2017 Annual Report to the Oregon Public Utility Commission & Energy Trust Board of Directors

ENERGY TRUST OF OREGON
APRIL 13, 2018

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A glossary of program descriptions and key terms is available online at www.energytrust.org/reports

From the executive director

Cost-effective energy efficiency and clean renewable energy are the most important energy resources available to Oregon's utility customers. Our work to deliver these resources helps keep costs low for customers and builds a more sustainable energy future for our communities. 2017 was an outstanding year for innovating and achieving these goals.

In 2017, we helped utility customers save more electricity than ever before and maintained record natural gas savings for the second year in a row. We achieved savings at even lower costs than the year before—at just 2.5 cents per kilowatt hour and 27.3 cents per therm—driven down by exceptionally low-cost savings from LEDs and an industrial megaproject. This report highlights we reached new milestones for advancing adoption of LEDs, building highly efficient new homes and businesses, and helping residential solar customers achieve record solar generation.

We pursued innovative new program strategies while taking steps to prepare the organization for future years, when market and policy changes will require new ways of working with customers to accomplish energy efficiency and renewable energy results. Our focus on innovation and readiness will be important as we achieve success in transforming the lighting market, which will mean LEDs—some of the lowest-cost and highest-volume sources of savings—will no longer need our support. While accelerating market transformation in lighting is a remarkable success for Energy Trust, it presents challenges for sustaining high levels of electric savings in the years ahead.

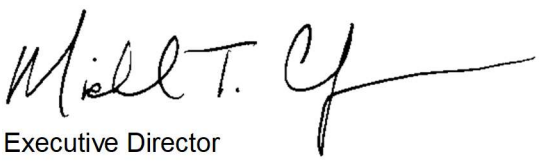
In tandem with our core work to help customers invest in clean energy, we prepared to navigate changes through innovative delivery strategies, from consolidating our residential programs to launching midstream incentives. We initiated pilots to test new technologies and approaches, including a pilot to replace outdated manufactured homes and to leverage our programs to reduce energy demand in rapidly growing communities.

Expanding participation is key to meeting goals as we seek the next increment of savings and generation. To reach new customers, we collaborated with the Oregon Department of Energy to increase access to solar energy for low- and moderate-income communities and partnered with Community Energy Project to deliver free weatherization workshops. We also supported community energy planning for Hood River and Northeast Portland's Living Cully initiative, while exploring new models for community engagement.

There is more we can do to reach and serve all Oregonians. In 2018, we plan to gather data, understand where gaps exist and learn from diverse communities—including communities of color, rural communities and people with low- and moderate-incomes—and develop new approaches to effectively engage all eligible customers.

Thank you to all who contributed to Energy Trust's success in 2017, including the Oregon Public Utility Commission, Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas, Avista, Northwest Energy Efficiency Alliance, Oregon Department of Energy, our 2,300 trade ally contractors and the many customers and communities pursuing energy efficiency and renewable energy across the state. We look forward to continuing our work with you to ensure utility customers benefit from low-cost energy and renewable power.

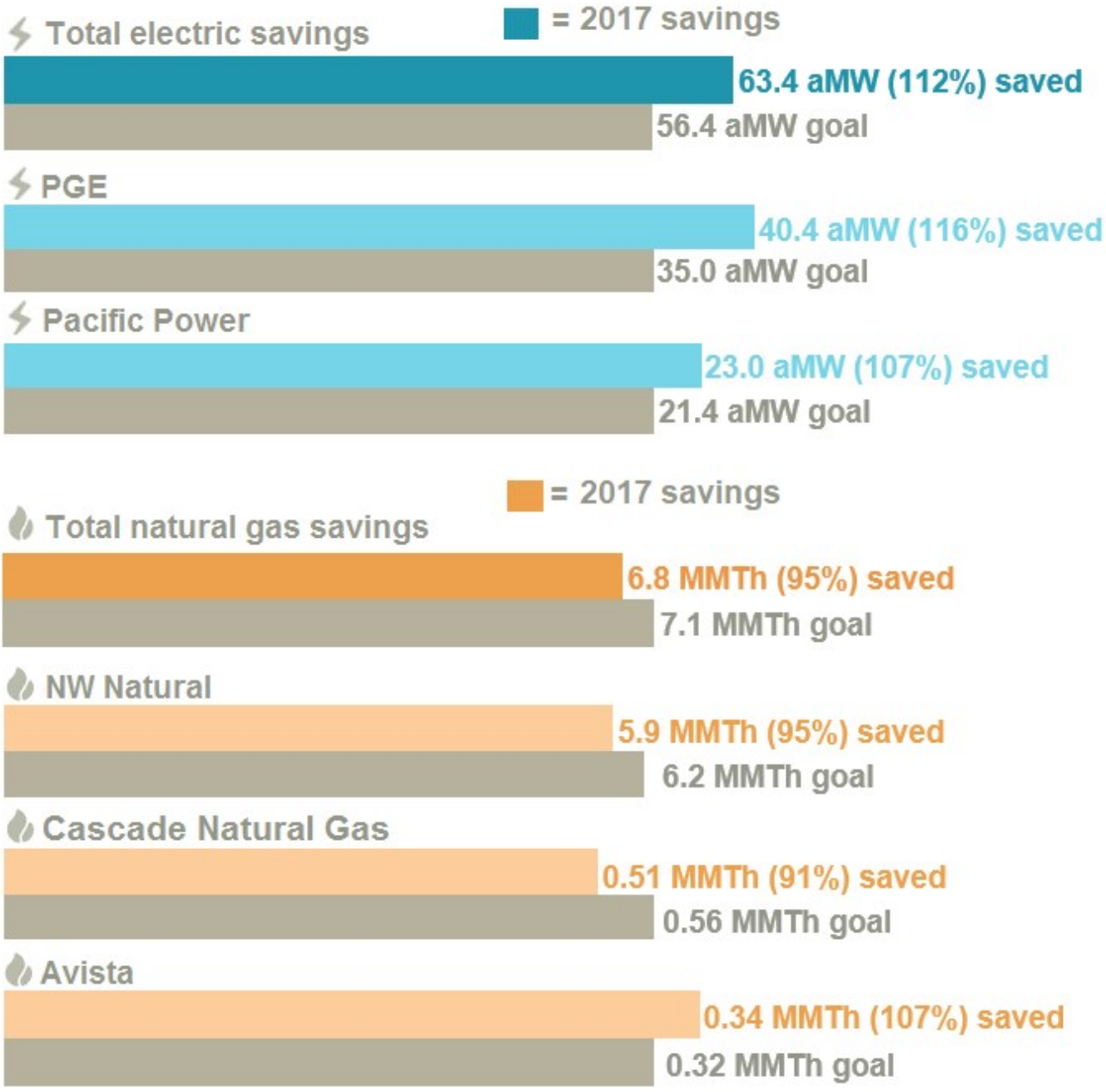
Michael Colgrove



Executive Director

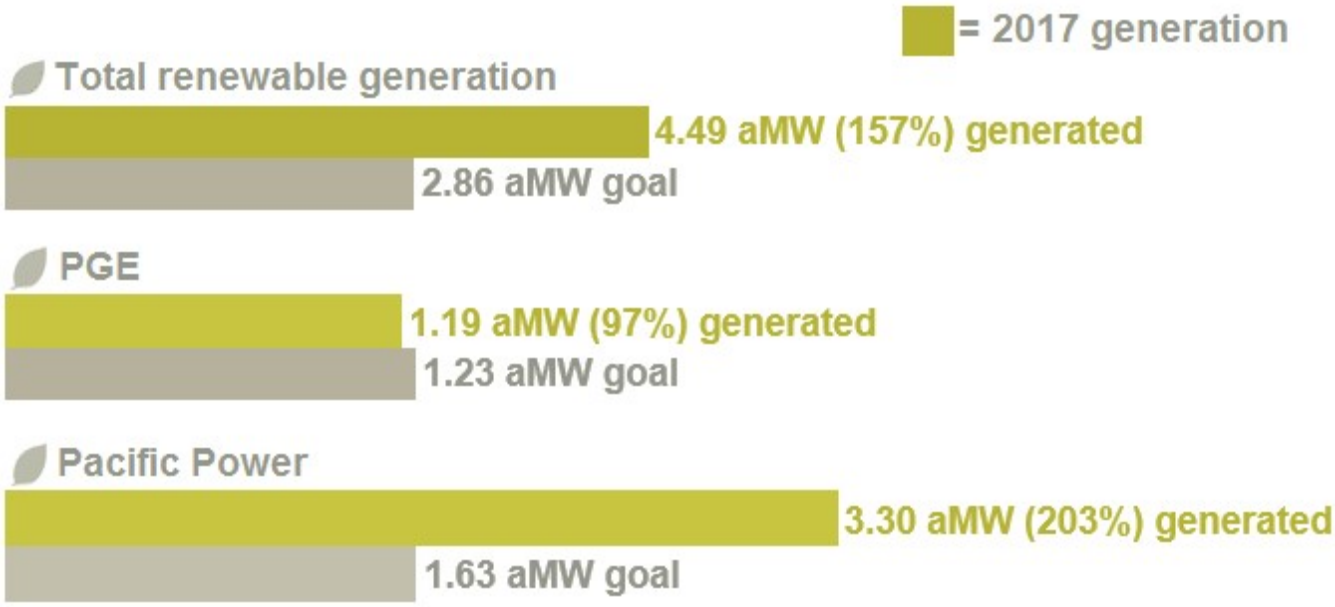
I Results at a glance[1,2]

Savings

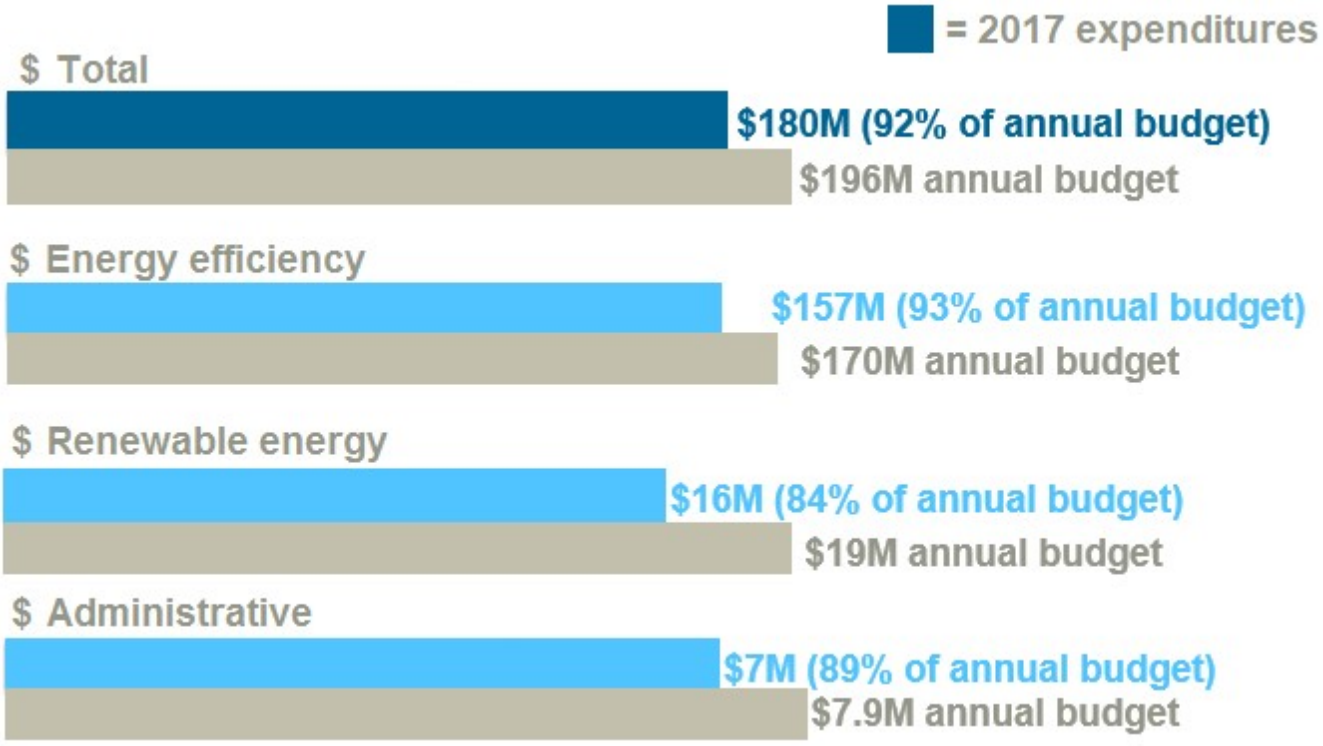


[1] This document reports net savings. Net savings are adjusted gross savings based on results of current and past evaluations.
[2] Note that aMW indicates average megawatts, MMTh indicates million annual therms and M is million.

