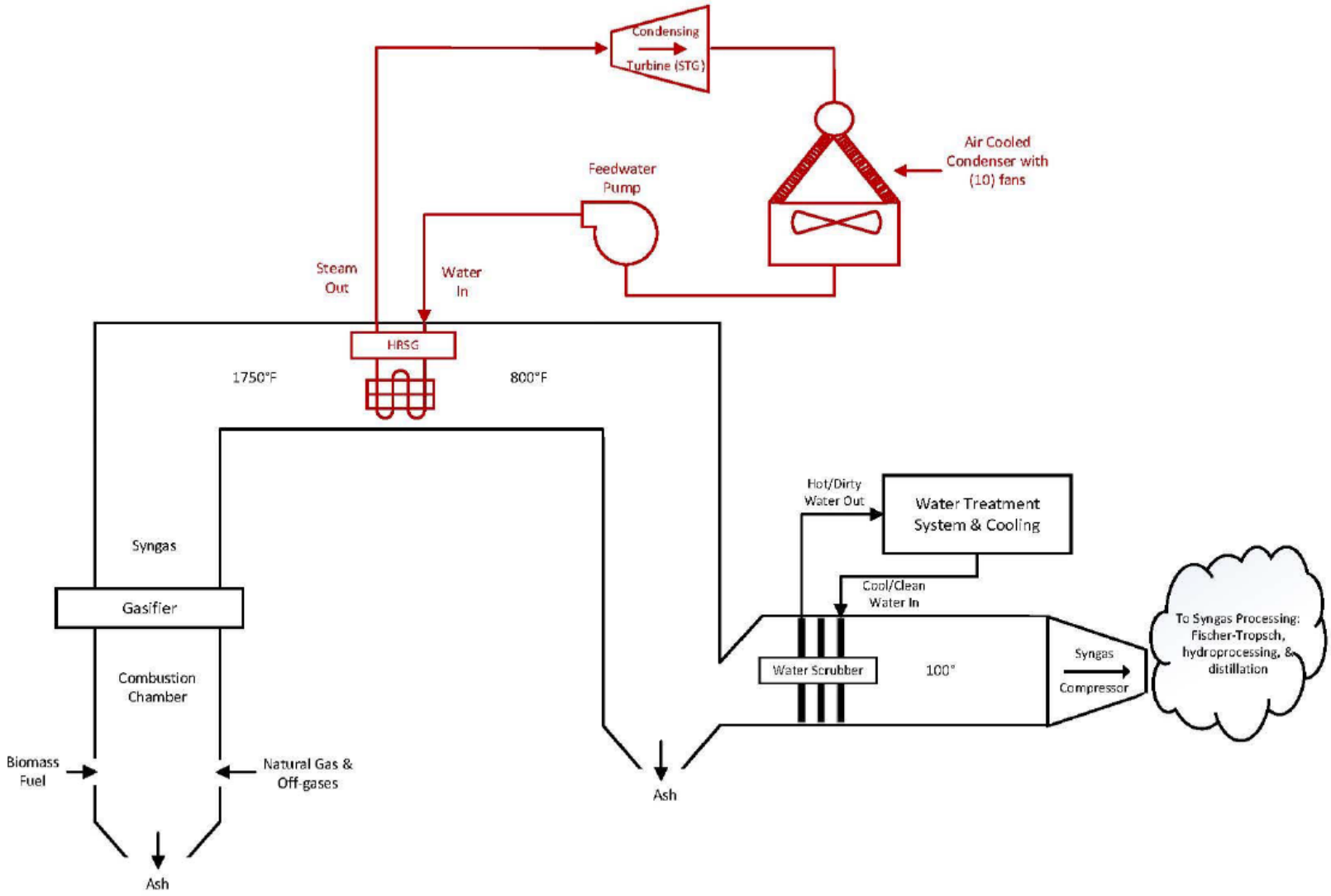
1. **Waives the Production Efficiency Program's incentive cap for this project; and**

2. **Authorizes the executive director to negotiate and sign an incentive agreement with Red Rock Biofuels LLC for up to $2 million in total incentives payable on the following terms and conditions:**
   - **Agreement to suspend self-direction at the site for at least three years;**
   - **Incentives to be paid in annual payments tied to savings performance;**
   - **Post-installation measurement, verification and evaluation plans for the Project will be required;**
   - **Red Rock to complete construction by September 2021**

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

ATTACHMENT 1

(EFFICIENCY PROJECT IN RED)



Tab 4

Board Decision
Willow Lake Biogas Project

June 6, 2018

Summary

The Willow Lake Water Pollution Control Facility is a wastewater treatment plant operated by the City of Salem. The facility currently operates a 30-year-old 650-kilowatt rich-burn cogeneration system that is at the end of its useful life. The City is proposing to install and operate a new lean-burn cogeneration system with increased capacity to use excess biogas that is currently flared. The $9.73 million Willow Lake Biogas Project would have a nameplate capacity of 1,176 kW and be capable of generating 7,610 megawatt hours annually (0.87 aMW). The project is sized to accommodate future population growth in the Salem area and would offset power delivered to the facility by Portland General Electric under a net-metering agreement.

Staff and an independent, third-party consultant evaluated the project and found that it aligns with Energy Trust's goals and falls within industry norms in design, expected costs and proposed operation. The project is proposed by an experienced municipality, would use industry standard equipment, and has eliminated most risks through a thorough and well-informed development process.

Staff propose a $3 million installation incentive to cover 85 percent of the project's above-market costs. Staff suggest one payment of $500,000 be made upon commercial operation and additional payments be made on a quarterly basis at a rate of $0.25 per kWh based on actual generation. Energy Trust would ask for a minimum of 85 percent of the renewable energy certificates (RECs) generated by the project over a 20-year term.

Energy Trust Goals

- The Willow Lake Biogas Project supports Goal 2 of the 2015-2019 Strategic Plan to accelerate the rate at which renewable energy resources are acquired.
- This project will add to the portfolio of five operational wastewater treatment biogas projects Energy Trust has supported, currently representing 5 MW of capacity and 4.1 average megawatts (aMW) of generation.

Background

- In November 2017, Energy Trust began a competitive process to allocate up to $4 million in incentives for renewable energy facilities in Portland General Electric service territory and $2 million in Pacific Power territory. Two applications were received, one hydropower application and the City of Salem's Willow Lake Biogas Project application. The hydropower project is not ready for an incentive at this time.
- The City of Salem uses anaerobic digestion processes to treat municipal wastewater at its Willow Lake Water Pollution Control Facility in Keizer, Oregon. The facility processes an average of 25 million gallons of wastewater per day. The City expects the volume of wastewater to grow slowly but steadily into the future.
- A by-product of the anaerobic digestion process is biogas, a methane-rich renewable fuel. The facility has used its biogas resource to generate electricity and heat with a cogeneration

system (cogen) for more than 30 years. The current 650 kW cogeneration system is at the end of its service life and does not have the capacity to burn significant quantities of excess biogas created by the facility's digesters. At present, excess biogas is flared.

- Energy Trust has supported the City in developing this project since 2014, providing $200,000 in project development assistance to aid in feasibility and design. Energy Trust staff also helped the City secure a $3 million incentive from PGE's Renewable Development Fund.
- The proposed Willow Lake Biogas Project would include a 1,176-kW Caterpillar cogeneration engine by Peterson Power Systems, with an expected average annual generation of 7,610 MWh. Prior to combustion, the biogas would be scrubbed of contaminants that could foul the engine by a gas treatment and cleaning system. Generation from the new system would save the City about $300,000 a year. Heat from the engine would be used to heat the facility's primary digesters.
- Project construction is expected to begin in winter 2018. The City anticipates commissioning and testing to start in fall 2019 with commercial operation occurring in winter of 2019.

Staff Evaluation

For projects eligible for incentives, Energy Trust staff thoroughly evaluate the following prior to performing an above-market cost analysis:

- Site control
- Development and operational team expertise
- Resource sufficiency and control
- Energy conversion technology and estimated generation
- Permitting
- Interconnection
- Power purchase agreement
- Project capital costs
- Operational and maintenance expenses
- Financing
- Project revenues

Staff's evaluation found the following:

- The project meets key qualifications for funding from Energy Trust. It is less than 20MW in capacity, offsets electricity demand from PGE and meets the requirements of a qualifying biopower project.

<u>Site Control, Development Team, Resource and Generation Estimates, and Permitting</u>

- The City owns the site and has full site control.
- City staff include a proven team capable of executing on project development, and the experience to operate the project when complete. City staff, with support from Energy Trust, deeply engaged other municipal biogas facility staff in their development process, ensuring best practices were observed in facility design and development choices.
- The currently available biogas resource is sufficient to support the estimated generation and the chosen engine has a wide operational range that is well matched for daily and seasonal production variations with minimal flaring. The chosen cogeneration engine is sized appropriately to immediately use all available biogas while maintaining reserve capacity to

manage future municipal growth or the addition of other feedstocks that could boost biogas production.

- As is the norm with complex facilities, generation from the new cogen would be expected to ramp up over the first three years of operation, from approximately 5,800 MWh in year one to approximately 7,000 MWh in year three. Generation would then be expected to grow gradually according to municipal growth trends. Maximum expected generation would occur in years 19 and 20, at approximately 8,649 MWh. Over 20 years, the average annual generation is expected to be 7,610 MWh.
- The City has successfully engaged in or completed all required local, county, and state permitting processes. Energy Trust staff have no concerns about the City's ability to successfully complete remaining county construction permitting processes.

Power Purchase and Interconnection

- The City plans enter into a Schedule 89 Net Metering agreement with PGE, offsetting their energy use at their existing retail rate. Energy Trust has no concerns with the City's ability to execute this agreement with PGE. The City's current retail power rate at the facility is 7.6 cents per kWh (energy only, all other charges excluded). Energy Trust modeled the City's power rate growing at a standard 2 percent annually over the project life.

- The City has been in contact with PGE about the planned facility upgrade and intends to submit a Level 3 Net-Metering application in June 2018, once a few remaining elements of the electrical design have been coordinated with the utility. PGE will then conduct a System Impact Study to determine final interconnection requirements and costs. This is one of two remaining areas of risk for the project.

- PGE has notified the City that they may require transfer trip capabilities which would allow the utility to remotely control and shut down the cogeneration system during outages or other necessary situations for safety purposes. Transfer trip typically requires a fiber optic connection back to the nearest substation, which is more than a mile away across the Willamette River. Fiber optic lines are very costly to install and the City estimates the installation could cost approximately $120,000. Transfer trip has not been required at other similar facilities and operators at other treatment plants have provided a number of lower cost alternatives to provide the same safety and control abilities for the utility. Energy Trust is working closely with the City to help them through this process and we believe a less costly solution will be found. Full interconnection costs are not likely to be known before fall and Energy Trust staff will remain engaged with City staff to see how costs differ from current estimates, which are currently in line with what we have seen at other facilities.

Project Costs, Expenses and Financing

- Total capital costs for the project are estimated at $9.73 million. The largest costs are the cogeneration engine package and the new building to house the cogeneration engine. Equipment costs are actual bids while construction costs are engineering estimates. All costs are within the expected ranges for a facility of this size and scope, with building costs at the upper end of the expected range. The existing cogeneration building does not meet current codes, therefore new construction is required. Current code requirements are driving the costs on the cogeneration building to the higher end of the range. Energy Trust staff subtract project development assistance incentive dollars from the total project costs to account for our assistance in modeling above-market costs.

- Construction costs are the other area of remaining risk for the project. The City expects to go to bid on construction this summer. In the current competitive construction market, bids could come back higher than expected. However, the cogeneration project is part of a larger facility upgrade. Packaging cogeneration construction as part of the larger upgrade is a strategic move for the City to try and keep construction costs on the lower side. Energy Trust staff will closely monitor final construction costs, which will not be known until later in the summer, and follow up with City staff if problems arise.
- Estimated capital costs:

Engineering and design	$	1,200,665
New cogen building	$	2,664,529
Engine and controls package	$	1,842,416
Gas treatment	$	1,518,867
Project management, general conditions, contractor overhead	$	2,052,532
Contingency	$	649,022
Energy Trust Project Development Assistance	*($*	*200,000)*
Total Estimated Cost	**$**	**9,728,031**

- For initial operations and maintenance the City awarded a contract to Peterson Power Systems to maintain and manage the performance of the engine for the first five years of commercial operation. City staff will be trained on new engine maintenance and will learn how to operate the new cogeneration system from Peterson Power Systems employees.

- Salem's application, perhaps informed by their current experience with an expensive-to-operate, end-of-life cogeneration system, listed higher-than-expected operations and maintenance (O&M) costs when compared to industry norms. Energy Trust staff are sympathetic to the City's concerns about high O&M costs but the experiences of Salem's peers in Gresham and at Clean Water Services lead us to believe they are being overly conservative in their estimates. Energy Trust staff reduced the City's O&M costs to be within accepted ranges (normally expected to be around 2.5 to 3 cents per kWh of generation). In addition, Energy Trust added a $500,000 expense for major overhauls over the 20-year life of the project.

- Expected O&M expenses are listed in the table below:

Estimated Annual Operations and Maintenance Costs		
Annual maintenance	$	78,000
Engine oil changes	$	15,000
Pump and valve maintenance and repair	$	28,000
Gas treatment skid operations and maintenance	$	88,345
Total	**$**	**209,345**

- The City intends to fund the project through a combination of wastewater utility rates and grant funding. Two years ago, with assistance from Energy Trust staff, the City secured a $3,000,000 grant from PGE's Renewable Development Fund. The grant from PGE is contingent upon Energy Trust also funding the project. The City has also applied for a $250,000 Renewable Energy Development (RED) grant from the Oregon Department of Energy. The RED grant is competitive and in recent years no projects have been awarded more than $175,000. Energy Trust modeled the finances of the project both with and without

a RED grant and found above-market costs in both scenarios. The City has the remaining funds required to build the facility and will not need to incur any loans.

Above-Market Cost Analysis

Above-market costs are calculated as the difference between the cost to produce power over a specific term, and the market value of the power. Above-market costs are calculated on a present-value basis: all costs and revenues over the project term are discounted to their current value as if they existed today.

- Staff evaluated this project over a 20-year term. The length of the term was chosen to match what we have used for other municipally owned biogas facilities.
- The project was evaluated at an 8 percent discount rate, consistent with the 8-10 percent range of discount rates Energy Trust has applied when evaluating other municipally or government-owned projects.
- Staff included the PGE grant but not the RED grant in the modeled view shown below.
- The table below shows the financial summary for the project:

Project Cost	
Total Design & Construction	$9,728,031
Expenses	
NPV Total Project Expenses	$2,636,687
Total: Equity + Expense	**$12,364,718**
Revenues	
NPV Generated Energy	$6,376,230
NPV PGE Grant	$2,777,778
NPV Total Revenues	**$9,154,008**
Above Market Cost of Power	**($3,210,710)**
(Costs + Expenses - Revenues)	

Without an Energy Trust incentive the project has an Above Market Cost of $3,210,710, a 2 percent internal rate of return, and would reach a simple payback after 17 years. If the City is successful in their RED grant application with a $175,000 award the project's above-market cost would drop to $3,048,673.

Staff's Overall Evaluation and Recommendation

- The proposed project has significant strengths. It would be constructed by an entity with an existing cogeneration project. It would be municipally owned, long-lived infrastructure. The City has secured a significant grant for the project. The project is well designed and has few remaining risks.

- The City of Salem is a returning customer, having pursued significant efficiency gains at the facility, and has diligently designed the proposed project with input from other regional facility operators. By taking the time to learn current best practices from others

(the cities of Gresham and Portland, as well as Clean Water Services), facility staff are well positioned to be successful with this project.

Energy Trust contracted with Tetra Tech to provide an independent analysis of the project. Tetra Tech evaluated the proposal's technical and financial feasibility and provided a written report. Their view of the project closely matches Energy Trust's evaluation, and they also believe the project holds a great deal of merit. They recommended supporting the project with an incentive and Energy Trust staff concur.

Proposed Incentive

- Staff proposes that Energy Trust provide an incentive of $3,000,000, matching the PGE grant. The incentive will be paid partially based on actual production. We suggest an initial payment of $500,000 upon the project reaching commercial operation. We further suggest additional payments be made on a quarterly basis based on actual generation at a rate of $0.25 per kWh as long as the project achieves 75 percent of the expected generation over the quarter. Payments based on production give the City an incentive to maximize generation during the initial ramp-up period and enable the City to be fully paid sooner if performance exceeds expectations. If the project achieves its expected generation goals Energy Trust's full incentive would be paid by the end of the second year of commercial operation. A $3,000,000 incentive would give the project a 6.8 percent internal rate of return and an 11-year payback.
- On a present-value basis (paid over time within two years), Energy Trust's incentive would be worth $2,706,790 representing approximately 85 percent of the project's above-market cost without a RED grant or 88 percent with a RED grant. At $3.45 million/aMW, the incentive is in the range of incentive costs for biogas projects we have supported in the past.
- Consistent with Energy Trust's policy on Renewable Energy Certificates (RECs), we would ask for a minimum of 85 percent to 88 percent of the project's RECs, equivalent to 129,374 RECs over 20 years.
- Staff proposes to negotiate a contract with the City with milestones to allow Energy Trust to withdraw funding if the project is unable to move forward.
- Funds for the project are within the 2017 Other Renewables program budget.

RESOLUTION 840
AUTHORIZING INCENTIVES FOR THE WILLOW LAKE BIOGAS FACILITY

WHEREAS:

1. **In November 2017, Energy Trust began a competitive process to allocate up to $4.0 million in incentives for renewable energy facilities in Portland General Electric service territory and $2 million in Pacific Power territory. Two applications were received, one hydropower and the City of Salem's proposed Willow Lake Biogas Project.**
2. **The City of Salem proposes to install a 1,176-kW cogeneration engine and biogas cleaning equipment at the existing Willow Lake Water Pollution Control Facility, resulting in 7,610 MWh of generation annually, on average. Generated power would offset energy consumed from Portland General Electric. Project construction is expected to begin in winter 2018, with commissioning and testing to start in in fall 2019, and commercial operation in winter 2019.**
3. **Staff finds that the project has significant strengths in that it will be built by an entity with a proven track record as a biogas cogeneration operator, it will be municipally owned, and it has secured a significant grant. Staff sees no significant permitting challenges and few other risks.**
4. **Above-market costs are $3,210,710 (present value) over a 20-year period if the project does not receive a RED grant or $3,048,673 if the project receives a $175,000 RED grant.**
5. **Staff proposes an incentive of up to $3,000,000 to be paid partially up front and partially over time based on actual generation. The first payment would be $500,000, payable upon the project achieving commercial operation. Subsequent payments would be made quarterly at a rate of $0.25 per kWh generated as long as the project achieves at least 75% of the expected generation for the quarter.**
6. **On a present-value basis, Energy Trust's incentive is worth $2,706,790, representing 85% to 88% of the project's above-market cost. At $3.45 million/aMW, the incentive is in the range for has previously supported biogas projects.**
7. **Staff proposes to seek Renewable Energy Certificates (RECs) equivalent to 85 percent to 88 percent of the project's expected generation over 20 years and to include milestones in the funding agreement with the City of Salem to allow Energy Trust to withdraw funding if the project is unable to move forward.**

It is RESOLVED that the Executive Director, or his designee, is authorized to negotiate and execute a funding agreement for up to $3,000,000 in incentives to offset the above-market cost of the 1,176-kW Willow Lake Biogas Facility owned by the City of Salem, consistent with the terms outlined above.

Moved by: Seconded by:

Vote: In favor: Abstained:

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

Tab 5

Board Decision
Authorize a Program Management Contract for the New Buildings Program

June 6, 2018

Summary

Approve negotiation and execution of a program management contract with CLEAResult Consulting, Inc. for a term of three years with two optional one-year extensions.

Background

- The Energy Trust New Buildings program is a significant component of Energy Trust's Commercial energy efficiency suite of program offerings. For 2018, the Energy Trust New Buildings program projects 54,849,649 kilowatt hours saved at $2.394/kWh levelized and $0.362 per unit kilowatt hour and 936,040 therms saved at $0.25 term levelized and $2.394 per unittherm

- In January 2018, Energy Trust staff launched a competitive selection process for a Program Management Contractor to deliver the New Buildings program.
- The competitive selection process included the following public communications in Q1:
    - Notified the public and stakeholders starting, presented to Energy Trust's Conservation Advisory Council, and issued a press release about the RFP and schedule;
    - Consulted with a diversity, equity and inclusion expert to provide input on the draft RFP and the program's communication of diversity, equity and inclusion goals, strategies and objectives;
    - Released the RFP in February for program delivery of new or enhanced strategies for the New Buildings program;
    - Hosted a webinar to introduce the program to potential respondents;
    - Provided written responses to questions submitted by potential respondents; and
    - Engaged the review team, which was comprised of Energy Trust staff and two external reviewers (a representative from the Northwest Energy Efficiency Alliance with deep knowledge of market transformation and commercial sector programs, and a diversity, equity and inclusion expert).
- In response to the RFP, Energy Trust received nine intents to respond, with many respondents indicating an interest in teaming. Two final proposals were submitted.
- Staff completed the following evaluation and selection process:
    - Conducted a pre-qualification review for completeness and adherence to financial, legal and minimum requirements;

- Conducted in-depth reviews of proposals, providing preliminary scores based on written proposals;
- Drafted detailed written questions to respondents;
- Conducted interviews with both respondents;
- Completed final scoring.

Discussion

Based on and through the evaluation process as outlined above, staff concluded that CLEAResult presented the superior proposal and recommends that Energy Trust proceed to contract with CLEAResult for New Buildings program management services.

Reviewers identified the following strengths of CLEAResult to support their conclusion:

- Ability to deliver cost-effective energy savings, reach customers and meet Energy Trust's annual energy savings goals and the longer-term goal of market transformation.
- Focus on strategic program design that delivers a cost-effective savings and allows codes and standards to advance while innovating to reach new and higher levels of energy efficiency.
  - Capacity to provide comprehensive engineering analysis to develop new measures for the commercial market, improve benefit-cost-ratios, and engage new allies with enhanced training and education that supports broad market adoption throughout Energy Trust's regions.
  - Ability to develop innovative market-specific incentive packages for business customers seeking simplified solutions or specifications that can result in significant energy efficiency while also strengthening outcomes for future codes.
  - Create equity through program design developments that provide specific solutions for our wide-ranging commercial market.
- Ability to deliver the program with a well-qualified team that can engage diverse commercial customers and increase market saturation with enhanced tools, resources and targeted market strategies.
  - Identification of specific technologies for multifamily markets, including subsidized and unsubsidized multifamily developments, and ensuring project delivery into communities needing direct outreach, engagement and energy strategies.
  - Development of financial and decision-making tools, specific to developers/owners of low-income and affordable housing.
  - Effective strategies to influence a broad and diverse market of industry professionals in the commercial design, engineering, construction and real estate market.
  - Program delivery model that includes cohesive offerings to meet the high, middle and low-end of the market reaching across a variety of building types, ownership models and sizes.
  - Ability to extend Path to Net Zero without affecting other markets and ability to apply learnings to other market segments.

- Capabilities to develop new training and education strategies to market actors, designed to support market transformation and drive increased market demand for high-performance buildings. Strategies include increased offerings for training and education, new on-demand webinar capabilities and content; and strategies to reach contractors and subcontractors.
- Broad understanding of market dynamics for commercial development, and an ability to build partnerships with organizations that can streamline the delivery of new program capabilities.
    - Demonstrated understanding of the challenges and opportunities in the commercial sector and leverage learnings from emerging technology pilots and new approaches.
    - Deployment of a new delivery strategy to expand simplified incentives packages into the office market to address a gap in the program's overall market penetration.
    - Support rural and non-urban markets with effective staffing to deliver offerings statewide.
- Demonstrated ability to support business systems, communications protocols and the organizational culture needed to foster effective collaboration with Energy Trust.
- Processes and controls to support program management, forecasting and goal attainment.
- A cost-competitive proposal that best aligns strategic goals and objectives, program delivery and innovation that drives future savings opportunities, and best positions Energy Trust to adapt to shifts in future savings opportunities.

Recommendations

Authorize staff to negotiate and sign a New Buildings program management contract with CLEAResult for an initial term of three years, with the potential for up to two, one-year performance-based extensions and a total contract term not to exceed five years. If the board agrees, in accordance with the requirements of our Grant Agreement with the Oregon Public Utility Commission (OPUC), staff will provide notice to the OPUC that we are entering into this agreement with would exceed two years in term.

RESOLUTION 841

AUTHORIZE A PROGRAM MANAGEMENT CONTRACT FOR THE NEW BUILDINGS PROGRAM

WHEREAS:

1. **With assistance from a selection committee including outside parties, staff has conducted a fair and open procurement process to select a program management contractor to manage New Buildings program services for the next 3-5 years;**
2. **CLEAResult Consulting, Inc. was selected and contract terms are being negotiated;**
3. **Staff has assumed and estimated a total first-year program management budget for 2019, including first-year incentives, contracted delivery, and possible performance compensation of approximately $21,131,372 million, which includes approximately $6,135,922 million in program delivery, $92,847 in solar delivery, $12,183,809 in incentives, and internal Energy Trust costs.**
4. **Actual savings and costs will be reviewed by the Energy Trust board as part of the annual budget and action plan process. Based on current assumptions, staff estimates the following program savings and fully loaded costs in 2019:**

	Electric	Gas
Savings	**56,510,692 kWh**	**1,039,233 therms**
$/Unit Savings	**$ 0.328/kWh**	**$2.523/therm**
Levelized Cost	**$0.030 /kWh**	**$ 0.216 /therm**

It is therefore RESOLVED:

1. **Subject to determination of a final contract amount based on the board-approved 2019 budget, the executive director or his or her designee is authorized to enter into a contract with CLEAResult Consulting, Inc. to manage the New Buildings program for an initial term from January 1, 2019 through December 31, 2021.**
2. **First-year contract costs and savings goals included in the contract shall be consistent with the board-approved 2019 budget and two-year action plan. Thereafter, the contract may be amended consistent with the board's annual budget and action plan decisions and the executive director or his designee is authorized to sign any such contract amendments.**
3. **The final contract may include a provision allowing staff to offer one-year extensions beyond the initial term if the program management contractor meets certain established performance criteria. In no event would the total term of the contract plus extensions exceed five years.**
4. **Before extending this contract beyond the initial term, staff will report to the board on the program management contractor's progress and staff's recommendation for any additional extension time periods. If the board does not object to extension, contract terms would remain as approved in the most recent action plans, budgets and contract at the time of extension, and the executive director or his designee is authorized to sign any such contract extensions.**

Moved by: Seconded by:

Vote: In favor: Abstained:

Opposed:

Tab 6

Notes on March 2018 Financial Statements

April 25, 2018

Revenue

Revenue receipts in March were slightly below budget, bringing our Q1 totals more in line with expectations.

	YTD Actual	YTD Budget	YTD Var	YTD %	PY
PGE	29,828,391	27,461,238	2,367,153	9%	27,855,419
PAC	17,785,060	16,957,109	827,952	5%	18,837,273
NWN	9,128,195	9,125,902	2,293	0%	10,766,183
CNG	1,096,006	870,400	225,607	26%	1,256,898
Avista	289,217	289,217	-	0%	417,433
Grant Revenue	23,747		23,747	0%	
Investment Income	119,309	55,000	64,309	117%	60,945
Total	58,269,925	54,758,866	3,511,059	6%	59,194,151

Reserves

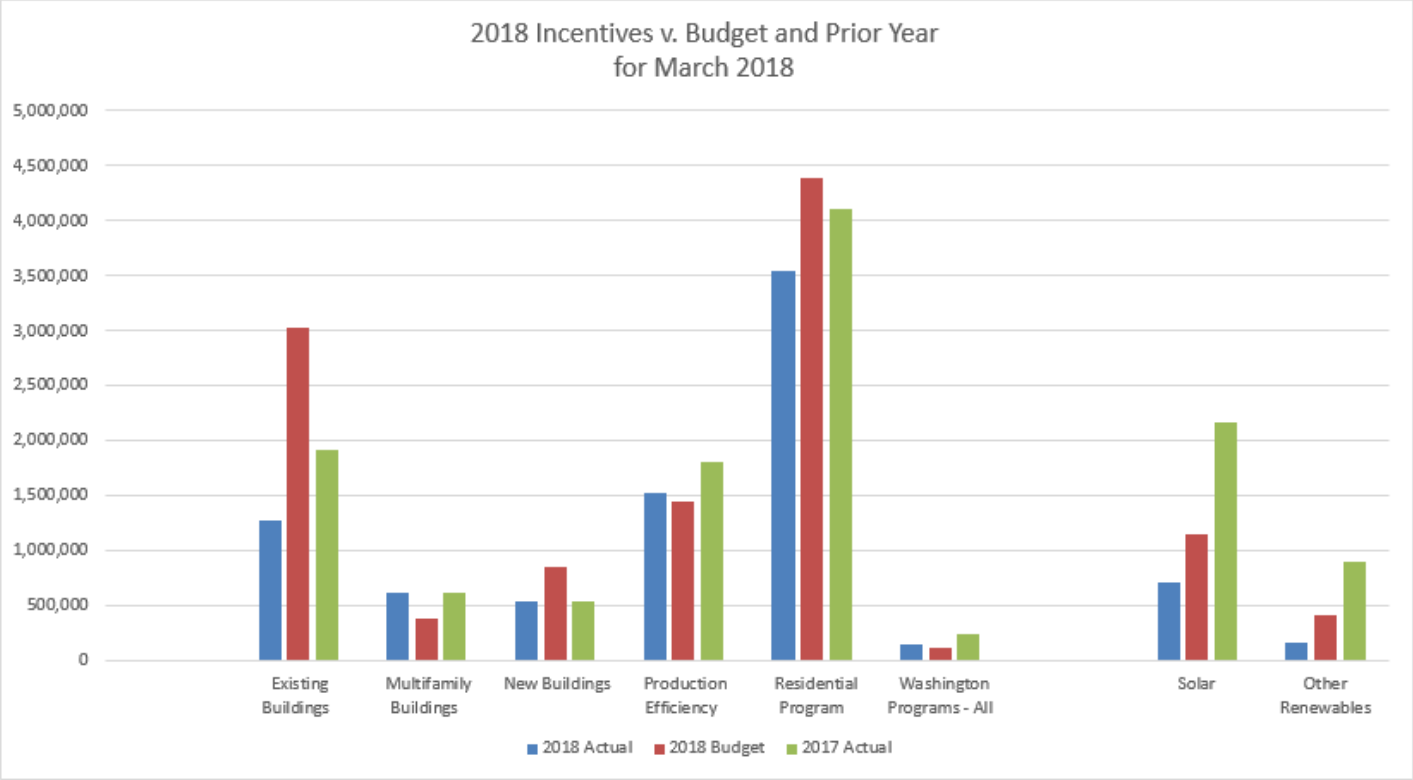
Reserves in March increased to $77 million compared to $62 million at this time last year. We don't anticipate a significant drawdown until midyear incentives are processed in June. Avista has been exceeding expectations so far this year, and is currently showing a slightly negative reserve balance.