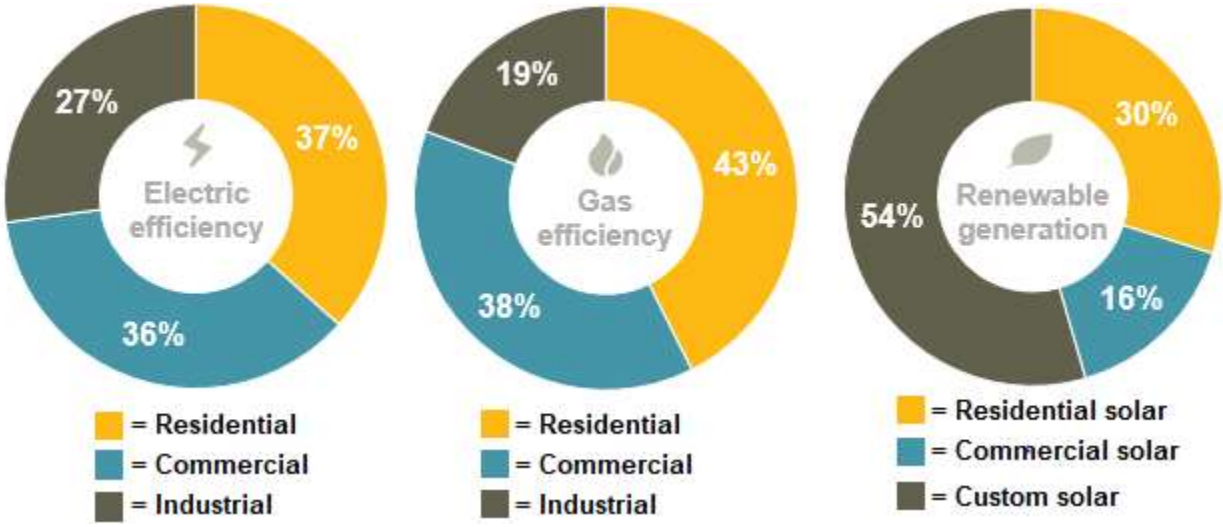
Generation



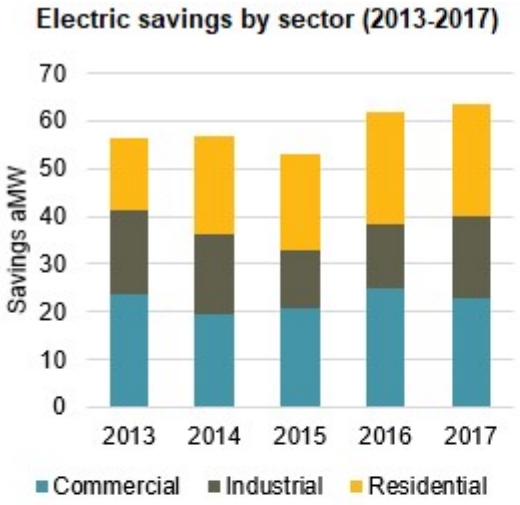
Expenditures

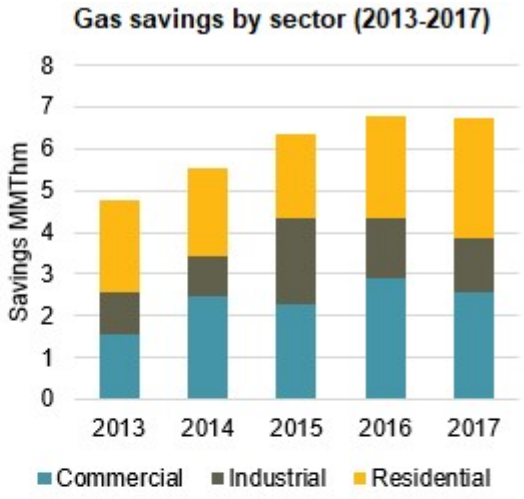


Percent of 2017 savings and generation by sector



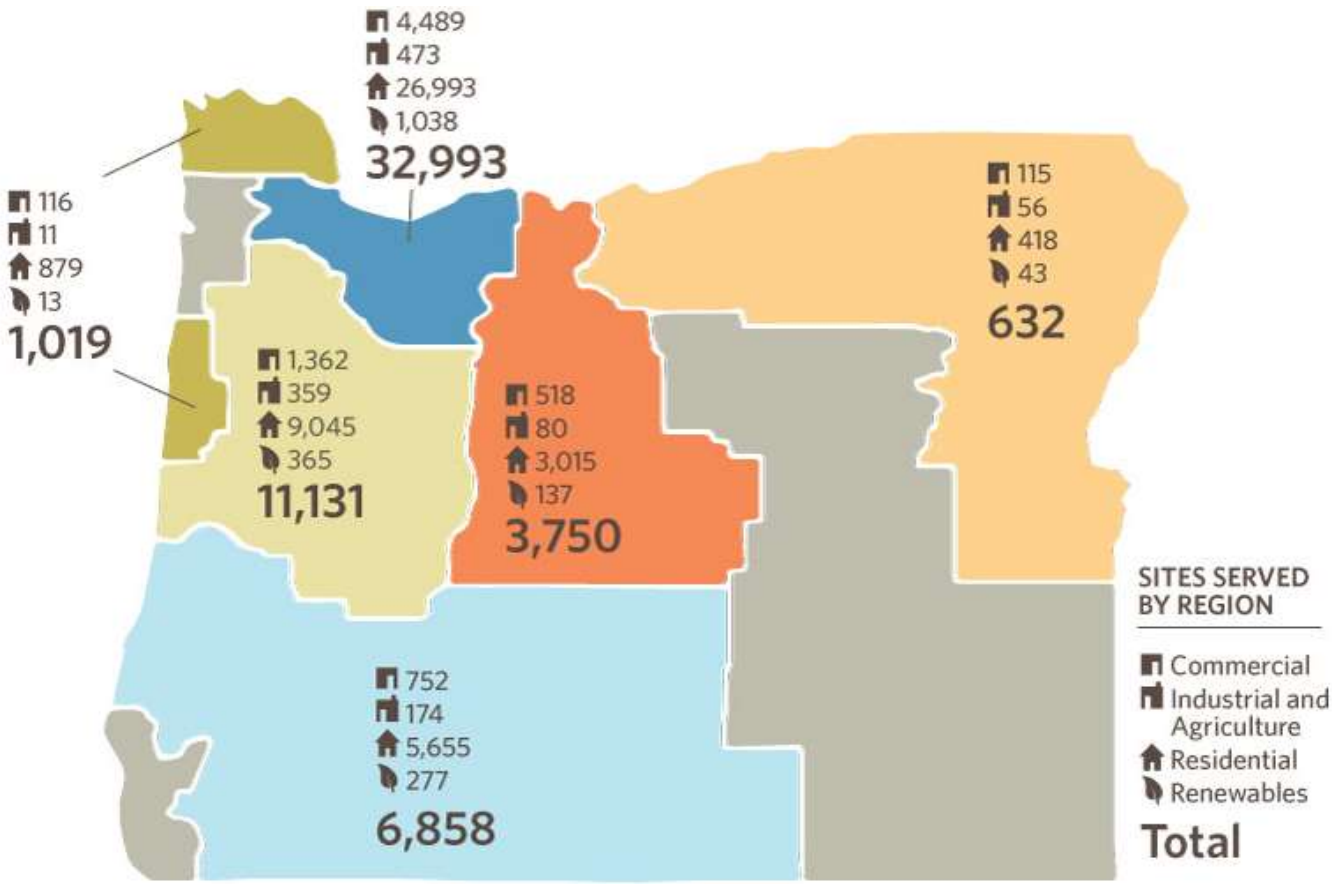
Savings by sector over time





Customer satisfaction[3]

Sites served by region[4]



[3] Energy Trust surveyed 1,862 residential customers and 598 non-residential customers in Oregon who received an incentive or discount from Energy Trust in 2017. In addition, Energy Trust conducted a separate survey with 100 recipients of Energy Saver Kits. New Buildings participants are surveyed annually and these results are from the most recent survey in Q4 2016. The Q4 2017 New Buildings survey is not yet complete and will be included in the Q1 2018 Report.

[4] This document reports on Energy Trust services to Oregon customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista. Areas in gray are not served by these utilities.

II Executive summary

A. Annual results [5,6]

- **Energy Trust exceeded its annual electric savings goal and approached its gas savings goal, while sustaining low costs.**
  - Electric efficiency improvements completed in 2017 **saved 63.4 average megawatts** of electricity, about 12 percent more than the 2017 goal of 56.4 aMW, at a levelized cost[7] of 2.5 cents per kilowatt hour.
  - Gas efficiency improvements completed during 2017 **saved 6.8 million annual therms** of natural gas[8], about 5 percent less than the 2017 goal of 7.1 million annual therms, at a levelized cost of 27.3 cents per therm. The shortfall in NW Natural was largely driven by an agreement with NW Natural to scale back on project outreach for NW Natural demand-side management customers to manage the incentive budget. In both NW Natural and Cascade Natural Gas territories, delay of large custom Existing Buildings projects also contributed to the shortfall.
  - Energy Trust exceeded goals in Portland General Electric, Pacific Power and Avista territories, and came close to goal in NW Natural and Cascade Natural Gas territories.
  - Savings and generation achieved in 2017 represent about **320,000 tons of carbon dioxide** kept out of the atmosphere, the equivalent of removing 56,500 cars from Oregon roads for a year.
- **The renewable energy sector exceeded its annual renewable energy goal**.
  - The sector far exceeded its annual goal for Pacific Power territory and came close to its annual goal for PGE territory.
  - Total renewable energy systems installed in 2017 will **generate 4.49 aMW** of electricity, 57 percent more than the 2017 goal.
- **Energy Trust exceeded every OPUC performance measure,** including:
  - **Maintained low administrative and program support costs at 5.2 percent of revenue ($10.1 million)**, below the OPUC performance measure of 8 percent.
  - **Kept staffing costs at 6.8 percent**, below the 7.75 percent, three-year rolling average threshold.
  - Received consistently high customer satisfaction ratings of **93 percent overall and 97 percent** for interaction with program representatives.

63.4
AVERAGE MEGAWATTS SAVED

6.8
MILLION ANNUAL THERMS SAVED

320,000
TONS OF CO2 AVOIDED

4.49
AMW GENERATED

93%
CUSTOMERS SATISFIED OVERALL

[5] This document reports net savings, which are adjusted gross savings based on results of current and past evaluations.
[6] This report includes the best available energy savings data as of the date of submission. Energy savings reported here for periods prior to January 1, 2017, may be different than previously reported as a result of applying updated evaluation factors to Energy Trust savings and generation in Oregon through the annual true up process. The full True Up 2017 Report is available online at www.energytrust.org/reports.
[7] Levelized cost is Energy Trust's total cost to save or generate each unit of energy over the life of the measure (which ranges from one to 20 years or more).
[8] Gas savings do not include NW Natural results in Washington. These results are available online at www.energytrust.org/reports.

B. Market and program trends

- **Through incentives and information, Energy Trust helped residential, commercial and industrial customers install 6.5 million LEDs in 2017**—1.8 million more than last year. Energy Trust's promotions and relationships with retailers and manufacturers helped make LEDs accessible and affordable to consumers, including higher incentives to help small and independent retailers compete and reach customers in rural areas and smaller cities.
- **Energy Trust engaged a robust new construction market, influencing builders to incorporate efficiency improvements into fast-paced projects.** Despite a statewide decrease in single-family home construction, multifamily home construction grew. New Homes engaged builders to complete 3,096 energy-efficient EPS™ homes in 2017—39 percent of all new homes built in Energy Trust's territory. New Buildings enrolled a record 702 projects in 2017, up 25 percent from 2016.
- **The organization responded to significant, accelerated market saturation in residential lighting and showerheads**. Market acceptance of these products occurred faster than expected, and 2017 is likely the apex of these high-volume, extremely low-cost savings sources for residential customers.
- **The volume of residential sites served declined** by roughly 25,000 compared to 2016 due to several factors. Discounted products and equipment purchased in stores (with incentives provided midstream to distributors and retailers) are excluded from Energy Trust's sites served because customer addresses cannot be captured. In addition, a decision was made to distribute fewer Energy Saver Kits, which comprised more than 30,000 residential sites in 2016 and roughly 15,000 in 2017.
- **Energy Trust continued to see commercial and industrial projects with fewer savings per project** because the organization has already supported many of the larger and less expensive projects. Although smaller projects tend to save less energy per project, Oregon's many small- and medium-sized businesses represent a significant source of future energy savings.
- **Levelized costs in certain sectors will start to trend higher in future years**, as a result of the cost of pursuing more small projects to achieve results consistent with the past, and anticipated market transformation for LEDs. In 2017, levelized costs remained lower than future expectations due to a large volume of savings from very low-cost LEDs and an industrial megaproject.
- **Following a multi-year trend of increased solar demand, more customers applied for solar project incentives in 2017 than in any previous year**, including for more than 150 commercial projects and more than 2,200 residential solar projects, as customers anticipated the year-end expiration of Oregon's Residential Energy Tax Credit. Staff monitored trends and adjusted incentive levels to support as many solar systems as possible within budget.

6.5 MILLION LEDS

COMPLETED 3,096 EPS HOMES

ENROLLED 702 NEW BUILDINGS PROJECTS

SUPPORTED 2,200 RESIDENTIAL SOLAR SYSTEMS

- **Energy Trust dedicated incentives for three small hydropower projects, part of a larger pipeline of customers participating in Energy Trust's irrigation modernization initiative.** 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.

DEDICATED INCENTIVES FOR 3 HYDROPOWER PROJECTS

C. Notable activities

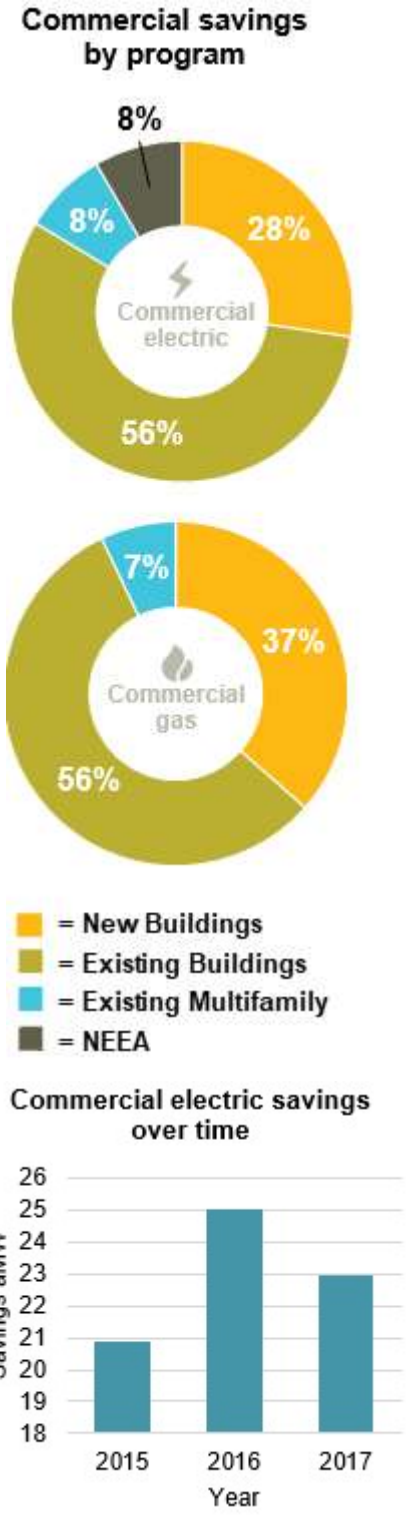
- **Energy Trust began delivering its full range of gas energy-efficiency services to Avista's Oregon customers**, including 90,000 Oregon customers in Roseburg, Medford, Klamath Falls, La Grande and surrounding areas. Energy Trust re-engaged Pacific Power commercial and industrial customers in Avista territory to offer dual-fuel and gas upgrades, with particular success for Existing Buildings and Existing Multifamily customers.
- **Energy Trust consolidated its three residential programs and awarded residential program management and delivery contracts according to this new structure**. In 2018**,** Existing Homes, New Homes and Products will be one Residential program, increasing Energy Trust's flexibility to reach more residential customers, respond to new opportunities and reduce costs by $1.2 million from 2017 to 2018. Staff conducted a competitive solicitation and selected CLEAResult as the Program Management Contractor, Ecova as a delivery contractor for retail promotions and TRC as the delivery contractor for EPS™ whole-home new construction. Each contract will run from 2018 through 2019, with three optional one-year extensions.
- **Energy Trust helped a large industrial customer save twice as much energy as expected through a megaproject that completed earlier than planned**. Megaprojects are large commercial or industrial projects receiving more than $500,000 in Energy Trust incentives for energy-efficiency upgrades. These projects are reviewed and approved by Energy Trust's board of directors and provide savings at a very low levelized cost.
- **The organization supported a pipeline of 46 hydropower, biopower and wind projects receiving project development assistance**, on par with 2016. Project development assistance is early stage support to help potential renewable energy projects overcome development barriers. For more information about Energy Trust's project development assistance activities, see Appendix 3.
- **Having helped develop a maturing home energy scoring market in Oregon, Energy Trust discontinued EPS for Existing Homes**. In its place, the U.S. Department of Energy and the Oregon Department of Energy will offer home energy scoring alternatives throughout Oregon, leveraging the customer and contractor awareness of home scoring generated by Energy Trust. In addition, the City of Portland prepared to launch its Home Energy Score program on January 1, 2018, requiring a Home Energy Score for all single-family homes listed for sale in the city. The City of Portland will allow EPS in lieu of its Home Energy Score for newly built homes until the end of 2019.
- **Energy Trust collaborated with utilities to deploy existing energy-efficiency offerings in select communities to reduce local demand and help save energy when and where it is most valuable**. In Q3, Energy Trust and Pacific Power launched a pilot project to reduce peak demand in North Santiam Canyon through targeted energy-efficiency and renewable energy offerings, which included community events, marketing and trade ally outreach. Staff also began designing another locational load management project with NW Natural. See Appendix 8.