Reserves

	3/31/18 Amount	Actual 12/31/17 Amount	% Change from Year End
PGE	25,969,152	12,210,374	113%
PacifiCorp	13,956,665	6,211,995	125%
NW Natural	7,594,660	3,527,721	115%
Cascade	1,022,512	262,065	-
Avista	(35,051)	75,716	-146%
NWN Industrial	2,205,951	2,647,086	-17%
NWN Washington	694,981	176,503	294%
PGE Renewables	8,436,794	7,073,074	19%
PAC Renewables	7,266,320	6,268,078	16%
Program Reserves	67,111,984	38,452,612	75%
Other Reserves	38,462	38,710	-
Contingency Reserve	5,000,000	5,000,000	0%
Contingency Available	4,760,618	4,641,309	3%
Total	76,911,052	48,132,611	60%

Expenses

March total expenses were $1.1 million below budget, mostly due to incentive spending coming in $1.4 million lower than budgeted. Year-to-date expenses are now $3.5 million lower than expected, due primarily to incentives ($3.2 million). Existing Buildings shows a significant gap between actual and budget in the graph below. Part of this is due to the timing curve used for budgeted incentives, which was heavily weighted to Q1. They expect to catch up later in the year.

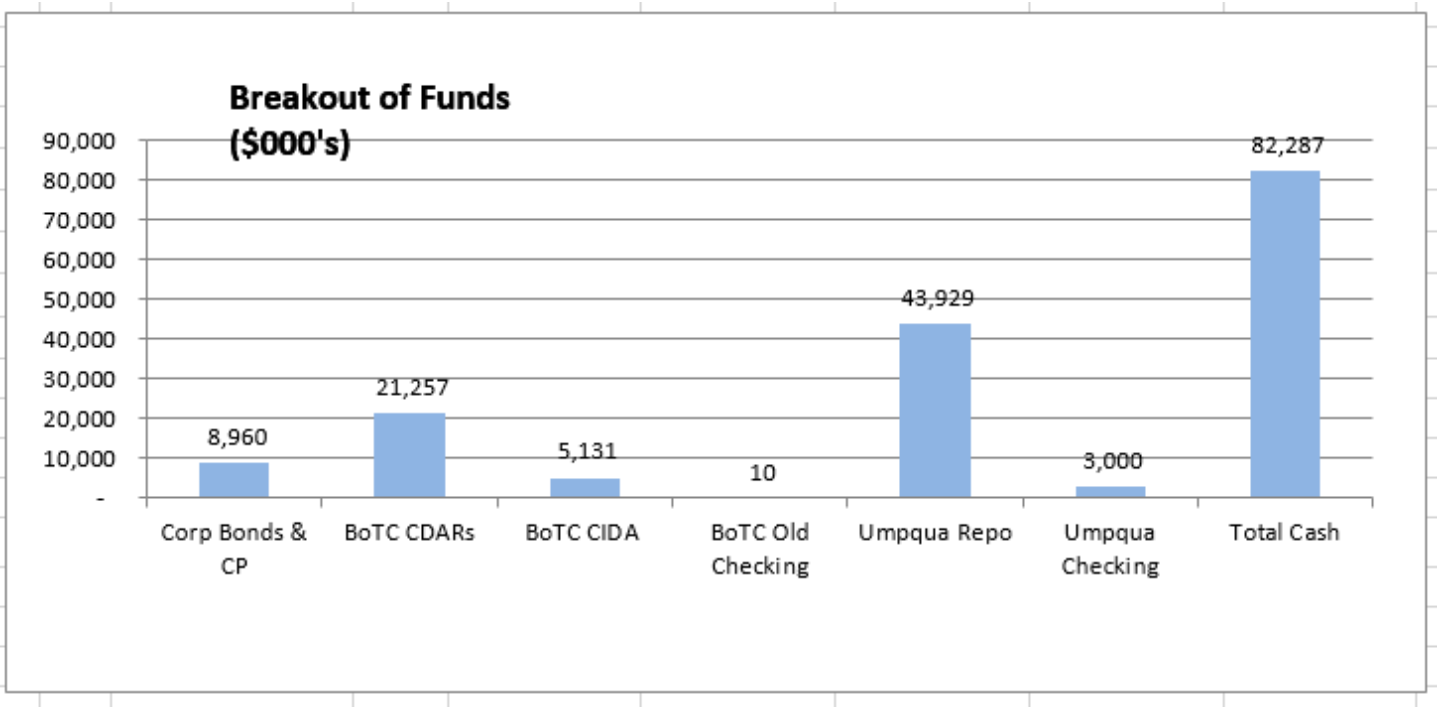


Total Incentives
Year-to-Date 2018

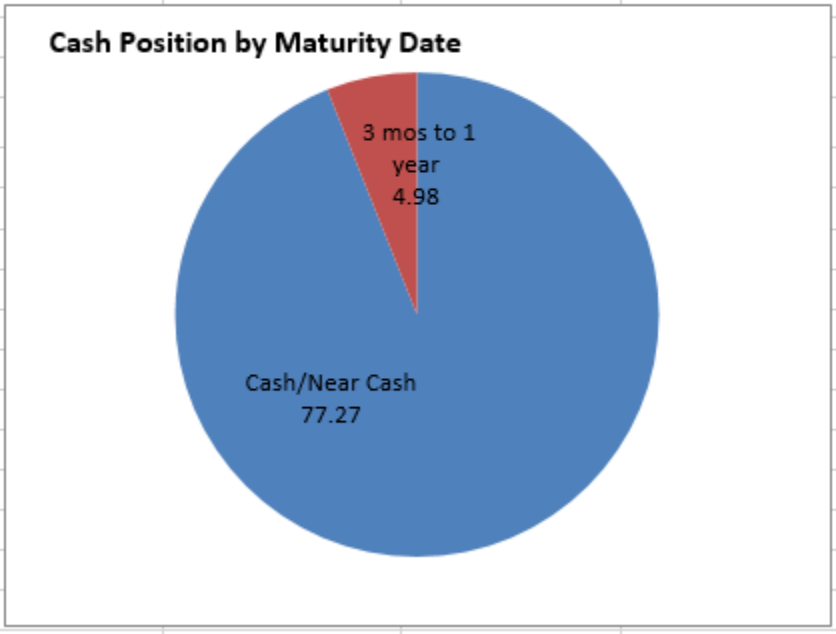
	2018 Actual	2018 Budget	2017 Actual
Existing Buildings	1,279,261	3,020,482	1,914,821
Multifamily Buildings	624,744	389,304	617,481
New Buildings	547,486	851,495	542,971
Production Efficiency	1,524,887	1,446,259	1,807,103
Residential Program	3,541,869	4,393,508	4,103,094
Washington Programs - All	151,933	118,719	238,644
Solar	714,961	1,142,550	2,163,567
Other Renewables	171,547	413,543	907,036
Total Incentives	8,556,688	11,775,860	12,294,716
Energy Efficiency Only	**7,670,180**	**10,219,767**	**9,224,114**

Investment Status

The graphs below show the type of investments we hold and where our funds are held. Since our year-end needs were not as great as anticipated, we will continue to invest more through Q2. Our average yield increased from 0.59% in February to 0.63% this month. We will continue to keep the timeframe of the investments relatively short.



Average Days to Maturity:	24
Average Portfolio Yield:	0.63%



PINK PAPER

Energy Trust of Oregon
BALANCE SHEET
March 31, 2018
(Unaudited)

	March 2018	February 2018	December 2017	March 2017	Change from one month ago	Change from Beg. of Year	Change from one year ago
Current Assets							
Cash & Cash Equivalents	52,085,153	59,324,388	52,223,904	37,968,346	(7,239,235)	(138,751)	14,116,807
Investments	30,128,823	21,712,520	22,721,392	29,879,910	8,416,304	7,407,431	248,914
Receivables	77,099	67,632	119,077	118,206	9,466	(41,979)	(41,107)
Prepaid Expenses	602,847	659,164	244,442	567,454	(56,317)	358,405	35,393
Advances to Vendors	2,267,137	717,907	2,489,421	2,218,948	1,549,230	(222,283)	48,189
Total Current Assets	**85,161,060**	**82,481,611**	**77,798,237**	**70,752,864**	**2,679,448**	**7,362,823**	**14,408,196**
Fixed Assets							
Computer Hardware and Software	3,733,082	3,733,082	3,733,082	3,696,232	-	-	36,850
Software Development in Progress	193,128	189,731	183,687		3,397	9,441	193,127.80
Leasehold Improvements	595,027	595,027	595,027	326,158	-	-	268,868
Office Equipment and Furniture	819,795	819,795	815,056	791,443	-	4,738.88	28,352
Total Fixed Assets	**5,341,031**	**5,337,634**	**5,326,852**	**4,813,833**	**3,397**	**14,179**	**527,198**
Less Depreciation	(4,600,359)	(4,563,205)	(4,442,925)	(3,809,453)	(37,154)	(157,434)	(790,906)
Net Fixed Assets	**740,672**	**774,429**	**883,926**	**1,004,380**	**(33,757)**	**(143,255)**	**(263,708)**
Other Assets							
Deposits	237,314	237,314	237,314	237,314	-	-	0
Deferred Compensation Asset	978,837	975,379	972,828	863,301	3,458	6,009	115,536
Note Receivable, net of allowance	430,669	430,669	263,669	263,669	-	167,000	167,000
Total Other Assets	**1,646,821**	**1,643,363**	**1,473,812**	**1,364,285**	**3,458**	**173,009**	**282,536**
Total Assets	**87,548,552**	**84,899,403**	**80,155,975**	**73,121,528**	**2,649,149**	**7,392,577**	**14,427,024**
Current Liabilities							
Accounts Payable and Accruals	7,788,801	10,805,389	29,180,745	8,350,325	(3,016,588)	(21,391,944)	(561,524)
Salaries, Taxes, & Benefits Payable	841,950	1,066,325	874,594	1,125,364	(224,375)	(32,644)	(283,414)
Total Current Liabilities	**8,630,751**	**11,871,714**	**30,055,339**	**9,475,689**	**(3,240,963)**	**(21,424,588)**	**(844,938)**
Long Term Liabilities							
Deferred Rent	1,026,621	1,014,529	990,344	601,253	12,093	36,278	425,369
Deferred Compensation Payable	978,837	981,760	976,378	864,051	(2,923)	2,459	114,786
Other Long-Term Liabilities	1,290	1,290	1,290	2,110	-	0	(820)
Total Long-Term Liabilities	**2,006,748**	**1,997,579**	**1,968,012**	**1,467,414**	**9,169**	**38,737**	**539,335**
Total Liabilities	**10,637,500**	**13,869,293**	**32,023,351**	**10,943,103**	**(3,231,793)**	**(21,385,851)**	**(305,603)**
Net Assets							
Unrestricted Net Assets	76,911,052	71,030,110	48,132,624	62,178,426	5,880,943	28,778,429	14,732,627
Total Net Assets	**76,911,052**	**71,030,110**	**48,132,624**	**62,178,426**	**5,880,943**	**28,778,429**	**14,732,627**
Total Liabilities and Net Assets	**87,548,552**	**84,899,403**	**80,155,975**	**73,121,528**	**2,649,149**	**7,392,577**	**14,427,024**

Energy Trust of Oregon
Cash Flow Statement-Indirect Method
Monthly 2018

	January	February	March	Year to Date
Operating Activities:				
Revenue less Expenses	$ 11,111,618	$ 11,785,867	5880943.22	$ 28,778,429
Non-cash items:				
Depreciation	60,349	60,436	37154.08	157,939
Change in Reserve on Long Term Note				-
Loss on disposal of assets				-
Receivables	25,330	13,597	-10052.06	28,876
Interest Receivable	11,816	701	585.84	13,103
Advances to Vendors	1,053,629	717,885	-1549230	222,284
Prepaid expenses and other costs	(423,367)	(160,906)	52859	(531,414)
Accounts payable	(18,224,160)	(151,198)	-3016589	(21,391,947)
Payroll and related accruals	94,882	102,231	-227298	(30,185)
Deferred rent and other	12,093	12,092	12092	36,277
Cash rec'd from / (used in) Operating Activities	(6,277,810)	12,380,706	1,180,465	7,283,361
Investing Activities:				
Investment Activity (1)	3,011,583	(2,002,711)	-8416303	(7,407,431)
(Acquisition)/Disposal of Capital Assets	(2,843)	(8,444)	-3397	(14,684)
Cash rec'd from / (used in) Investing Activities	3,008,740	(2,011,155)	(8,419,700)	(7,422,115)
Cash at beginning of Period	52,223,904	48,954,835	59,324,388	52,223,904
Increase/(Decrease) in Cash	(3,269,070)	10,369,552	(7,239,235)	(138,753)
Cash at end of period	$ 48,954,835	$ 59,324,388	$ 52,085,153	$ 52,085,153

(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 2018 - December 2019

	Actual			Adjusted Budget								
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Cash In:												
Public purpose and Incr funding	18,964,634	21,537,912	17,624,324	16,522,913	14,307,658	13,273,406	13,216,202	13,495,932	14,007,521	14,541,672	13,272,027	16,008,718
Investment Income	48,230	35,414	48,768	10,434	13,912	13,912	13,912	13,912	13,912	13,912	13,912	13,912
From Other Sources	31,744	20,495	383									
Total cash in	19,044,608	21,593,822	17,673,475	16,533,347	14,321,570	13,287,318	13,230,114	13,509,844	14,021,433	14,555,584	13,285,939	16,022,630
Cash Out:	(25,325,256)	(9,221,560)	(16,496,406)	(13,874,277)	(13,306,171)	(16,227,232)	(15,231,645)	(12,912,067)	(16,226,365)	(15,518,968)	(16,896,830)	(24,574,328)
Net cash flow for the month	(6,280,648)	12,372,261	1,177,069	2,659,071	1,015,399	(2,939,914)	(2,001,530)	597,777	(2,204,932)	(963,384)	(3,610,891)	(8,551,698)
Cash Flow from/to Investments	3,011,583	(2,002,711)	(8,416,303)									
Beginning Balance: Cash & MM	52,223,904	48,954,835	59,324,381	52,085,153	54,744,221	55,759,620	52,819,706	50,818,176	51,415,953	49,211,021	48,247,637	44,636,746
Ending cash & MM	**48,954,835**	**59,324,381**	**52,085,153**	**54,744,221**	**55,759,620**	**52,819,706**	**50,818,176**	**51,415,953**	**49,211,021**	**48,247,637**	**44,636,746**	**36,085,048**
Future Commitments												
Renewable Incentives	8,300,000	8,500,000	6,400,000	4,900,000	5,200,000	5,700,000	6,000,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000
Efficiency Incentives	84,300,000	85,700,000	88,200,000	90,600,000	89,500,000	90,700,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000
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	97,600,000	99,200,000	99,600,000	100,500,000	99,700,000	101,400,000	115,100,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000

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 2018 - December 2019

	2019 Final R2 Projection											
	January	**February**	**March**	**April**	**May**	**June**	**July**	**September**	**September**	**October**	**November**	**December**
Cash In:												
Public purpose and Incr funding	15,970,862	20,394,304	20,722,660	17,098,459	14,743,958	13,596,738	14,573,633	13,617,897	14,099,097	15,412,038	13,580,079	16,540,633
Investment Income	25,000	15,000	15,000	15,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
From Other Sources												
Total cash in	15,995,862	20,409,304	20,737,660	17,113,459	14,763,958	13,616,738	14,593,633	13,637,897	14,119,097	15,432,038	13,600,079	16,560,633
Cash Out:	(31,688,074)	(11,040,289)	(12,017,485)	(12,649,468)	(12,460,968)	(13,228,580)	(14,957,185)	(12,174,555)	(13,517,924)	(16,641,042)	(17,904,238)	(21,900,335)
Net cash flow for the month	(15,692,211)	9,369,016	8,720,175	4,463,992	2,302,990	388,158	(363,552)	1,463,343	601,173	(1,209,003)	(4,304,159)	(5,339,702)
Cash Flow from/to Investments	-	-	-	-	-	-	-	-	-	-	-	-
Beginning Balance: Cash & MM	36,085,048	20,392,837	29,761,852	38,482,028	42,946,019	45,249,009	45,637,167	45,273,615	46,736,958	47,338,131	46,129,128	41,824,968
Ending cash & MM	**20,392,837**	**29,761,852**	**38,482,028**	**42,946,019**	**45,249,009**	**45,637,167**	**45,273,615**	**46,736,958**	**47,338,131**	**46,129,128**	**41,824,968**	**36,485,266**
Future Commitments												
Renewable Incentives	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000	6,600,000
Efficiency Incentives	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000	104,100,000
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	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000	115,700,000

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 YTD Budget Comparison
For the Month Ending March 31, 2018
(Unaudited)

	March				YTD			
	Actual	**Budget**	**Budget Variance**	**Variance %**	**Actual**	**Budget**	**Budget Variance**	**Variance %**
REVENUES								
Public Purpose Funds-PGE	3,452,354	3,616,550	(164,196)	-5%	10,751,654	11,062,554	(310,900)	-3%
Public Purpose Funds-PacifiCorp	2,462,923	2,371,938	90,985	4%	8,040,591	7,905,730	134,861	2%
Public Purpose Funds-NW Natural	2,581,050	2,816,916	(235,867)	-8%	8,205,506	8,303,853	(98,347)	-1%
Public Purpose Funds-Cascade	310,821	251,935	58,886	23%	1,096,006	870,400	225,607	26%
Public Purpose Funds-Avista	96,406	96,406	0	0%	289,217	289,217	-	0%
Total Public Purpose Funds	**8,903,554**	**9,153,745**	**(250,191)**	**-3%**	**28,382,975**	**28,431,754**	**(48,779)**	**0%**
Incremental Funds - PGE	5,974,186	6,557,123	(582,937)	-9%	19,076,737	16,398,684	2,678,053	16%
Incremental Funds - PacifiCorp	2,746,584	2,669,532	77,051	3%	9,744,469	9,051,379	693,090	8%
NW Natural - Industrial DSM				-				-
NW Natural - Washington		822,049	(822,049)	-	922,689	822,049	100,640	-
Grant Revenue	10,435		10,435	-	23,747		23,747	-
Revenue from Investments	48,181	15,000	33,181	221%	119,309	55,000	64,309	117%
TOTAL REVENUE	**17,682,940**	**19,217,450**	**(1,534,510)**	**-8%**	**58,269,925**	**54,758,866**	**3,511,059**	**6%**
EXPENSES								
Program Subcontracts	5,297,719	4,753,808	(543,910)	-11%	15,046,872	14,173,517	(873,355)	-6%
Incentives	4,420,552	5,806,407	1,385,855	24%	8,556,688	11,775,860	3,219,172	27%
Salaries and Related Expenses	1,252,287	1,240,874	(11,413)	-1%	3,637,456	3,722,621	85,165	2%
Professional Services	616,058	867,817	251,758	29%	1,551,484	2,603,450	1,051,966	40%
Supplies	4,591	3,958	(633)	-16%	9,240	11,875	2,635	22%
Telephone	2,769	4,300	1,531	36%	11,006	12,900	1,894	15%
Postage and Shipping Expenses	988	2,042	1,054	52%	2,254	6,125	3,871	63%
Occupancy Expenses	75,229	78,703	3,474	4%	238,550	236,108	(2,442)	-1%
Noncapitalized Equip. & Depr.	70,655	80,279	9,624	12%	246,497	285,911	39,415	14%
Call Center	14,485	15,000	516	3%	42,782	45,000	2,219	5%
Printing and Publications	972	1,046	74	7%	6,635	3,138	(3,497)	-111%
Travel	12,850	19,404	6,554	34%	35,140	58,212	23,072	40%
Conference, Training & Mtng Exp	13,309	19,308	6,000	31%	44,990	57,925	12,935	22%
Interest Expense and Bank Fees	23	500	477	95%	1612.64	1,500	(113)	-8%
Insurance	8,803	9,167	364	4%	26,408	27,500	1,092	4%
Miscellaneous Expenses	492	250	(242)	-97%	492	750	258	34%
Dues, Licenses and Fees	10,218	18,795	8,577	46%	33,391	56,384	22,994	41%
TOTAL EXPENSES	**11,801,997**	**12,921,657**	**1,119,660**	**9%**	**29,491,497**	**33,078,777**	**3,587,280**	**11%**
TOTAL REVENUE LESS EXPENSES	**5,880,943**	**6,295,793**	**(414,850)**	**-7%**	**28,778,429**	**21,680,089**	**7,098,340**	**33%**

Energy Trust of Oregon
Income Statement - Actual and Prior Yr Comparison
For the Month Ending March 31, 2018
(Unaudited)

	March				YTD			
	Actual	**Actual Prior Year**	**Prior Year Variance**	**Variance %**	**Actual**	**Actual Prior Year**	**Prior Year Variance**	**Variance %**
REVENUES								
Public Purpose Funds-PGE	3,452,354	3,689,292	(236,938)	-6%	10,751,654	11,285,037	(533,383)	-5%
Public Purpose Funds-PacifiCorp	2,462,923	2,692,416	(229,494)	-9%	8,040,591	8,619,655	(579,064)	-7%
Public Purpose Funds-NW Natural	2,581,050	2,883,960	(302,910)	-11%	8,205,506	8,501,487	(295,982)	-3%
Public Purpose Funds-Cascade	310,821	363,807	(52,985)	-15%	1,096,006	1,256,898	(160,892)	-13%
Public Purpose Funds-Avista	96,406	116,365	(19,959)	-17%	289,217	417,433	(128,216)	-31%
Total Public Purpose Funds	**8,903,554**	**9,745,840**	**(842,286)**	**-9%**	**28,382,975**	**30,080,510**	**(1,697,535)**	**-6%**
Incremental Funds - PGE	5,974,186	6,625,777	(651,591)	-10%	19,076,737	16,570,382	2,506,355	15%
Incremental Funds - PacifiCorp	2,746,584	3,281,241	(534,657)	-16%	9,744,469	10,217,618	(473,149)	-5%
NW Natural - Industrial DSM		1,720,596	(1,720,596)			1,720,596	(1,720,596)	
NW Natural - Washington		544,100	(544,100)		922,689	544,100	378,589	70%
Grant Revenue	10,435		10,435	-	23,747		23,747	-
Revenue from Investments	48,181	14,330	33,852	236%	119,309	60,945	58,364	96%
TOTAL REVENUE	**17,682,940**	**21,931,883**	**(4,248,944)**	**-19%**	**58,269,925**	**59,194,151**	**(924,225)**	**-2%**
EXPENSES								
Program Subcontracts	5,297,719	4,951,394	(346,325)	-7%	15,046,872	13,468,088	(1,578,785)	-12%
Incentives	4,420,552	7,779,280	3,358,728	43%	8,556,688	12,294,716	3,738,028	30%
Salaries and Related Expenses	1,252,287	1,255,997	3,710	0%	3,637,456	3,323,799	(313,658)	-9%
Professional Services	616,058	380,487	(235,571)	-62%	1,551,484	1,070,999	(480,485)	-45%
Supplies	4,591	3,914	(678)	-17%	9,240	8,314	(925)	-11%
Telephone	2,769	4,784	2,015	42%	11,006	17,124	6,118	36%
Postage and Shipping Expenses	988	761	(227)	-30%	2,254	3,119	865	28%
Occupancy Expenses	75,229	75,784	556	1%	238,550	228,598	(9,953)	-4%
Noncapitalized Equip. & Depr.	70,655	93,190	22,536	24%	246,497	286,473	39,976	14%
Call Center	14,485	14,440	(45)	0%	42,782	36,695	(6,087)	-17%
Printing and Publications	972	827	(145)	-18%	6,635	1,445	(5,190)	-359%
Travel	12,850	12,180	(670)	-6%	35,140	30,308	(4,832)	-16%
Conference, Training & Mtng Exp	13,309	21,083	7,774	37%	44,990	38,177	(6,813)	-18%
Interest Expense and Bank Fees	23	1,500	1,477	98%	1,613	1,678	66	4%
Insurance	8,803	8,607	(196)	-2%	26,408	25,821	(587)	-2%
Miscellaneous Expenses	492	935	443	47%	492	4,609	4,117	89%
Dues, Licenses and Fees	10,218	29,082	18,864	65%	33,391	49,684	16,293	33%
TOTAL EXPENSES	**11,801,997**	**14,634,244**	**2,832,247**	**19%**	**29,491,497**	**30,889,646**	**1,398,150**	**5%**
TOTAL REVENUE LESS EXPENSES	**5,880,943**	**7,297,639**	**(1,416,697)**	**-19%**	**28,778,429**	**28,304,504**	**473,924**	**-2%**

Energy Trust of Oregon
Statement of Functional Expenses
For the 3 Months Ending March 31, 2018
(Unaudited)

	Energy Efficiency	Renewable Energy	Solar LMI	Total Program Expenses	Management & General	Communications & Customer Service	Total Admin Expenses	Community Solar Expenses	Total	Budget	Variance	% Var
Program Expenses												
Incentives	7,670,180	886,508		8,556,688					8,556,688	11,775,860	3,219,172	27%
Program Management & Delivery	14,921,990	124,882		15,046,872					15,046,872	14,173,517	(873,355)	-6%
Payroll and Related Expenses	1,036,299	327,216	10,386	1,373,901	613,271	495,732	1,109,003	248	2,483,152	2,506,187	23,035	1%
Outsourced Services	732,470	175,934	10,000	918,404	128,338	373,576	501,913		1,420,317	2,440,825	1,020,508	42%
Planning and Evaluation	675,047	35,670		710,717	2,675	44,587	47,262		757,979	774,419	16,440	2%
Customer Service Management	69,211	31,244		100,456					100,456	102,941	2,485	2%
Trade Allies Network	77,072	8,976		86,048					86,048	96,825	10,777	11%
Total Program Expenses	**25,182,269**	**1,590,431**	**20,386**	**26,793,086**	**744,284**	**913,895**	**1,658,179**	**248**	**28,451,513**	**31,870,574**	**3,419,061**	**11%**
Program Support Costs												
Supplies	2,284	708	6	2,998	2,999	1,022	4,021		7,018	8,597	1,579	18%
Postage and Shipping Expenses	485	174	2	661	265	245	510		1,171	4,852	3,681	76%
Telephone	443	159	1	604	242	218	460		1,064	2,182	1,118	51%
Printing and Publications	303	21		324	5,963	33	5,995		6,319	2,414	(3,905)	-162%
Occupancy Expenses	67,695	24,294	214	92,203	36,950	33,283	70,233		162,436	163,830	1,394	1%
Insurance	7,494	2,689	24	10,207	4,090	3,684	7,775		17,982	19,082	1,100	6%
Equipment	656	35,029	2	35,687	358	322	680		36,367	37,464	1,097	3%
Travel	7,832	1,920	1,202	10,954	7,309	10,982	18,291		29,245	47,162	17,917	38%
Meetings, Trainings & Conferences	10,947	3,330		14,278	10,465	2,766	13,231		27,509	35,850	8,341	23%
Interest Expense and Bank Fees					1,613		1,613		1,613	1,500	(113)	-8%
Depreciation & Amortization	8,834	3,170	28	12,032	4,822	4,343	9,165		21,197	21,741	544	3%
Dues, Licenses and Fees	8,625	4,845		13,470	3,050	11,725	14,775		28,245	38,787	10,542	27%
Miscellaneous Expenses	713	(31)		681	(48)	(43)	(91)		590	520	(70)	-13%
IT Services	439,376	63,048	528	502,952	107,735	88,541	196,276		699,228	824,222	124,994	15%
Total Program Support Costs	**555,687**	**139,356**	**2,007**	**697,051**	**185,813**	**157,121**	**342,934**	**-**	**1,039,984**	**1,208,203**	**168,219**	**14%**
TOTAL EXPENSES	**25,737,957**	**1,729,787**	**22,393**	**27,490,137**	**930,099**	**1,071,017**	**2,001,116**	**248**	**29,491,497**	**33,078,777**	**3,587,280**	**11%**