- **Energy Trust prioritized outreach to moderate-income, rural and under-represented customers through a variety of efforts**, including sponsorship of Community Energy Project's Portland-area do-it-yourself attic insulation workshops, translating materials into Spanish, collaborating with the Oregon Department of Energy to increase access to solar energy for low- and moderate-income communities, and dedicating additional program outreach staff in Central, Eastern and Southern Oregon.
- **Energy Trust launched a two-year manufactured home replacement pilot** to retire old, inefficient manufactured homes and replace them with energy-efficient new models. In 2017, the manufactured home replacement pilot conducted outreach to identify potential participants, secure program partners and develop partnerships to support the financial needs of the pilot.
- **To increase Energy Trust's capacity to innovate and adapt to change, staff launched projects to improve organizational processes and readiness for the future**: an organizational review project and a budget review project. For the organizational review project, a team of staff identified a comprehensive set of organizational assessment questions, completed a literature review, and interviewed staff and other high-performing organizations to gain insights. It began developing a set of recommendations for organizational processes and structure. Recommendations will be presented to the internal management team for consideration in Spring 2018. For the budget review project, staff engaged internal and external stakeholders to understand issues and needs, and drafted recommendations to be reviewed and considered by management team, the board of directors and stakeholders in 2018. Any resulting changes would be implemented in 2019 for the 2020 budget development and engagement.
- **To help reach, serve and deliver benefits to more participants, Energy Trust developed a diversity, equity and inclusion initiative operations plan** to guide the organization's work to better engage Oregon's diverse residents and businesses. Energy Trust needs to effectively engage Oregon's diverse residents and businesses to fulfill our purpose of delivering cost-effective energy efficiency and small-scale renewable energy. The diversity, equity and inclusion operations plan will help Energy Trust better understand if gaps exist and achieve energy efficiency and renewable energy program participation outcomes across a broad range of customer characteristics, including communities of color, rural communities, and people with low and moderate incomes in all areas of our programs and operations.
- **Staff piloted a new program development model to explore potential offerings** for energy education in K-12 schools and for moderate-income customers. Staff conducted research and customer interviews based on lean startup methodology. Results will inform test offerings that can be evaluated in 2018 for potential implementation in 2019.
- **Staff updated Energy Trust's resource assessment model used to supply utilities with 20-year energy efficiency forecasts**. Staff also updated electric and gas avoided costs for 2018 measure planning and development. Work included meeting with stakeholders, updating measures and assumptions, and incorporating emerging technologies.
- **Staff participated in interviews and responded to information requests from the Oregon Secretary of State audit division as part of a performance audit of the OPUC's oversight of Energy Trust**. The Secretary of State conducts periodic performance audits to evaluate how state agencies and programs are achieving desired results. The audit is expected to complete in 2018.
- **In Q4, Governor Kate Brown signed executive orders to reduce greenhouse gas emissions** by increasing energy-efficiency of new residential and commercial building construction and facilitating Oregonians' electric vehicle use. The orders direct state agencies, including the Oregon Public Utility Commission, to leverage Energy Trust programs in their strategies to achieve these goals, including Energy Trust's Pay for Performance pilot.

III Program and operations activity

A. Commercial sector highlights

- **The commercial sector exceeded goals in Pacific Power and Avista territories, came very close to goal in PGE territory, and fell short of goals in the remaining territories.**
- **The shortfall in NW Natural was largely driven by an agreement with NW Natural** to scale back on project outreach for NW Natural demand-side management customers to manage incentive budget. In PGE and Cascade Natural Gas territories, fewer Existing Buildings custom projects were completed than expected. In all territories, Existing Buildings has a strong pipeline of projects expected to complete in 2018.
- **Staff assisted Multnomah County and Prosper Portland's PropertyFit** Commercial Property Assessed Clean Energy initiative with technical services, contractor outreach, marketing and training content. PropertyFit leverages Energy Trust technical services and incentives to offer financing to commercial property owners in Multnomah County who complete comprehensive energy-efficiency and renewable energy projects.
- **Savings from NEEA activities comprised approximately 8 percent and 9 percent of the sector's results** in PGE and Pacific Power territories, respectively. Savings in 2017 were from building code and equipment standards improvements, working with distributors and manufacturers to encourage stocking of efficient commercial lighting, and from efforts to promote and support commissioning of new and existing commercial buildings.

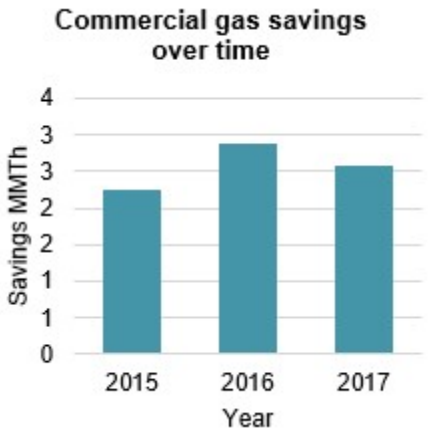


Existing Buildings

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

- **Energy-efficient lighting upgrades accounted for the majority of electric savings** through a network of trade allies and a Small Business Energy Savings offer. Through Small Business Energy Savings, the program helped small businesses upgrade to LEDs and lighting controls through financing with no upfront costs.

- **Gas savings were led by standard upgrades for foodservice equipment**, followed by grocery upgrades, boilers and insulation improvements. Bolstered by targeted outreach efforts and a year-end bonus, applications for foodservice equipment represented 18 percent of all Existing Buildings project applications in 2017. Demand for foodservice equipment increased as distributors become more familiar with Energy Trust incentives.
- **Participants installed fewer large custom projects and more standard upgrades** than expected, with **350 custom projects completed** in 2017 compared to 511 in 2016. Custom projects require trade allies to perform initial studies, and waiting for these studies may have been a barrier for customers and trade allies who want to move quickly in a thriving economy and construction market.
- **The Existing Buildings program saw strong participation from schools and grocery stores** in 2017. Interest from local and national grocery stores was high, especially for lighting upgrades and adding doors to open refrigerator cases. Energy Trust provided **incentives and studies for 145 projects at K-12 schools**—more than double the number supported in 2016.
- **Existing Buildings launched two commercial Strategic Energy Management cohorts** in Bend and Portland, including its **11th commercial SEM cohort to date**.
- **Commercial SEM saved less energy than expected due to several challenges**, such as lower than expected customer enrollment due to customer employee turnover, resource constraints and other competing business priorities.
- **Seven organizations increased capacity for energy savings by hiring paid interns** with Energy Trust's new intern incentive for SEM participants. Energy Trust launched the paid intern incentive in 2017 to address staffing constraints identified as a barrier to commercial SEM participants implementing recommendations. Three of the interns are located in Central Oregon, with the remainder in Portland.
- **Energy Trust began recruiting and training contractors for a multi-year Pay for Performance pilot**. The initial Q4 deadline was extended into 2018 to allow more time to receive applications. The Pay for Performance offering for commercial customers provides incentives for capital and operations and maintenance improvements over a multiyear period to help achieve additional energy savings for comprehensive projects.
- **Existing Buildings supported the City of Portland's Energy Performance Reporting Policy** for commercial buildings. Energy Trust offered training to help building owners and managers prepare and submit building data to the city, and then offered resources to help them improve their ENERGY STAR® Portfolio Manager scores. Staff also coordinated with the Building Owners and Managers Association, NEEA and the Lloyd



350
CUSTOM PROJECTS COMPLETED

145
K-12 SCHOOL PROJECTS SUPPORTED

11
COMMERCIAL SEM COHORTS LAUNCHED TO DATE

EcoDistrict to develop additional customer resources for benchmarking best practices in 2018.

Existing Multifamily

The Existing Multifamily program serves existing multifamily buildings with two or more dwelling units, including market-rate housing, affordable housing, homeowners associations, individual unit owners, and assisted living and campus living facilities. The program offers standard incentives for water heaters, HVAC equipment, weatherization, appliances and foodservice equipment; free in-unit installation of LEDs, showerheads and faucet aerators and distribution of advanced power strips; custom incentives for capital improvements; incentives for lighting upgrades in common areas; and incentives paid to distributors to reduce costs of efficient lighting and equipment for customers.

COMMON-AREA LIGHTING CONTRIBUTED LARGE PORTION OF MULTIFAMILY SAVINGS

- **Common-area lighting contributed the largest portion of electric savings**, followed by standard upgrades and free in-unit installation of energy-saving products.
- **Standard projects contributed the largest portion of gas savings**, followed by in-unit installation of energy-saving products.
- **While still a large portion of savings, free in-unit installation of LEDs, showerheads and faucet aerators no longer comprised the largest portion** of electric and gas savings as in prior years. Energy Trust has served many of the large properties in its service territory, with outreach now geared to the underserved smaller rental properties.
- **More condominium owners saved energy with Energy Trust incentives** and support, especially by installing ductless heat pumps and efficient windows. With a new incentive offering added mid-year, smart thermostats were also immediately popular with customers. Many customers installing ductless heat pumps were motivated to take advantage of the state energy tax credit prior to its expiration at the end of 2017.
- **Existing Multifamily launched a new incentive structure and simplified eligibility requirements** to align with Existing Homes offerings. The changes made it easier for customers and trade allies to participate and reduced market confusion. In addition, Existing Multifamily aligned with Existing Homes and Existing Buildings bonus offerings
- **The program launched new incentive offerings** to help Existing Multifamily customers save more energy, including smart thermostats, new categories of tankless water heaters, flat roof insulation and rooftop unit controls for multifamily buildings.

LAUNCHED NEW MULTIFAMILY INCENTIVES

- **Energy Trust analyzed program and market data to identify customers for targeted outreach**, including small multifamily, condominium and townhome owners; identify and fill trade ally gaps in under-represented geographic regions; and re-engage past recipients of in-unit product installations.
- **The program launched Multifamily Energy Efficiency Workshops in Medford and Salem**, customized to provide market insights and energy

efficiency information for property managers in specific market segments and regions. Through these workshops, Existing Multifamily gained insights into successes and barriers for customer segments and garnered several project leads.

- **In collaboration with the Portland Water Bureau, Energy Trust launched a water submetering pilot** in 2017 to explore potential savings opportunities from shifting participants from master-metered to individually metered water billing. With limited customer interest and competing customer priorities, staff will conclude the pilot outreach as of Q2 2018 and explore additional ways to coordinate with the water bureau on energy and water saving measures in multifamily and commercial buildings. Staff identified high installation costs, changes to existing landlord-tenant billing arrangements, and existing plumbing configurations as barriers to participation.

New Buildings

The New Buildings program supports design and construction of high-performance commercial buildings and major renovations of all sizes and building types. Staff engage with building owners, developers and design professionals to provide standard prescriptive incentives, market solutions incentive packages and custom incentives. 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.

- **Construction continued at a fast pace with 476 projects completed in 2017—up 12 percent over last year**. Strong new construction provided both opportunities for energy-efficient new buildings and challenges for engaging customers moving quickly and making decisions in short periods.
- **New Buildings enrolled a record 702 projects in 2017, up 25 percent** from 2016, with roughly one-half of enrollments outside of the Portland Metro area.
- **Multifamily buildings comprised roughly one-third of electric and gas savings**, followed by K-12 schools and warehouse projects. Manufacturing facilities, offices, retail, lodging and restaurants also contributed savings. Bolstered by state bonds passed in recent years, roughly 50 schools enrolled in 2017—up from 30 in 2016. Strong participation from multifamily and K-12 schools is expected to continue in 2018
- **The number of market solutions projects increased by 30 percent over 2016**, with about two-thirds of savings coming from multifamily.
- **Energy Trust advanced Oregon's leadership in net-zero construction, with 59 projects currently enrolled in Path to Net Zero** and 15 projects completed through 2017. The Path to Net Zero offering provides increased incentives and support to new commercial construction projects that aim to exceed energy code by 40 percent through a combination of energy-efficiency and renewable energy features.

476

NEW BUILDINGS PROJECTS COMPLETED

1/3 OF SAVINGS FROM MULTIFAMILY BUILDINGS

59

PATH TO NET ZERO PROJECTS

- **New Buildings launched and selected the first recipients of its Net Zero Fellowship and Special Projects Grant**. Shilpa Surana, Net Zero Fellow and lead energy analyst at Brightworks Sustainability, is developing net-zero prototypes for multifamily and low- to mid-rise office buildings, and will share findings with designers and architects in 2018. Special Project Grant recipient Hacker Architects is working with engineering firm, PAE, and its client, the Confederated Tribes of Warm Springs, to develop conceptual design and conduct a net-zero feasibility study for a community center. When it is completed, the community center will be a business incubator space for up to 15 entrepreneurs.
- **A total of 1,500 attendees participated 29 events and trainings hosted or sponsored by Energy Trust**—a 50 percent growth in overall attendance from 2016. The 20 Energy Trust-hosted events included six Building Energy Simulation Forums, five Allies for Efficiency events, five High Performance Design trainings and four Association of Energy Engineers Energy Engineering Forums.
- **In coordination with NEEA, the program launched a Luminaire Level Lighting Controls Pilot** to gather information regarding incremental costs and savings potential of luminaire level lighting controls. Staff recruited and assessed 10 projects, and will continue outreach in 2018. An active construction market with rapid schedules and tight budgets, along with complexity of the new technology, have been barriers to early adoption and pilot participation.
- **The program dedicated additional staff resources to serve Central, Eastern and Southern Oregon** as well as the rural Willamette Valley. Outreach staff help New Buildings have a greater presence in rural communities through visiting customers, delivering incentive checks, providing presentations and attending regional events.

SELECTED FIRST NET ZERO FELLOWSHIP RECIPIENTS

1,500

EVENT AND TRAINING ATTENDEES

MORE REGIONAL STAFF RESOURCES

B. Industry and agriculture sector highlights

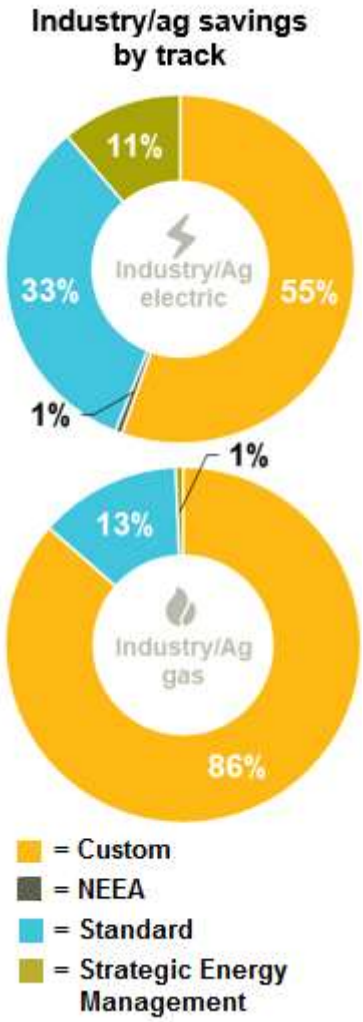
- **The industry and agriculture sector exceeded its goals for PGE and NW Natural territories**, approached its goal in Pacific Power territory, and fell short of goals in Cascade Natural Gas and Avista territories.
- **Shortfalls in Pacific Power and Cascade Natural Gas territories were due to large projects delayed from 2017 to 2018**, which contributed to a robust pipeline of projects expected to complete in 2018. In Avista territory, there were very few eligible industrial customers.
- **Savings from NEEA activities comprised approximately 1 percent of the sector's results** in both PGE and Pacific Power territories. Savings in 2017 came from NEEA's reduced wattage lamp replacement initiative, certification of refrigeration operators in the industrial refrigeration market as well as from

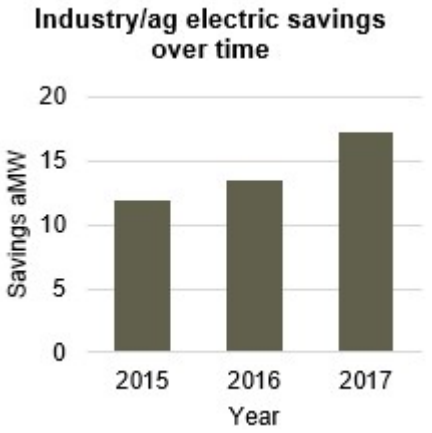
a previously funded initiative to improve awareness of and establish standards for efficient motors.