OPUC Measure vs. 8%	**4.6%**
Program Support Costs	697,051
Total Admin Exp and Community Solar	2,001,364
Total Support and Administrative	2,698,415
divided by	
Total Utility Revenue (without Int Income)	58,126,870
OPUC %	4.6%

ENERGY TRUST OF OREGON
Summary of All Units
For the 3 Months Ending March 31, 2018

	ENERGY EFFICIENCY									
	PGE	PacifiCorp	Total	NWN Industrial	NW Natural	Cascade	Avista	Oregon Total	NWN WA	ETO Total
REVENUES										
Public Purpose Funding	8,334,640	6,241,220	14,575,859	-	8,205,506	1,096,006	289,217	24,166,589	-	24,166,589
Incremental Funding	19,076,737	9,744,469	28,821,206					28,821,206	922,689	29,743,895
Grant Revenue										
Contributions										
Revenue from Investments										
TOTAL PROGRAM REVENUE	**27,411,377**	**15,985,689**	**43,397,065**	**-**	**8,205,506**	**1,096,006**	**289,217**	**52,987,795**	**922,689**	**53,910,484**
EXPENSES										
Program Management (Note 3)	851,446	513,984	1,365,430	46,148	252,717	21,501	24,928	1,710,724	43,076	1,753,800
Program Delivery	6,758,718	4,165,585	10,924,304	241,310	1,918,168	163,783	174,543	13,422,106	118,965	13,541,071
Incentives	3,807,004	2,180,736	5,987,739	97,044	1,214,941	94,172	124,349	7,518,247	151,933	7,670,180
Program Eval & Planning Svcs.	482,583	288,035	770,619	11,984	139,567	10,963	14,956	948,092	39,236	987,328
Program Marketing/Outreach	431,355	278,849	710,205	3,662	185,192	11,172	19,376	929,607	6,587	936,194
Program Legal Services	-	-	-	-	-	-	-	-	-	-
Program Quality Assurance	964.00	821.00	1,786.00	-	649.00	46.00	59.00	2,539.00	-	2,539.00
Outsourced Services	67,829	45,922	113,753	2,898	22,345	1,711	2,183	142,889	1,988	144,877
Trade Allies & Cust. Svc. Mgmt.	59,447	46,031	105,478	438	34,738	2,398	3,232	146,283	0	146,283
IT Services	211,494	127,180	338,674	5,522	72,693	5,736	7,505	430,128	9,247	439,375
Other Program Expenses - all	54,832	34,073	88,906	2,176	16,515	1,292	1,692	110,579	5,731	116,310
TOTAL PROGRAM EXPENSES	**12,725,672**	**7,681,216**	**20,406,894**	**411,182**	**3,857,525**	**312,774**	**372,823**	**25,361,194**	**376,763**	**25,737,957**
ADMINISTRATIVE COSTS										
Management & General (Notes 1 & 2)	430,916	260,101	691,017	13,923	130,624	10,591	12,624	858,779	12,759	871,538
Communications & Customer Svc (Notes 1 & 2)	496,203	299,508	795,713	16,033	150,413	12,196	14,538	988,892	14,692	1,003,584
Total Administrative Costs	**927,119**	**559,609**	**1,486,730**	**29,956**	**281,037**	**22,787**	**27,162**	**1,847,671**	**27,451**	**1,875,122**
TOTAL PROG & ADMIN EXPENSES	**13,652,791**	**8,240,825**	**21,893,624**	**441,138**	**4,138,562**	**335,561**	**399,985**	**27,208,865**	**404,214**	**27,613,079**
TOTAL REVENUE LESS EXPENSES	**13,758,586**	**7,744,864**	**21,503,441**	**(441,138)**	**4,066,944**	**760,445**	**(110,768)**	**25,778,930**	**518,475**	**26,297,405**
NET ASSETS - RESERVES										
Cumulative Carryover at 12/31/17	12,210,566	6,211,801	18,422,366	2,647,089	3,527,716	262,067	75,717	24,934,948	176,506	25,111,445
Net Assets Reattributed from prior year										
Change in net assets this year	13,758,586	7,744,864	21,503,441	(441,138)	4,066,944	760,445	(110,768)	25,778,930	518,475	26,297,405
Ending Net Assets - Reserves	**25,969,152**	**13,956,665**	**39,925,807**	**2,205,951**	**7,594,660**	**1,022,512**	**(35,051)**	**50,713,878**	**694,981**	**51,408,850**
Ending Reserve by Category										
Program Reserves (Efficiency and Renewables)	25,969,152	13,956,665	39,925,807	2,205,951	7,594,660	1,022,512	(35,051)	50,713,878	694,981	51,408,850
Operational Contingency Pool										
Emergency Contingency Pool										
TOTAL NET ASSETS CUMULATIVE	**25,969,152**	**13,956,665**	**39,925,807**	**2,205,951**	**7,594,660**	**1,022,512**	**(35,051)**	**50,713,878**	**694,981**	**51,408,850**

Note 1) Management & General and Communications & Customer Service Expenses (Admin) have been allocated based on total expenses.
Note 2) Admin costs are allocated for mgmt reporting only. GAAP for Not for Profits does not allow allocation of admin costs to program expenses.
Note 3) Program Management costs include both outsourced and internal staff.

ENERGY TRUST OF OREGON
Summary of All Units
For the 3 Months Ending March 31, 2018

	RENEWABLE ENERGY						TOTAL			
	PGE	PacifiCorp	Total	Solar LMI	Community Solar	Other	All Programs	Approved budget	Change	% Change
REVENUES										
Public Purpose Funding	2,417,014	1,799,372	4,216,386	-	-	-	28,382,975	28,431,754	(48,779)	0%
Incremental Funding							29,743,895	26,272,112	3,471,783	13%
Grant Revenue				23,747			23,747		23,747	
Contributions									-	
Revenue from Investments						119,309	119,309	55,000	64,309	117%
TOTAL PROGRAM REVENUE	**2,417,014**	**1,799,372**	**4,216,386**	**23,747**	**-**	**119,309**	**58,269,925**	**54,758,866**	**3,511,059**	**6%**
EXPENSES										
Program Management (Note 3)	191,333	138,383	329,716	10,386	248	-	2,093,902	2,247,929	154,027	7%
Program Delivery	76,252	46,130	122,382	-	-	-	13,663,453	12,522,026	(1,141,427)	-9%
Incentives	487,488	399,020	886,508	-	-	-	8,556,688	11,775,860	3,219,172	27%
Program Eval & Planning Svcs.	20,319	15,350	35,669	-	-	-	1,022,997	1,559,399	536,402	34%
Program Marketing/Outreach	33,694	28,147	61,841	-	-	-	998,035	1,248,950	250,915	20%
Program Legal Services	-	-	-	-	-	-	-	1,500	1,500	100%
Program Quality Assurance	-	-	-	-	-	-	2,539	21,250	21,250	100%
Outsourced Services	71,881	42,212	114,093	10,000	-	-	268,970	505,462	236,492	47%
Trade Allies & Cust. Svc. Mgmt.	21,940	18,279	40,221	-	-	-	186,504	197,266	10,762	5%
IT Services	36,833	26,215	63,048	528	-	-	502,951	592,859	89,908	15%
Other Program Expenses - all	42,730	33,579	76,309	1,479	-	-	194,098	221,970	27,872	13%
TOTAL PROGRAM EXPENSES	**982,470**	**747,315**	**1,729,787**	**22,393**	**248**	**-**	**27,490,137**	**30,894,471**	**3,404,334**	**11%**
ADMINISTRATIVE COSTS										
Management & General (Notes 1 & 2)	32,914	25,010	57,925	636	-	-	930,099	1,145,232	215,132	19%
Communications & Customer Svc (Notes 1 & 2)	37,909	28,806	66,714	719	-	-	1,071,017	1,039,075	(31,942)	-3%
Total Administrative Costs	**70,823**	**53,816**	**124,639**	**1,355**	**-**	**-**	**2,001,116**	**2,184,307**	**183,191**	**8%**
TOTAL PROG & ADMIN EXPENSES	**1,053,293**	**801,131**	**1,854,426**	**23,747**	**248**	**-**	**29,491,497**	**33,078,777**	**3,587,280**	**11%**
TOTAL REVENUE LESS EXPENSES	**1,363,721**	**998,241**	**2,361,960**	**-**	**(248)**	**119,309**	**28,778,429**	**21,680,089**	**7,098,340**	**33%**
NET ASSETS - RESERVES										
Cumulative Carryover at 12/31/17	7,073,073	6,268,079	13,341,154	-	38,710	9,641,309	48,132,624	43,871,177	4,261,447	10%
Net Assets Reattributed from prior year							-			
Change in net assets this year	1,363,721	998,241	2,361,960	-	(248)	119,309	28,778,429	21,680,089	7,098,340	33%
Ending Net Assets - Reserves	**8,436,794**	**7,266,320**	**15,703,114**	**-**	**38,462**	**9,760,618**	**76,911,052**	**65,551,266**	**11,359,786**	**17%**
Ending Reserve by Category										
Program Reserves (Efficiency and Renewables)	8,436,794	7,266,320	15,703,114	-	38,462		67,150,426			
Operational Contingency Pool						4,760,618	4,760,618			
Emergency Contingency Pool						5,000,000	5,000,000			
TOTAL NET ASSETS CUMULATIVE	**8,436,794**	**7,266,320**	**15,703,114**	**-**	**38,462**	**9,760,618**	**76,911,052**	**65,551,266**	**11,359,786**	**17%**

Energy Trust of Oregon
Program Expense by Service Territory
For the 3 Months Ending March 31, 2018
(Unaudited)

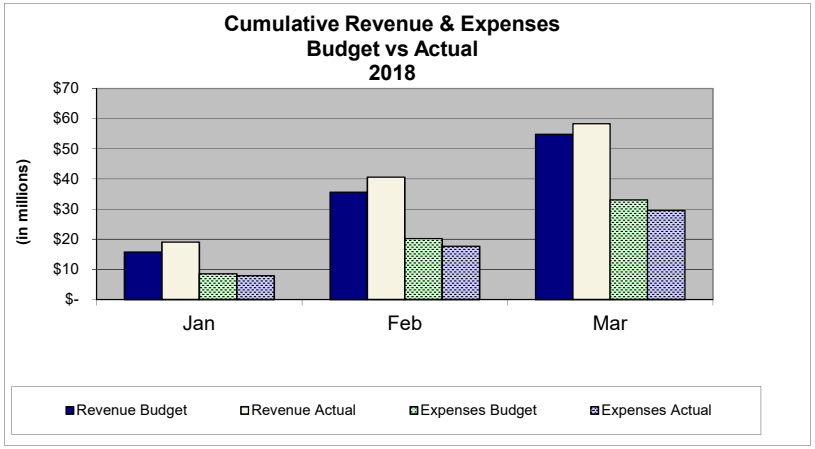
	PGE	Pacific Power	Subtotal Elec.	NWN Industrial	NW Natural Gas	Cascade	Avista	Subtotal Gas	Oregon Total	NWN WA	Solar LMI	Community Solar	ETO Total	YTD Budget	Variance	% Var
Energy Efficiency																
Commercial																
Existing Buildings	$3,174,526	$1,801,237	$4,975,762	$181,490	$985,836	$50,004	$118,205	$1,335,536	$6,311,298	$121,656			$6,432,954	$8,225,121	$1,792,167	22%
Multifamily Buildings	1,380,907	430,664	1,811,571	2,892	202,164	7,531	28,335	240,922	2,052,493				2,052,493	1,916,783	(135,710)	-7%
New Buildings	1,695,750	657,519	2,353,269	1,703	387,031	65,871	51,332	505,937	2,859,206				2,859,206	3,158,694	299,488	9%
NEEA	458,974	346,244	805,218		61,039	6,537		67,576	872,793	6,872			879,665	567,268	(312,397)	-55%
Total Commercial	**6,710,156**	**3,235,664**	**9,945,820**	**186,085**	**1,636,070**	**129,943**	**197,872**	**2,149,970**	**12,095,790**	**128,528**	-	-	**12,224,318**	**14,009,739**	**1,785,421**	**13%**
Industrial																
Production Efficiency	3,110,209	1,802,579	4,912,788	255,051	58,416	22,951	8,848	345,266	5,258,054				5,258,054	5,474,063	216,009	4%
NEEA	11,341	8,557	19,898						19,898				19,898	257,371	237,473	92%
Total Industrial	**3,121,551**	**1,811,136**	**4,932,686**	**255,051**	**58,416**	**22,951**	**8,848**	**345,266**	**5,277,952**	**-**	-	-	**5,277,952**	**5,731,434**	**453,482**	**8%**
Residential																
Residential Combined	3,210,230	2,733,208	5,943,438	-	2,142,731	150,395	193,261	2,486,387	8,429,825	241,760	-	-	8,671,585	9,643,506	971,921	10%
NEEA	610,856	460,820	1,071,676		301,346	32,270		333,616	1,405,292	33,924			1,439,216	1,123,705	(315,511)	-28%
Total Residential	**3,821,086**	**3,194,028**	**7,015,114**	**-**	**2,444,076**	**182,666**	**193,261**	**2,820,003**	**9,835,117**	**275,684**	**-**	**-**	**10,110,801**	**10,767,211**	**656,410**	**6%**
Energy Efficiency Program Costs	**13,652,791**	**8,240,825**	**21,893,624**	**441,138**	**4,138,562**	**335,561**	**399,985**	**5,315,239**	**27,208,865**	**404,214**	**-**	**-**	**27,613,079**	**30,508,384**	**2,895,305**	**9%**
Renewables																
Solar Electric (Photovoltaic)	752,458	627,021	1,379,479						1,379,479		23,747		1,403,226	1,823,043	419,817	23%
Other Renewable	300,835	174,113	474,948						474,948				474,948	747,351	272,403	36%
Renewables Program Costs	**1,053,293**	**801,131**	**1,854,426**	**-**	**-**	**-**	**-**	**-**	**1,854,427**	**-**	**23,747**	**-**	**1,878,174**	**2,570,394**	**692,220**	**27%**

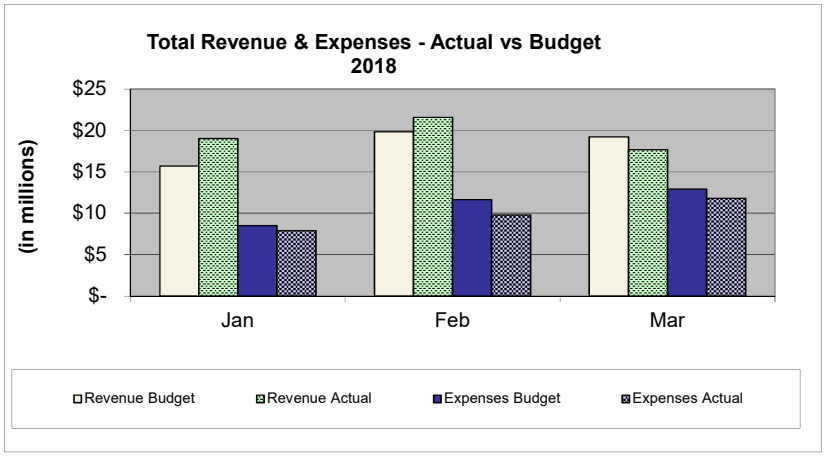
Energy Trust of Oregon
Administrative Expenses
For the 3 Months Ending March 31, 2018
(Unaudited)

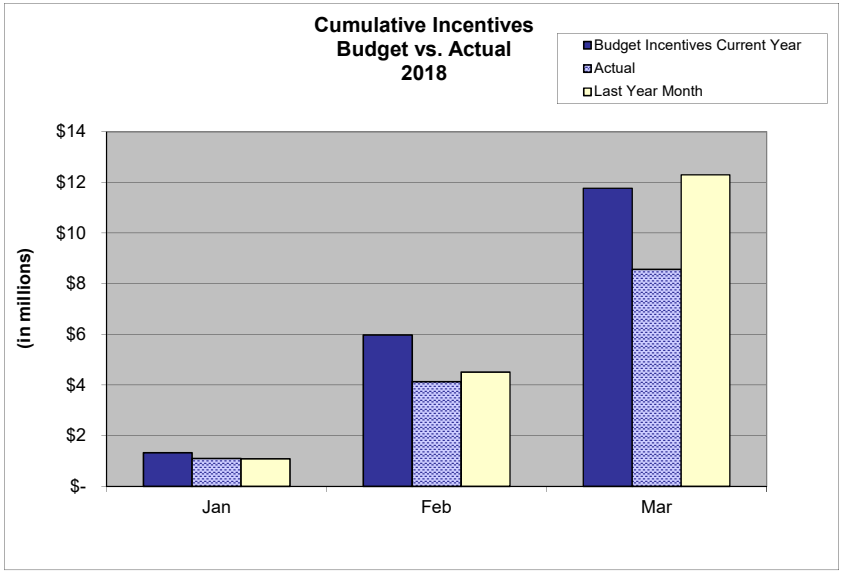
	MANAGEMENT & GENERAL						COMMUNICATIONS & CUSTOMER SERVICE					
	QUARTERLY			YTD			QUARTERLY			YTD		
	ACTUAL	BUDGET	REMAINING	ACTUAL	BUDGET	VARIANCE	ACTUAL	BUDGET	REMAINING	ACTUAL	BUDGET	VARIANCE
EXPENSES												
Outsourced Services	$121,401	$270,662	$149,261	$121,401	$270,662	$149,261	$373,576	$341,500	($32,076)	$373,576	$341,500	($32,076)
Legal Services	6,937	6,250	(686)	6,937	6,250	(686)						
Salaries and Related Expenses	613,271	640,905	27,634	613,271	640,905	27,634	495,732	480,828	(14,904)	495,732	480,828	(14,904)
Supplies	1,923	725	(1,198)	1,923	725	(1,198)	52	250	198	52	250	198
Postage and Shipping Expenses		750	750		750	750	7		(7)	7		(7)
Printing and Publications	5,931	1,125	(4,806)	5,931	1,125	(4,806)	4		(4)	4		(4)
Travel	7,309	13,850	6,541	7,309	13,850	6,541	10,982	12,500	1,518	10,982	12,500	1,518
Conference, Training & Mtngs	10,450	13,250	2,800	10,450	13,250	2,800	2,752	5,500	2,748	2,752	5,500	2,748
Interest Expense and Bank Fees	1,613	1,500	(113)	1,613	1,500	(113)						
Dues, Licenses and Fees	3,050	12,862	9,812	3,050	12,862	9,812	11,725	4,500	(7,225)	11,725	4,500	(7,225)
Shared Allocation (Note 1)	47,803	53,626	5,823	47,803	53,626	5,823	43,058	44,073	1,014	43,058	44,073	1,014
IT Service Allocation (Note 2)	107,735	126,993	19,259	107,735	126,993	19,259	88,541	104,369	15,828	88,541	104,369	15,828
Planning & Eval	2,675	2,733	58	2,675	2,733	58	44,587	45,554	967	44,587	45,554	967
TOTAL EXPENSES	**930,099**	**1,145,233**	**215,136**	**930,099**	**1,145,231**	**215,136**	**1,071,017**	**1,039,073**	**(31,943)**	**1,071,017**	**1,039,074**	**(31,943)**

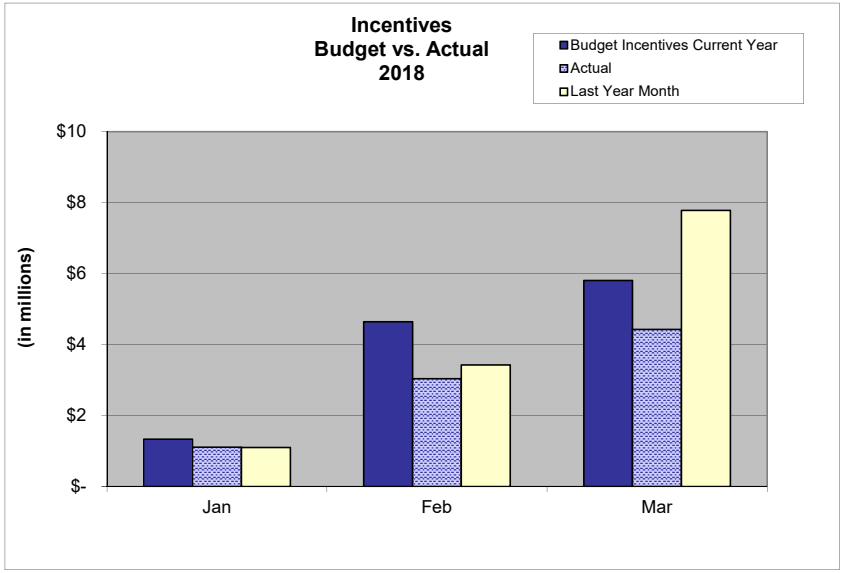
Note 1) Represents allocation of Shared (General Office Management) Costs
Note 2) Represents allocation of Shared IT Costs

Administrative Expenses 3rd Month of Quarter


Cumulative Revenue & Expenses
Budget vs Actual
2018
(in millions)
$70
$60
$50
$40
$30
$20
$10
$-
Jan
Feb
Mar
Revenue Budget
Revenue Actual
Expenses Budget
Expenses Actual


Total Revenue & Expenses - Actual vs Budget
2018
(in millions)
$25
$20
$15
$10
$5
$-
Jan
Feb
Mar
Revenue Budget
Revenue Actual
Expenses Budget
Expenses Actual


Cumulative Incentives
Budget vs. Actual
2018
Budget Incentives Current Year
Actual
Last Year Month
(in millions)
$14
$12
$10
$8
$6
$4
$2
$-
Jan
Feb
Mar


Incentives
Budget vs. Actual
2018
Budget Incentives Current Year
Actual
Last Year Month
(in millions)
$10
$8
$6
$4
$2
$-
Jan
Feb
Mar

PINK PAPER

CONTRACTOR	Description	City	EST COST	Actual TTD	Remaining	Start	End
Administration							
		Administration Total:	**13,202,090**	**5,026,544**	**8,175,546**		
Communications							
		Communications Total:	**5,855,988**	**2,229,112**	**3,626,877**		
Energy Efficiency							
Northwest Energy Efficiency Alliance	Regional EE Initiative Agmt	Portland	36,142,871	23,283,088	12,859,783	1/1/2015	7/1/2020
ICF Resources, LLC	2018 BE PMC	Fairfax	15,616,683	3,645,015	11,971,668	1/1/2018	12/31/2018
CLEAResult Consulting Inc	2018 Residential PMC	Austin	8,483,204	2,045,759	6,437,445	1/1/2018	12/31/2018
CLEAResult Consulting Inc	2018 NBE PMC	Austin	6,206,575	1,676,346	4,530,229	1/1/2018	12/31/2018
Northwest Energy Efficiency Alliance	Regional Gas EE Initiative	Portland	5,864,530	2,802,445	3,062,085	1/1/2015	7/1/2020
Lockheed Martin Corporation	2018 MF PMC	Grand Prairie	4,655,000	1,034,563	3,620,437	1/1/2018	12/31/2018
Energy 350 Inc	PDC - PE 2018	Portland	3,199,704	750,188	2,449,516	1/1/2018	12/31/2018
Intel Corporation	EE Project Incentive Agmt	Hillsboro	2,400,000	0	2,400,000	11/13/2015	12/31/2019
TRC Engineers Inc.	2018 EPS New Const PDC	Irvine	1,946,406	424,754	1,521,652	1/1/2018	12/31/2018
Evergreen Consulting Group, LLC	PE Lighting PDC 2018	Tigard	1,875,000	494,123	1,380,877	1/1/2018	12/31/2018
Northwest Power & Conservation Council	RTF Funding Agreement		1,825,000	1,349,096	475,904	2/25/2015	12/31/2019
Cascade Energy, Inc.	PE Lighting PDC 2018	Walla Walla	1,823,250	459,845	1,363,405	1/1/2018	12/31/2018
RHT Energy Inc.	PDC - PE 2018	Medford	1,665,704	391,703	1,274,001	1/1/2018	12/31/2018
CLEAResult Consulting Inc	2018 Retail PDC	Austin	1,645,112	415,961	1,229,151	1/1/2018	12/31/2018
KEMA Incorporated	EB & SEM 15-16 Evaluation	Oakland	575,000	574,999	1	6/8/2017	5/31/2018
SBW Consulting, Inc.	PE Program Impact Evaluation	Bellevue	540,000	534,255	5,745	5/1/2016	5/1/2018
Craft3	Loan Agreement	Portland	500,000	167,000	333,000	1/1/2018	12/31/2019
Pivotal Energy Solutions LLC	License Agreement	Gilbert	490,500	225,612	264,888	3/1/2014	12/31/2019
Michaels Energy, Inc.	NBE '15 & '16 Impact Eval	La Crosse	425,000	21,581	403,419	3/5/2018	3/1/2019
Balanced Energy Solutions LLC	New Homes QA Inspections	Portland	321,700	139,428	182,272	4/27/2015	12/31/2018
Craft3	Loan Agreement	Portland	300,000	300,000	0	6/1/2014	6/20/2025
EnergySavvy Inc.	Optix Engage Online Audit Tool	Seattle	273,600	205,667	67,933	6/1/2016	5/31/2018
ICF Resources, LLC	2018 BE PMC - WA	Fairfax	258,286	49,557	208,729	1/1/2018	12/31/2018
Alternative Energy Systems Consulting, Inc.	PE Mobile App Scoping Tool	Carlsbad	249,830	248,253	1,577	6/1/2016	4/30/2018
CLEAResult Consulting Inc	2018 Residential PMC - WA	Austin	238,129	42,738	195,391	1/1/2018	12/31/2018
CLEAResult Consulting Inc	2018 Residential PMC - CustSvc	Austin	174,000	29,721	144,279	1/1/2018	12/31/2018
ICF Resources, LLC	2018 BE PMC - DSM	Fairfax	161,119	108,080	53,039	1/1/2018	12/31/2018
Open Energy Efficiency, Inc.	Automated Meter Data Analysis	Mill Valley	150,000	37,920	112,080	1/1/2018	12/31/2018

Hitachi Consulting Corporation	SOW #20 NB RFP Coordination	Dallas	127,500	35,688	91,813	1/2/2018	7/9/2018
Research Into Action, Inc.	Fast Feedback 2018	Portland	112,000	33,087	78,913	2/15/2018	5/31/2019
Alternative Energy Systems Consulting, Inc.	PE Review of Technical Studies	Carlsbad	100,000	30,987	69,013	5/22/2017	12/31/2018
Research Into Action, Inc.	NB Market Research 2018	Portland	90,000	17,575	72,426	1/1/2018	7/1/2018
WegoWise Inc	benchmarking license	Boston	90,000	34,920	55,080	6/15/2014	12/31/2019
1000 Broadway Building L.P.	Pay-for-Performance Pilot	Portland	88,125	80,959	7,166	10/17/2014	11/1/2018
The Cadmus Group Inc.	Residental Air Conditioning	Watertown	83,550	74,981	8,569	7/1/2017	6/30/2018
CLEAResult Consulting Inc	Professional Services/Trans	Austin	81,688	69,170	12,518	10/15/2014	10/15/2018
Evergreen Economics	Research Cannabis Market	Portland	80,130	80,131	(1)	6/23/2017	4/30/2018
Abt SRBI Inc.	Fast Feedback Surveys 2017	New York	70,000	70,000	0	2/1/2017	4/30/2018
Energy 350 Inc	Professional Services	Portland	64,062	63,993	70	12/10/2014	12/10/2018
TRC Engineers Inc.	2018 EPS New Const PDC - WA	Irvine	63,456	4,724	58,732	1/1/2018	12/31/2018
Craft3	SWR Loan Origination/Loss Fund	Portland	55,000	0	55,000	1/1/2018	12/31/2019
Research Into Action, Inc.	Evaluation MHR Pilot	Portland	52,000	15,359	36,641	5/1/2017	2/28/2019
Ecotope, Inc.	NB - NEEA Impact Evaluation	Seattle	50,000	30,545	19,455	10/23/2017	12/31/2018
Navigant Consulting Inc	Evaluation Cosultant-DSM Proj.	Boulder	45,000	35,507	9,493	6/15/2017	6/1/2019
EES Consulting, Inc	Professional Services Agmt	Kirkland	44,680	20,610	24,070	10/1/2016	9/30/2018
Evergreen Economics	New Home Pilot- DHP	Portland	44,000	4,186	39,814	11/1/2017	3/31/2019
Brightworks Sustainability LLC	Net Zero Fellowship Grant Agmt	Portland	43,500	24,000	19,500	4/5/2017	8/31/2018
BASE zero LLC	Quality Assurance Services	Bend	43,075	27,786	15,289	3/1/2016	12/31/2018
Research Into Action, Inc.	Lighting Tool-Mrkt Research	Portland	42,237	29,022	13,215	12/1/2017	6/30/2018
The Cadmus Group Inc.	Existing Homes DHP Study	Watertown	40,000	40,000	0	9/25/2017	3/31/2019
The Cadmus Group Inc.	SEM Impact Pt 2	Watertown	39,110	0	39,110	3/16/2018	7/1/2018
The Cadmus Group Inc.	Assess - Subset Load Profiles	Watertown	38,580	3,669	34,912	2/5/2018	8/1/2018
MetaResource Group	Intel Mod 1&2 Megaproject	Portland	35,000	1,297	33,703	3/1/2018	10/12/2018
The Cadmus Group Inc.	Air Conditioning Measures	Watertown	32,950	22,660	10,290	8/22/2016	8/22/2018
Research Into Action, Inc.	Evaluation - APS Pilot	Portland	31,219	13,240	17,980	7/1/2017	12/31/2018
Northwest Energy Efficiency Council	Toll Lending Lbry Sponsorship	Seattle	30,500	30,500	0	1/1/2018	12/31/2018
American Council for and Energy Efficient Economy	Research Sponsorship - 2018		30,000	30,000	0	1/1/2018	12/31/2018
MetaResource Group	Pay-for-Performance Evaluation	Portland	25,000	0	25,000	2/1/2018	8/15/2018
Sustainable Northwest	Klamath Ag Program	Portland	24,990	6,248	18,742	2/1/2018	12/10/2018
Consortium for Energy Efficiency	Membership Dues - 2018		23,074	23,074	0	1/1/2018	12/31/2018
Evergreen Consulting Group, LLC	Lighting Conslt.-Mrkt Research	Tigard	22,000	19,109	2,891	12/13/2017	5/31/2018
Earth Advantage, Inc.	Sponsorship	Portland	17,750	10,250	7,500	3/1/2017	2/28/2019
Sheepscot Creative LLC	SEM Videos	Portland	15,400	10,780	4,620	2/19/2018	7/31/2018

Research Into Action, Inc.	Research -MF Energy Savings	Portland	15,360	0	15,360	1/5/2018	6/30/2018
FMYI, INC	Subscription Agreement	Portland	15,350	15,350	0	4/25/2016	6/30/2018
KEMA Incorporated	New Bldg Evaluation	Oakland	13,000	1,847	11,153	10/1/2017	3/31/2019
American Council for and Energy Efficient Economy	ACEEE Sponsorship - 2018		12,500	12,500	0	1/1/2018	12/31/2018
Consortium for Energy Efficiency	IEM DSM Sponsorship		10,000	0	10,000	3/13/2018	12/31/2018
Hacker Architects Inc	Special Proj. Grant Agreement	Portland	10,000	9,000	1,000	11/7/2017	5/30/2018
Alliance For Sustainable Energy, LLC	Technical Services Agreement	Lakewood	9,609	0	9,609	3/19/2018	11/30/2018
LightTracker, Inc.	Lighting Market Analysis	Boulder	9,000	0	9,000	4/1/2018	12/31/2018
The Leede Research Group Inc	Evaluation Consultant	Manitowoc	9,000	4,500	4,500	5/1/2017	6/30/2018
City of Portland Bureau of Planning & Sustainability	Sponsorship - 2018	Portland	8,000	8,000	0	1/1/2018	12/31/2018
Resource Innovation Institute	2018 Event Sponsorship	Portland	7,500	7,500	0	2/7/2018	12/31/2018
Northwest Energy Efficiency Council	BOC 2018 Sponsorship	Seattle	7,300	7,300	0	1/1/2018	12/31/2018
The Cadmus Group Inc.	NB Evaluation Plan	Watertown	6,500	0	6,500	10/1/2017	3/31/2019
Sheepscot Creative LLC	Business Case for EE Video	Portland	6,400	0	6,400	3/30/2018	5/30/2018
Shades of Green	Shades of Green Sponsorship	Portland	5,000	5,000	0	11/6/2017	10/30/2018
	Energy Efficiency Total:		**100,026,298**	**42,522,747**	**57,503,551**		

Joint Programs

E Source Companies LLC	Membership Agreement	Boulder	75,607	75,607	0	1/1/2018	12/31/2018
Structured Communications Systems, Inc.	ShoreTel Phone System Install		70,345	65,287	5,059	1/1/2017	12/31/2018
CoStar Realty Information Inc	Property Data	Baltimore	48,020	45,177	2,843	6/1/2011	5/31/2018
Infogroup Inc	Data License & Service Agmt	Papillion	26,114	13,057	13,057	2/12/2018	2/12/2020
Pinnacle Economics Inc	2017 Economic Impact Study	Camas	24,610	24,610	0	2/7/2018	4/30/2018
Navigant Consulting Inc	Resource Assessment Updates	Boulder	10,600	9,825	775	8/26/2016	8/26/2018
	Joint Programs Total:		**255,296**	**233,563**	**21,734**		

Renewable Energy

Sunway 3, LLC	Prologis PV installation		3,405,000	3,261,044	143,956	9/30/2008	9/30/2028
Clean Water Services	Project Funding Agreement		3,000,000	2,013,106	986,894	11/25/2014	11/25/2039
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	1,000,000	0	10/25/2012	10/25/2027
Three Sisters Irrigation District	TSID Hydro	Sisters	1,000,000	1,000,000	0	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	382,500	467,500	7/11/2016	7/10/2041
Old Mill Solar, LLC	Project Funding Agmt Bly, OR	Lake Oswego	490,000	490,000	0	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
Deschutes Valley Water District	Opal Springs Hydro Project	Madras	450,000	0	450,000	1/1/2018	4/1/2040
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
Three Sisters Irrigation District	TSID Funding Agreement	Sisters	400,000	0	400,000	1/1/2018	12/31/2038
Farmers Conservation Alliance	Program Support	Hood River	367,000	61,415	305,585	1/1/2018	12/31/2019
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
BSA Enterprises Inc	Solar Verifier Services	Sisters	200,000	116,599	83,401	8/1/2016	7/31/2018
Gary Higbee DBA WindStream Solar	Solar Verifier Services	Eugene	200,000	130,287	69,713	8/1/2016	7/31/2018
Luxurious Plumbing and Heating, Inc.	Solar Verifier Services	West Linn	200,000	184,720	15,280	8/1/2016	7/31/2018
RHT Energy Inc.	Verifier Services Agmt - Solar	Medford	200,000	174,433	25,568	8/1/2016	7/31/2018
City of Astoria	Bear Creek Funding Agreement	Astoria	143,000	143,000	0	3/24/2014	3/24/2034
Solar Oregon	Outreach Agreement	Portland	135,300	115,400	19,900	1/1/2015	6/30/2018
Clean Power Research, LLC	PowerClerk License	Napa	109,175	109,175	0	7/1/2017	6/30/2018
SPS of Oregon Inc	Project Funding Agreement	Wallowa	75,000	74,513	488	10/15/2015	10/31/2036
Kendrick Business Services LLC	Small Business Support Agmt	Albany	60,000	8,375	51,625	11/1/2016	6/30/2018
Kleinschmidt Associates	Evaluation Services	Pittsfield	47,400	47,609	(209)	1/1/2017	11/30/2018
OSEIA-Oregon Solar Energy Industries Assoc	Technical Training Course Dev		41,650	29,100	12,550	1/1/2017	5/30/2018
TRC Engineers Inc.	2018 EPS New Const PDC - Solar	Irvine	41,500	6,056	35,445	1/1/2018	12/31/2018
The Cadmus Group Inc.	Solar Verification	Watertown	41,000	41,000	0	8/24/2017	4/30/2018
Clean Energy States Alliance	CESA Membership 17-18		39,500	39,500	0	7/1/2017	6/30/2018
Craft3	NON-EEAST OBR Svc Agrmt	Portland	30,000	7,500	22,500	1/1/2018	12/31/2018
ENERGYneering Solutions Inc	Biopower & Hydro Evaluations	Sisters	25,000	24,954	46	12/6/2016	11/30/2018
University of Oregon	UO SRML Contribution - 2018	Eugene	24,999	24,999	0	3/9/2018	3/8/2019
Wallowa Resources Community Solutions, Inc.	Renewables Field Outreach		24,999	3,920	21,079	2/1/2018	1/30/2020
Robert Migliori	42kW wind energy system	Newberg	24,125	24,125	0	4/11/2007	1/31/2024
Site Capture LLC	SiteCapture Subscription	Austin	24,000	4,500	19,500	2/1/2018	1/31/2019
Clean Power Research, LLC	WattPlan Software	Napa	20,000	20,000	0	11/17/2017	6/30/2018
Warren Griffin	Griffin Wind Project	Salem	13,150	9,255	3,895	10/1/2005	10/1/2020
Forth	Electric Vehicles Support	Portland	10,000	8,140	1,860	1/26/2018	4/30/2018
OSEIA-Oregon Solar Energy Industries Assoc	OSEIA 2018 Conf. Sponsorship		7,500	7,500	0	9/1/2017	12/31/2018
Bonneville Environmental Foundation	REC/WRC Purchase 2016	Portland	7,290	4,860	2,430	1/1/2016	12/31/2018
Strategic Environmental Associates	Overview Carbon Mrkts to Board	Lake Oswego	5,000	5,000	0	1/16/2018	5/31/2018

Verde	LMI Solar Working Group	Portland	5,000	5,000	0	9/11/2017	3/31/2018
NeighborWorks Umpqua	LMI Solar	Roseburg	4,000	2,600	1,400	9/11/2017	3/31/2018
		Renewable Energy Total:	**17,659,320**	**14,200,437**	**3,458,883**		
		Grand Total:	**136,998,993**	**64,212,403**	**72,786,590**		

PINK PAPER

Finance Committee Meeting

May 3, 2018, 3:00 p.m.

Attending at Energy Trust offices
Pati Presnail, Hannah Cruz, Mike Colgrove, Art Sousa, Mike Bailey, Becky Rein

Attending by teleconference
Susan Brodahl—Finance Committee Chair, Roger Hamilton, Dan Enloe, Anne Root (joined at 3:09 p.m.)

Budget Review

Hannah Cruz, senior communications manager, kicked off a presentation summarizing recommendations of Energy Trust's budget review project.

Mike Bailey, engineering manager, discussed feedback from staff and external stakeholders. One theme received is the budget process has represented significant workload for all the groups involved.

Staff suggested that Energy Trust obtain better budgeting tools to allow for modeling scenarios, make more time for stakeholder input, allow for more time to make changes, have more flexibility to move funds between programs and sectors, and create staffing plans and strategy plans.

External stakeholders expressed that the budget was complex and that the timing was not optimal. The OPUC and utilities wanted more time to deliberate, have earlier completion dates and receive minimal rate changes. In addition, utilities wanted to be informed of large pending budget and/or rate changes before October. Utilities expressed that they would like staff to prioritize consistency and predictability in a budget process.

Pati Presnail, finance controller, described Energy Trust's current budget process, which includes a five-year strategic plan, a five-year sector plan, a two-year action plan and annual budgets. Pati described the proposed three-year budget and planning process.

Anne Root requested additional information around staff planning. Mike Colgrove indicated that the focus is what do we want to see and how does that translate into the programs or support groups, and then what are those resource needs. This information then feeds into a staffing plan.

Roger asked how the five-year strategic plan would align with a three-year budget plan. Staff noted that right now, they must simply complement one another. Pati provided a planning scenario representing strategy and planning over the course of an example 2020 year to illustrate the budget review team's recommendation.

She then provided a scenario outlining the action efforts over a three-year scenario involving 2021-2023. In this scenario, 2023 would also include a new strategy and planning year. Dan asked if Energy Trust wanted that rolling offset to occur all the time or if it would synchronize every two and a half years? Mike noted one possible solution was to have a "rolling strategic plan", opened in every year three and updates to it would be made, rolling forward two years every three years. Dan commented that in essence, every three years would have a two-year tail on a five-year plan.

It was also noted that the five-year plan is referenced within the grant agreement, which constrains the process to five years. Mike would like to see the strategic planning feed into both planning phases and will continue to think this through. No additional questions arose from the initial planning discussion.

Hannah presented on critical success factors to achieving a more effective and efficient budgeting process. Success factors included relying on stakeholder support, strong forecasting, increased flexibility in use of reserves and appropriate levels of reserves, as well as obtaining new budgeting software. Dan suggested a secure website to upload budget drafts, which supports private and secure stakeholder feedback.

Hannah noted that during presentations of the recommendation to staff and stakeholders, participants had questions and concerns surrounding future workgroups, costs, the potential impact to reserves and the accuracy of three-year forecasts in a dynamic market. Dan noted that the value behind new budget software included data integrity, reduction of errors, increased data and budget sharing, increased flexibility, decreased finance labor over time, and better reserve management. While there are upfront costs to an IT solution, there are long-term savings and improved products.

Mike presented on the next steps of the Budget Review project and noted that should the board approve the recommendations, the current Budget Review project would be closed, and a Budget Implementation Planning team would be created. The new team would work with staff and stakeholders through the remainder of 2018. Then, in 2019, a Budget Implementation Team would create concrete implementation processes, guidelines and staffing plans. In 2020, the process would then begin. Mike thought it would be beneficial to utilize a consultant to assist with the development and process of implementing a new budget. Dan suggested “blog benchmarking” other companies who had gone through the process, like conducting LinkedIn research. Mike said if anyone on the committee or board had referrals, staff would be happy to receive them.

Reserve Policy and Re-Distribution of Organizational Contingency Fund

Mike introduced the Reserve Policy and Re-Distribution of Organizational Contingency Fund policy proposal. The policy has been shared with the board policy committee and with utilities for feedback. The next step will be to bring it to the full board.

The current reserve policy calls for a $3 million contingency reserve. Over time, thanks to returns on investments, the contingency reserve is now nearly $5 million. Of the approximately $2 million above the contingency reserve, $800,000 is committed to the Savings Within Reach loan program through Craft3.

Staff propose to use $1 million to support a mobile home replacement loan program. The residential team will present the mobile home replacement loan program at the July board meeting, and to the policy committee beforehand. Mark Wyman presented this program concept to the finance committee in 2017. It had originated as a USDA grant proposal in 2016, but that grant did not go forward. The loan program would be a significant step forward, and could help lenders attract additional funding.

Funding that remains in the reserve account after these loan programs would then be redistributed to program reserves by crediting each utility’s reserve proportionate to their average balance in the preceding year. Staff does not propose a year-by-year retroactive calculation because doing so will require significant effort while not make a material difference. The first redistribution would be in 2019 for the cumulative excess amount, and then annually, thereafter. Staff is describing this as an accounting change.

Dan suggested that Mike or Pati present the accounting change that stops building the contingency reserve, and suggested that if the fund needed to be built up again, another accounting change could be made.

[Roger and Anne left the meeting at 4:19 p.m.]

March 2018 Financial Statements

Pati presented the 2018 financials. At the end of March, total reserves were $76.9 million, including renewables, contingency and emergency reserves. In comparison, one year ago, Energy Trust was at $62 million in reserves. Expenditures are low in first quarter, which is typical. Revenues in first quarter may be higher than average because of weather conditions. Pati noted that Energy Trust finished strong in Avista territory in Quarter 4, 2017, and also had a strong Quarter 1, 2018. As a result, the Avista service territory was overspent by $35,000 at the end of March. Steve Lacey is working with Avista to transfer funding faster than was planned in order to cover the shortfall.

The Contract Commitments report shows where contractor headquarters are located, to indicate the extent Energy Trust dollars remain in the Oregon economy. This was Dan's suggestion many years ago. Dan noted it would be interesting to see how CLEAResult spends locally. Pati will inquire if this is feasible.

Pati presented the regular financial packet. Cash was strong. On the balance sheets, current assets are $85 million, up $14 million from a year ago. Revenues are above budget by $3.5 million, or 6%, and expenditures are below budget by $3.6 million, or 11%. This is primarily in incentives, which we expect will pick back up in the second quarter.

Alison was acknowledged for her work with our investment brokers who find opportunities that fit within our investment policy. Thanks to Alison's work with cash flow tracking, we are able to earn a small yet nice return without taking undue risk or tying up working capital for long periods. The previous discussion of $2 million above the contingency reserve is a direct result of this good work.

Susan thanked Pati for her work and noted she was excited about the new budgeting process.

No further questions were noted by the committee.

Meeting adjourned at 4:38 p.m.

Next meeting date is August 16, 2018

Tab 7

Compensation Committee Meeting

April 26, 2018, 3:00 p.m.

Attending at Energy Trust offices
Dan Enloe—Compensation Committee Chair, Michael Colgrove, Cheryle Easton, Debbie Menashe, Pati Presnail, Becky Rein, Amanda Sales

Review and Approval of March 22, 2018, Meeting Notes

The minutes of January 10, 2018, were reviewed and approved by the committee as submitted.

Discussion of Transition to The Principal Group and Cable Hill Partners for Retirement Plan Third Party Administration Services

Staff provided committee member Dan Enloe with an update on the transition process. Staff advised Mr. Enloe of the fund mapping options and costs associated with the transition, and provided an update on staff communications.

Brief Update on 2017 Performance Review Process, Pay Equity Analysis, and Process for Development of a Compensation Policy

Amanda gave an overview of the 2017 performance management process. Dan requested that the decision-making behind the building lease and the employee work environment and amenities be noted as a big part of compensation.

Dan did not have any additional questions.

Amanda provided information on steps taken to analyze compensation across the organization for pay equity compliance, and described the process for development of a documented compensation philosophy. Working with outside consultant, Mammoth HR, Amanda and the HR team will be working over the next several months with Energy Trust's Management Team and employees to review Energy Trust's compensation principles and update documentation to guide performance management and compensation decisions for the future.

Chair Enloe was thanked for his work with the compensation committee. He also thanked the committee for their hard work in moving the transition and other projects forward.

Meeting adjourned before 4:30 p.m.

Next meeting date is August 23, 2018, at 3:00 p.m.

Tab 8

Evaluation Committee Meeting

April 25, 2018, 12:00 pm

Attending at Energy Trust offices

Lindsey Hardy—Evaluation Committee Chair, Kathleen Belkhayat, Susan Brodahl, Shelly Carlton, Sarah Castor, Michael Colgrove, Amber Cole, Warren Cook (ODOE), Phil Degens, Sue Fletcher, Erika Kociolek, Matt Getchell, Jackie Goss, Fred Gordon, Jeni Hall, Ken Keating (sole proprietor), Steve Lacey, Jennifer Light (Northwest Power and Conservation Council), Alan Meyer, Spencer Moersfelder, Jay Olson, Thad Roth, Dan Rubado, Andrew Shepard, Katie Wallace, Peter West, Mark Wyman

Customer Insights Study 2017

Shelly Carlton presented on the Customer Insights Study.

Background: This study is in its second year.

There are two main goals of the study. It is a way to track trends over time, and is also an opportunity to explore areas of interest in a particular year. The survey looks at customer demographics, awareness of Energy Trust and energy efficiency topics, motivations, barriers and attitudes. The survey averages about 10 minutes in length, and this year we completed surveys with 1,000 respondent. One-half of respondents were recent participants and the other half were single-family residents who had never participated with Energy Trust. Additionally, we oversampled in zip codes with a high percentage of minority households, according to the U.S. Census. We used this strategy because we didn't get many non-white respondents last year, so this was an attempt to learn more about these households and their perspectives. Research Into Action completed the analysis of the survey responses and did post-survey weighting of responses to make them representative of the general population.

Findings: The study indicated that participants are more likely than non-participants to be white, have higher education levels, be employed, own their home, be under age 65, have higher income, have children in the home and have more occupants in the home. These findings match what we have seen in previous surveys of participants and non-participants. Awareness of Energy Trust as an organization that offers incentives for energy efficiency is relatively low (14 percent), and is consistent with last year's results. There is more awareness of utilities as a source of information and incentives. As shown in the table below, the top three ways people reported learning about Energy Trust were advertisements; a contractor, supplier, vendor or retailer; and their utility. About a quarter of respondents heard about us through advertising, which has historically been a big source of awareness.

Alan Meyer asked why there was such an increase in awareness through a contractor or retailer. Unfortunately, there isn't enough information from the survey to explain why.

Sources of awareness of Energy Trust (top three highlighted)

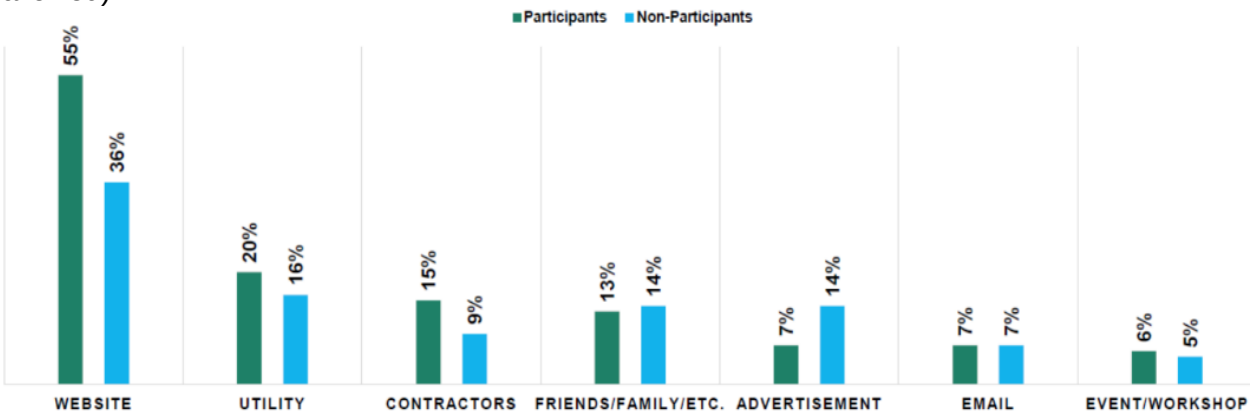
	2016		2017	
	Participants (n=104)	Non-participants (n=25)	Participants (n=111)	Non-participants (n=34)
An advertisement	25%	23%	25%	20%
From a contractor, supplier, vendor, or retailer*	6%	2%	18%	26%
From your utility*	14%	29%	18%	11%
Energy Trust programs	N/A**	N/A	13%	5%
Word of mouth	10%	20%	10%	9%
Online	N/A	N/A	8%	19%
Through social media	7%	7%	6%	10%

* Denotes significant differences between 2016 and 2017.
**For 2017, Research Into Action recoded "Other" responses into existing or new categories, including "Energy Trust programs." 2016 responses were not recoded.

Participants report being more experienced with hiring contractors than non-participants. More than two-thirds of all respondents reported buying at least one LED and one-quarter reported purchasing an efficient showerhead in the last year. We do not believe that many people bought that many efficient showerheads. It is more likely that they don't know what qualifies as an efficient showerhead. Even so, that rate of showerhead purchases would be unlikely.

Most respondents use utility bills to understand their energy use and costs, and people turn to their utilities for information on saving energy at home. When asked what sources they used for information on energy efficiency and home improvements, as shown in the figure below, respondents most often said websites, their utility, friends and family, contractors and advertisements. Jackie Goss asked whether website means just the Energy Trust website or whether it includes others. It includes any website. Michael Colgrove asked how an answer of Energy Trust might be categorized in the answer options. It could fall under websites, advertisements or other answer options, depending on the specific channel.

Sources of information on energy efficiency or home improvements (multiple responses allowed)



We tried asking respondents what they need to know to take action to save energy, and the most frequent answer—about a third of respondents—was "don't know." We probably won't ask this question again. When asked why people made their most recent home improvement, the most common response was immediate need, followed by saving energy and money and increasing comfort. Top barriers to making improvements, other than money, were time constraints for participants and being a renter for non-participants. Many people say they pay attention to their energy use. Renters, respondents with lower educational attainment or income, minorities and Southern or Eastern Oregonians are more likely to be concerned about their energy costs. Non-participants, older respondents and those with lower educational attainment or income are less likely to be aware of, or concerned about, the impact of their energy use on the environment.

In 2017, we asked about recall of energy education in school, because we are exploring what role Energy Trust might have in the area of education. Respondents who recalled learning about energy use and saving energy in school were more likely to pay attention to their energy use, talk to others about energy use and purchase energy efficient lighting or showerheads.

Comparing minority and non-minority respondents, minorities are more likely to be renters, have lower income, and have more occupants in the household. Minorities are less likely to be aware of any organizations offering energy efficiency incentives. A primary barrier to taking energy efficiency actions for minority respondents is being a renter. Minorities are more likely to talk about energy use with friends and family. As we consider how to serve these communities, we want to leverage that word-of-mouth and networking.

Recommendations: Research Into Action recommended conducting qualitative research to explore specific communities we want to reach, and target strategies to each community. The residential sector is currently conducting qualitative research on some customer groups. As awareness of Energy Trust is low, Research Into Action recommends we continue to monitor awareness and try to re-engage past participants. There remains a need for information and education on saving energy and home improvements. Energy Trust likes to try to move customers straight to action, but we may need to consider doing more education first. There are some barriers, like time constraints, that Energy Trust has little control over, and it is unlikely that we can do much to change attitudes about environmental impacts of energy use.

Ken asked about the changes to methodology from the 2016 study. Sarah Castor explained that both surveys were done by the same survey house (not Research Into Action), but the survey implementation in 2017 was inconsistent. Research Into Action recommended some steps to improve the survey methodology and implementation. Susan asked about the oversampling of zip codes with more minority households and how that affected the survey. Sarah said that the oversample did complicate the analysis, because having more minority respondents made the post-survey weighting difficult. Research Into Action developed a solution that was able to give us responses that were representative of the general population while also allowing us to compare minorities and non-minorities. It would be easier in the next survey to either plan the sampling strategy to be representative of the general population *or* compare minorities and non-minorities. Alan asked what we can say about the reasons for differences between minorities and non-minorities. Sarah and Shelly acknowledged that the differences may be related to demographics or to something else – there is not enough qualitative information in a survey to be conclusive.

Residential Grow Light Research

Presented by Katie Wallace

Background: This study, which is the first of its kind on the residential grow light market, was conducted by Evergreen Economics after a competitive request for proposals. The project had three key goals: to identify opportunities for cost-effective lighting savings for home grows, to gather information to help define an energy baseline for home grow operations, and to gain understanding of the size of the Oregon residential grow market. Recreational cannabis has been legal in Oregon for almost three years. There is a limit of four plants for residential home grows, but medical growers are allowed to grow more plants. There is no licensing on residential home grows for recreational use, which is why we did this research to understand more about the scope of the market.

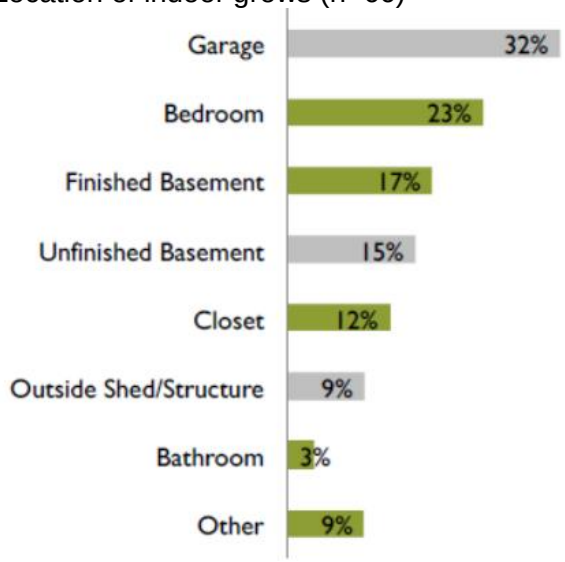
Research began with a review of current literature and legislation. We were able to obtain and analyze lighting sales data from two specialty lighting retailers. The next phase was interviews with market actors. There was a target list of 127 contacts and the goal was to complete 22 interviews. In the end, we got 14 interviews, since it was challenging to reach contacts, especially hardware retailers. Interviews were completed with four lighting manufacturers, two lighting distributors and eight specialty retailers. Evergreen had to switch from phone to in-person outreach to complete the interviews. In terms of geographic distribution, four of the specialty retailers were in the Portland Metro region, two were in the Northwest Oregon region and two were in Southern Oregon. Interview questions covered lighting sales, equipment characteristics, market share of technologies, customer perceptions and barriers to purchasing efficient lighting, customer priorities and the importance of specific lighting features.

There was also a web survey of home growers. The survey was anonymous and questions covered grower demographics, their growing set-up and methods, lighting used, purchasing decisions and willingness to use efficient lighting. In addition to being anonymous, the survey did not require answers to all questions. Recruitment was conducted through social media marketing and paid ads targeting eligible users, outreach at cannabis events, flyers posted at relevant retailers and emails targeted to industry contacts. We received 146 responses, 99 of which were fully completed surveys.