Production Efficiency

The Production Efficiency program offers technical assistance and incentives to industrial and agricultural businesses, including incentives for custom projects, standard lighting and equipment upgrades delivered by trade allies, and an industrial Strategic Energy Management offering to help customers achieve persistent energy savings through behavioral and operations and maintenance improvements.

- **More customers upgraded to energy-efficient lighting**, bolstered by the increase in cannabis lighting upgrades. Nearly all of these lighting upgrades were LEDs, with about 10 percent from controls.
- **The program supported the efficiency of Oregon's energy-intensive cannabis production industry through 44 efficient lighting upgrades**—up from 16 in 2016. Lighting upgrades at cannabis facilities accounted for approximately 21 percent of lighting savings. Production Efficiency supported its first three non-lighting projects for cannabis growers, including HVAC, dehumidification and insulation. Staff completed qualitative market research to inform outreach and marketing to cannabis growers in 2018.
- **Nine customers completed comprehensive Performance Plus lighting projects**, on par with prior years. The lighting offering helps industrial customers save more energy by going beyond replacing bulbs and addressing the whole building, updating fixtures and incorporating lighting controls.
- **The first phase of a megaproject saved twice as much energy as expected and completed earlier than planned**. The second phase of the megaproject is expected to complete in 2018. Megaprojects are large commercial or industrial projects receiving more than $500,000 in Energy Trust incentives for energy-efficiency upgrades. These projects are reviewed and approved by Energy Trust's board of directors and provide savings at a very low levelized cost.
- **The sector completed 1,466 projects in 2017—4 percent more than last year—and reached 10,000 projects to date.** In 2017, more savings came from lighting projects, which are typically smaller in project size. Staff focused on increasing participation from small- to medium-sized facilities after having already served many of the state's larger facilities.
- **Production Efficiency helped customers meet air pollution reduction requirements and reduce energy use** through three large regenerative thermal oxidizer projects. The projects illustrate an emerging opportunity for customers to integrate energy efficiency into their environmental remediation efforts.

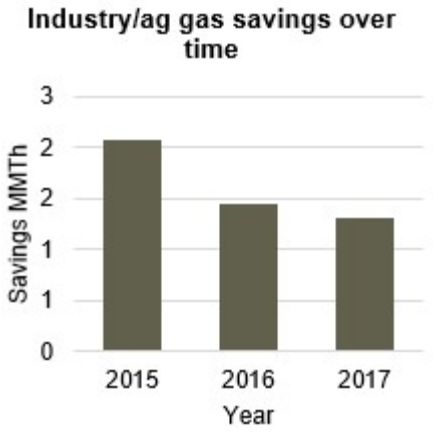




10,000

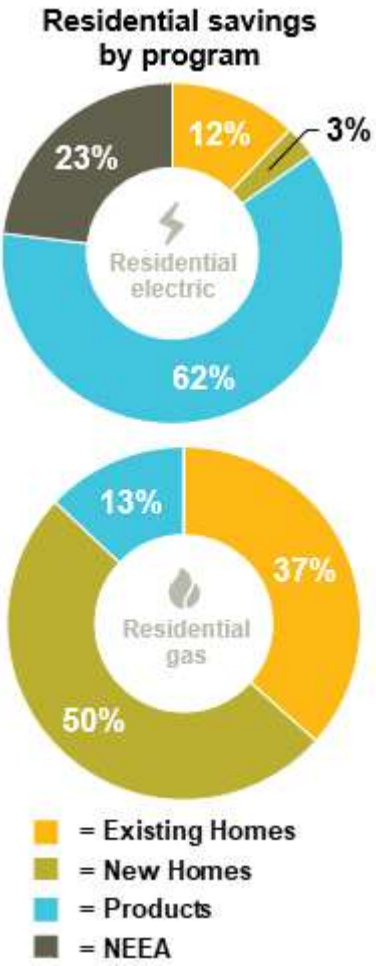
PRODUCTION EFFICIENCY PROJECTS COMPLETED TO DATE

- **The program launched new incentives for steam trap systems and electric battery chargers** used in forklifts and pallet jacks.
- **Production Efficiency completed first-year industrial SEM cohorts in Willamette Valley and Roseburg**, with the majority of customers enrolling in Continuous SEM for 2018. Staff also recruited customers for and launched a new first-year Willamette Valley industrial SEM cohort in Q4.
- **The program launched its second Continuous SEM engagement in 2017 with 26 participants, including customers in Klamath Falls, Pendleton, Madras and the Medford area**. The multiyear Continuous SEM offering provides ongoing engagement, support and performance-based incentives to help graduates of first-year SEM offerings further reduce energy waste.
- **Energy Trust sponsored the 2017 NW Industrial Energy Efficiency Summit**, sharing energy-efficiency best practices and technologies with 185 industrial customers.



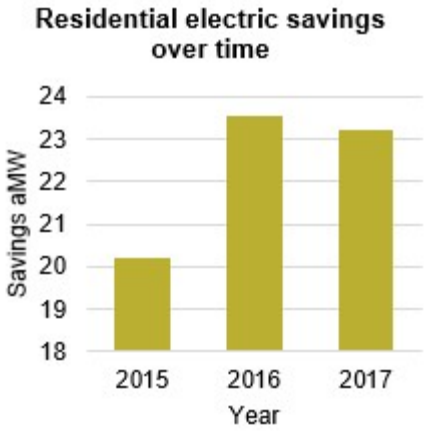
C. Residential sector highlights

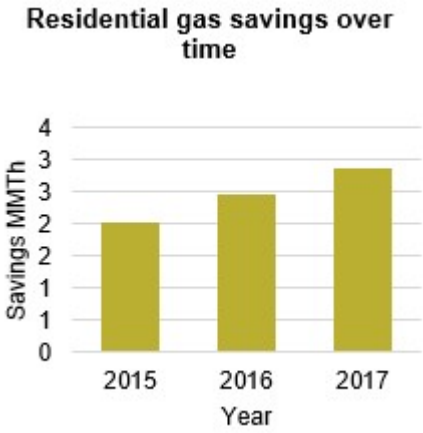
- **The residential sector exceeded goals in PGE, Pacific Power and Cascade Natural Gas territories, and approached gas savings goals in NW Natural and Avista territories**. The small shortfalls in NW Natural and Avista were due to a slight decline in overall new home construction activity and fewer Energy Saver Kits.
- **Energy Trust awarded residential program management and delivery contracts** following a competitive solicitation. Energy Trust selected CLEAResult as Program Management Contractor, Ecova as Program Delivery Contractor for retail promotions and TRC as PDC for EPS™ whole-home new construction. Each contract will run from 2018 through 2019, with three optional one-year extensions. The contracts represent consolidation of Energy Trust's three residential programs—Existing Homes, New Homes and Products—into a single program in 2018, which will increase Energy Trust's flexibility to reach residential customers, respond to new opportunities and reduce costs by $1.2 million from 2017 to 2018.
- **The sector transitioned from customer-facing incentives to more cost-effective midstream incentives for energy-efficient water heaters**, and began providing them through seven new distributors. 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.
- **The sector also expanded midstream incentives for gas hearths with electronic ignition to new retailers**, including Smokey's Stoves in Medford and Gensco locations in the Portland Metro area, Eugene, Bend and Medford.
- **The sector helped customers across all residential programs install 5,800 smart thermostats** in 2017, up from 3,400 in 2016. Smart thermostat



installations were bolstered by a $25 bonus from PGE for Nest and Ecobee products and a promotion to 100,000 PGE customers. Energy Trust also made it easier for customers to install smart thermostats by allowing trade allies to install them as part of heating system installations and apply for smart thermostat incentives on behalf of customers. Solar trade allies also began installing smart thermostats, and Energy Trust plans to integrate smart thermostats into solar incentive forms in 2018.

- **Savings from NEEA activities comprised 23 percent of the sector's savings** in PGE territory and 24 percent in Pacific Power territory. Savings in 2017 were primarily from previously funded efforts to improve battery charger standards and accelerate market adoption of heat pump water heaters, as well as from residential building code improvements.





Existing Homes

The Existing Homes program serves single-family homeowners, renters and owners of existing manufactured homes with energy-saving recommendations, referrals to qualified trade ally contractors, cash incentives for heating and water heating equipment, smart thermostats, insulation, windows, and LEDs, showerheads and faucet aerators delivered through kits. Enhanced Savings Within Reach incentives are available for moderate-income residents.

- **HVAC equipment measures contributed the largest portion of savings for both gas and electric utilities**, including heat pumps, ductless heat pumps, gas hearths and furnaces. This marked a significant change from 2016, when lighting and water-saving devices from Energy Saver Kits drove the most savings. Staff made a deliberate reduction in Energy Saver Kit promotions to allocate that budget in support of strong retail LED sales in the Products program.
- **Customers installed 32 percent more ductless heat pumps in 2017** than compared to 2016, and 14 percent more heat pumps overall. Heat pump installations were driven by distributor, utility and Bend Energy Challenge promotions as well as the sunset of the Oregon Residential Energy Tax Credit at the end of 2017.
- **Energy Trust** launched a new Nest Seasonal Savings incentive following a pilot indicating customers used nearly 5 percent less energy during the winter heating season, and enrolled 10,500 customers in Q4. The pilot confirmed that Nest thermostats reduced energy use by making small, gradual temperature adjustments based on occupant habits and preferences.
- **Existing Homes supported 442 renters installing heating systems**, up 55 percent from last year.
- **The program provided enhanced** Savings Within Reach incentives for 724 moderate-income homeowners**,** up 66 percent compared to 2016.
- **The program improved its Energy Saver Kit ordering process** to enable customers to select a kit with lighting, water-saving devices or both, ensuring customers only receive products they intend to install—making the offering

NEST SEASONAL SAVINGS INCENTIVE LAUNCHED

724

SAVINGS WITHIN REACH INCENTIVES FOR MODERATE-INCOME HOMEOWNERS

more cost-effective and increasing energy savings per kit. The new order form includes questions to help customers determine the value of potential new products and images to help customers understand what they're ordering. The improved process also helps the program target recipients for future marketing activities.

- **More than 230 customers financed energy-saving upgrades with loans to be repaid through their utility bills**. Energy Trust also extended eligibility of on-bill repayment financing to customers installing heat pumps in owner-occupied condominium units and moderate-income customers installing heat pump water heaters, gas water heaters and windows. Financing with on-bill repayment reduces the upfront cost as a barrier to installing energy-efficient upgrades.
- **To reach and serve more moderate-income participants**, staff participated in the Bonneville Power Association's Low-Income Workgroup, continued sponsorship of Community Energy Project's Portland-area do-it-yourself attic insulation workshops, and helped Neighbor Impact of Central Oregon recruit Energy Trust trade allies to participate in a new low-income weatherization and heating equipment upgrade offering. Staff collaborated with community action agencies and Oregon Housing and Community Services to increase opportunities and cross-program referrals for low- or moderate-income customers.
- **In response to market adoption of LEDs, staff discontinued LivingWise kits in schools mid-year**, including early communication to teachers and schools announcing the change and asking for input to shape potential new educational offerings in development.

230
CUSTOMERS USED ON-BILL FINANCING

New Homes

The New Homes program works with trade ally builders, subcontractors and verifiers to construct energy-efficient homes that exceed code through construction of EPS-rated homes and prescriptive incentives for individual equipment.

- **EPS homes contributed 98 percent of the program's electric savings**, with a small remainder from individual equipment installations. Electric savings in EPS homes are primarily from energy-efficient electric heating, water heating improvements and efficient building shells. Builders can receive cash incentives for construction of new homes to EPS requirements and exceeding energy code by at least 10 percent, indicating low energy consumption, utility costs and carbon footprint.
- **Market transformation made up 71 percent of the program's gas savings**, with the bulk of the remainder from EPS homes. Energy Trust claims market transformation savings for influence on 2011 and 2008 updates to energy code that increased the adoption of energy-efficient technologies and practices.

98 PERCENT ELECTRIC SAVINGS FROM EPS

- **The program achieved 39 percent market share for EPS homes—well above an anticipated 33 percent** and on par with 2016 market share. The majority of homes were built 20 to 29 percent above code. Energy Trust offers tiered EPS incentives based on improvement over code ranging from 10 percent to 40 percent.
- **New Homes engaged builders to complete 3,096 energy-efficient homes** in 2017, slightly fewer than last year. This corresponded with a statewide decrease in single-family home construction and an increase in multifamily units. Despite the lower number of homes, staff observed an increase in electric savings per home and consistent gas savings per home.
- **Energy Trust continued to offer EPS for new homes while transitioning out of scoring for the existing homes market** in summer 2017. Starting January 1, 2018, a Home Energy Score and Home Energy Report are required for single-family homes listed for sale within the City of Portland. The Oregon Department of Energy supports home energy scoring activity in areas outside of Portland.
- **In 2017, 700 heat pump water heaters were installed in EPS homes, up 50 percent** compared to last year. The increase was a result of several production builders using heat pump water heater technology in some or all of newly constructed homes.
- **The program updated incentives to incorporate changes to the state energy code effective January 1, 2018**. Improvements in code levels increased the baseline against which Energy Trust's incentives are measured, lowering the amount of savings that can be claimed per home constructed. The program worked with Oregon Home Builder's Association to provide Contractor Construction Board accredited sessions on energy code updates.
- **One developer committed to building all of its southern Hillsboro homes to exceed energy code by 20 percent or more**. This followed a series of discussions with City of Hillsboro staff about the city's sustainability goals for new home development and construction.
- **New Homes added 37 new builders** following statewide outreach to recruit new builders and support verifier engagements with builders.
- **The program launched a pilot to evaluate ductless heat pumps that use supplemental air distribution fans to heat larger spaces**. The program recruited 18 homes to receive temperature monitoring through 2018, and identified five participants for fan control installations in 2018. The pilot will continue through summer 2018 with results anticipated at the end of 2018.

39%
MARKET SHARE FOR EPS HOMES

3,096
EPS HOMES BUILT

700 HEAT PUMP WATER HEATERS INSTALLED

37 NEW EPS HOME BUILDERS ADDED

Products

The Products program offers incentives for qualified front-loading clothes washers, smart thermostats, heat pump water heaters and qualified gas water heaters. The program also offers instant discounts at time of purchase through select retailers for qualified front-loading clothes washers, LED bulbs and fixtures, showerheads, advanced power strips, heat pump water heaters and gas water heaters. In addition, the program encourages the sale of energy-efficient new manufactured homes by offering retailers sales performance incentives. Lastly, the program delivers energy-saving products to customers through water bureaus and districts, food pantries and utility community offices.