Findings: From the web survey, most growers live in single-family homes and most of those own their home. A majority were over 35 years of age. Half live in the Portland Metro area, which mirrors the state population, and income skews lower than the state. Most respondents grow indoors only or in combination with a greenhouse or outdoors, and 44% grow both medical and recreational.

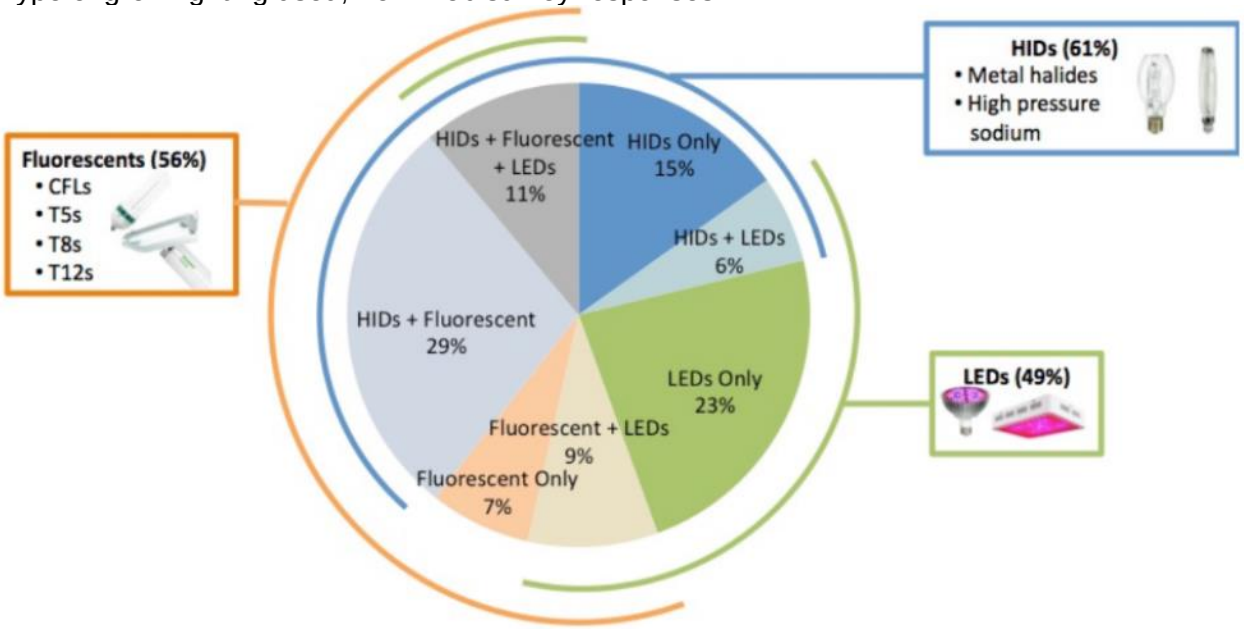
Based on the average number of plants per grower (84% have four or more plants), respondents are growing enough to have full lighting set-ups. Half of indoor grows are in unconditioned spaces, as shown in the figure below, which means there is no interaction between the heat put off by lighting and the home's heating or cooling system. About half of respondents said they are experienced growers, and there was not a big difference in experience by age.

Location of indoor grows (n=66)



Lighting technologies in the home-grow market are the same as in the commercial sector. There are high-intensity discharge (HID) lights, which use the most energy and are in a medium price range. These include ceramic metal halides (CMH), which use less energy than other HID types, but cost about the same. Alan asked what makes a CMH different, but Katie said she was not enough of an expert in the technology to explain. LEDs are highest priced, but very energy efficient. There is also fluorescent lighting, but we didn't focus on those. Growers reported using multiple technologies in their set-up, as shown in the figure below. There are 23% using only LEDs already, and 49% use them alone or in combination with other lights. The 61% who are using HIDs (alone or with other lighting) would be our target to transition to LEDs. A large majority of growers are using less than four bulbs. Some HID users may need to go from one HID bulb to two LED bulbs.

Type of grow lighting used, from web survey responses



Most respondents were growing at least three cycles per year, meaning there is sustained lighting use throughout the year. Runtime of lighting varies by growth stage of plants – most are using lighting not more than 18 hours a day in the first two growing stages (seedling and vegetative), and not more than 12 hours in the flowering stage. HIDs need to be replaced much more often compared to LEDs – once every six to 12 months versus every five or 10 years.

Seventy-two percent of indoor growers use cooling equipment, which is usually a basic fan; HVAC load is minimal. Only a third use heating in their home grow, and surprisingly this did not differ between those who use LEDs versus non-LEDs. Shelly asked if LEDs require less air conditioning (AC). Katie said that the survey didn't ask about that; it is true for commercial, but that's a different scale of operation. Since most people are growing in unconditioned spaces, there probably isn't much AC use. Overall, 91% of growers have their lighting on a timer.

In terms of retail channels used, most respondents with HIDs purchased them at brick and mortar stores, whereas a little over half of LED users purchased them online. This is probably related to price points and availability. There are three large lighting distributors that supply most of the specialty market, so it is very concentrated.

Estimating market size is hard. From Oregon Health Authority, we know there are about 33,000 medical grows, but estimating the recreational market is difficult as there is no licensing. From other sources, we know about 2% of cannabis users reportedly grow their own in states where it is legal, and about 23% of Oregon adults reported using cannabis. We can estimate the number of growers based on that, but then we would also need to estimate how many of those people grow indoors and need lighting.

Recommendations: Evergreen Economics recommended that program design account for LEDs being used only for some growth stages. They also recommend including CMH bulbs in a program since they are somewhat efficient. They suggest focusing on specialty retailers to make LEDs more available, and designing the offer to serve both medical and nonmedical grows.

Katie noted that this was a challenging project, and the first study of this kind. Energy Trust will not focus on CMH bulbs, and will pursue LEDs only. Alan asked why and Katie replied that it is mostly because there is no incremental cost. They are also already well known to growers. Alan asked if there was a role for CMH in transitioning growers to LEDs - couldn't we do education? Phil said we could work with retailers to drive the technologies that are efficient. Ken noted that technology preferences are driven by culture, word of mouth, and blogs and websites. Recent research, including our commercial cannabis market research, shows how people learn how to grow – they follow the advice of other experienced growers. We may be able to change practices by targeting the places where people are getting advice. Katie noted that the set-up costs for a home grow operation are high so people want reliable growing methods and technology. It is hardest to get LED use in the flowering stage.

In terms of what worked well about this research project, the web survey (which used a raffle to encourage response) and in-person interviews with specialty retailers were productive. Challenges were outreach to standard hardware retailers, phone outreach to all market actors, and getting sales data. Six market actors offered to provide sales data, but only two did. Several said they did not have the time or could not get approval from a manager to provide data to us.

Since getting the report, we have presented the findings to the utilities and completed a preliminary measure screening. There is savings potential for LEDs; we need to do some more

analysis for baseline and savings. We will go through a full measure screening in the fall, then decide if we move forward with a program test in 2019. We want to affect retail stocking practices. We are considering two potential strategies – going through specialty lighting retailers or lighting distributors. There are benefits and challenges to each strategy.

Warren said it is early to say much about total energy use or savings potential in the home grow market. For growers, monthly energy use is not a big deal, the up-front cost of the equipment is the big deal. Commercial growers have to report their annual energy use to Oregon Liquor Control Commission, but there is no such requirement on the residential recreational side. The opportunity may be narrow because of a relatively small number of distributed growers. Warren said he thinks the current most-commonly used LED is a $400 unit from Feit, which is not as expensive as some other LEDs. Medical grows are considered commercial facilities, but aren't served through our commercial program. Katie said the savings appear to be there for LEDs, but market potential is the question. Warren said determining the baseline is tough, it may not be the least efficient technology. Oregon Department of Energy is concerned about not having a good sense of the baseline. In the initial legislation process, growers didn't want to be told what lighting to use in their production. This research is a great step on the path to a baseline and understanding how much we can influence the market. Mark said the program is leaning toward using a common market baseline for a midstream incentive, so we don't need to know what individual growers are doing. Warren said it makes sense to educate the retailers, too. Ken noted that manufacturers of LEDs, coming from a digital innovation background, can make different products with differing light spectrums, and there are lots of different products available. Katie said that some growers don't realize how far LEDs have come from 10 years ago, it is a hard barrier to overcome.

Fast Feedback Results 2017

Presented by Dan Rubado

Background: Fast Feedback is an ongoing survey and we present results once a year. It is a short phone survey conducted within one to two months of the participant receiving an incentive. We have been doing the survey since 2009 in the nonresidential sector and since 2010 for all other program. There are slightly different questions for residential and nonresidential participants. There are quarterly quotas to make sure responses are not clustered in one season. The 2017 surveys were conducted by Abt Associates, who had been conducting Fast Feedback for several years. We had just over 2,500 completed surveys in 2017: about 1,900 residential and 600 nonresidential.

Findings: Overall satisfaction with participant experience with Energy Trust is 93%, and this is a metric that we report to the Oregon Public Utilities Commission (OPUC). For nonresidential programs, we also report satisfaction with interactions with program representatives, which is 97%. Breaking results out by program shows the range of overall satisfaction is from the low to high 90's (see table below).

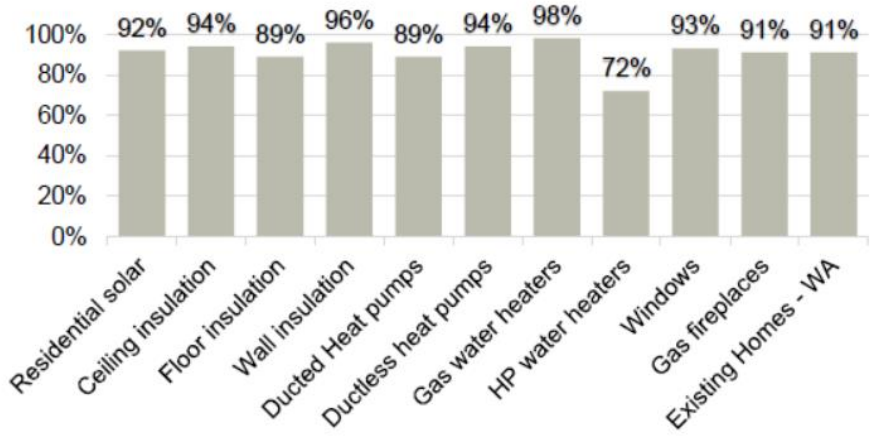
Overall satisfaction in 2017

Program	% Satisfied
Existing Buildings - Oregon	95%
Existing Buildings - Washington	90%
Production Efficiency	98%
Multifamily	94%
Commercial Solar PV	94%
Residential Solar PV	92%
Home Products (clothes washers)	94%
Existing Homes - Oregon	91%
Existing Homes - Washington	93%

Overall satisfaction over time has remained high – the numbers fluctuate a little from year to year, but not that much. In 2017, there was a small decrease in satisfaction for residential insulation and windows. The Existing Buildings – Washington group has a small sample size each year, so satisfaction appears to fluctuate more. Satisfaction with program representative has also remained high.

We have a few other satisfaction metrics that are not part of OPUC reporting. For nonresidential participants, we ask about satisfaction with technical services, if they received them. Satisfaction here was more than 95% for all programs, up to 100% for a couple groups. For residential participants, satisfaction with their contractor was also relatively high (as shown in the figure below), except for heat pump water heaters, but that measure has a smaller sample size, so we are not sure if there is anything to worry about there. Peter asked whether we analyze separately for trade allies and non-trade allies; we do not.

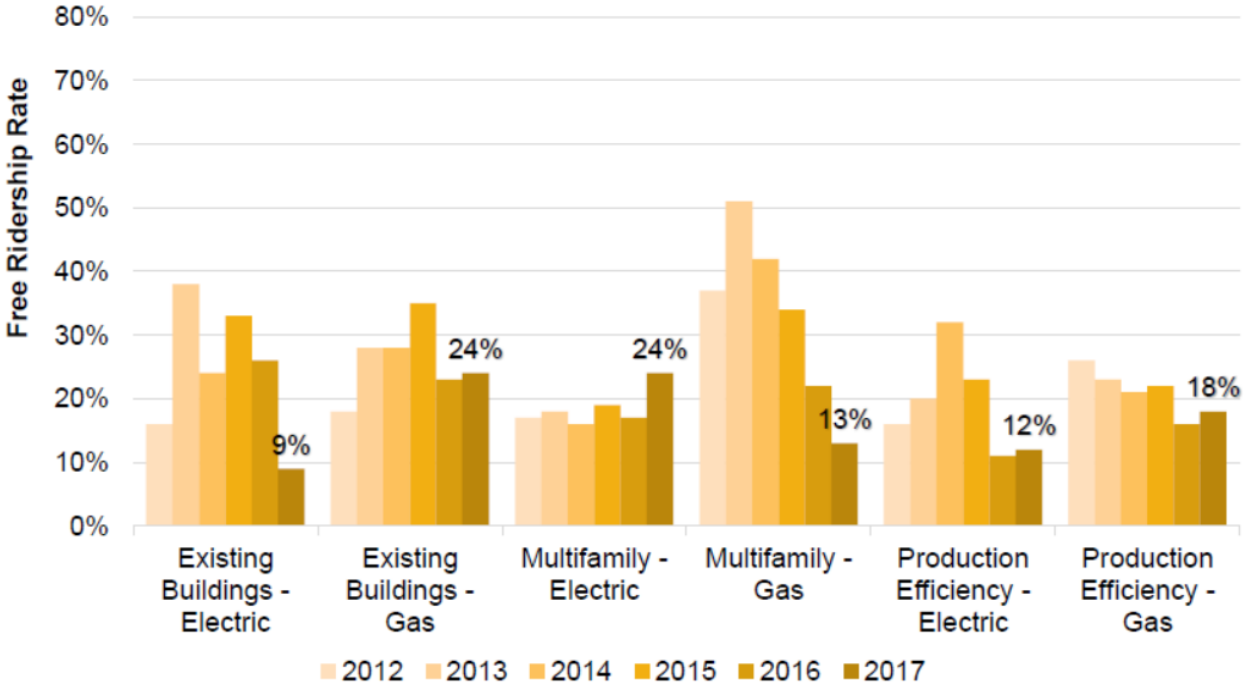
Satisfaction with contractor in 2017 (residential respondents only)



We use Fast Feedback to calculate free ridership for most programs and measures, with a few exceptions, such as Washington measures and solar. On the residential side, there has been some fluctuation in free ridership rates over time, but not really any trends within measures. Many of the measures have a rate around 40%. On the nonresidential side, 2017 saw a significant reduction in free ridership for Existing Buildings electric measures, from 26% in 2016 to 9%, as shown in the figure below. The calculations are complex, so it is hard to say what is

driving things in every instance of a change. Many of the rates are an average of 2017 plus previous years. For Existing Buildings, some past years with higher free ridership rates are no longer included in the calculation. On the gas side, the free ridership rate for Existing Buildings was similar to past years. Multifamily had an increase in free ridership for electric measures and a decrease for gas measures. Andrew Shepard asked if there was any change in the gas measure portfolio that could have caused the change; no one was aware of any. It could be that the change is related to smaller sample sizes for that program and fuel. Free ridership for Production Efficiency was very similar to last year.

Free ridership rates over time for non-residential programs



Another interesting piece of the survey is a question for residential participants about the funding source(s) for their project. For solar participants, almost everyone used the Residential Energy Tax Credit. Other measures are mostly cash and/or credit card. Higher cost measures (equipment and windows) are more likely to make use of financing and loans. Michael asked if respondents can choose more than one funding source and Dan confirmed they can.

Other interesting factoids on the residential side involved water heaters, thermostats and gas fireplaces. We ask participants about the location of their heat pump water heater; 45% installed it in the garage, 35% in the basement and 20% inside the home. About three quarters of these water heaters replaced a functional water heater and only 5% replaced a gas water heater. For participants installing a gas water heater, the same percent were replacing a functional water heater, while 20% were replacing an electric water heater. We asked smart thermostat participants if their unit was still installed, and 100% said that it was, which is in indication that we don't have to worry about people buying them and not installing or uninstalling them. In about two thirds of cases, gas fireplaces replaced a wood fireplace, while 28% replaced an older gas fireplace.

Next Steps: The 2018 survey is in progress and we are testing a web survey alongside the phone survey (with random sorting into these groups) to compare the effectiveness and costs of

the two methods. We are also testing what type of survey incentive is most cost-effective (including no incentive). After completing the first month of surveying, the web survey is producing very good, better-than-expected response rates.

Alan asked if we need to do this survey at this frequency, or could we do it less often. Phil responded that our goal is to make this survey predictable and expected. Because we do it on an ongoing basis, the results don't take anyone by surprise and we can smooth out variations. We used to do quarterly reporting, but now it is just annual. Managers know it is happening and they get direct comments from respondents on a regular basis. Amber noted that we report satisfaction to the OPUC on a quarterly basis. Staff's goal is to try to minimize the cost (with a web survey, if it continues to work out) rather than reduce the frequency. Ken added that an original goal of Fast Feedback was to get satisfaction and information on decision-making soon after participation so it is more accurate.

Solar Verification Process Evaluation

Presented by Sarah Castor

Background: Energy Trust's solar program is a relatively mature program, and is looking for ways to have a positive impact on the solar market beyond providing incentives to customers that install solar. The program is working to reduce program costs, reduce soft costs, and provide value to customers. The program performs verification on 100% of the systems that receive an incentive, which is one piece of the program's quality management strategy. Program verifications focus on checking workmanship to ensure the systems will meet Energy Trust's generation estimates, and to maintain quality in the Oregon solar market. Cadmus performed this evaluation.

Once a customer selects a trade ally to install their system, the program contracts with independent verifiers to review the design of the system before it is installed. And once the system is installed, the verifiers will perform an onsite verification. Verifier feedback factors into trade allies' ratings; trade allies get stars for making sure applications are complete, that installed systems are of high quality, for providing good customer service, etc. Higher ratings lead to benefits; trade allies are eligible to get solar leads (customers can go onto Energy Trust's website, enter information, and obtain bids directly from multiple trade allies). The highest rated trade allies are also eligible to participate in solar program pilots, such as the current remote verification pilot, which will be discussed more at the end of the presentation.

The study objectives were to look at the benefits of verification to allies, customers, and Energy Trust; document the current verification experience, and identify opportunities for improvement (taking into account the perspectives of verifiers, allies, Energy Trust and participants); obtain early feedback on the star rating system (which was rolled out in mid-2017); and see if the value of verifications can be quantified (e.g., in dollars).

Methods: Energy Trust provided project data, verification results from 2015-2017, trade ally data, and trade ally ratings. Interviews were conducted with Energy Trust staff, all four verifiers at the time, and 10 of the 121 trade allies (the 10 interviewed trade allies included the one with the most projects in the program, as well as trade allies from different geographies and with a mix of star rating levels). A survey was conducted with residential and commercial participants who had systems verified in August through early November 2017. Only two of 21 commercial

participants responded, along with 95 residential participants; in total, 97 of 512 eligible participants responded to the survey.

Findings: 27% of verifications resulted in corrections needed; 17% had major violations and 10% had only minor violations. Cadmus found that there is quite a bit of variation in trade ally quality management practices – some do a lot of internal quality control, while others don't – and some trade allies reported that their quality management practices have been directly impacted by Energy Trust's verification requirements. Verifiers that work outside of Energy Trust territory reported that installations are of higher quality in our service territory, and attributed that to Energy Trust's verification process.

All of the verifiers follow the same set of program guidelines regarding what to inspect, however, they look at slightly different things from slightly different perspectives, spend different amounts of time on-site, have different levels of effort to inspect enclosures, and provide different documentation. Trade allies reported that they see differences in the amount of feedback they get from different verifiers. Cadmus felt this was more variation than was desirable, but they did not have a lot of suggestions about how to improve consistency.

The star rating system was rolled out just before interviews were completed, so it is a little early to conclude much about the rating system. Verifiers reported that they felt they have seen improvements in installation quality since the ratings were implemented; some trade allies don't like the rating system, and expressed concern about consistency, and did not understand the ratings. Participants who were aware of the rating system said it was influential in their choice of a contractor, and those who were not aware of the rating said they thought it would be influential in contractor choice. Participants noted that the Energy Trust website and recommendations from others were key to selecting an installer.

Participants also noted that program incentives and tax credits were influential, and said that the design review and verification are important. Participants' willingness to pay for verification was about $100; some were willing to pay more, and some were not willing to pay anything.

Trade allies see a continuing role for Energy Trust in education, lead generation, developing financing options, and standardizing permitting across jurisdictions.

Similar to Fast Feedback, participants are very satisfied with their overall experience (93%) and are also very satisfied with their verifier. Overall, participants felt that the process was easy.

Currently, the program is testing remote verification; at the time this evaluation was performed, the remote verification pilot was limited to three trade allies. These trade allies were positive about remote verification; they recognized that it saves time for verifiers, and said that it provided good information about the installation. They did not like that it takes more time for them, since they are required to submit lots of photos. It essentially shifts some time from verifiers to the trade allies.

The evaluation asked trade allies about tools, including Power Clerk, which is the software used for submitting program applications, and remote shade analysis tools, which the program started allowing within the last year or two. Trade allies said Power Clerk works well. Half of interviewed trade allies said they are using remote shade tools, and while they said the tools are useful, they noted that it can't replace on-site tools in all cases.

Overall, it seems that verification is resulting in higher quality installations, improving trade ally knowledge and practices, improving project documentation, and increasing customer understanding of their system. However, these benefits come with costs: program staff, verifier, and trade ally time, and communication and education. Trade ally suggestions for improvements were related to streamlining the verification process, and improving transparency and consistency, especially as verification relates to the rating system. Cadmus had a few suggestions for how to quantify the benefits of verification, but this would require more work and study; we can't assign a dollar value right now.

Conclusions: The evaluator concluded that verification provides benefits; it seems to be improving the quality of installations, and provides value to customers and trade allies.

Recommendations: The evaluator recommended increasing verifier consistency, and increasing the number of verifiers from three back to four, if the program expects to continue to see the high project volume it saw last year (without the Residential Energy Tax Credit, that is not likely to continue). The evaluator also recommended trying to manage the burden of verification on trade allies – e.g., thinking through what is the minimum number of pictures trade allies need to submit to support high quality verification. The evaluator supports the program continuing to pursue remote verification.

Energy Trust Take: Jeni said that knowing that customers find value in verification and in the trade ally rating system is useful feedback; it confirms that the program is on the right track. The program has been expanding the remote verification pilot to include more contractors; about two dozen are now participating. Also, the number of program verifiers is down to two; this is not something within Energy Trust's control.

Alan asked what information we are getting from this report – are we able to claim more savings? Jeni responded that a core piece of the program design is consumer protection and quality management. The program's installation requirements go beyond what is required by code, because a system can be designed and installed to code, but never produce electricity, and that's not a good investment of ratepayer dollars. We think this emphasis on system quality shows in the results from the recent impact evaluation, which found that generation was 20% higher than what was estimated, and found that all of the systems were producing, which isn't the case for other programs in the country.

Alan asked if verifications were not done, what would be the impact. Jeni responded that the program and trade allies would lose a feedback loop, and we expect that installation quality would decrease, since no one would be holding the industry to a higher standard. Jurisdictional inspections are solely safety-focused; they are not allowed to get up on roofs, and are not equipped to do the type of quality- and performance-focused review that Energy Trust requires and supports. Peter added that verifications are important for customer engagement; without Energy Trust, customers don't have access to an independent perspective.

Alan commented that verification is a nice thing to do for customers, but is wondering if this is covering the above-market cost. Sarah responded that we can do more research to obtain a quantitative estimate of the value. Susan commented that 27% of verifications resulted in issues requiring corrections – can that number be used to quantify the value? Sarah responded that some of the issues identified through verifications would not lead to system failures; they might result in decreased energy production. Fred commented that there are ways we can crudely come up with an estimate, and illustrate the costs and benefits without getting too precise and without spending too much time and too many resources. Jeni commented that reducing soft

costs is getting at above-market costs, by reducing costs to customers. Also, benefits like verification are really incentives that make projects go.

Existing Buildings 2015-2016 Impact Evaluation

Presented by Sarah Castor

Background: The Existing Buildings impact evaluation started about a year ago, right after the 2013-2014 impact evaluation was completed. DNV GL was the evaluator, and the impact evaluation covered program years 2015 and 2016. Capital measures in the standard, lighting, and custom tracks were evaluated, as well as commercial Strategic Energy Management (SEM), which, in the past, was evaluated separately.

The objective was to estimate realized savings, which are used in budget development and True-Up. The table below shows program activity in 2015 and 2016; SEM, standard and custom tracks resulted in significant savings on the gas side, while lighting resulted in significant savings on the electric side.

Existing Buildings program savings, by track and year

	Measures		Reported Electricity Savings (kWh)		Reported Gas Savings (therms)	
Program Track	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**
Custom	263	252	26,045,331	25,840,900	789,124	654,306
Lighting	7,976	7,268	66,159,552	77,678,006	0	0
Standard	1,393	1,461	6,515,821	10,590,409	559,703	753,615
Capital Measures Only	**9,632**	**8,981**	**98,720,704**	**114,109,315**	**1,348,827**	**1,407,921**
Strategic Energy Management	114	168	10,330,780	9,806,709	539,194	481,771
Grand Total	**9,746**	**9,149**	**109,051,484**	**123,916,024**	**1,888,021**	**1,889,692**

Methods: DNV GL started by reviewing program data. They developed a sample design, and then selected a sample of projects to include in the evaluation. Energy Trust provided DNV GL with files for the sampled projects. The project files were reviewed and used to inform data collection, which took the form of phone interviews or site visits. Once data collection was complete, DNV GL began working on the analysis, which, depending on project complexity, involved reviewing and updating calculations, re-running calibrated simulation models, and/or performing regression analysis for some custom projects and SEM.

This evaluation focused on lighting, including direct-install lighting and tube LEDs (TLEDs). The program was interested in direct-install lighting because a subcontractor performs the installations and there is a heavy discount on the price of the lighting equipment. Direct-install lighting comprises a small portion of the program's electric savings, but such measures are important for small and medium businesses. The program was interested in TLEDs because they represent a new and growing technology, and staff were interested in TLED performance and any customer satisfaction issues. Another focus area for this evaluation was SEM, including

both first-year participants and continuing participants, as well as capital measures installed at SEM sites. Other focus areas for the evaluation included getting a good mix of measure types, evaluating projects with large savings, and reviewing measure approval documents (MADs).

Findings – Lighting Track: As shown in the table below, lighting accounts for about 60% of overall electric savings in 2015 and 2016. Savings from TLEDs doubled, going from 6 million kWh in 2015 to 12 million kWh in 2016. As mentioned previously, direct-install lighting is a small portion of lighting overall, but it is an important segment.

Existing Buildings program lighting track savings, by year

Program	Reported kWh	
Track	2015	2016
Standard (except TLED)	45,596,198	45,334,044
Standard (TLED)	6,001,286	12,927,930
Direct Install	4,120,570	4,615,837
Street Lighting	10,441,498	14,800,195
Lighting Total	**66,159,552**	**77,678,006**
Existing Buildings program total	109,051,484	123,916,024
Percent of Existing Buildings program savings	61%	63%

DNV GL was able to complete 75% of the overall sample target; there were a fair number of refusals (we were able to replace some of those) and some direct-install projects were just power strips, which were moved into the standard track.

The lighting track achieved a realization rate of 96% across both program years (99% in 2015 and 94% in 2016). TLEDs had a slightly lower realization rate (77%), and this seemed to be due to differences in the assumed versus actual hours of use. This is the case with all kinds of lighting projects, but it seemed to be particularly prevalent for TLED projects.

Customers were very satisfied with TLEDs, and few reported issues; forty-three of 44 customers were satisfied with TLEDs. There are three main types of TLEDs: Type A, Type B, and Type C. The program saw a big shift between 2015 and 2016 from Type C to Types A and B. A few were controlled, but most were on on/off switches. The evaluator was not able to obtain much information about customers' decision-making regarding TLEDs due to the length of time between the installation and the evaluation; most said they relied on their contractor's recommendation.

The evaluator recommended that the program attempt to obtain accurate hours of use. The evaluator also recommended estimating and reporting the change in use related to HVAC interaction (this is a recommendation we have seen in the past). Finally, the evaluator recommended continuing to support TLEDs, while revising the Type A measure (installed with existing ballasts) to reduce ballast failure issues and providing more guidance on Type B measures (TLEDs at line voltage).

Findings – Standard Track: The standard track encompasses a wide variety of measure types; the highest-saving measure types included refrigeration, cooking, HVAC, shell, office equipment, and power strips. As shown in the table below, standard measures account for a small portion of overall electric savings, but a large portion of overall gas savings.

Existing Buildings program standard track savings, by year

Program Track	Reported Electric Savings (kWh)		Reported Gas Savings (therms)	
	2015	2016	2015	2016
Standard Non-Lighting	**6,515,821**	**10,590,409**	**559,703**	**753,615**
Existing Buildings program total	109,051,484	123,916,024	1,888,021	1,889,692
Percent of Existing Buildings program savings	*6%*	*9%*	*30%*	*40%*

DNV GL was able to complete 84% of the overall sample target; as with lighting, there were a fair number of refusals (we were able to replace some of those). The evaluator reviewed measure approval documents, which apply to standard track measures, as well as project-specific documentation.

The standard track achieved a realization rate of 88% for electric and 76% for gas across both program years. Realization rates looked good, except for power strips (47% in 2015 and 20% in 2016), which are leave-behind measures that the program provides for free. The evaluator did not go on-site to track these down, and it is hard to verify the location and use of power strips. Many customers did not know if the power strips were being used, or reported using the power strips in ways that do not save energy. The program also has purchased power strip measures; these realization rates will only be applied to other leave-behind power strip measures. Sarah commented that the power strips are a way to engage with customers that may be worth continuing, but we may not be able to claim savings. Ken asked about the realization rate for purchased power strip measures and Sarah responded that none of those measures were sampled for the evaluation, so the realization rate is unknown.

DNV GL reviewed several vintages of measure approval documents (MADs). MADs are the documents used to claim savings for prescriptive measures; for such measures, an average savings value is used. MADs include information about the baseline, savings, and measure life, as well as the sources of such information. MADs also document measure cost-effectiveness. The evaluator noted that newer MADs are more complete and consistent, but had a difficult time reviewing the MADs overall. They noted: that it is difficult to match MADs to measure codes; that the MADs did not have enough sources/references; that when a MAD deviates from standard calculators such as Energy Star, it is not clear why; and that the baselines and units (e.g., savings per heat pump or per kBTUh of capacity) are sometimes unclear. DNV GL acknowledged that there is no perfect system, but that there is room for improvement. Sarah commented that her takeaways are that there is nothing terribly wrong with the savings estimates we are using; there is some room to improve the reliability of savings, but there is more room to reduce the cost of reviewing these documents. Ken asked about the relationship of MADs to the RTF's measures, which are estimated for the entire region. Sarah responded that Energy Trust's MADs often reference RTF measures, and use their data and inputs. Jackie commented that even when Energy Trust uses RTF measures, we create our own MAD. Fred commented that we don't deviate from the RTF without good reason. Jackie commented that one challenge is that although the MADs are rewritten on a regular basis, they often include the history of the measure, which can be complex. Fred added that MADs are now written by people at multiple contractors, which is a challenge. He also noted that Energy Trust just implemented standards for MADs; the evaluator was looking at documents that preceded this work. Jennifer commented that in cases where the RTF is lacking measures, the Northwest Power and Conservation Council has turned to Energy Trust's MADs, and has found them to be well-done.

The evaluator recommended that Energy Trust keep working to improve MADs, including the link to measure codes (which we are working on as we speak). They also recommended not claiming savings for leave-behind power strips. The evaluator recommended sticking with Energy Star calculators if possible, and if deviation is necessary, clearly documenting why. The evaluator also made a couple of recommendations specific to certain measures, which are mentioned in the report.

Findings – Custom: Custom track measures account for a large portion of overall program electric and gas savings, as shown in the table below.

Existing Buildings program custom track savings, by year

Program	Reported kWh		Reported therms	
Track	2015	2016	2015	2016
Custom	**26,045,331**	**25,840,900**	**789,124**	**654,306**
Existing Buildings program total	109,051,484	123,916,024	1,888,021	1,889,692
Percent of Existing Buildings program savings	24%	21%	42%	35%

These measures have had a custom study completed by an allied technical assistance contractor (ATAC). These measures are often complex, and have large savings. More than half of the custom track sample received a site visit; the rest involved phone interviews. The evaluation involved regression analysis and calibrated modeling. DNV GL was able to complete 91% of the overall sample target; there were a few refusals, but not as many as other tracks.

The custom track achieved a realization rate of 90% for electric and 91% for gas across both program years.

The evaluator noted that the program was modeling more projects than expected, and that the models were very high quality. There were some one-off errors, but no systemic errors. The evaluator did note that eQuest models were of higher quality than Trane Trace models, which had more issues. The evaluator also noted that non-standard weather files were used for calibrating usage, which is not a problem, except in cases where the weather files were not including in the project files, meaning that the evaluator could not use the files to recreate the savings estimates. Differences between claimed and evaluated savings were driven by changes in operating hours, setpoints, and loads.

The evaluator recommended that the program use parametric runs to estimate savings of measure combinations (as opposed to estimating the savings of measures separately, and adding the savings). The evaluator also recommended using standard weather files or including weather files with models and improving Trane Trace modeling. The evaluator emphasized the importance of documenting baseline conditions and assumptions, as these are difficult to recreate later on. Finally, the evaluator recommended working to improve analysis and implementation or demand control ventilation (DCV) measures – specifically, narrowing down the cases where such measures would be a good fit; they noted a few instances where DCV was not the right measure type for a site. Ken commented that compared to California, these are solid and consistent realization rates, with a lot more modeling to back them up. Sarah concurred, noting that these are good results overall, and the recommendations reflect our desire to provide actionable information to the program.

Findings – SEM: SEM track measures account for a small portion of overall program electric savings, but a large portion of overall program gas savings, as shown in the table below.

Existing Buildings program SEM track savings, by year

Program	Reported kWh		Reported therms	
Track	2015	2016	2015	2016
SEM	**10,330,780**	**9,806,709**	**539,194**	**481,771**
Existing Buildings program total	109,051,484	123,916,024	1,888,021	1,889,692
Percent of Existing Buildings program savings	9%	8%	29%	25%

A third of the SEM track sample received a site visit; the rest were phone interviews. The evaluator updated the regression models used by the program, and in cases where the models were older and did not conform to the current modeling guidelines, the evaluator built a new model that conformed to the current guidelines. The evaluator was able to complete all of the overall sample target; a few sites did not participate, but they were replaced.

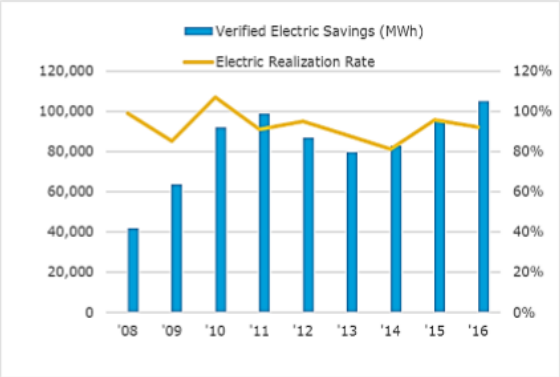
The SEM track achieved a realization rate of 91% for electric and 100% for gas across both program years.

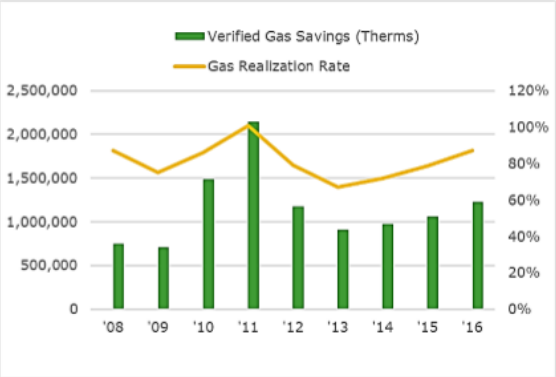
The evaluator found that participants value SEM; they specifically value peer-to-peer learning, and working with coaches. The evaluator also found that Energy Champions and executive support are key to the success of the engagements and to energy savings. DNV GL noted that the level of documentation of activities contributing to savings varies greatly; some customers keep detailed records, and some do not. They also noted that many models the program is using will expire soon, and will need to be re-baselined. Finally, the evaluator noted some use of inconsistent measurement and/or baseline periods; for example, some have measurement periods of six months and others have twelve months. Sometimes this has to be done, but it makes the evaluation difficult, and the savings more questionable.

The evaluator recommended maximizing the time between coaches and participants, and reducing the amount of time spent on administration. They also noted that some participants are not able to devote attention to SEM – for example, due to changes at their business, or due to the departure of a staff member. The evaluator recommended developing an “inactive” status for such participants, and re-engaging them at a later date. The evaluator also recommended reviewing and enhancing documentation requirements, continuing to re-baseline and update old models, and sticking to a consistent measurement schedule.

Conclusions: The graphs below show overall electric and gas realization rates over time (excluding SEM). Realization rates for electric have been consistently high, and realization rates for gas have been steadily increasing since 2013, when ICF took over as PMC. The program is on a good trajectory, and is achieving good energy savings.

Existing Buildings program electric and gas savings and realization rates, by year





Note. Graphs do not include SEM.

Energy Trust Take: The program is performing well overall; there are some potential improvements for custom projects and standard gas measures. As noted previously, staff are focused on improving MADs. DNV GL was selected to perform the 2017 impact evaluation, which will again cover both capital and SEM. The evaluation will focus on standard boilers and purchased power strips, and although TLEDs will not be oversampled, we will continue to monitor satisfaction with TLEDs.

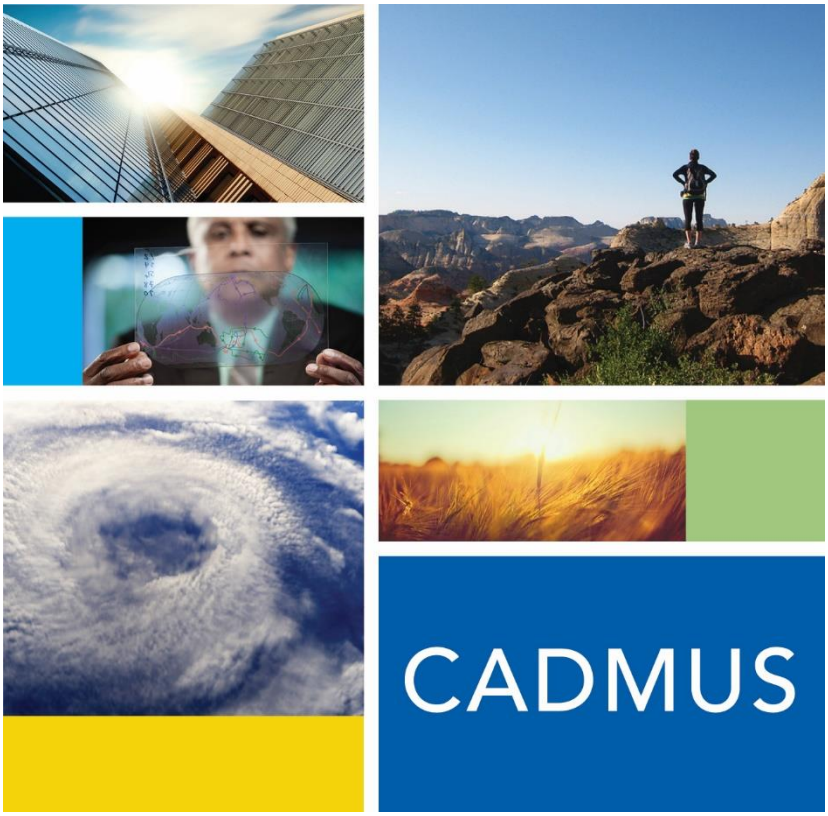
Evaluation of Diversity, Equity & Inclusion Language in Program Contracting

There was not enough time to cover this items, so it will be discussed at the next meeting.

Meeting adjourned at 3 p.m.

Sarah sent out a poll the day before the meeting to schedule the next meeting, for late June 2018.

PINK PAPER



Comparison of Ductless and Ducted Heat Pump Retrofits in Manufactured Homes

January 5, 2018

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Cadmus

CADMUS

Executive Summary

Energy Trust of Oregon considers ducted and ductless heat pump retrofits in manufactured homes to be a significant energy savings opportunity. In 2015 and 2016, Energy Trust ran a pilot to install ducted heat pumps in manufactured homes. In the fall of 2017, Cadmus conducted a billing analysis of these ducted heat pumps and found that they saved on average 3,269 kWh per year, or 21% of the pre-installation electricity use.

Following that study, Energy Trust commissioned Cadmus to conduct a similar billing analysis to evaluate the savings from ductless heat pumps in manufactured homes installed through its Existing Homes program in 2012–2016 and to compare the savings and costs between ductless and ducted heat pumps.

Cadmus' analysis of ductless heat pumps and ducted heat pumps in manufactured homes found that the two types of systems, on average, had very similar savings and installation costs despite differences in reported savings, as shown in Table 1. The differences between reported and evaluated savings resulted in realization rates that differ significantly —126% for ductless heat pumps and 75% for ducted heat pumps. Because ducted systems were installed in homes that previously had electric forced-air furnaces, we compared these against the subset of ductless heat pumps that had also been installed in homes with electric forced-air furnaces.

Table 1. Ductless and Ducted Heat Pump Average Savings and Cost Comparison

Heat Pump Type	Energy Savings					Installed Cost*		Savings per Dollar (kWh/$)
	Average kWh per unit	As a Percentage of Pre-NAC	n	Reported kWh per unit	Realization Rate	Average	n	
Ductless Heat Pumps**	3,324	22%	84	2,646	126%	$4,501	170	0.74
Ducted Heat Pumps	3,269	21%	78	4,367	75%	$4,511	103	0.72

*Installation costs include both the cost of labor and the costs of the equipment
** Installations in homes with electric forced-air furnaces

Cadmus reviewed Energy Trust's program data to analyze the cost profile of the ducted and ductless systems installed in manufactured homes. Installation costs for ductless heat pumps varied significantly; however, costs were not sensitive to a wide range of variables, including home size and age. One exception was the Portland Metro area, where ductless heat pump installation costs were higher than the rest of the state (likely due to a higher cost of living than elsewhere in Oregon). Installation costs for ducted heat pump systems installed through the pilot were clustered much more closely than ductless systems. This difference reflects the distinct designs of the two programs: the ducted heat pump pilot was designed with a tight cost structure, while the ductless heat pump incentive is applied to installation costs determined by the open market.

Cadmus also reviewed program data for ductless heat pumps to identify outliers and blank entries for key data fields. We requested original documents for 35 projects and received invoices and applications

for 30 of these. Based on that documentation, we made two corrections to systems install cost, four corrections to home age, and seven corrections to system capacity.

Conclusions and Recommendations

Ducted and ductless heat pumps provide similar savings at comparable costs. The billing analysis for ducted and ductless heat pumps in manufactured homes showed almost identical savings on the basis of annual kWh and percentage of pre-installation usage for both system types. The annual savings for homes with electric forced-air furnaces were 3,324 kWh for ductless heat pumps and 3,269 kWh for ducted heat pumps. Despite, or perhaps due to the difference in program delivery, average costs and savings per dollar spent on system cost were also almost identical: $4,501 installed cost and 0.74 kWh per dollar for ductless heat pumps and $4,511 installed cost and 0.72 kWh per dollar for ducted heat pumps. Cadmus found greater variance in cost of the ductless heat pumps incentivized through the market-based program. Offering the ductless heat pump measure in conjunction with cost-controls, such as was done with the ducted heat pump pilot, should reduce the variance in cost and potentially lower the average cost.

- **Recommendation:** Offer incentives for both ducted and ductless heat pumps for manufactured homes. Work with the PMC to explore whether the cost of a ductless heat pump retrofit will respond to the same strategies used in the ducted heat pump pilot.

Although ducted and ductless heat pump savings are very similar, the realization rates for the two systems differ. The billing analysis of the two system types showed a realization rate of 126% for ductless heat pumps and 75% for ducted heat pumps in manufactured homes. This major difference suggests that Energy Trust underestimated the savings for ductless heat pumps and overestimated the savings of ducted heat pumps in manufactured homes.

- **Recommendation:** Revise *ex ante* savings estimates for ductless and ducted heat pumps for manufactured homes to more closely reflect evaluated savings.

Program design appears to significantly affect individual installation costs of ductless and ducted heat pumps. There was higher variance in installation costs for ductless heat pumps than for ducted heat pumps, despite the similarities in technology and housing stock. This variance is likely explained, in part, by the different program designs. The ducted heat pump pilot was delivered by four vetted contractors who were paid a fixed rate for the installation, whereas ductless heat pumps were installed by many contractors in a market-based program design. Although the average installation costs of these systems were similar, customers installing a ductless heat pump had much more uncertainty in the price they would pay. Such price inconsistency could affect uptake of this measure.

- **Recommendation:** If Energy Trust chooses to move forward in promoting ductless and ducted heat pumps in manufactured homes, it should consider the approach of its ducted heat pump pilot for both technologies. With more consistent pricing, and potentially lower retrofit costs, this design is likely to drive higher measure uptake than the market-based design currently used for ductless heat pumps.

Ductless heat pump program data contained some errors and missing information. Cadmus reviewed the program data for ductless heat pumps and selected a sample of projects that appeared to be outliers and in need of further investigation. We compared the program data for these projects against their original project documentation and found errors that indicate an opportunity for Energy Trust to improve its data entry process. Cadmus also found fields in the program data that were frequently missing information, such as the HSPF and SEER.

- **Recommendation:** Conduct quality review checks of the program data against project documents to improve the accuracy and completeness of the data. Consider prioritizing the review of project files with values that appear to be missing or outliers.

CADMUS

EnergyTrust of Oregon

MEMO

Date: April 5, 2018
To: Board of Directors
From: Marshall Johnson, Residential Senior Program Manager
Dan Rubado, Evaluation Project Manager
Subject: Staff Response to the Comparison of Ductless and Ducted Heat Pump Retrofits in Manufactured Homes Report

After the completion of its successful pilot of ducted heat pump retrofits in manufactured homes with electric forced air furnaces, Energy Trust commissioned Cadmus to analyze ductless heat pumps (DHPs) supported by its Existing Homes program and compare the savings and costs to the heat pump pilot. This goal of the study was to help Energy Trust determine the most cost-effective electric heating system for manufactured homeowners and decide which technology to promote in this market. The study found that DHPs provided comparable savings to ducted heat pumps at a very similar cost. These findings led Energy Trust's Residential program to pursue a strategy to promote both technologies in manufactured homes. In addition, the DHP savings estimates from the study were significantly higher than Energy Trust's deemed savings. Thus, Energy Trust will adjust its deemed savings for DHPs in manufactured homes based on this study.

Given that the DHPs were installed through the open market, while the ducted heat pump pilot used a competitively selected pool of contractors and price controls to constrain costs, there is probably room to significantly reduce the installed costs of DHPs in manufactured homes. If the Residential program can bring down the cost of DHPs, using a similar strategy to the ducted heat pump pilot, DHPs will be the more cost-effective technology. The Residential program is currently planning a new campaign to promote DHPs and ducted heat pumps using the principles tested in the ducted heat pump pilot. This effort should drive down installation costs for both technologies, improving cost-effectiveness and driving higher uptake in the market. If successful, this strategy has the potential to reach a large number of manufactured homes across the state and achieve substantial energy savings.

Tab 9

Policy Committee Meeting

May 10, 2018

Attending at Energy Trust offices
Alan Meyer—Policy Committee Chair, Eric Braddock, Carol Brimhall, Amber Cole, Phil Degens, Jessica Iplikci, Jed Jorgensen, Oliver Kesting, Steve Lacey, Debbie Menashe, Dave Moldal, Peter West, Amanda Potter, Becky Rein, Chris Smith, David Wynde (Wynde Consulting), Lily Xu

Attending by teleconference
Roger Hamilton, Elaine Prause (Oregon Public Utility Commission), John Reynolds, Eddie Sherman, Mike Colgrove

Board meeting presentation previews

Red Rock Biofuels
Amanda Potter, industry and agriculture sector lead, previewed a presentation on a proposal for waiving incentives caps for incentives for the Red Rock Biofuels megaproject. Amanda described the project, the proposed incentive amount and structure, as well as the technical, financial and business due diligence undertaken by staff and consultants. Chris Smith, Energy 350, and David Wynde, Wynde Consulting, were present to answer questions.

Committee members appreciated the presentation and suggested that staff include some explanation regarding free ridership analysis in its presentation to the full board. Staff explained that there had been information provided by the project developers, and staff will include information about this topic in the board briefing. Committee members recommended moving this presentation to the full board.

Willow Lake Biogas
Jed Jorgensen, other renewables senior program manager, and Lily Xu, project manager, presented a proposal for project incentive funding for the Willow Lake Biogas project proposed by the City of Salem Willow Gas wastewater treatment plant. Alan reported that the project was enthusiastically received by the Renewable Energy Advisory Council. Peter also commended staff for their long and continued support for this project, working continuously to support the City of Salem. Willow Lake Biogas will be the seventh wastewater treatment plant to participate in Energy Trust's program. Committee members recommended moving this presentation to the full board.

Program Management Contractor (PMC) for Energy Trust New Buildings Program
Jessica Iplikci, commercial senior program manager, presented information about the recent competitive bidding process for PMC services for the New Buildings program. Committee members asked question about the process and noted considerations for reviewing proposals. Committee members recommended moving the recommendation to the full board.

SBW Consulting Contract Amendment
Phil Degens, evaluation manager, presented a proposal to increase contract scope and funding for SBW Consulting impact evaluation services. SBW Consulting is completing an impact evaluation for the 2013-2014 Production Efficiency program savings. Committee members expressed concern considering that the request was the second for contract budget increase and asked for staff to consider how to do things differently in the future. Committee members recommended moving this presentation to the full board.

Policies for Review

Debbie explained that no policies were up for regular review by the committee, but that at the committee's next meeting, the Balanced Competition and Combined Heat and Power policies would be brought forward for regular review. Debbie also reported that although the committee had requested consideration and a proposal on a new name for the "Other Renewables" program, no proposal is yet ready for presentation. Staff will continue to examine possible alternatives.

Other Matters

Evaluating New Opportunities Procedures Review
The committee did not have enough time to review the current draft of the updated Evaluating Opportunities procedures document, but committee members expressed believe that the document is in good form. The committee will review the draft document in detail at its next committee meeting. Mike advised the committee that staff is using the current draft of the procedures to guide its efforts in reviewing opportunities in a manufactured home replacement initiative, and the committee expressed interested in discussing the procedures and its connection to this initiative at the next meeting.

Board Nominating Committee
The Board of Directors Nominating Committee has updated its nomination procedures. The Nominating Committee has also interviewed candidates for one of the current board vacancies. The committee discussed the updated nomination procedures and the current candidate nomination discussions. After additional discussion about the candidate, John Reynolds, chair of the Board Nominating Committee reported that the candidate would be recommended to the full board at the board workshop on May 17th.

Update on Organization Review Project (Debbie Menashe)
Debbie presented a brief update to the committee on the status of the Organization Review project, outlining the project's history, methodology and high level list of recommendations from the project. A full presentation of the project and recommendations will occur at the board meeting on June 6, 2018.

Consent and Appointment of Members to Conservation Advisory Council (CAC)

Pursuant to board policy, the Policy Committee approves appointments of members to the board's advisory committees. At this meeting, committee members approved three new members to the CAC: Dave Moody of Bonneville Power Administration (BPA), Will Gehrke of Oregon Citizens Utility Board (CUB), and Jason Klotz of PGE.

Dave Moody: Dave is manager of efficiency programs at BPA. Dave has served in various capacities at BPA since 2015 and has a deep understanding of efficiency programs, regional issues and the many important stakeholders.

Will Gehrke: Will is an economist at CUB. Will previously worked for the Florida Public Utility Commission as a regulatory analyst. Since joining CUB, he has worked on a number of energy efficiency dockets and is well-versed in analysis of conservation measures.

Jason Klotz: Jason works for Portland General Electric, managing emerging technology work for the utility. He has worked for the Office of General Counsel for the Federal Energy Regulatory Commission and the Vermont Public Service Board. Jason has worked extensively on greenhouse gas and other policy issues, serving both the California and Oregon Public Utility Commissions.

Jason has also worked as the Northwest Energy Efficiency Alliance's policy advisor. Jason's broad portfolio of relevant experience will serve Energy Trust's CAC well.

Meeting adjourned after 5:00 p.m.

Next meeting date is Thursday, June 21, 2018, at 3:30 p.m.

Tab 10

Strategic Planning Committee Meeting

April 10, 2018 - 3:00 pm

Attending by teleconference
Janine Benner, Susan Brodahl, Roger Hamilton, Lindsey Hardy, Elaine Prause *(Oregon Public Utility Commission)*, John Reynolds, Lizzie Rubado, Michael Colgrove

Attending at Energy Trust offices
Mark Kendall - *Strategic Planning Committee Chair,* Amber Cole, Becky Engel, Fred Gordon, Debbie Menashe, Spencer Moersfelder, Nick Viele *(facilitator from c3strategies*), John Volkman, Jay Ward.

Mapping Relationships: Becky Engel, Jay Ward, and Amber Cole previewed the board learning topics presentation on Mapping Relationships. Their findings and recommendations were presented. Committee members then discussed the information models presented and expressed appreciation for the thorough analysis and recommendations.

Committee members and staff discussed the time allotment for the upcoming board workshop. Given the level of interest in this topic, the Committee requested that staff ensure adequate time for the presentation, as well as time for a question-and-answer (Q&A) session following.

Expanding Goals Supporting Energy Savings and Generation: John Volkman and Debbie Menashe presented their draft paper on goal setting. Committee members expressed their appreciation for the clarity of the paper. Discussion ensued about how to set and consider goals for activities not currently addressed within the current Energy Trust's strategic plan and which outside factors would be determined as significant drivers.

Long Term Energy Efficiency Resource: Spencer Moersfelder previewed his presentation on long term forecasting and methodology. Committee members requested that the presentation provide an adequate level of detail, as well as fully detailing the implications of forecasted savings and how the results overlay with next strategic plan session. The committee provided final feedback to solidify the May 17 – 18 board agenda.

Agenda Draft Review: Mark Kendall opened the floor for discussion of the overall agenda. Committee members made suggestions on sequence and timing. Energy Trust staff would incorporate the revisions into the next draft. A final draft will be circulated to the committee in advance of the board workshop.

Strengths and Values Discussion: Nick Viele, facilitator from c3strategies, presented the topics of strengths and values as they relate to Energy Trust's strategic planning efforts**.** The workshop agenda provided time for small group discussions to kick off the strategic planning process. To seed those discussions, Nick asked committee members to engage in an initial conversation on these topics. Nick, committee members, and staff determined that additional definition and direction was needed for a productive discussion, either at the committee meeting and/or at the upcoming workshop. Staff and Nick would meet again to discuss how to move the discussion forward, and planned to report back on their discussions through proposed changes to the workshop agenda.

Next meeting date is Tuesday, May 8, 2018 at 3:00 p.m.

PINK PAPER

Strategic Planning Committee Meeting

May 8, 2018, 3:00 p.m.

Attending by teleconference
Janine Benner, Susan Brodahl, Roger Hamilton, Lindsey Hardy, Elaine Prause, John Reynolds

Attending at Energy Trust offices
Mark Kendall—Strategic Planning Committee Chair, Amber Cole, Mike Colgrove, Debbie Menashe, Spencer Moersfelder, John Volkman, Becky Rein

Review and Discussion of Board Strategic Planning Workshop Agenda

Mark presented the final agenda for the May Strategic Planning Workshop. Mike also noted that the final set of board learning topics will be sent out ahead of the board packet. Committee members expressed appreciation for the board learning topics and asked that a link and reminder about the topics be sent to board members, and Mike agreed to make arrangements for that.

Debbie described the logistics of the workshop, noting small group discussions are scheduled for Thursday afternoon. Committee members expressed support for the small group set up.

Mike previewed his proposed scenario planning presentation, and the committee discussed scenario planning considerations.

Janine let the committee know that she would not attend the workshop and will ask Ruchi Sadhir to attend in her place.

Meeting adjourned at approximately 4:30 p.m.

Next meeting date is Thursday, June 7, 2018, at 3:00 p.m.

Tab 11

Director Recruitment, Selection and Orientation
Energy Trust of Oregon Board of Directors

Board Nominating Committee Process Document

June 2018

Energy efficiency is the cleanest, cheapest and most important resource for the utilities and ratepayers of Oregon. Delivering energy efficiency and supporting renewable energy generation is the primary mission of Energy Trust. As a nonprofit organization, Energy Trust relies on its volunteer Board of Directors to provide strategic guidance and financial and policy oversight in the delivery of its mission.

The Board of Directors plays a critical role in the oversight of Energy Trust's performance under the Grant Agreement with the Oregon Public Utility Commission (OPUC). This is designed and intended to complement the OPUC's oversight obligations. The selection of board members to the Board of Directors is an important process overseen by the Board Nominating Committee with input and feedback from the OPUC.

The Nominating Committee (the Committee) consists of board directors. The Board President is an ex officio member to the Committee, as are either or both the OPUC and ODOE representatives. All members are encouraged to participate in the interview process. The ex officio members are not allowed to vote. The Executive Director will act as an advisor throughout the process. An Energy Trust designee will also be assigned to the Committee and provide support as needed. Throughout this process, if the OPUC or ODOE ex officio board member(s) is/are unable to perform any or all of their responsibilities, they may assign a delegate from their organization to act in their place.

This document outlines the process to identify nominees, establish candidates, and select and orient new board members when there is a vacancy. Note that a vacancy may be created whenever an existing board member leaves the board or if the board decides to expand the number of directors.