- **LEDs purchased in stores made up 92 percent of electric savings, and retail showerheads contributed 57 percent of gas savings**. The remainder of electric and gas savings came from smart thermostats, efficient water heaters, clothes washers, upgrades to manufactured homes and Carry Home Savings kits delivered to moderate-income customers through community action agencies.
- **The program influenced consumers to purchase 5.2 million ENERGY STAR LEDs in stores, a 45 percent increase over 2016**, through incentives and education, promotions and expanding relationships with retailers and manufacturers.
- **Energy Trust reduced incentives per LED bulb as prices decreased**, and sales remained strong even with lower incentives. The average incentive in 2017 was $1.83 per bulb, compared to $2.46 in 2016. The decline in LED prices illustrates that the residential lighting market is transforming faster than expected, with full transformation expected in the next few years.
- **Retail showerhead performance remained strong throughout the year**, increasing by 40 percent over 2016 as incentives and outreach influenced participating retailers to stock more energy-efficient products. Showerhead and shower wand sales were bolstered by retailer promotions, including a shower wand promotion at all Costco locations in Energy Trust service territory.
- **The program recruited new small and independent retailers, offering higher incentives to help small businesses compete and reach customers in rural areas**. In 2017, the program **added 80 new stores** spanning 41 cities or towns. Of those towns, Eagle Point, Warrenton, White City, Lincoln City, Hood River, Myrtle Creek, Boring, Prineville and Madras each have populations of around 5,000 people with limited access to retailers. Glendale has an average population of 1,000 people.
- **Smart thermostats made up a greater portion of electric and gas savings than anticipated.** Smart thermostat sales remained strong, particularly in the fourth quarter when Costco began stocking the Nest thermostat.
- **Water heaters also contributed more electric and gas savings than expected**, with **customers purchasing 760 water heaters with midstream incentives**. More than one-half heat pump water heaters purchased with

SHOWERHEADS MADE UP 57% OF GAS SAVINGS

5.2 MILLION LEDS PURCHASED IN STORES

ADDED 80 NEW STORES

760

WATER HEATERS PURCHASED WITH MIDSTREAM INCENTIVES

midstream incentives were connected models, allowing for integration with home automation, energy management and demand response systems.

- **Energy Trust** launched a two-year Manufactured Home Replacement pilot to retire old, inefficient manufactured homes and replace them with energy-efficient new models. Staff conducted outreach to identify potential participants, secure program partners and develop partnerships to support the financial needs of the pilot. To coordinate and align the Manufactured Home Replacement pilot with the state's Low Income Weatherization Assistance Program, Energy Trust developed partnerships with Oregon Housing and Community Services, Multnomah County and United Community Action Network.

LAUNCHED MANUFACTURED HOME REPLACEMENT PILOT

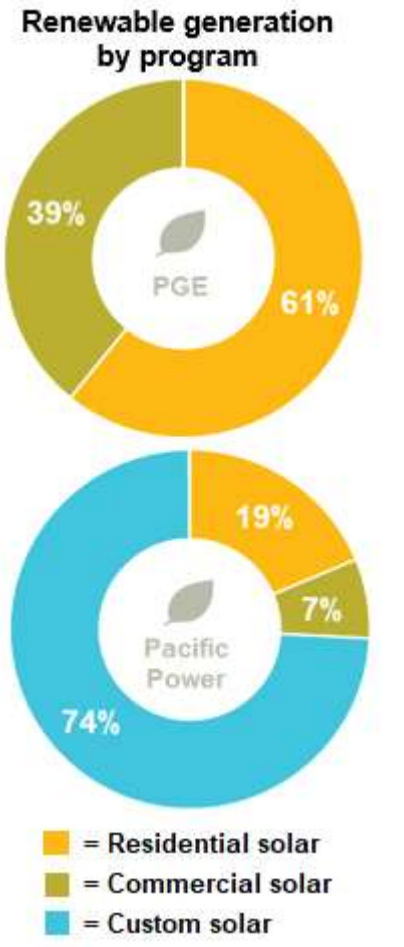
D. Renewable energy sector highlights

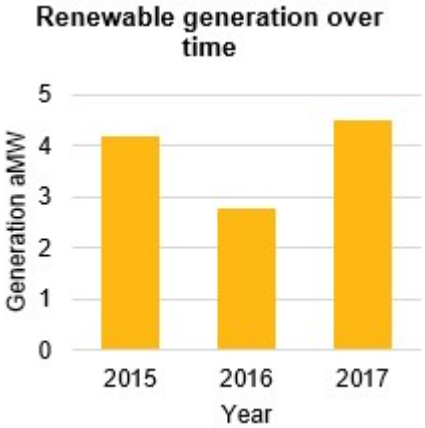
- **The renewable energy sector far exceeded its generation goals overall and for Pacific Power territory**, and fell just 1 percent short of its generation goal for PGE territory.

Solar

The Solar program aims to create a vigorous and sustainable market for solar energy 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 incentive levels regularly and gradually reduce them to manage budget, respond to decreases in solar costs and support as many systems as possible. The Solar program supports installation of standard solar systems on residential and commercial properties, and also large custom projects when funding is available.

- **Energy Trust** received a record 2,272 residential solar applications in 2017, driven by the expiration of the state's Residential Energy Tax Credit at the end of 2017.
- **The program helped** residential and commercial customers install 1,796 solar systems. The program reduced incentives in response to market demand to support as many projects as possible with a limited budget.
- **The program** supported two large utility-scale solar installations in 2017, the 1.5-aMW Old Mill project in Bly and the 0.9-aMW Klamath Falls Solar 2 project, previously called Ewauna 2.
- **Staff collaborated with the Oregon Department of Energy to increase access to solar energy for low- and moderate-income communities**. In the first year of a three-year partnership, staff convened nine stakeholder working group meetings around the state along with four community outreach meetings (in Roseburg, Redmond, Hood River and Portland) to engage a total of 69 community-based organizations. These meetings resulted in draft strategies that will be finalized in 2018 and implemented in 2018 and 2019. The effort is supported by a U.S. Department of Energy grant.





- **More customers were interested in installing solar panels connected to battery storage** with **85 applications including batteries** in 2017. This compares to 14 applications with battery storage in 2016 and four in 2015.
- **Staff attended Rocky Mountain Institute's Electricity Innovation Lab Accelerator**, an invitation-only event that brings together energy innovators from around North America. Along with representatives from the City of Portland, Portland General Electric, Pacific Power and Multnomah County, staff explored ways to deploy solar and storage to increase emergency preparedness in Portland.
- **The program launched a trade ally rating system** to provide feedback on trade ally performance and help customers select a contractor. Trade allies receive a quarterly report with performance metrics and opportunities for improvement. Ratings are updated quarterly and are based on the most recent 12 months of trade ally performance.
- **In 2017, third-party evaluators found that solar systems supported by Energy Trust generated more energy than expected**—on average 112 percent of the estimated annual output. In 2018, the program will incorporate these findings into updated generation estimation methodology.
- **The program connected more than 2,000 customers with solar trade allies through its online bid request form**—up from 1,500 in 2016—meeting customer demand for online self-service tools and reducing customer acquisition costs for trade allies.
- **Staff supported the OPUC's community solar program development**, providing program design and solar market expertise in work sessions and sub-groups.

85
SOLAR APPLICATIONS INCLUDED BATTERIES


LAUNCHED A TRADE ALLY RATING SYSTEM

2,000
CUSTOMERS CONNECTED WITH SOLAR TRADE ALLIES

Other Renewables

The Other Renewables program provides project development assistance and installation incentives that lower above-market costs for projects that generate renewable energy from hydropower, biopower, wind and geothermal resources. Project development assistance supports early-stage development and helps build a pipeline of future renewable energy installation projects. 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. In 2017, staff focused on projects that provide a wide range of benefits, including biogas projects generating energy from anaerobic digestion of organic waste and hydropower projects at irrigation districts.


DEDICATED INCENTIVES FOR 3 HYDROPOWER PROJECTS

- **The program dedicated incentives for three small hydropower projects, two of which are participating in Energy Trust's irrigation modernization initiative**, which helps irrigation districts and the farmers they serve upgrade to modern infrastructure that can generate hydropower while reducing energy use and conserving water. The projects include:
    - **A 0.11-aMW McKenzie small hydropower project** near Sisters, which is part of Three Sisters Irrigation District's work to upgrade open canals to pipes.

    - **A 0.09-aMW project near Three Sisters Irrigation District's existing 700-kW hydropower plant** (installed in 2014), which will demonstrate the effectiveness of different types of hydropower turbines that can be installed on farms where irrigation modernization has created excess water pressure.
    - **A 0.12-aMW upgrade at the existing Opal Springs hydropower facility** owned by the Deschutes Valley Water District near Madras, which will generate energy while also providing fish passage on the Crooked River upstream of Lake Billy Chinook.
- **Staff supported a pipeline of 46 hydropower, biopower and wind projects receiving project development assistance**, on par with 2016. Project development assistance is early stage support to help potential renewable energy projects overcome development barriers. For more information about Energy Trust's project development assistance activities, see Appendix 3.
- **The Other Renewables program provided incentives for three small wind turbines, totaling 14 kW in capacity, that reached commercial operation in 2017**. These projects applied for incentives prior to Energy Trust's decision in 2017 to discontinue incentives for small wind projects and restrict incentives for community wind projects to municipal developments. Small wind projects face market and technology challenges that make them unviable at this time. There is no market for community wind projects in Oregon outside of a few being explored by municipal entities for resiliency purposes.
- **Energy Trust documented best practices around the operation and maintenance of installed projects** and identified opportunities for performance optimization. Third-party consultants evaluated two operating hydropower projects and one operating biogas project by benchmarking them against the original upfront costs, annual costs and generation estimates. Staff shared these results with the project owners and incorporated lessons learned into best practices around project development.

46

RENEWABLE ENERGY PROJECTS RECEIVING PROJECT DEVELOPMENT ASSISTANCE

E. Internal operations highlights

Communications

- **Energy Trust received 735,000 website visits in 2017**, generating 1.8 million page views.
- **Nearly 80 percent of all visitors to the website in 2017 were new visitors**, most of whom were driven by Energy Trust's online advertising.
- **Visitors to the Energy Trust website viewed 2.5 pages per visit and spent about two and a half minutes** on the website on average in 2017, a good indicator of engagement.
- **The majority of web visitors were located in the Portland Metro area** (77 percent), followed by the Willamette Valley (10 percent), Southern Oregon (7 percent) and Central Oregon (4 percent). The remaining 2 percent of visits originated from Eastern Oregon and the Coast.
- **Mobile traffic to the website continued to increase, with more than one-half of users accessing Energy Trust's mobile-optimized website** on their phone or tablet.
- **Energy Trust brought the Energy Trust website into compliance with top tier Web Content Accessibility Guidelines**, optimizing the browsing experience both for individuals with and without disabilities by making the user interface simpler and easier to read and navigate on a variety of devices.
- **Energy Trust distributed 19 press releases in 2017**, featuring new service to Avista customers, program promotions, requests for proposals and information, board officer elections, completed energy-efficiency and renewable energy projects around the state, results and customer benefits.
- **The organization garnered 289 news stories** about Energy Trust programs, services and customer benefits in print and broadcast with a media value of $172,000—what it would have cost to purchase the equivalent advertising space and air time—as a result of media outreach and responses to reporter inquiries.

735,000
WEBSITE VISITS

MORE THAN 50% OF ALL WEB TRAFFIC FROM MOBILE DEVICES

289
NEWS STORIES ABOUT ENERGY TRUST

Customer service

- **Energy Trust received 19,850 calls to Energy Trust's main hotline in 2017,** roughly on par with 2016.
- **Staff received and responded to 1,780 email inquiries** from info@energytrust.org, roughly on par with 2016.
- **Energy Trust received and addressed eight complaints** that could not be easily resolved by a call center representative and required follow up from Energy Trust staff, the same number as in 2016.
- **Staff redesigned and delivered customer experience training for new and existing staff, Program Management Contractors and Program Delivery Contractors**, ensuring consistent understanding of the

19,850
CUSTOMER CALLS RECEIVED

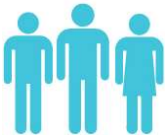
organization's background, customer service core values and customer channels to support high-quality customer interactions.

Trade and program allies

- **Energy Trust provided education and networking opportunities for more than 600 trade allies** through forums and events in Bend, Medford, Grants Pass, Klamath Falls, La Grande, Pendleton and Portland—with 100 more trade allies in attendance. Presentations included updates from the executive director, Construction Contractors Board code training, a presentation on the Portland Home Energy Score program and technical breakout sessions.
- **Energy Trust added 171 new allies to the network**, including 164 trade allies, six design allies and one real estate ally, bringing the total number of allies to 2,300.
- **Energy Trust provided $409,000 in business development fund reimbursement** to support trade ally marketing, advertising and training costs—$27,000 more than last year. In 2017, 140 trade allies took advantage of business development fund opportunities.
- **To diversify and expand the Trade Ally Network**, staff attended the Governor's Marketplace and Oregon Association of Minority Entrepreneurs Trade Show, Metropolitan Contractor Improvement Partnership subcontractor trade show and Minority Enterprise Development Week conference.

600

TRADE ALLIES ATTENDED TRADE ALLY FORUMS AND EVENTS



NEW ALLIES ADDED

$409,000 IN BUSINESS DEVELOPMENT FUNDS PROVIDED

General outreach

- **Staff expanded awareness about Energy Trust services through presentations** at Pacific Power WattSmart events in Hood River, Redmond and Corvallis; at "Conectate!" a gathering of Latino service provides from Eastern Oregon; and to Lake Oswego City Council, Albany Millersburg Economic Development Council, Affiliated Tribes of Northwest Indians, Westside Economic Alliance and Oregon Volunteers.
- **Staff developed and sustained relationships with stakeholders and customers by attending meetings and events**, including with Malheur Equity Committee, Columbia Latino Cultural Alliance, Confederated Tribes of the Umatilla Indian Reservation, Hermiston Latino Business Network, Eastern Oregon University Multi-cultural program, Umatilla County Housing, Wallowa County Housing, Oregon Housing and Community Services, Bonneville Power Administration, Douglas County and Douglas County Home Builders Association.
- **Staff supported AmeriCorps Resource Assistance for Rural Environments interns in Hood River and Talent**, including their work to develop and publicize a Hood River County Energy Plan.

- **Staff celebrated completion of energy-efficiency and renewable energy customer projects by coordinating and attending events**, **including** at Montgomery Park and Salem City Council.
- **Staff organized and hosted energy-efficient building tours for attendees of Pacific Northwest Economic Region Summit**, which brought together 800 leaders across the Pacific Northwest and Western Canada to discuss opportunities for regional growth and address major challenges to the economy and environment.
- **Staff provided information and expertise to elected officials and policymakers** on Energy Trust programs and benefits delivered to Oregon utility customers, and provided testimony to legislative committees regarding financing for energy efficiency and renewable energy projects. For example, Energy Trust joined Corvallis Mayor Biff Traber, Oregon State Senator Sara Gelser and Benton County Commissioner Xan Augerot to inaugurate the city's new 100-kW solar electric system at the Corvallis Airport. Energy Trust and customers of Pacific Power's Blue Sky℠ program co-funded the project.

IT and business systems

74,000
CUSTOMER PROJECTS PROCESSED

- **Staff processed 74,000 customer projects in Energy Trust systems**, including 52,000 submitted through web applications.
- **Staff created a "Participation and Penetration Rates" report**, and presented it to Conservation Advisory Council members. The report described the percentage of eligible sites that Energy Trust has served to date, plus the percentage of energy saved compared to total energy consumption.
- **Staff developed automated reports for commercial and industrial customers** summarizing each customer's energy-efficiency and renewable energy investments, incentives received and corresponding benefits.
- **Staff continued investments in foundational IT system improvements to help anticipate program needs and reduce future costs**, including:
    - Migrated to Exchange Online, Microsoft's cloud-based email service, to eliminate the cost and disruption of future upgrade projects and ensure reliability for email systems.
    - Upgraded employees to the latest version of Microsoft Office, providing new functionality.
    - Upgraded to a new, easier-to-maintain phone system.
    - Upgraded database servers to improve functionality and performance.
    - Automated server and workstation patching, reducing significant staff time and expediting functional and security software patches.