I. Skills Assessment

A. Within one week of a vacancy, the Nominating Committee Chair (the Chair) shall send the current Board Skills/Interests Matrix to all board members who will be asked to update their portion of the matrix. If the vacancy is due to the departure of an existing board member, that member's skills/interests will be highlighted, indicating those that are being lost.

B. The members of the Committee will review the Board Skills/Interests Matrix to identify which skills, experience and interests are needed on the board based on the organization's strategic plan to help guide the nomination and selection process.

C. The Chair, working with the Executive Assistant if desired, shall immediately establish a calendar of dates based on the availability of all Committee members for each meeting and interview needed to complete this process.

II. Nominations

A. The Committee shall use a variety of means to solicit nominations.

1. To achieve and maintain the diversity of the board and ensure a broad, qualified slate of candidates, it is important that the nomination process seek nominees from a wide range of sources, including existing and outgoing board members, the OPUC, the Energy Trust Executive Director and staff (especially the outreach staff), and various stakeholder organizations to be identified by the Committee, for example the Citizens Utility Board or the Alliance of Western Energy Consumers. Energy Trust staff shall maintain a list of stakeholders and their contact information to include in this nomination process.

2. The Committee shall also work to establish a small group of advisors who can help cultivate a bench of nominees in the event of a vacancy. This group of advisers would be well-networked and particularly familiar with Energy Trust and may include, for example, prior board members or former Energy Trust Executive Directors or members of Management Team. As they become aware of nominees, they should refer them to the Chair regardless of the existence of a vacancy. The establishment of this bench of nominees will serve as a resource to the Committee when a vacancy arises.
3. The Committee may also consider how to encourage nominees to become involved with Energy Trust through volunteer activities or participation as an external member of a board committee. These strategies would help develop a qualified, familiar group of nominees in the event a position becomes available.
4. In the event of a vacancy, the Committee may consider, too, working with Energy Trust staff to develop a webpage where interested persons can register to be considered for Energy Trust board of director vacancies. The webpage could allow self-nominees to upload their resume, submit a brief statement describing their interest, and provide contact information.

B. The nominee submittal process shall include the following:
   1. The skills and qualifications being sought in the new board member shall be provided to all those listed in II.A.1 and 2, along with guidelines for what information may be shared with a nominee about the search process and skills being sought. These guidelines are critical to ensuring that any interactions with nominees establish appropriate and reasonable expectations about the process. Energy Trust's Communications and Customer Service team, in coordination with the committee staff liaison, can provide support to the Committee in the establishment of these guidelines.
   2. A nomination shall be submitted to the Chair by an established deadline (typically no more than 30 days following the vacancy) and include:
      a. a brief autobiography or resume;
      b. a statement of why they are interested in serving on the Energy Trust Board of Directors; and,
      c. any additional skills or interests not included on their resume.

C. After the deadline has passed, the Chair shall compile a list of nominees to share with OPUC staff. The Chair, with support from the Executive Assistant as desired, shall arrange a meeting with OPUC staff to discuss the nominees in order to understand any preferences, reservations, or suggestions they may provide.

D. The materials provided by each nominee along with any feedback from OPUC staff shall be compiled by the Chair and shared with the Committee members. The voting members of the Committee will be asked to send back any nominees they feel should receive further consideration. The Chair shall compile the results of this feedback and any nominee receiving a simple majority to proceed shall be added to the final list of nominees.

E. The Chair shall then assign each remaining nominee to a Committee member who will be asked to compile a short description of them. The members of the Committee should seek information about each nominee, preferably without contacting the person directly, by referring to their resume, speaking to the person who nominated them, and talking to any other references familiar with the nominee.

F. A Committee meeting shall be convened and include the following:
   1. The Chair shall facilitate a discussion of the nominees including providing a summary of the feedback received from OPUC staff.
   2. Based on that discussion, the process may be extended and additional candidates sought or it may move on to the next step.

3. The Committee shall assemble a panel of candidates based on the nominees. A nominee will be added to the panel of candidates by a simple majority of the voting Committee members present at this meeting.

III. Candidate Ranking, Interviews and Final Selection

A. Following this Committee meeting, the members of the Committee shall send the Chair their ranked choice for each candidate. All candidates on the final panel must be ranked by the members of the Committee.

B. The Chair shall compile and rank the candidates based on this feedback and distribute the results to the Committee members. The Chair shall use a "sum of ranks," or similar, approach that assigns value to each rank and sums those values by candidate. This process will provide a rank order of all candidates based on the rank votes received.

C. A number of interview slots shall be determined by the Committee, usually no more than four slots per vacancy. Based on the rank order of candidates, the top number of candidates based on the number of interview slots shall establish a list of candidates for interview consideration. The list of interview candidates shall be shared with OPUC staff.

D. The Chair shall contact the list of interview candidates to determine whether they are still interested and available to participate on the Board of Directors. The Chair shall, at this time, also ensure each candidate is aware of the level of commitment of the position and the basic responsibilities and duties of a director. This information would also have been included in the guidelines provided in II.B.1. At the least, the following shall be communicated to each candidate:
    1. Directors are volunteers; the positions are non-compensated with the exception of travel, accommodations, and meals while on official Energy Trust business.
    2. Directors are expected to participate on at least two board committees.
    3. Directors are expected to attend all board meetings (typically eight per year), which includes a two-day board strategic planning workshop in May. Most board meetings and the workshop are held in Portland, but at least one board meeting is held outside of the Portland-metro area.
    4. Directors are expected to understand the organization and operation of Energy Trust of Oregon, its unique relationship with the OPUC, and its role in the energy industry in Oregon and the Northwest by participating in the orientation process outlined below.
    5. Candidates will be informed of the selection process and pointed to any resources that might be helpful to them in the interviews.

E. The Committee shall compile a list of questions to be asked of each candidate in the interview.

F. For each candidate, a telephone conference call shall be arranged. Each Committee member shall be assigned one or more questions from the list compiled in the previous step. The Executive Director shall participate in the interviews.

G. After each conference call, each Committee member shall send the Chair their impression of the candidate as well as a "yes," "no," or "maybe" indication. This shall not be construed as a vote, but rather as feedback from all Committee members.

H. After all candidates have been interviewed, the Committee shall meet to recommend a finalist. The Chair shall summarize the results of the interview impressions for each candidate and provide them to the attendees of this meeting. A finalist shall be selected by a "sum of ranks" vote of the Committee members present at this meeting, excluding the ex officio committee members, as described in III.B except that members shall verbalize their ranks to the Chair. All ex officio members of the Committee are especially encouraged to participate in this meeting despite their not being able to vote.

1. Note that the selection of a candidate is not required by the Committee. The vote shall include a "None of the Above" option. If this option is ranked first by the voting members, the Committee may elect to restart the process or ask for a second round of interviews with the top interviewees. In any situation, the Committee should first look to this process memo for guidance. Failing that, the Committee should propose and agree upon, with a simple majority of the voting members, a process for moving forward.

I. The Chair will contact the presumed selected candidate to determine their availability at the next board meeting and will ask them to attend.

J. The Chair shall forward the recommendation to the Board President and Executive Director. Energy Trust staff shall draft a resolution based on the Committee recommendation. The resolution shall be included in the board packet for the next board meeting where the board will vote on the recommendation.

K. The Chair shall contact each nominee with the results of the process.

Following approval of a new member to Energy Trust's Board, Energy Trust staff shall initiate the following Board Member orientation process:

1. The new board member should meet with the Board President as part of the initial welcome.

2. The Energy Trust Executive Director shall meet with the new Director soon after their confirmation to deliver the board member binder and begin the orientation process. This first meeting will include an overview of the binder and some of the key aspects of the organization. The board member binder shall include, at a minimum, the following:
    - Articles of Incorporation and Bylaws
    - Grant Agreement with OPUC plus one- or two-page summary
    - Current Strategic Plan
    - Current Budget and Action Plan
    - Current Annual Report
    - Current Board Calendar
    - Document summarizing roles of board committees
    - Copy of Committee Assignments
    - Copy of New Member Selection and On-Boarding Procedure
    - Copy of Pursuing Funding beyond PPC Funding
    - Link to Board Training materials, presentations and resources
    - Copy of all policies
    - Diversity Equity and Inclusion (DEI) initiative Operations Plan
    - An Organizational Chart
    - Diagram of Board Committees, Advisory Committees, Board and Executive Director
    - Charters for the Renewables Advisory Council (RAC), Conservation Advisory Council (CAC) and Diversity Advisory Council (DAC)
    - Current membership lists for RAC, CAC and DAC

    It is preferable that this initial meeting take place at the Energy Trust offices and that the Management Team is available to meet the new Director. There should also be an opportunity to introduce the new Director to various members of the Energy Trust staff and to give them a tour of the office.

3. Prior to the next board meeting and following the distribution of the board packet, the Executive Director shall meet with the new Director to review the packet and provide an opportunity for questions and discussion.

4. Whenever new Directors join the Board, a two-part board orientation will be scheduled. All board members are encouraged to participate.

- The first orientation session will be held prior to the Strategic Planning Workshop in May.
- The second orientation session will be held in August prior to the kick-off of the annual budget.

5. The first orientation would include:
    - An overview of Energy Trust
        - Vision and purpose
        - Review of bylaws
        - Governance structure
        - Funding source(s)
        - Program overview
        - Board calendar
    - History of Energy Policy in the Northwest
    - Overview of OPUC Oversight and relationship
        - Grant agreement overview
        - Introduction to OPUC Commission and Staff
    - Strategic Planning at Energy Trust
        - Overview of current strategic plan
        - Preview of May's Strategic Planning Retreat
    - NEEA
    - Northwest Power and Conservation Council

6. The second orientation would include:
    - Utility introductions
    - An overview of Energy Trust's programs and major activities
        - Forecasting and the IRP process
        - Cost-effectiveness and above-market cost calculations
        - PMC/PDC model
        - Measure development process
        - Solicitation and selection process
        - Contracting process
        - Staff presentations on programs, projects, and major initiatives
        - One or two project case studies with guests, if possible
        - Evaluations
        - Realization rates, free-ridership, spill-over and true-up
    - Overview of business planning, staffing, and annual budget process
        - Annual calendar
        - Current budget and action plans
        - Utility Integrated Resource Plan (IRP) process
        - Identification of savings and generation opportunities
        - Determination of revenues
        - Utility funding agreements
        - Program action plans
    - Plan management process
        - Quarterly reports and OPUC presentations
        - Regular updates to board
        - Energy Trust reporting process

Tab 12

Conservation Advisory Council Meeting Notes

March 20, 2018

Attending from the council:
JP Batmale, Oregon Public Utility Commission
Holly Braun, NW Natural
Warren Cook, Oregon Department of Energy
Danny Grady, City of Portland Bureau of Planning and Sustainability
Kari Greer, Pacific Power
Charlie Grist, NW Power and Conservation Council
Julia Harper, Northwest Energy Efficiency Alliance
Garrett Harris, Portland General Electric
Liz Jones, Citizens' Utility Board of Oregon
Lisa McGarity, Avista
Kerry Meade, Northwest Energy Efficiency Council
Allison Spector, Cascade Natural Gas

Attending from Energy Trust:
Gwen Barrow
Tom Beverly
Amber Cole
Susan Jowaiszas
Oliver Kesting
Scott Leonard
Dave Moldal
Jay Olson
Amanda Potter
Kate Scott
Julianne Thacher
Jay Ward
Peter West
Robert Wylie
Mark Wyman

Others attending:
Alan Meyer, Energy Trust board
Lindsey Hardy, Energy Trust board
Rick Hodges, NW Natural
Scott Scheuneman, RH Energy
Jeffrey Tamburro, NW Natural

1. Welcome, Old Business and Short Takes

Peter West 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/conservation-advisory-council-meetings/.

Peter asked if there were concerns or changes to the notes from the last meeting. No changes were noted, and CAC adopted the notes.

2. Legislative Update

Jay Ward provided an update on the short legislative session. Staff monitor and track on bills that could intersect with Energy Trust's work, and do not advocate or lobby for any proposed legislation.

Jay Ward: The legislative session ended March 3. There were a few bills that involved energy, which we monitored as the session progressed. For instance, SB 1552, titled the Ratepayer Protection Act, would have capped the public purpose charge at 1.5 percent, capped Energy Trust salaries and refunded money set aside to remove the four Klamath River dams. It was considered to be largely unconstitutional.

Holly Meyer: Under what grounds was it unconstitutional?
Jay Ward: Mainly the cap on utility return on investment. They couldn't service debt at that level.

Jay Ward continued. The Homewrap bill was sponsored by Representative Marsh. It was called a kind of Residential Energy Tax Credit replacement, but it would have capped households at the $180,000 income level from qualifying for the program. It also included a 25 percent low-income set-aside, and manufactured home replacement. Enhabit and the NW Energy Coalition were supporters. It had bipartisan support and almost unanimously passed out of committee. It was with Ways and Means at the end of the session.

Jay said there were two similar cap-and-invest bills in both the House and Senate. They were heard in their committees and passed on a partisan vote, but both expired. At the end of the session, the governor was given $1.4 million to do studies in the interim, and the Senate President and Speaker of the House created a joint committee on carbon. They would like to bring the clean energy bill back next session.

Holly Braun: Why didn't Homewrap get through?
Jay Ward: The budget request was seen as too high. Oregon Housing and Community Services indicated that they would have to scale up and hire up to deliver it, and it was too costly.

3. World Café Exercise: 2018 CAC Planning

Peter West: At the last meeting, we had a presentation on what topics staff shuld bring forward to the Conservation Advisory Committee and how we engage with members. We gave out homework to all of you, and we appreciate the feedback we received. The homework assignment was intended to identify essential parts of the discussions we have at CAC. Topics you identified were large and wide.

> We have seven more CAC meetings this year, and we need to get your engagement on the right topics at the right levels during those meetings. We also want to look at the meeting format. Does it need to be the same type of format and layout as we've always done in the past? Lastly, what topics should come to CAC and what are the priority topics?
>
> Today we'll have a World Café discussion moving to help you engage with us on this planning exercise. It's a fast way of engaging and collecting information. It's also intended to clarify and give us themes to work with. We'll take this information, distill it down and draft some guidance that we can bring back to CAC in May.
>
> The packet includes the charter and topics for discussion. In our synthesis of the homework you completed, a few categories jumped out at us: innovation and new initiatives, program design and redesign, policy context, strategic plan input, challenges and barriers facing programs, and accomplishments.
>
> We also heard some suggestions in the homework you completed. There was a request that materials come out earlier. And we heard that materials could be at a higher level, and with implications and questions at the policy or strategic level. Another comment was that we should screen for topics that are longer term. There was an interest in more roundtable discussions, too, to provide an opportunity for more dialog with each other, rather than staff largely presenting to CAC members.

Amber Cole described the World Café exercise. First, CAC members worked in small groups to review the topics suggested by the group through the homework exercise, and added additional topics for consideration. Then, CAC voted to identify which topics to explore in more detail during the second half of the meeting. The six topics in order of the most votes from council members:

1. Customer research and insights
2. Context—market trends, policy issues affecting programs
3. Program innovations
4. Challenges and barriers facing programs
5. Program delivery to historically underrepresented groups

6. What's working and not working nationally

CAC members, staff and public in attendance then broke into small groups and explored each topic. Topics were posted around the room as "stations" and after five minutes the groups rotated to a new station. At each station, each group was asked to discuss and clarify the following about the topic:

1. What are essential questions CAC should discuss on this topic?
2. What about this topic is most essential for CAC to discus/review?

Refer to the **Appendix: World Café Exercise—2018 CAC Planning** for an executive summary and notes from the exercise. Also included in the appendix is the full list of topics proposed by CAC members through the homework exercise and the subsequent discussion, including votes on what topics to explore during the World Café exercise.

Based on the feedback and priorities, Energy Trust staff will be developing an internal guidance document to inform what and when topics are brought to CAC, and what staff is looking for from council members in terms of feedback on those topics. This document will be presented to CAC for feedback. Staff will also look to incorporate alternative facilitation techniques at future meetings.

4. Public Comment
There were no public comments.

5. Meeting Adjournment
The meeting adjourned at 4:35 p.m. The next Conservation Advisory Council meeting is Wednesday, May 9, 2018.

Appendix: World Café Exercise—2018 CAC Planning

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1. Executive Summary

Energy Trust staff hosted a series of discussions at the CAC meetings in February and March 2018 to better plan for what topics to bring to CAC and how council members should be engaged on those topics. Energy Trust will use input from these discussions to shape future meeting designs and agendas.

The process

After the February meeting, council members submitted feedback on topics they would like to have presented at CAC through a homework exercise. At the March meeting, council members identified six priority topics that they would most like to hear about and discuss. Essential questions and discussions by topic were also identified, as well as ideas for meeting design and best practices.

Results

Top priority meeting topics identified, in order of most votes from council members: Customer research and insights; Context—market trends, policy issues affecting programs; Program innovations and new initiatives; Challenges/barriers facing programs; Program delivery to historically underrepresented groups; What's working and not working nationally. There was a clear divide of much lower rankings for other items.

Staff propose the other suggested items be handled as part of addressing the top six priorities. “Vetting by CAC before board approval (especially program innovation)” was also ranked by CAC. Board members Alan Meyer and Lindsey Hardy clarified the types of actions it takes as mostly related to policies, budgets and contracts, and not measures or program details. The board uses the CAC notes to understand the feedback brought forward by CAC members on topics they may be considering at the board level. It is possible more discussion may be needed on this point.

To discuss priority topics effectively, council members also provided recommendations on agenda and presentation development, discussion format, assignments and next steps after each meeting. The notes that follow summarize these useful suggestions.

Based on the feedback and priorities, Energy Trust staff will be developing an internal guidance document to inform what and when topics are brought to CAC, and what staff is looking for from council members in terms of feedback on those topics. This document will be presented to CAC for feedback. Staff will also look to incorporate alternative facilitation techniques at future meetings.

2. Full List of CAC Topics Proposed by Council Members

Proposed topics sorted by most votes from council members	CAC member votes
Customer research and insights--who are we serving, reach of programs; including insights from Big Data	10
Context--market trends, policy issues affecting programs; includes research, evaluation, legislation, policy, and policy barriers to Energy Trust work	10
Program innovations and new initiatives – Future sources of savings, pilot prioritization, horizon planning; especially, expanding reach or changing costs, and vetting approaches and delivery contracts	9
Challenges/barriers facing programs - including policy barriers	8
Program delivery to historically underrepresented groups and diversity/equity considerations; includes savings, costs, metrics	6
What's working and not working nationally, including benchmarking	6
Vetting by CAC before board approval (esp. program innovation)	6
Multi-year organization and sector strategic plans - connection to board	4
Collaboration opportunities with partners (how can 1+1=3 ?)	4
Areas of new/different risk for programs	3
Evaluation Committee updates – plans and results, report out - key variables for success, what's not working, including news from outside Oregon	3
Measure reviews, approvals, changes - how will changes roll out? Impacts to customers?	2
Successes/accomplishments of programs – what's working?	1
What can be done with AMI (advanced metering infrastructure, or "smart meters")	1
Program plans and implementation details, especially expanding reach or changing costs	1
Policy implications of planning assumption changes	1
Lessons learned from unintended consequences	1
Avoided Costs: impact on acquisition and utility IRPs (resource plans)	1
Innovation incubation	1
Trends in programs and customer interaction	0
Savings attribution and how to report savings (net-to-gross)	0
Leveraging demand response	0
Annual Energy Trust budget and action plan	0
Commercial and industrial program development – what's new, what's evolving	0
Board learning topics	0
Intentional linkage with board agenda	0
Optimize data available	0
Key variables for success	0
Identify barriers to good policy (why not passing)	0
Interplay of Energy Trust with other sectors (i.e., transportation, housing)	0

3. Essential Discussions for Top 6 Topics

A. Customer research and insights

- *What are essential questions CAC should discuss on this topic?*
    1. What information is being collected, and how can we avoid duplication?
        - What is the cost vs. the benefit of digging into the data
        - Consider a segment of the available data
    2. What do you do with the data and how does it translate to program design?
    3. What does the market want, and how well are we penetrating the segments?
    4. Are we reading all segments of utility customers?
    5. How do you give the market efficiency efficiently?
        - NEBs
    6. Mining customer data for other energy efficiency program opportunities?
        - Time value
        - Targeted DSM
    7. Do we comprehensively mine our own data? Before seeking outside data?
    8. Help CAC understand the current market research and how is Energy Trust using data to engage customers?
- *What about this topic is most essential for CAC to discuss/review?*
    1. Where are the opportunities? Who are participating in programs today?
    2. Vetting research
    3. Identify sources of data/research
    4. Research strategy coordination
- *Other thoughts*
    1. Who are the decision makers?

B. Context—market trends, policy issues affecting programs

- *What are essential questions CAC should discuss on this topic?*
    1. First group
        - How are we measuring?
        - What are underlying drivers?
        - How do programs react to uneven trends in segments?
    2. Second group
        - What are the trends?
        - What are the policies?
    3. Third group
        - Do trends require changes?
        - What's the threshold for response?
        - Impact on customers and trade allies
    4. Fourth group
        - How do they impact Energy Trust as an organization?
        - How do we inform policy?
        - How does energy efficiency fit into a distributed energy future?
        - Who are our allies?
    5. Fifth group

        - How do we mine the opportunity?
        - How do we identify trends/leverage CAC perspective?
        - Identify leading indicators on bad trends
    6. Sixth group
        - What are program implications?
        - What can we do to respond or shape?
        - How do trends impact underserved groups?
- *What about this topic is most essential for CAC to discuss/review?*
    1. Federal
        - Board policy?
        - Where is Energy Trust in policy shaping?
        - Ensure stability for trade allies
        - Cheap energy and cost-effectiveness implications
    2. State
        - What are we going to do?
        - Are we impacting board policy or responding to state / local / federal?
        - How do we position to be successful?
        - How to prioritize response to multiple policies/trends?
    3. Local
        - Different perspectives

C. Program innovations

- *What are essential questions CAC should discuss on this topic?*
    1. What are risks?
    2. What is the technical/program potential?
    3. Timeline/logistics
    4. Can we try out this idea faster?
    5. What is the evaluation path?
    6. Savings shape, grid impacts
    7. Does this solve more than one problem? (address)
    8. Are trade allies involved in the process?
    9. How does it impact people in the real world?
    10. What is driving the change?
    11. Does this program make sense, in our wheelhouse?
    12. Are there opportunities for partnerships, other synergies?
    13. Are there policy barriers—or other barriers?
    14. DSM/renewables intersection
    15. Has it been done before?
    16. CAC members would answer questions, Energy Trust responds
    17. What gap does this fill?
    18. Recommendation to go forward?
    19. How can this be integrated?
    20. Measure life
    21. Are there alternative approaches?
    22. How big is it? Scope/bounds
    23. How does it fit with broader market trends?
    24. What's screening criteria? Tradeoffs?
    25. Cost/benefit

26. Is this change equitable to all customers?
27. Who will benefit?
28. How are we inviting ideas from CAC, others?

- *What about this topic is most essential for CAC to discuss/review?*
    1. How do we define success?
    2. What is the exit strategy?
- *Other ideas*
    1. Sub-group to look at report

D. Challenges and barriers facing programs

- *What are essential questions CAC should discuss on this topic?*
    1. What are real-world implementers (trade allies, contractors) seeing in the market?
    2. Which programs to prioritize with delivery solutions?
    3. How much longer can we continue _____ in current state and what could/should we change?
    4. How can we adapt to keep serving when something goes away or is at risk?
    5. How big of a deal are these? (Prioritization)
    6. What is the root cause of the(se) challenge(s)/barriers
- *What about this topic is most essential for CAC to discuss/review?*
    1. How do we remove these barriers? (AKA discussion is problem solving with CAC)
    2. Research and vetting/reviewing research
    3. Anticipated changes coming down the line, trends
    4. Different perspectives—contractors, customers, programs, Energy Trust, utilities, other groups, stakeholders
    5. Regional differences, focus/considerations (ties with diversity)
    6. Who benefits from status quo?
- *Other thoughts*
    1. Codes, standards, baselines—impacts of those
    2. Policies/fail safes when something isn't cost-effective—keep serving customers
    3. Leverage CAC input and expertise/ideas
    4. Are these embedded in program design, external, regulations/rules, structural
    5. Alternative approaches

E. Program delivery to historically underrepresented groups

- *What are essential questions CAC should discuss on this topic?*
    1. How to define groups?
    2. What is the appropriate cultural context? Regional or economic
    3. How big is the group and where is it?
    4. What are barriers and benefits?
    5. How to hear from these groups and what they need/want
    6. How to find/recruit diversity voices on CAC
    7. Underserved? Who is?
    8. Tradeoffs: getting to this group vs. others, risk political and social of targeting [?]

9. Opportunities
10. Costs
11. How do you measure success?
12. How are others approaching this, including CAC members?
13. Coordination with policy
14. What are the gaps and what is not reaching them?

- *What about this topic is most essential for CAC to discuss/review?*
    1. What delivery methods work best? What are others doing?
    2. How to define the groups?
    3. The ones in blue [?]
    4. How big and where?
    5. What are the opportunities?
    6. What are the barriers?
    7. What is the voice of the delivery agents?

F. What's working or not working nationally?

- *What are essential questions CAC should discuss on this topic?*
    1. What are the missed opportunities? In other words, what are other states/programs doing that we aren't and then dig into why?
    2. How have programs adapted over time?
    3. How would staff determine this information? Examples include research, conferences and report outs
    4. What are best practices? (Nationally or globally)
    5. What's the best way to share information?
    6. What is the context of the new ideas?
    7. Valuation of DSM partnerships
    8. Are there things that work here that can be promoted?
    9. What are they doing in New York, California, Canada, Massachusetts?
    10. How do you learn about what's working?
    11. How is that market unique compared to Oregon?
    12. What does "working" mean?
    13. What are the underlying data and trends behind what's working?
- *What about this topic is most essential for CAC to discuss/review?*
    1. How do we use all this information? Does it fit?
    2. What is the CAC's recommendation to the board?
    3. What's applicable here? Vetting
    4. How would that work here?
- *Other thoughts*
    1. Presentations, white papers, email seeking updates from CAC
    2. Sub-group report-outs
    3. Making connections with other organizations
    4. Supplemental perspective from program design/proposals

4. Meeting Best Practices

Before meeting

Agenda development

- Well-defined agenda
- Prioritization
- Clear objective statements for agenda topics
- Seek input on burning questions (real-time)
- Make sure there's a reason for the meeting
- Flag all agenda items as:
    - Informational content
    - Actionable item for Energy Trust staff
    - Board topic
- If doing single topic, some might not show up. Diversify agenda to get everyone there.
- Highlights and full minutes as part of agenda
- Mix of discussion/presentation
- Never sit for more than 90 minutes
- Discuss next meeting topic at end of meeting before, 10 minute preview and assignment

Assignment development

- Clarify charter
- Send detailed information ahead of time
- Send objectives/expectations ahead of time
- Learning topic with bibliography using secondary research
- Members informed enough to represent
- Get CAC prepared to come with ideas

Presentation development

- Presenter = person working on it (not higher-ups)
- Invite outside presenters to represent perspectives
- Presentations/information from other committees
- Define problem and information available
- History and background on topic/measure, numbers, proof
- Paint scenarios, different options
- Doesn't have to be fully baked, have room for decisions and changes
- Present considerations and potential impact before decision made
- Surface changes in process = right expectations
- Impacts and opportunity analyses
- Barriers to implementation
- Unknowns/needs
- Supporting materials

Discussion development

- Conduct specific outreach to targeted stakeholders/groups who would be interested, fill the room, include diverse perspectives to bring more broad ideas
- Meaningful icebreaker to connect as people
- Set expectations of discussion
- Prepare specific questions for CAC

- Standing questions
    - What are the risks, opportunities, barriers, unknown needs?
    - What should go to board?
- Ground rules for each type of topic/discussion
- Opportunities for back-and-forth feedback
- Facilitated breakouts
- Small groups to ask more questions
- World Café format
- Writing
- Other ways to share input so everyone is engaged
- Anonymous questions

Room set up

- Conducive room set up
- Tech: be able to present remotely
- Name tags—especially for breakouts

During meeting

- Trained, engaging, agnostic facilitator(s) from Energy Trust or outside
- Let people vent first so they are more engaged
- At beginning, check-ins (less than one minute) on what they're working on
- Encourage everyone to speak / contribute
- Comfortable to share diverse perspectives, right vibe
- Let people feel heard
- Make sure interest from participants
- Check in with phone participants
- Mix up the group
- Encourage roundtable style more than popcorn style—deliberately manage conversation and facilitate getting input from everyone
- Identify problem, brainstorm ideas
- Collaborate/discuss
- Facilitated discussion to come to consensus
- Stay conscious of time, when it's done it's done

After meeting

- Instant feedback
- Evaluate meetings
- Summarize/synthesize findings
- Distinct action items and decisions recorded
- Distinguish clarifying questions vs. deep-dive questions
- Meeting minutes include Executive Summary with decisions, questions, action items
- Add context for board: what CAC discussed/asked/flagged
- Board would use CAC to vet what staff puts together
- How to present to board and get input back (loop)
- Question: why is interaction between CAC and board valuable? (Invite board?)
- Path to disseminate within Energy Trust
- Get down to actionable pieces
- Follow-through on topics (go beyond the dots used for voting)

Tab 13

Renewable Energy Advisory Council Meeting Notes

March 20, 2018

Attending from the council
Erik Anderson, Pacific Power
Peter Weisberg, The Climate Trust
Bruce Barney, PGE
Kendra Hubbard, Oregon Solar Energy Industries Association
Les Perkins, Farmers Irrigation District
Adam Schultz, Oregon Department of Energy
Frank Vignola, University of Oregon
Dick Wanderscheid, Bonneville Environmental Foundation

Attending from Energy Trust:
Shelly Carlton
Becky Engel
Matt Getchell
Jeni Hall
Jed Jorgensen
Betsy Kauffman
Dave McClelland
Dave Moldal
Josh Reed
Lizzie Rubado
Zack Sippel
Greg Stokes
Jay Ward
Peter West
Rachel Wilson
Whitney Winsor
Robert Wylie

Others attending:
Rob Del Mar, Oregon Department of Energy
Lindsey Hardy, Energy Trust board
Alan Meyer, Energy Trust board
John Reynolds, Energy Trust board

Executive Summary:

- Solar market current state and forecast:
  - Questions about impacts of the RETC expiration and import tariffs on solar panels, as well as the future pace of projects and incentive trends.
- Wallowa Lake County Service District hydro project:
  - Overview of proposed project in Wallowa County area.
  - Questions about project scope and prioritization of incentive funds.
- Public comment:
  - Questions about changing the name of the Other Renewables program; and availability of RAC for a tour of Farmers Irrigation District over the summer.

1. Welcome, introduction, announcements

Jed Jorgensen called the meeting to order. He discussed changes to the agenda, including a specific request from Suzanne Leta Liou to speak during the public comment period about solar + storage. He also requested feedback from council members at the meeting's conclusion about their availability to attend a tour of the Farmers Irrigation District in Hood River.

The agenda, notes and presentation materials area available on Energy Trust's website at: https://www.energytrust.org/about/public-meetings/renewable-energy-advisory-council-meetings/

2. Solar program updates

Dave McClelland provided a presentation about the solar program and market, in light of the RETC expiration, and post-RETC above market costs for residential and commercial.

In his overview about the current market and 2017 activities, Dave provided a summary of the Solar program's progress toward 2018 action plan goals. He acknowledged challenges in the current market, including one solar contractor's business troubles, recently featured in an Oregon Public Broadcasting story. Energy Trust has facilitated conversations with contractors to enable customer projects to move forward.

Dave McClelland provided an update about infrastructure/systems upgrades to the PowerClerk software platform, which Energy Trust uses to accept incentive applications from contractors. An upgrade to new version of PowerClerk will allow Energy Trust to develop new offerings and provide process improvements for contractors.

In the 2017 action plan, Energy Trust identified several Solar program goals. One involved expanding participation with a particular focus on participation among low- and moderate-income individuals. The organization plans work later in 2018 to operationalize its plans for this audience.

Another area of exploration by the Renewables sector has been an expanded focus energy capacity (kilowatts), in addition to energy generation (kWh) alone. Dave explained the industry is working to provide flexibility in *when* energy is available, so it can address peaks and valleys in demand. Storage and controls can be added to solar to make systems more flexible. Changes at the federal level about how solar and storage are considered together for tax credits could create opportunities for Energy Trust to explore in 2018 and beyond.

Kendra Hubbard: Are you referring to storage for both residential and commercial?

Dave McClelland: We haven't made decisions, but will look at this in Q2-Q4. At that time, Energy Trust will come back to RAC and ask for its perspective.

Alan Meyer: Our region has a lot of capacity, but Energy Trust's enabling legislation doesn't include capacity. Is OPUC thinking about looking at that, and what we're allowed to do?

Dave McClelland: Hopefully JP Batmale can join us for the discussion today, but we will come back to RAC to talk about this. It's an area of interest. Right now, our focus is on generation and getting systems installed. But there's a question of what other benefits those systems can provide, such as supporting peak demand reduction.

Dave McClelland then reviewed application trend data for solar projects from 2017 through today. The overall pace was steady for most of last year. In the last few weeks of 2017 and into the first week of January 2018, Energy Trust received a surge of project applications as people tried to take advantage of RETC. Q4 2017 was Energy Trust's biggest quarter ever for solar applications. The application deadline for residential customers to receive the Energy Trust incentive was January 8, 2018, while the state application RETC deadline was December 31, 2017.

Since January 8, 2018, the organization has received only 99 residential applications. Dave provided a comparison of that pace to the same period in 2017, which had three times more applications.

As contractors close out RETC projects, they gain more capacity to take on new projects, which Dave cited as a promising indicator for the sector. Energy Trust saw 22 applications per week. Last year this time, we received 34 applications per week.

Kendra Hubbard: Are most of the applications getting approved?

Dave McClelland: Almost all applications will turn into funding reservations and installs. The typical turnaround for residential will be 90-180 days.

Alan Meyer: Has the average number of applications per week changed with a lack of incentives?

Kendra Hubbard: There is uncertainty in the market from the new federal aluminum and steel tariffs. These tariffs impact materials used in solar systems. I still foresee some volatility in the market until the tariff impact is borne out.

The presentation provided context for the incentive changes in 2017 and 2018, in line with RETC. Dave discussed the organization's past decision-making approach around its solar incentives levels. He reminded RAC members that last August, Energy Trust asked if it should change incentives after RETC, and whether the organization should take a "wait-and-see" approach or act quickly. At the time, there was a decision to wait and see. Dave indicated that Energy Trust still agrees with the decision to make slow and steady reductions to the solar incentive last year, and to increase them after RETC expired. However, now is a good time to reassess which approach to take in this new market landscape.

Kendra Hubbard: Those step-downs in incentives were easier for contractors to pitch to customers. It gave them a window of time when an incentive is guaranteed, so they felt some stability. Those fewer reductions with longer lengths of time between them were easier for them to deal with in residential.

Peter Weisberg: Do all applications after January receive the $0.52 incentive?

Dave McClelland: Yes. Although the average slightly varies between PGE and Pacific Power.

Dave McClelland provided background on the RETC deadlines and the current status of projects applying to receive this tax credit. The organization started 2018 with 1,200 active residential projects. Since then, Energy Trust has completed 25 percent of those projects. Another 25 percent came back and requested verification, leaving 600 applications whose status was unknown. To get a better sense for these projects' status, Energy Trust informally surveyed 10 of the most active contractors. Inputs from these contractors indicate that half of those 600 existing projects were already installed and received jurisdictional inspection. They estimate that roughly 300 projects are still in progress trying to hit the installation deadline for RETC.

Energy Trust is equally hopeful that many of those projects will be completed. However, Dave notified RAC that there will likely be some projects that don't make the deadline. Renewables team members are working with contractors and jurisdictions to prepare them for this last push before the March 31 deadline.

Dick Wanderscheid: If you don't get a RETC, are you kicked into the $0.52 incentive?

Dave McClelland: We are considering an option to push customers to that new higher incentive. We need to look at how many projects actually come through and the impact of that decision on budget.

Jay Ward: That is what the state is suggesting we do in the unhappy event that people don't make the RETC deadline.

Dave McClelland: Although doing so won't make up for loss of RETC.

Peter Weisberg: What is the shortfall?

Dave McClelland: RETC allows for up to $6,000. With the new 2018 incentives at about $0.30-0.40/watt higher than late 2017 rates, a typical system would receive about $2,000-3,000 more.

Kendra Hubbard: For a homeowner who doesn't get RETC, they view it as an extra couple years of payback, rather than 5-10 years with RETC.

Dave McClelland: The Energy Trust incentive reduces the up-front costs instead receiving a tax credit over multiple years.

Kendra Hubbard: Yes, the financing is less with an Energy Trust incentive, and homeowners see the value in that.

Dave McClelland continued his presentation with an above market cost forecast, including a chart that outlined current and future projections. As of January 9, 2018, Energy Trust incentive is at $0.50/watt and covers about 30 percent of the above market cost. Dave showed a future forecast of the Investment Tax Credit (ITC) phase-out in 2020-2022. He introduced a question about whether there will be another boom/bust cycle as the market anticipates the expiration of the ITC. Dave also provided industry context from 2013 where the industry experienced a similar step-change in cost. At that time, Energy Trust had significantly cut its incentives. Costs went up at first, then came down sharply, dropping from $5.00/watt.to $4.50/W on average. If the industry were to see a similar 10 percent reduction in cost, the market would likely grow again.

Kendra Hubbard: When we consider storage in this, storage will increase cost per watt. It will create the same production level, but require more equipment. Is storage part of this cost forecast?

Dave McClelland: If we were providing incentives for storage projects, then yes, it would need to be part of the conversation. Our focus is above market cost of solar alone.

Kendra Hubbard: Not including storage above market costs?

Dave McClelland: Correct.

Dave McClelland described a current market dynamic at the beginning of 2018 whereby there are significant cost reductions happening with contractors. Some low-cost contractors are at $2.50/watt, representing a small portion of market. Some contractors are still at $5.00/watt.

Dave McClelland proceeded with his presentation by providing a summary of the current program status. Residential activity is down 66 percent from Q1 2017, although things are picking up. Current incentives cover 30 percent of above market costs. Energy Trust expects above market costs to stay high. Dave then requested feedback on the "wait-and-see" strategy from 2017.

Kendra Hubbard: Energy Trust made the right decision of half-and-half between residential and commercial. My conversations with contractors focus on how to take away risk in the market. I haven't seen the residential market become impacted yet by the aluminum/steel tariff, which could make modules and equipment more expensive. Going forward, tariffs could impact larger projects—not just utility scale, but larger commercial projects. I recommend monitoring what the split is. Things like the availability of material, price of equipment and where is it manufactured will all be factors to watch. From my opinion, it's good to have 50/50 split.

Dave McClelland: Last year, we saw equipment prices decrease in the first half of the year, and price increases in the last half.

Kendra Hubbard: Manufacturers will change prices expecting that material costs will change. These changes are not necessarily a reflection what is actually happening with costs, but a speculation of what could happen to the cost of modules and availability.

Dave McClelland: Our assumption is that the tariff costs are already included due to speculation.

Dave McClelland completed his presentation with a summary of the non-residential market. New incentives and caps were introduced for the commercial market. Activity has been slow and steady, and Energy Trust has not seen the rush that it experienced last year. The focus for commercial has been on the reintroduction of incentives for voluntary grant programs, specifically Pacific Power's Blue Sky program and PGE's Renewable Development Fund (RDF).

Energy Trust is considering two incentive offerings for voluntary grant programs. First, Energy Trust may offer up-front development assistance incentives. Although they are relatively small, these incentives remove risk from contractors who have to provide this type of up-front support today. Design work is not an eligible cost for an RDF or Blue Sky grant, so it is an area where Energy Trust incentives won't be duplicative.

Kendra Hubbard: These incentives could be important as contractors move into residential space, but lack the staff and expertise to do design.

Dave McClelland: Energy Trust hopes to get the development incentive out next month. We can learn what customers need from us and what they need from the grant, so we don't duplicate the grant.

Bruce Barney: Will this offer increase the number of projects or just make greater competition for grant funds?

Dave McClelland: The feedback from PGE staff is that they haven't spent all the RDF grant dollars and are looking for more qualified applications. Blue Sky may be funding constrained, but this could provide opportunities for projects that wouldn't happen otherwise.

Dick Wanderscheid: How will we determine how much money people get?

Dave McClelland: We do a cost share for early design work, similar to how we approach our new buildings program. We pay a percentage of the up-front work. However, we propose to pay no more than $1,800 for early design work. We will also take that into consideration for the installation incentive. The design incentive will come out of the installation incentive.

The second incentive Energy Trust proposes to voluntary grant programs is to offer an installation incentive for public entities and nonprofits. It is a lower incentive than the current offering, but includes a two-year reservation period that is twice as long as the current reservation period.

Peter Weisberg: How are grant projects different from other commercial projects?

Dave McClelland: Voluntary grants are dollars that come from voluntary green power customers. The leftover funds are used for grants. A couple years ago there was a concern that Energy Trust incentive plus grant funds were too much, and OPUC asked us to step back from offering incentives for grant projects. But with a new review from OPUC, we now can offer incentives again.

Kendra Hubbard: Is there any way we can announce incentive decreases on a monthly basis? Can we tell contractors what the changes are for incentives, so there is consistency when changes will occur?

Dave McClelland: We avoided setting a date for project changes so we avoid the start-stop of contractors rushing to get applications submitted. We are not expecting many incentive reductions in 2018. We hope to extend the current rate because of low activity in Q1.

Kendra Hubbard: Speaking for my own personal project, incentives went down 10 cents over a period of five weeks. That was a big change. I'm just thinking from a contractor perspective. Step-downs can be communicated to the industry to help them.

Jeni Hall: We intentionally don't publish the dates, but we try to be as transparent as possible to contractors. We do a weekly status report for them with current and projected incentive rates, and forward-thinking contractors put the current and future incentive rates in their contracts to inform customers.

Kendra Hubbard: Not every installer is doing that, but that would be helpful. They fear setting incorrect expectations.

Jeni Hall: We are trying to give contractors as many tools as possible.

Alan Meyer: Could we review the chart of the spike again? I'd like to see mean calculation prior to the last two months, and then how long it would take to get back to the mean, to see if projects rise up or if there has been a change. There is some level of demand that didn't change absent this incentive that should continue.

Peter Weisberg: Is this 66 percent reduction going to continue?

Dave McClelland: We are hopeful because it has shrunk to a one-third year-over-year reduction for March. Looking back to 2013, we dropped from 1,200-1,300 projects to 800 projects with a similar incentive reduction. We have 1,000 projects projected this year. It could be more.

Lindsey Hardy: What is the distribution of projects across state? Are they with top contractors? Spread out?

Dave McClelland: Current data show no more than 10 projects from any one contractor. There are 30 contractors represented in the Q1 project numbers. Projects are located around the state. The activity in Pacific Power territory has been a significant part of the total.

Kendra Hubbard: Contractors are busy getting through March 31. Their sales teams are trying to rethink how they are going to sell going forward. They are figuring out how to get through their backlog. I believe a better look at the universe is after March 31. OSEIA predicts that there will be a contraction in the market, which could come from out of state or local contractors.

Frank Vignola: Do you expect the soft costs for solar to change?

Dave McClelland: This is still an area of interest. Customer acquisition is a major cost, and becomes higher as the project financials become less optimal for customers. It becomes harder to sell a 15-year payback than an eight-year payback. The leads we provide to contractors will continue. We should think about other marketing to let people know about existing solar incentives.

Bruce Barney: Is there any way Energy Trust will recognize issues or warn people so they don't experience the problems we have right now with one contractor? What role can Energy Trust play in consumer awareness?

Dave McClelland: It is not unusual in the construction industry for companies to go out of business. In the few cases where solar contractors went out of business, they had high volume and lots of customer interest, but had cash flow issues. Those are challenging issues for Energy Trust to predict. If you have ideas of indicators, we'd be interested in that feedback.

3. Wallowa Lake County Service District hydro project

Jed Jorgensen introduced Dave Moldal to give a presentation on Wallowa Lake County Service District hydropower facility. Jed reminded RAC participants that projects requesting less than $500,000 in incentives can be approved by staff only. Over that amount, RAC gives feedback and then Energy Trust's board evaluates the project. This Wallowa project doesn't require RAC feedback or approval, so it is being shown for informational purposes.

Dave Moldal then shared his presentation about the proposed project, including an overview of the project, evaluation points, above market costs and overall budget.

The Wallowa Lake County micro-hydropower project has been under consideration for many decades. The project involves generating power on a municipal drinking water system that draws water from a spring on U.S. Forest Service land and delivers it to water users in the valley south of Wallowa Lake. This system delivers water for 330 accounts including the Wallowa Lake State Park.

The new project will install a powerhouse (small shed), replace 800 feet of existing 4-inch pipe and install a turbine and generator. This micro-hydro project will generate energy from the head and flow of water in the existing pipeline, and in the process, will offset through net-metering for about 75 percent of the water district's pumping load. The project must take into consideration protection of water quality because it is a drinking water source. Therefore, in addition to the regular permitting involved in such a project, Wallowa County must also obtain review by the Oregon Health Authority to ensure water quality standards are met. Wallowa County aims to complete permitting and construction this summer, with commissioning in late 2018.

The project would offset approximately $12,000 in retail power. Financing is not yet complete, and Dave mentioned that the state drinking water revolving loan fund is under consideration. Additionally, Wallowa County received a Pacific Power Blue Sky grant for $60,000.

Overall project costs are estimated at $212,000. The cost for the turbine and generator are based on a bid, and other cost estimates in the capital stack are based on similar projects that have been recently developed. Energy Trust proposes an incentive of $80,000 for this project, which is estimated to generate about 134 megawatt-hours of renewable electricity per year. To calculate above market costs, Energy Trust factored in an 8 percent risk-adjusted rate of return on a 20-year project, and factored in the Blue Sky grant that will offset a portion of the project's cost. The final above market cost estimate is approximately $100,000.

John Reynolds: Is there flow all the time? 365 days a year?

Dave Moldal: Yes. The spring flows at a consistent volume year-round. Regardless of water demand, the turbine and generator will operate year-round.

Alan Meyer: This is a very expensive project. Have we have prioritized this as the best project for this investment?

Jed Jorgensen: It is the only project that has applied at this time. Smaller projects tend to be more expensive. In that area, where there is a lot of potential for other projects, getting more projects in the ground helps get others to move forward.

Alan Meyer: Is an 8 percent rate of return and a 12-year payback correct? Is that consistent with the market?

Les Perkins: Yes. We don't have the same return requirements that a utility has. Projects need to make sense over a longer time frame.

Jed Jorgensen: This project is county-owned. That is going to be a piece of infrastructure that can last a long time, 50 years or longer.

Les Perkins: I expect the costs of retail power to go up over time. This way, the district controls their costs.

John Reynolds: There is also a resilience factor. This is a small generator, but because it's in remote place, it could be help with resilience.

Jed Jorgensen: There is a Pacific Power one-megawatt hydro plant about one mile up valley from this site.

Dick Wanderscheid: Why are they replacing the pipe, and why only part of the pipe and not the whole thing?

Jed Jorgensen: The section of pipe being replaced will have to manage higher pressures than it currently does.

Frank Vignola: Why has it taken so long?

Dave Moldal: Cost.

Peter Weisberg: Are there any headline risks where the powerhouse is loud and annoys campers? Or water quality issues?

Jed Jorgensen: Yes, they thought of those things and are addressing them. They are insulating the powerhouse building. Noise is always a concern.

Bruce Barney: It seems wrong to put in all this money to power the pump, but we aren't even powering the whole pump. Did the county do a pump efficiency evaluation to see if that is possible?

Dave Moldal: I understand it is outside of the hydro project's scope, and replacing it would significantly increase costs. However, the pump is new.

Jed Jorgensen: We can't change how the water delivery system operates. It is a capital-constrained county. It has taken 30 years to get here.

Bruce Barney: Then would the public's money be better spent on some other design?

Jed Jorgensen: The county does not have the resources available for a filtration plant.

Bruce Barney: Will this system be allowed by DEQ in its present state, or will they need to put a water treatment plant in?

Dave Moldal: The Oregon Health Authority is part of the permitting process. They have to sign off.

Les Perkins: One benefit is that no development is going to happen near the water source. It is located in the wilderness. Water quality won't change, because it is not an accessible area.

Bruce Barney: Like Bull Run, but no one can get in there.

Les Perkins: Even less accessible than Bull Run.

4. Public comment

Jed Jorgensen and Lizzie Rubado acknowledged that Suzanne wasn't able to join today, so her topic will be saved for the May meeting. Kendra said that Suzanne would likely speak to a potential tax incentive for people taking advantage of ITC. The potential tax incentive would allow current and existing solar homes to add storage as part of an ITC project. This is timely because of conversations around community resilience and how solar + storage will interact with the grid. Storage is something for RAC to think about in the context of Energy Trust's solar offerings.

Jed noted that this discussion ties into questions about definitions and statutory requirements around Energy Trust's renewable energy work. Energy Trust needs to be in alignment with the OPUC on how the organization may support things like solar + storage and how storage fits into above market costs.

John Reynolds raised the issue of nomenclature for "non-solar" program projects. He said that Alan has for some time been unhappy with "Other Renewables" as the name for non-solar. He

asked if Energy Trust ever considered the word terrestrial. Jed agreed that the “other” name has been unsatisfying for a long time and for a lot of people. Energy Trust has begun conversations about a name change. This task has been assigned to Shelly Carlton at Energy Trust, who will help facilitate this discussion. Any name change will go through policy committee because of the work and disruption that it could cause.

Finally, Jed revisited the poll about dates for a field trip to Farmers Irrigation District, asking for a show of hands for which RAC members could attend on the following dates: June 13, June 27 or July 25. July 25 was identified as a board meeting date, which will not work for Energy Trust staff or board members.

Jed committed to send the poll out to others for their input. He will let RAC know about the date.

5. Meeting adjournment

The meeting adjourned at 11:17 a.m. The next scheduled meeting of the Renewable Energy Advisory Council will be held May 9, 2018, at 9:30 a.m.

Tab 14

Energy Trust of Oregon Glossary of Key Terms and Program Descriptions

Key terms

Updated May 2018

Allied technical assistance contractors: Allied technical assistance contractors provide technical analysis and studies to help industrial customers identify energy-efficiency upgrades.

Avoided cost: The amount of money that an electric utility would 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 gets paid for power sold to the utility.

Benefit/cost ratio: Energy Trust ensures investment in cost-effective energy efficiency based on 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.

> **Total Resource Cost Test:** 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
>
> **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 the 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 cost of the Energy Trust incentive.

Cost-effectiveness: The OPUC has a definition that refers to ORS 469.631 (4) stating that an energy resource, facility or conservation measure during its life cycle 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.

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.

Energy Saver Kit: Customers of PGE, Pacific Power, NW Natural, Cascade Natural Gas and Avista can order free Energy Saver Kits from Energy Trust's website, including energy-saving LEDs, showerheads and faucet aerators.

EPS™: Builders can receive cash incentives for new homes constructed to EPS energy performance requirements, indicating low energy consumption, utility costs and carbon footprint. The score helps homebuyers assess and compare the energy use and costs of similarly sized homes.

Irrigation modernization: A collaborative effort by Energy Trust and Farmers Conservation Alliance, irrigation modernization connects irrigation districts and farmers with tools to invest in modern irrigation infrastructure, saving water and energy, improving habitats for fish and generating clean energy through small-scale hydropower systems installed in pipes.

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.

Market Solutions: Tailored market solutions incentive packages help businesses make quick decisions and achieve deeper energy savings when constructing small restaurant, grocery, multifamily, office, school or retail buildings less than 70,000 square feet.

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.

Megaproject: Large commercial or industrial projects receiving more than $500,000 in incentives for energy-efficiency upgrades are considered megaprojects. These projects are reviewed and approved by Energy Trust's Board of Directors.

Midstream incentive: Midstream incentives are provided to distributors and retailers to encourage stocking of energy-efficient equipment, and are passed on to both consumers and contractors as instant discounts, reducing barriers to participation.

Multnomah County Property Fit initiative (formerly Commercial Property Assessed Clean Energy): Started in 2015, the pilot provides 100 percent of funding to commercial property owners that complete comprehensive energy-efficiency and renewable energy projects, with standard incentives from Energy Trust and long-term loans from the Portland Development Commission repaid through energy savings or electricity production.

Path to Net Zero: The Path to Net Zero offering 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: The Pay for Performance offering for commercial customers offers incentives for capital and operations and maintenance improvements over a multiyear period to help achieve additional energy savings for more comprehensive projects.

Program Management Contractor (PMC): Company contracted 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. Contracts are rebid on a regular basis.

Program Delivery Contractor (PDC): Company contracted 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. Contracts are rebid on a regular basis.

Project development assistance: Incentives and support for early-stage development of Other Renewables projects, project development assistance helps build a pipeline of future renewable energy projects.

Retrocommissioning: A systematic process for identifying less-than-optimal performance in commercial equipment, lighting and control systems and improving the energy efficiency of these existing systems.

Savings Within Reach: Owners of single-family or manufactured homes who meet moderate-income qualifications can receive enhanced Savings Within Reach incentives for qualifying projects.

Strategic Energy Management: Energy Trust helps industrial and commercial customers reduce energy use and save money through behavioral and low-cost operations and maintenance improvements.

Targeted load management: This term encompasses efforts to change how and when energy is used. It could include efforts from the customer perspective to reduce non-coincident peak, efforts from the utility perspective to reduce coincident peak demand, and/or efficiency programs to reduce energy consumption. Formerly referred to as locational load management or targeted demand-side management.

Verifier: Trade ally verifiers provide technical guidance and inspection to home builders, ensuring that homes rated with EPS save energy through energy-efficient windows, HVAC, appliances and weatherization.

Program descriptions

Existing Buildings: The Existing Buildings program offers energy-efficient improvements for existing commercial buildings of all sizes. Incentives are available for custom projects, including capital upgrades and operations and maintenance improvements; standard upgrades; lighting upgrades; and energy management offerings such as commercial Strategic Energy Management, with incentives, tools, training, and technical assistance to help customers reduce energy use through behavioral and operations improvement.

Existing Multifamily: The Existing Multifamily program serves buildings with two or more dwelling units across diverse market segments, including market rate housing, affordable housing, assisted living facilities, campus housing facilities, homeowners associations and individual unit owners. Offerings include free installation of LEDs, showerheads and faucet aerators, and distribution of energy-saving advanced power strips in tenant units. Other offerings are incentives for common-area lighting upgrades; incentives for standard offerings including HVAC equipment, water heaters, weatherization, appliances and foodservice equipment; midstream incentives provided to distributors for qualifying equipment and lighting measures; incentives for custom projects; and technical services including technical analysis studies and free walkthrough surveys.

New Buildings: New Buildings influences commercial design and construction practices to reduce energy use. Program staff work closely with building owners and design teams to make energy considerations part of building design criteria and an asset for the building owner in major renovations and new construction projects. Outreach managers influence a broad range of market actors, leveraging energy-efficiency and renewable energy strategies and incentives to achieve energy-savings targets. New Buildings delivers highly technical solutions, simplified where possible, to create cost-effective, above-code options that leverage architectural design solutions and systems. New Buildings provides incentives to support high-performance design, including early design assistance, energy modeling incentives and a solar-ready offering. Incentives for whole-building approaches include modeled savings and standard incentive packages for small commercial buildings. Prescriptive and calculated incentives include standard offerings and lighting calculators.

Production Efficiency: Production Efficiency provides energy-efficiency solutions for all sizes and types of eligible industrial, agricultural and municipal water and wastewater customers. The program provides services and incentives through three primary delivery tracks: standard, custom and energy performance management.

Residential: Energy Trust’s residential program provides electric and gas energy-efficiency solutions for residential customers of single-family homes, manufactured homes and newly constructed homes. Cash-back incentives are available for energy-efficient HVAC systems, appliances and weatherization upgrades. Instant discounts are provided for water heating equipment, lighting and showerheads. The

program delivers services through program tracks: home retrofit, manufactured homes, retail promotions and new construction.

Solar: The Solar program aims to create a vigorous and sustainable market for solar in Oregon by offering cash incentives that lower above-market costs for small residential and commercial solar projects, educating consumers, creating and enforcing quality standards and ensuring a robust network of qualified trade ally contractors. Staff review and adjust incentive levels regularly to manage budget and respond to changes in solar costs. The Solar program supports installation of distributed solar systems across all customer sectors and types.

Other Renewables: The Other Renewables program supports renewable energy projects up to 20 megawatts in nameplate capacity that generate electricity using biopower, geothermal, hydropower and municipal-scale, community-owned wind technologies. Most projects are less than 2 megawatts in size. The goal of the program is to expand Energy Trust's renewable energy portfolio across a range of technologies and improve market conditions for renewable energy projects. The program provides project development assistance incentives and installation incentives. Project development assistance incentives can pay for a portion of the costs of feasibility studies, technical assistance or other non-capital cost assessments and investigations to help projects move from concept to construction. Qualified projects may access project development assistance incentives multiple times, up to the limits of funding caps, enabling applicants to move through consecutive development activities. The program also provides installation incentives calculated on a custom basis after a detailed technical and financial review of a project's application. All incentives are paid following successful project installation or activity completion.

Northwest Energy Efficiency Alliance: To deliver low-cost energy for customers, Energy Trust has been working with the Northwest Energy Efficiency Alliance (NEEA) since 2002 to increase the availability and adoption of energy-efficient electric products, equipment and practices. In 2015, natural gas equipment was added. By pooling resources at a regional level to work with manufacturers, distributors and retailers, NEEA accelerates the development, testing and distribution of new energy-saving equipment and approaches. NEEA identifies and refines new high-efficiency products, services and practices and helps bring them to market. NEEA is supported by and works in partnership with Bonneville Power Administration, Energy Trust and more than 100 Northwest utilities for the benefit of more than 12 million energy consumers.