Planning and evaluation

554
NEW ENERGY-EFFICIENCY MEASURES

- **Staff designated 554 new energy-efficiency measures** and revised 229 measures.

- **Staff completed and posted 16 evaluations and market studies** on the Energy Trust website.
- **Staff updated the resource assessment model** used to supply utilities with 20-year energy efficiency forecasts. Work included meeting with stakeholders, updating measures and assumptions, and incorporating emerging technologies.
- **Staff updated electric and gas avoided costs for 2018 measure planning and development** based on input from stakeholder workshops. Avoided costs represent the value of energy-efficiency upgrades and are used in cost-effectiveness tests to determine if the benefits of an upgrade outweigh the costs. For the 2018 avoided cost forecast, the gas avoided cost increased significantly for many measures due to higher forecast carbon compliance costs. For electric savings, the value of providing energy diminished except for measures that reduce energy use during peak periods, where the value increased.
- **Staff supported utilities in developing Integrated Resource Plans** by submitted 20-year energy-efficiency forecasts to PGE and Cascade Natural Gas and preparing to submit forecasts to Pacific Power, NW Natural and Avista in 2018.
- **Staff calculated 2018 Savings Realization Adjustment Factors**, which include realization rates and free ridership. These are factors in calculating how much savings can be claimed and reported for energy-efficiency upgrades.

74,000
CUSTOMER PROJECTS PROCESSED

IV 2017 progress to OPUC performance measures

Each year, the Oregon Public Utility Commission establishes minimum performance measures for Energy Trust in a variety of categories. Minimum savings and generation figures for energy-efficiency programs and renewable energy programs are set at an aggregated level rather than at an individual program or sector level. This allows Energy Trust to pursue different program strategies in the residential, commercial and industrial sectors as market forces and technologies change. Electric and gas efficiency performance targets are set at 85 percent of Energy Trust goals as defined in annual budgets. The following OPUC minimum performance measures apply to Energy Trust 2017 results.

Category	Measure	Result
Electric efficiency	PGE: • Save at least 29.7 aMW • Levelized cost not to exceed 3.4 cents/kWh Pacific Power: • Save at least 18.2 aMW • Levelized cost not to exceed 3.3 cents/kWh	PGE: ✓ **Exceeded**, with 40.39 aMW saved ✓ **Within requirement**, levelized cost at 2.4 cents/kWh Pacific Power ✓ **Exceeded**, with 23.01 aMW saved ✓ **Within requirement**, levelized cost at 2.6 cents/kWh
Natural gas efficiency	NW Natural: • Save at least 5.3 million annual therms • Levelized cost not to exceed 35 cents/therm Cascade Natural Gas: • Save at least 0.48 million annual therms • Levelized cost not to exceed 39 cents/therm Avista: • Save at least 0.27 million annual therms • Levelized cost not to exceed 23 cents/therm	NW Natural: ✓ **Exceeded**, with 5.9 million annual therms saved ✓ **Within requirement**, levelized cost at 27 cents/therm Cascade Natural Gas: ✓ **Exceeded**, with 0.51 million annual therms saved ✓ **Within requirement**, levelized cost at 30 cents/therm Avista: ✓ **Exceeded**, with 0.34 million annual therms saved ✓ **Within requirement**, levelized cost at 22 cents/therm
Renewable energy	• For project and market development assistance report annual results, including number of projects supported, milestones met and documentation of results from market and technology perspective • Obtain at least 1.6 aMW of installed generation of net-metered standard projects including solar • For non-solar custom projects, the three-year rolling average incentive is not to exceed $25/allocated MWh	✓ **In compliance**, paid $1,856,070 and committed $2,605,875 in project development assistance to 46 projects, including 42 hydropower and four biopower projects. Additional detail is in Appendix 3. ✓ **Exceeded**, with 4.90 aMW of installed generation from standard solar projects ✓ **Within requirement**, with a three-year rolling average incentive per allocated MWh for 2015-2017 of $17.02

	• For innovative and custom solar projects, report sources of funding for projects and the selection criteria	✓ **In compliance**, program did not dedicate funds for custom solar projects in 2017
Financial integrity	Receive an unmodified financial opinion from an independent auditor on annual financial statements	✓ **In compliance**, with an unmodified financial audit opinion for 2017
Administrative/ program support costs	Keep administrative/program support costs below 8 percent of annual revenues	✓ **Within requirement**, with 2017 administrative and program support costs at 5.2 percent of annual revenues
Staffing expenditures	Total staffing expenditures not to exceed 7.75 percent of total organization expenditures calculated on a three-year rolling average	✓ **In compliance**, with a three-year rolling average staffing cost of 6.8 percent of total organization expenditures for 2015-2017.
Customer satisfaction	Demonstrate greater than 85 percent satisfaction rates for interaction with program representatives and overall satisfaction	✓ **Achieved**, with a 97 percent satisfaction rate for interaction with program representatives and a 93 percent overall satisfaction rate. Results for major programs are averaged to determine satisfaction rates. See Appendix 1.
Benefit/cost ratios	Report utility system and total resource perspective annually. Report significant mid-year changes as warranted in quarterly reports.	✓ **Achieved**, see table below.

Benefit/cost ratios

- Report benefit/cost ratios for larger conservation acquisition programs for both utility system and total resource perspective

2017 Utility Cost and Total Resource Cost by program

Program	Combined Utility Cost Test benefit cost ratio	Combined Total Resource Cost Test benefit cost ratio
New Homes and Products	3.24	3.70
Existing Homes	1.45	1.86
Existing Buildings, including Multifamily	1.67	1.29
New Buildings	2.34	1.71
Production Efficiency	2.96	2.31

V Revenues and expenditures tables[9,10]

A. Revenue and expenditure results

- **Overall public purpose revenue plus incremental electric revenue from SB 838 totaled $194.2 million for 2017,** 2 percent over what was budgeted, and $45.4 million more than in 2016.
- **2017 expenditures totaled $180.3 million**; of which, $102.6 million or 57 percent was for incentives, compared to $109.2 million and 59 percent in 2016. The underspending was primarily due to lower than expected spending in incentives, given a large volume of low-cost savings from LEDs and an industrial megaproject.
- **In 2017, Energy Trust spent a total of $10.1 million, or 5.2 percent of total budgeted revenue, on administration and program support costs**.[11]
- **2017 electric efficiency expenditures** were 6 percent below budget.
- **2017 gas efficiency expenditures** were 13 percent below budget.
- **2017 renewable energy expenditures** were 16 percent below budget.

B. Revenues

Revenues include public purpose revenue plus incremental electric revenue from SB 838. Incremental revenues are those authorized under SB 838 to support capturing additional cost-effective electric efficiency savings above the amount supported by funding through SB 1149.

Source		Annual actual revenues		Annual budgeted revenues
Portland General Electric	$	38,436,607	$	37,255,027
PGE Incremental	$	63,767,342	$	65,291,750
Pacific Power	$	29,130,929	$	27,524,599
Pacific Power Incremental	$	34,863,205	$	33,375,078
NW Natural	$	18,458,974	$	17,392,246
NW Natural Industrial DSM	$	5,920,596	$	5,920,596
Cascade Natural Gas	$	2,622,395	$	2,900,000
Avista	$	1,036,868	$	1,036,869
Total	**$**	**194,236,916**	**$**	**190,696,166**

[9] Columns may not total due to rounding.
[10] The gas savings do not include results for NW Natural in Washington. These results are available at www.energytrust.org/reports.
[11] $10.1 million in support costs aligns with Energy Trust's calculation of the OPUC administrative and program support costs performance measure, and includes administrative and program support costs for services in Southwest Washington. The number does not align with administration costs in table D below, because program support costs are not included under administrative costs.

C. Expenditures by utility[12,13]

Source		Annual actual expenditures		Annual budgeted expenditures
Portland General Electric	$	96,970,919	$	103,635,729
Pacific Power	$	59,536,033	$	65,594,073
NW Natural	$	16,416,912	$	17,661,205
NW Natural Industrial DSM	$	4,301,658	$	6,227,325
Cascade Natural Gas	$	2,024,465	$	2,471,060
Avista	$	1,029,771	$	899,611
Business development	$	17,491	$	-
Low and moderate income grant	$	50,651	$	-
Total	**$**	**180,347,899**	**$**	**196,489,003**

[12] In 2017, Energy Trusted invested organization contingency pool funds to explore new business opportunities. Organization contingency pool funds are unrestricted donations and consulting fees, and are independent from ratepayer funds.
[13] Energy Trust received a grant from the U.S. Department of Energy to collaborate with the Oregon Department of Energy to increase access to solar energy for low- and moderate-income communities.

D. Expenditures by sector and program[14,15]

			Annual actual expenditures		Annual budgeted expenditures	Budget variance
Commercial	Existing Buildings and Multifamily	$	51,850,094	$	59,748,459	13%
	New Buildings	$	18,061,784	$	19,138,949	6%
	NEEA Commercial	$	2,356,644	$	2,737,400	14%
	Commercial total	**$**	**72,268,522**	**$**	**81,624,808**	**11%**
Industrial	Production Efficiency	$	32,853,533	$	33,305,711	1%
	NEEA Industrial	$	178,855	$	230,621	22%
	Industrial total	**$**	**33,032,387**	**$**	**33,536,332**	**2%**
Residential	Existing Homes	$	18,165,408	$	19,590,815	7%
	New Homes and Products	$	28,874,705	$	29,689,465	3%
	NEEA Residential	$	4,912,713	$	5,078,431	3%
	Residential total	**$**	**51,952,826**	**$**	**54,358,712**	**4%**
	Energy efficiency total	**$**	**157,253,736**	**$**	**169,519,852**	**7%**
Renewables	Solar	$	11,220,535	$	12,867,781	13%
	Other Renewables	$	4,867,522	$	6,157,301	21%
	Cancelled project*	$	(135,000)	$	-	N/A
	Renewable generation total	**$**	**15,953,057**	**$**	**19,025,082**	**16%**
Administration	**Administration**	$	7,072,965	$	7,944,070	11%
	Administration total	**$**	**7,072,965**	**$**	**7,944,070**	**11%**
Other	**Business development**	$	17,491	$	-	N/A
	Low and moderate income grant	$	50,651	$	-	N/A
	Total expenditures	**$**	**180,347,899**	**$**	**196,489,003**	**8%**

* In Q3 2017, Energy Trust cancelled a renewable energy project claimed in a prior year (2009). Funds were returned to Energy Trust and generation was discounted.

E. Incentives paid

Quarter	PGE efficiency	Pacific Power efficiency	NW Natural efficiency	Cascade Natural Gas efficiency	Avista efficiency	PGE generation	Pacific Power generation	Total
Q1	$4,552,627	$3,086,395	$1,139,036	$167,746	$39,665	$1,967,134	$1,103,469	$12,056,072
Q2	$13,194,287	$6,836,569	$2,788,465	$173,489	$147,525	$2,354,040	$2,095,317	$27,589,691
Q3	$8,954,386	$4,868,491	$1,884,334	$184,843	$130,015	$874,279	$1,080,360	$17,976,708
Q4	$21,664,521	$13,436,280	$5,793,832	$557,049	$229,807	$1,804,201	$1,463,937	$44,949,628
Total	**$48,365,821**	**$28,227,735**	**$11,605,667**	**$1,083,127**	**$547,012**	**$6,999,654**	**$5,743,083**	**$102,572,099**

[14] In 2017, Energy Trusted invested organization contingency pool funds to explore new business opportunities. Organization contingency pool funds are unrestricted donations and consulting fees, and are independent from ratepayer funds.
[15] Energy Trust received a grant from the U.S. Department of Energy to collaborate with the Oregon Department of Energy to increase access to solar energy for low- and moderate-income communities.

VI Savings and generation tables[16,17,18,19,20]

A. Savings and generation by fuel

	Annual savings/generation	Annual goal	Percent Achieved	Levelized Cost
Electric savings	63.4 aMW	56.4 aMW	112%	2.47 ¢ per kWh
Natural gas savings	6,753,074 therms	7,130,306 therms	95%	27.25 ¢ per therm
Electric generation	4.49 aMW	2.86 aMW	157%	3.25 ¢ per kWh

B. Progress toward annual efficiency goals by utility

	Annual savings	Levelized cost	Annual goal	Percent achieved YTD	Annual IRP target	Percent achieved YTD
Portland General Electric	40.39 aMW	2.41 ¢ per kWh	34.97 aMW	116%	32.68 aMW	124%
Pacific Power	23.01 aMW	2.57 ¢ per kWh	21.43 aMW	107%	19.12 aMW	120%
NW Natural	5.9 million therms	27.38 ¢ per therm	6.2 million therms	95%	4.7 million therms	125%
Cascade Natural Gas	510,350 therms	29.99 ¢ per therm	563,862 therms	91%	563,862 therms*	91%
Avista	340,738 therms	21.54 ¢ per therm	318,332 therms	107%	318,332 therms**	107%

Integrated Resource Plan targets are shown in net savings.

* Integrated Resource Plan for Cascade Natural Gas is pending acknowledgement by the OPUC.

** Energy Trust and Avista have not yet determined an IRP target for 2017. Energy Trust's program goal is used in lieu of a 2017 IRP target.

[16] Columns may not total due to rounding.
[17] This document reports net savings. Net savings are adjusted gross savings based on results of current and past evaluations.
[18] Electric savings also include transmission and distribution savings.
[19] The gas savings do not include results for NW Natural in Washington. These results are available at www.energytrust.org/reports.
[20] Energy Trust reports 100 percent of generation and capacity for renewable energy installations supported by Energy Trust's cash incentives. While some of these projects have additional sources of funding, Energy Trust enabled project completion.

C. Electric savings by sector and program

		Annual savings aMW	Annual goal aMW	Percent achieved YTD	Levelized cost per kWh
Commercial	Existing Buildings and Multifamily	14.8	14.7	100%	3.46 ¢
	New Buildings	6.3	6.3	99%	2.67 ¢
	NEEA Commercial	1.9	1.5	128%	2.33 ¢
	Commercial total	**23.0**	**22.5**	**102%**	**3.15 ¢**
Industrial	Production Efficiency	17.1	13.6	126%	2.04 ¢
	NEEA Industrial	0.111	0.077	145%	2.89 ¢
	Industrial total	**17.2**	**13.7**	**126%**	**2.05 ¢**
Residential	Existing Homes	2.8	3.9	72%	4.18 ¢
	New Homes and Products	15.0	10.9	138%	2.01 ¢
	NEEA Residential	5.4	5.4	99%	0.99 ¢
	Residential total	**23.2**	**20.2**	**115%**	**2.09 ¢**
	Total electric savings	**63.4**	**56.4**	**112%**	**2.47 ¢**

D. Natural gas savings by sector and program

		Annual savings thm	Annual goal thm	Percent achieved YTD	Levelized cost per therm
Commercial	Existing Buildings and Multifamily	1,629,945	2,200,792	74%	37.47 ¢
	New Buildings	937,631	946,372	99%	20.72 ¢
	Commercial total	**2,567,576**	**3,147,164**	**82%**	**31.77 ¢**
Industrial	Production Efficiency	1,307,844	1,071,174	122%	18.13 ¢
	Industrial total	**1,307,844**	**1,071,174**	**122%**	**18.13 ¢**
Residential	Existing Homes	1,052,651	1,112,252	95%	46.98 ¢
	New Homes and Products	1,825,003	1,799,715	101%	16.25 ¢
	Residential total	**2,877,654**	**2,911,967**	**99%**	**27.87 ¢**
	Total natural gas savings	**6,753,074**	**7,130,306**	**95%**	**27.25 ¢**

Energy Trust allocated budget to NEEA for gas market transformation activities. While there were no associated savings in 2017, savings are expected in subsequent years.

E. Renewable energy generation by utility

	YTD generation aMW	Annual goal aMW	Percent achieved YTD
Portland General Electric	1.19	1.23	97%
Pacific Power	3.30	1.63	203%
Total	**4.49**	**2.86**	**157%**

F. Renewable energy generation by program

	YTD generation aMW	Annual goal aMW	Percent achieved YTD
Other Renewables program	0.0017	0.0012	139%
Solar program	4.49	2.86	157%
Total generation	**4.49**	**2.86**	**157%**

G. Incremental utility SB 838 expenditures[21]

Utility		2017 Q4 SB 838 Expenditures		YTD SB 838 Expenditures
Portland General Electric	$	196,546	$	801,601
Pacific Power	$	439,880	$	1,039,162
Total	**$**	**636,426**	**$**	**1,840,763**

[21] Reflects expenditures by Pacific Power and PGE in support of utility activities described in SB 838. Reports detailing these activities are submitted annually to the OPUC.

VII Northwest Energy Efficiency Alliance progress

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.

Once products are ready and available, Energy Trust creates and implements programs to support broad market adoption in Oregon.

Utility customers benefit by seeing a greater choice of higher-efficiency products available at stores, and through improvements to building codes and equipment standards that will save energy.

NEEA savings noted here are forecasted. Updated savings results will be available in late Q2 2018 through NEEA's Annual Report. Any changes to NEEA savings reported here will be captured in Energy Trust's annual True Up 2018 Report, available Q4 2018.

A. NEEA savings

	Annual savings	Annual energy target	Percent achieved	Levelized cost per kWh
Commercial	1.9 aMW	1.5 aMW	128%	2.33 ¢
Industrial	0.11 aMW	0.08 aMW	145%	2.89 ¢
Residential	5.4 aMW	5.4 aMW	99%	0.99 ¢
Total	**7.4 aMW**	**7.0 aMW**	**106%**	**1.24 ¢**

B. NEEA expenditures

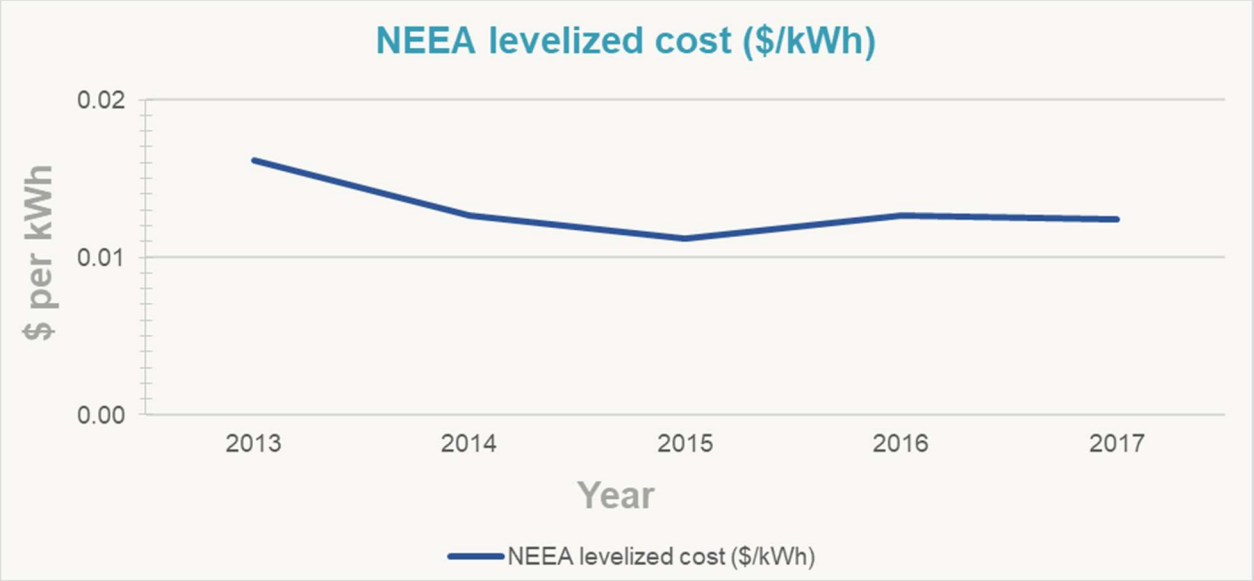
	Annual actual expenditures	Annual budgeted expenditures	Budget variance
Commercial	$2,452,911	$2,852,737	14%
Industrial	$186,161	$240,338	23%
Residential	$5,113,393	$5,292,404	3%
Total	**$7,752,465**	**$8,385,479**	**8%**

C. Status of NEEA goals in Energy Trust's 2015-2019 Strategic Plan

EMERGING EFFICIENCY RESOURCES	Status
NEEA identification of electric market transformation savings of 35 aMW	On track
Energy Trust identification of electric market transformation savings beyond NEEA's	On track
NEEA gas market transformation progress	In progress

D. NEEA levelized cost

NEEA costs and savings are not realized in the same year. Savings in 2017 reflects costs from prior years, and costs from 2017 will lead to savings in subsequent years. For this reason, levelized costs are included for the past five years.



E. NEEA electric market transformation long-term goals, strategies and performance metrics

Below are NEEA's long-term goals and strategies, outlined in NEEA's 2015-2019 Business Plan[22].

NEEA facilitates market transformation with the following goals, strategies and performance metrics:

Goal 1: Fill the energy efficiency pipeline with new products, services, practices and approaches.

- Key strategies:
  a. Identify new energy-efficiency opportunities.
  b. Assess the potential for newly identified emerging technologies.
  c. Prove the viability of emerging technology concepts.
- Five-Year Success Metric: Fill the 20-year energy efficiency pipeline with 1,000 aMW of regional potential savings in process and 175 aMW of savings readied for market adoption.

Goal 2: Create market conditions that accelerate and sustain the market adoption of emerging energy-efficiency products, services and practices.

- Key strategies:
  a. Influence market actors to increase availability of energy-efficient products and services.

[22] NEEA's 2015-2019 Business Plan is available online at http://neea.org/docs/default-source/default-document-library/neea-2015-2019-strategic-plan-board-approved.pdf.

b. Improve and ensure product quality.
c. Build market knowledge and capability.
d. Identify and develop market resources that capitalize on the compelling value proposition and business case (i.e., “non-energy benefits”) for an energy-efficient product, service or practice.
e. Increase product awareness.
f. Develop strategies to address price and first-cost issues.
g. Influence and support the successful implementation of more stringent building codes and appliance standards.

- Five-Year Success Metric: In all of the markets in which NEEA works, including Oregon, NEEA programs are to result in substantive and measurable change in market conditions, resulting in energy savings.

More information and NEEA's market transformation strategies, processes and performance metrics is available in NEEA's 2015-2019 Business Plan and recent annual or quarterly reports[23].

F. NEEA gas market transformation progress indicators

Progress indicator	Status
2015: Complete scanning research and concept opportunity assessment for two technologies	Achieved
2016: Complete concept opportunity assessment for three technologies	Achieved
2017: Complete market and product assessment for one technology; five additional technologies in “Scanning”	Achieved
2018: Complete strategy testing and finalization for one technology	N/A
2019: At least two technologies ready for scale-up	N/A

G. Energy Trust membership on NEEA committees and direction to NEEA

Energy Trust provides regular guidance to NEEA through membership on the board of directors and all eight of NEEA's advisory committees.

Committee	Energy Trust staff member
Regional Portfolio Advisory Committee	Fred Gordon, director of planning and evaluation
Cost-effectiveness and Evaluation Advisory Committee	Andy Eiden, planning project manager Phil Degens, evaluation manager
Emerging Technology Advisory Committee	Mike Bailey, engineering manager
Natural Gas Advisory Committee	Mike Bailey, engineering manager
Northwest Research Advisory Committee	Phil Degens, evaluation manager
Residential Sector Advisory Committee	Mark Wyman, program manager
Commercial Sector Advisory Committee	Oliver Kesting, commercial sector lead
Industrial Sector Advisory Committee	Lindsey Piercksen, senior program manager
Board of Directors	Michael Colgrove, executive director

Energy Trust staff provided the following direction to NEEA through committees:

[23] NEEA's recent annual and quarterly reports are available online at http://neea.org/resource-center/neea-performance-reports.

- Energy Trust provided guidance regarding NEEA's proposed update to the methodology for claiming savings from more robust state energy codes. Ensuring alignment on this issue is important because while NEEA tracks and reports on code energy savings for electric homes and businesses in Energy Trust territory, Energy Trust tracks and reports this information for gas homes and businesses.
- As a member of the NEEA's Board Strategic Planning Committee, Energy Trust's executive director guided the launch of the planning process for NEEA's 2020-2024 renewal period and stakeholder outreach plan.
- Energy Trust staff provided guidance through the Regional Portfolio Advisory Committee supporting adoption of the Regional Strategic Market Plan for Consumer Products.
- Energy Trust staff provided feedback to the NEEA Industrial, Commercial and Residential Advisory Committees on NEEA initiatives, and facilitated cross-organizational collaboration on topics including Strategic Energy Management infrastructure, commercial code enhancement, commercial real estate tools and training, new measures based on extended motor products and emerging technology such as next generation compressed air nozzles. Energy Trust staff continued to provide leadership in the NEEA-convened Northwest SEM Collaborative, a peer-to-peer network for program administrators, implementers and evaluators that speeds innovation and advances SEM program progress in the region. Energy Trust staff engaged on numerous NEEA program work groups to provide tactical guidance on program implementation efforts to ensure program effectiveness while preventing overlap and confusion in the market. Activities at the work-group level are shared as appropriate with the sector advisory committees, regional portfolio committee, and in some cases, the NEEA board.
- Through membership on NEEA's Gas Advisory Committee, Energy Trust helped prioritize and explore several emerging gas efficiency technologies.
- Energy Trust staff helped redesign NEEA's process for the Emerging Technology Advisory Committee to improve regional coordination on new technology pilots.
- Energy Trust staff participated in the steering group for a new NEEA-staffed regional initiative to coordinate commercial and industrial lighting initiatives to improve mid-term results and develop new efficiency opportunities. Energy Trust also participated in a similar initiative regarding retail product efficiency.
- Energy Trust staff helped NEEA update the ENERGY STAR Retail Products Portfolio selection process, facilitating improved coordination between NEEA and workgroup members.

H. Energy Trust opts out of select NEEA efforts

Energy Trust opts out of industrial technical training, one of NEEA's infrastructure offerings for member utilities. It was found to be duplicative with other training resources that Energy Trust sponsors for industrial and agricultural businesses and had lower participation. Energy Trust provides extensive training in comprehensive SEM through the Production Efficiency program, sponsors the annual Northwest Industrial Efficiency Summit, and sponsors more than 20 system-focused industrial technical training classes per year, which are provided to PGE and Pacific Power customers by PGE's customer technical training group. Opting out of NEEA's industrial technical training means that Energy Trust does not fund that effort and does not work with NEEA to plan and coordinate these efforts in Energy Trust territory.

APPENDIX 1: Customer satisfaction results

Energy Trust calculated customer satisfaction from short telephone surveys conducted with randomly selected participants soon after they completed projects. The survey asked participants about satisfaction with their overall experience with Energy Trust. Participants in the Existing Buildings (including Existing Multifamily), Production Efficiency and Commercial Solar programs were also asked about satisfaction with program representatives. Surveys were conducted with 1,862 residential customers and 598 non-residential customers in Oregon who received an incentive or discount from Energy Trust in 2017. In addition, Energy Trust conducted a separate survey with 100 recipients of Energy Saver Kits—the overall satisfaction results of these customers are included in the Existing Homes program satisfaction results.

In 2017, the average proportion of program participants satisfied with their overall experience with Energy Trust was 93 percent, and satisfaction with interactions with Energy Trust program representatives was 97 percent.

New Buildings projects often involve numerous market actors (architects, engineers, developers and owners) at different project stages, so it is difficult to reach a project representative who is able to respond to questions about satisfaction. Satisfaction with the New Buildings program is obtained from interviews with program participants as part of a separate evaluation survey. The survey of 2017 New Buildings participants was delayed and results will be available later in 2018. In the survey of 2016 participants, 38 New Buildings project owners or representatives were surveyed about their overall program satisfaction and satisfaction with communications with program representatives. Of participants surveyed, 89 percent were satisfied with their overall program experience. Satisfaction with program representatives was 94 percent.

Table 1: 2017 overall satisfaction

Program	Satisfaction with overall experience
Existing Buildings, including Multifamily	95%
New Homes and Products	94%
Existing Homes*	91%
New Buildings**	89%
Production Efficiency	98%
Solar	92%
Unweighted average	**93%**

* Existing Homes satisfaction includes results from a separate survey of 100 Energy Saver Kit recipients.

** New Buildings satisfaction based on survey results of 2016 program participants due to the delay of the 2017 survey.

Table 2: 2017 satisfaction with program representatives

Program	Satisfaction with program representative
Existing Buildings, including Multifamily	98%
New Buildings*	94%
Production Efficiency	98%
Commercial Solar	100%
Unweighted average	**97%**

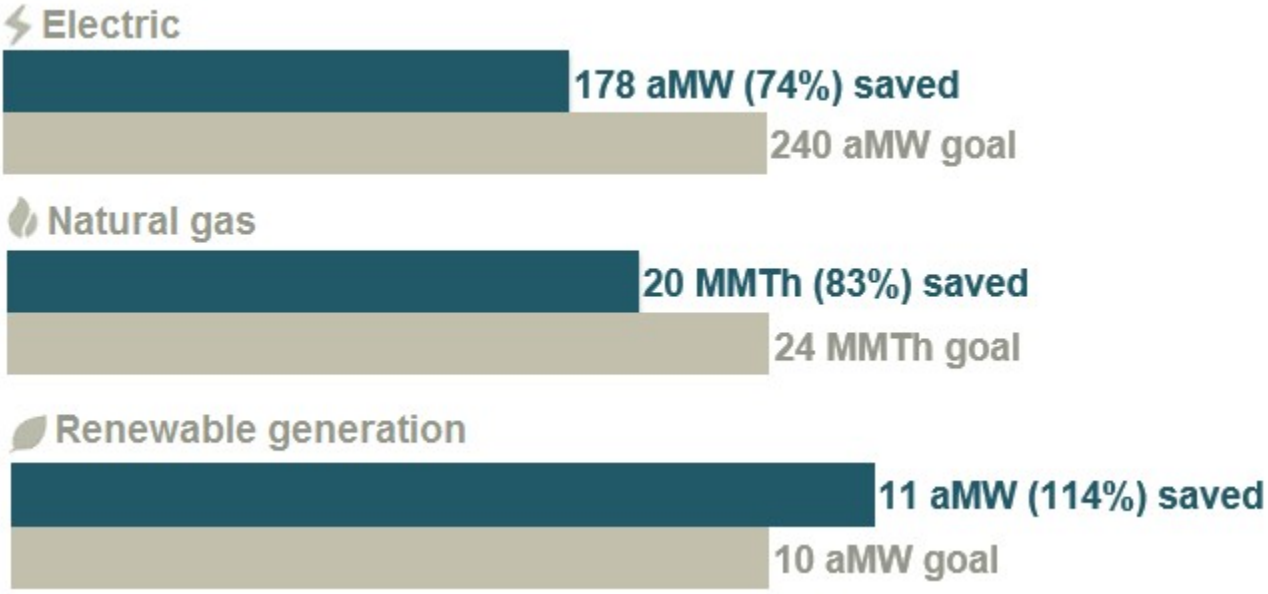
* New Buildings satisfaction based on 2016 survey results due to the delay of the 2017 survey.

Note: Energy Trust's customer feedback survey does not ask residential participants about satisfaction with program representatives. Residential participants interact with Energy Trust representatives to a varying degree—some may call the call center and others may not interact with a program representative. In general, commercial and industrial participants have more interaction with Energy Trust representatives.

APPENDIX 2: Progress to 2015-2019 Strategic Plan goals; cumulative and total annual results

Progress to 2015-2019 Strategic Plan goals

- **Energy Trust achieved 74 percent of the Strategic Plan electric-savings goal of 240 aMW** through 2017.
- **Energy Trust achieved 83 percent of the Strategic Plan gas-savings goal of 24 million annual therms** through 2017.
- **Energy Trust achieved 114 percent of the Strategic Plan renewable generation goal of 10 aMW** through 2017.



Cumulative and total annual results

- **Total annual savings of 670 aMW** have been realized since electric efficiency programs began in 2002, equivalent to powering approximately 520,000 Oregon homes. This total includes 23 aMW of savings from self-direct customers.
- **Total annual savings of 57.9 million annual therms** have been realized since gas efficiency programs began in 2003, equivalent to providing gas heat to approximately 114,000 Oregon homes.
- **Total annual renewable energy generation of 126.8 aMW** has been installed since 2002, equivalent to powering approximately 98,000 Oregon homes.
- **The net economic benefits of Energy Trust 2002-2017 expenditures, energy savings and renewable energy generation added $6.7 billion to the local economy**, including $2.0 billion in wages, $362 million in small business income and employment equivalent to 5,400 full-time jobs lasting a decade.[24]
- **Through 2017, air quality improvements stemming from Energy Trust investments have kept more than 22.8 million tons of carbon dioxide out of the atmosphere**, the equivalent of removing more than 4 million cars from Oregon roads for one year.

[24] The net economic benefit of Energy Trust expenditures, savings and generation is from an independent analysis by third-party Pinnacle Economics completed in spring 2018.

- **Since 2003, Energy Trust has invested more than $12 million in energy-efficiency projects at nearly 1,050 public K-12 Oregon schools**, and provided more than $3.4 million in funding for solar electric and wind energy systems at nearly 61 public schools.
- **Energy Trust investments in energy efficiency and solar generation will save utility customers nearly $7.6 billion** on their utility bills over the lifetime of those investments. Participating customers have already saved more than $3.2 billion on their energy bills since 2002.

APPENDIX 3: Renewable resource development targets

A. Purpose of project development assistance

Energy Trust provides project development assistance and installation incentives for projects that will generate renewable energy from hydropower, biopower, municipal-owned community wind and geothermal resources.

The primary goal of project development assistance is to expand distributed renewable energy generation in Oregon by lowering early stage development barriers and financial risk. Through project development assistance, Energy Trust builds a pipeline of projects that have passed through critical pre-construction activities, including technical and financial assessments. Development assistance also prepares proposed projects to apply for Energy Trust installation incentives or other sources of financial support. The products delivered through development assistance, such as feasibility studies, build and reinforce Energy Trust's awareness of market factors and other considerations important for supporting distributed renewable energy technologies, while helping individual projects to leverage construction and long-term financing.

Applications for project development assistance must be received and approved by Energy Trust prior to the start of the proposed development activity. Project development assistance incentive funds are provided as a reimbursement following completion of the activity and proof of full payment to all contractors. Incentive funding typically equates to 50 percent of the project activity cost, up to a maximum of $200,000. Project proponents have a significant financial stake in development activities, helping ensure that activities are necessary and fiscally prudent. Common examples of project development activities include feasibility and design studies, feedstock studies, irrigation district modernization assessments, and transmission/interconnection studies.

While project proponents using any eligible technology can apply for project development assistance incentives, staff are focused on outreach to projects in two key areas:

1) Electricity generation from the combustion of biogas, which is created by the anaerobic digestion of organic wastes at water resource recovery facilities (also known as wastewater treatment plants) and businesses that manage organic materials (such as food processors).
2) Hydropower projects made possible through the modernization of irrigation water delivery infrastructure (canals) by irrigation districts and other agricultural water providers.

B. Barriers to project development

Energy Trust's project development assistance is designed to address the main barriers to renewable energy project development. Helping projects overcome these barriers builds a pipeline of projects that can apply for incentives, complete construction and generate renewable energy. Barriers in 2017 remained similar to those in previous years, and in some instances increased.

- **It is difficult to find capital to support early stage work.** The riskiest time to invest money in a renewable energy project is at the beginning. Investors are reluctant to put funds into projects with unclear potential, especially when a project may have a lengthy return on investment. Without early stage funding, a project cannot advance to the point where the risk is reduced. By providing early stage funds, Energy Trust builds a pipeline and helps move projects forward, enabling them to attract additional financing and eventually

construct a project. In some cases, projects at this early stage learn they are not feasible. Energy Trust helps project owners reach that point with less financial exposure.

- **Project proponents whose primary business is not energy often encounter difficulties navigating the stages of project development.** Energy Trust works with many project proponents that are not professional developers. Moving through the steps of resource characterization, feasibility, permitting and interconnection can be lengthy and difficult. Project development assistance—both financial and technical—helps developers navigate these steps efficiently in less time and for less cost, and learn industry best practices and how to avoid mistakes.

- **Market conditions for distributed renewable generation in Oregon continue to be challenging.** At all stages of the development process, project owners face poor market fundamentals, including low avoided cost rates and greatly diminished state and federal incentives. In our current thriving economy, costs for materials, equipment and labor have also significantly increased since the 2008 - 2010 recession. Project development assistance is an essential tool to continue to attract investment in projects in Oregon and to maintain development capacity in the state.

C. Project development assistance activity in 2017

This report details the specific uses of project development assistance in these areas in 2017.

Since 2014, Energy Trust has focused on increasing the deployment of project development assistance incentives to build a pipeline of projects that can apply for installation incentive funds in future years. As a result, the pipeline of active non-solar renewable energy projects has now increased from 18 supported in 2014 to 46 supported in 2017.

Summary of project development assistance activity in 2017:

	Projects supported	Total funds committed	Total funds spent
Focus Area 1: Biogas	4	$378,988	$86,018
Focus Area 2: Irrigation hydropower	29	$2,099,225	$1,609,105
Outside focus areas	13	$127,663	$160,947
Total	46	$2,605,875	$1,856,070

The growth from 2014 to 2017 was largely due to the success of outreach efforts for hydropower projects. In 2017, the total number of supported projects remained steady at 46 supported. Staff expects the total number of supported projects to remain about 50 over the next few years.

With high demand for project development assistance funds, staff fully allocated the 2017 budget for development assistance and expect the 2018 budget to be fully allocated as well. If staff determine that demand is likely to exceed available budget, Energy Trust will use competitive processes to allocate project development assistance funds.

D. Focus area: Electricity generation from the combustion of biogas

Biogas projects supported: 4

Milestones met

- Design study due diligence
- Biosolids management technology assessment
- Co-digestible organic feedstock assessment
- Cogeneration predesign
- Biogas flow meter installation
- Accounting services to secure the federal Investment Tax Credit

Oregon's businesses and municipalities manage and process significant volumes of organic material. As Oregon's population grows, the volume of organic material requiring processing and disposal increases. These organic materials, managed daily by food processors and municipal water resource recovery facilities, are putrescent, costly to transport and often pose human health risks. Traditional methods of safely managing these materials include land application and landfilling, and conveyance of food waste to livestock operations.

With recent technological advancements, these materials can serve as a valuable feedstock for the production of biogas. Under controlled conditions, organic materials can produce biomethane, or biogas, through a process known as anaerobic digestion. Biogas, about 60 percent methane by volume, may be used as a renewable fuel. This biogas may be combusted to serve on-site thermal energy needs, used as a fuel for combined heat and power systems, or cleaned and compressed further for vehicle fuel or injected into existing natural gas pipelines.

Oregon's water resource recovery facilities treat wastewater to standards that protect human health and the environment. Treating wastewater is an energy intensive process. The sophistication and scale of the treatment facilities range from simple aerobic treatment ponds to technologically advanced anaerobic treatment systems with nutrient recovery. These facilities are often the most significant use of energy for a municipality, and costs to treat wastewater are passed on to water utility ratepayers.

These facilities are ideal locations for investments in energy efficiency and renewable energy generation (primarily biopower and solar) because they are permanent, publically owned with a growing base of ratepayers, provide an essential public service, have access to low-cost capital, are in close proximity of electricity transmission, and usually have significant onsite heat and electricity demands. Energy Trust deploys project development assistance to help municipalities learn about the opportunities for adding or expanding generation and to advance efficiently through pre-construction development processes.

Project development assistance for municipal biopower projects is typically used for feasibility studies, regional organic material feedstock studies, and design studies. Additionally, Energy Trust uses operations, maintenance and technical information gleaned from operating municipal biopower projects to inform future projects.

Food processors are recognizing significant potential for combined heat and power from biogas. Oregon is home to a significant number of food processors and a burgeoning craft brewing and distilling sector. Traditionally, these businesses have disposed of their liquid wastes in municipal sewer collection systems, applied the waste to land, or made wastes available as livestock feed. Food processors (including breweries) located in urban and suburban areas face significant extra-strength sewerage charges for disposing of their organic wastes. These municipal

waste disposal costs provide the financial motivation to investigate onsite waste treatment options, including biopower. Energy Trust helps businesses evaluate if onsite waste treatment and biopower are a financially sound investment.

E. Focus area: Irrigation hydropower

Energy Trust supports several types of irrigation hydropower projects, which are categorized by customer type and process used. Staff see technically and financially viable hydropower opportunities at irrigation districts, other agricultural water suppliers such as ditch companies, and farms where irrigation water is delivered to an individual user. Energy Trust's irrigation modernization program provides a comprehensive structure for irrigation districts and other agricultural water suppliers to assess hydropower potential and identify additional water delivery system improvements and benefits.

1. Irrigation modernization hydropower

Irrigation modernization projects supported: 16

Milestones met

- Feasibility Studies
- Compilation and evaluation of information on existing water use and infrastructure
- Evaluation of stakeholder needs
- Evaluation of water and energy conservation potential
- Evaluation of environmental benefits and water quality impacts
- Evaluation of hydroelectric potential
- Evaluation of economic impacts
- Development of system optimization plans

Similar to other western states, most of Oregon's agricultural water is delivered to farms by irrigation districts or other water providers using aging, open canal systems. Many of these earthen conveyances were dug more than 100 years ago and lose significant quantities of water to seepage and evaporation. These municipal systems are ripe for modernization. Modernizing irrigation infrastructure derives lasting energy and water benefits and creates additional opportunities for agricultural security, rural prosperity, drought resiliency and environmental improvements.

Hydropower electric projects using irrigation water have been a programmatic focus for Energy Trust since 2010. Despite challenging renewable energy market conditions, these types of projects remain viable due to concerted efforts by irrigation district managers and agricultural producers, grants from state and federal agencies to offset the cost of piping, and the wide range of non-energy benefits that modernized irrigation systems can provide.

Modernizing an irrigation district is complex. The process typically starts by replacing open canals with pipes, which saves water by eliminating seepage and evaporation. Irrigation canals use gravity to keep water flowing. Once piped, the water is naturally pressurized, allowing irrigators to remove pumps, reducing energy use and maintenance costs. Pressurized water may also enable additional upgrades to more water-efficient

on-farm irrigation systems. Excess water pressure can be used to generate hydropower, with revenues from the sale of renewable electricity helping to finance project implementation.

The irrigation modernization offering provides irrigation districts and the farmers they serve a one-stop shop to navigate complex agricultural priorities, regulatory requirements, funding needs and environmental concerns. Through irrigation modernization, each district identifies short- and long-term irrigation goals; assesses opportunities and risks; identifies potential stakeholder partnerships; evaluates and communicates the associated energy, economic, ecological and social benefits of modernization; secures project financing and facilitates project implementation.

This nationally recognized effort reduces the cost and time required for project planning and implementation; addresses key regulatory and institutional barriers; leverages federal, state and private funding; and reduces costs for agency, environmental and agricultural program deployment. This program builds awareness that modern agricultural water management can help mitigate the impacts of long-term drought on agricultural production and regional watersheds and ecosystems. The irrigation modernization offering is a replicable and scalable model to achieve significant energy, agricultural and ecosystem benefits in Oregon and in other western states.

In 2017, irrigation modernization assessments were underway at 16 Oregon irrigation districts. These assessments identify the renewable energy, energy efficiency, agricultural, water, environmental and economic benefits associated with modernization and characterize various potential project implementation approaches. Each irrigation district will choose the implementation approach that is right for its situation. After a district's board selects a preferred approach, design, permitting and financing will begin, followed by contracting and construction.

Early results show real potential to generate energy. In one irrigation district, more than 20 megawatts of hydropower potential has been identified, along with significant water savings and other benefits. However, not every irrigation district is expected to present such strong hydropower opportunities.

Since 2015, the irrigation modernization offering has been delivered by Farmers Conservation Alliance, a nonprofit that develops resource solutions for rural communities. Farmers Conservation Alliance has worked with individual farmers, irrigation districts, agencies, tribes, nonprofits and foundations to form collaborative relationships that support modern irrigation systems. Farmers Conservation Alliance will continue to deliver the offering in 2018.

2. Other agricultural hydropower projects (non-irrigation modernization)

Energy Trust continues to support irrigation hydropower development outside of the irrigation modernization offering. The difference between these projects and those enrolled in the irrigation modernization offering is that the other potential modernization benefits are not being explored in the projects below.

Irrigation district hydropower projects supported: 13

Milestones met:

- Feasibility studies
- Site evaluations

- Site control
- Geotechnical studies
- Resource assessments
- Economic analyses
- Structural and electrical engineering
- Interconnection studies

F. Project development assistance outside of focus areas

Energy Trust supported 13 hydropower projects outside of focus areas in 2017. These projects represent a wide variety of distributed renewable energy generation opportunities. While all are viable, staff do not focus on these particular opportunities because past research has indicated that the market for these types of projects is smaller than for irrigation hydropower and biogas projects, permitting is challenging and upfront development costs can be high. Energy Trust remains open to these opportunities and provides staff support, but does not engage in a targeted outreach effort to these types of projects.

Other agriculture water supply hydropower projects: 5

Milestones met:

- Feasibility studies
- Hydrologic modeling and GIS

On-farm hydropower project: 1

Milestones met:

- Feasibility study

Other hydropower projects outside focus area: 7

Milestones met:

- Feasibility studies
- Biological assessment
- Interconnection study
- Property ownership survey
- FERC licensing & environmental studies

APPENDIX 4: 2017 gross savings

This appendix provides Energy Trust's 2017 energy savings in gross savings. Gross savings are energy savings that result from Energy Trust programs, regardless of why customers participated.

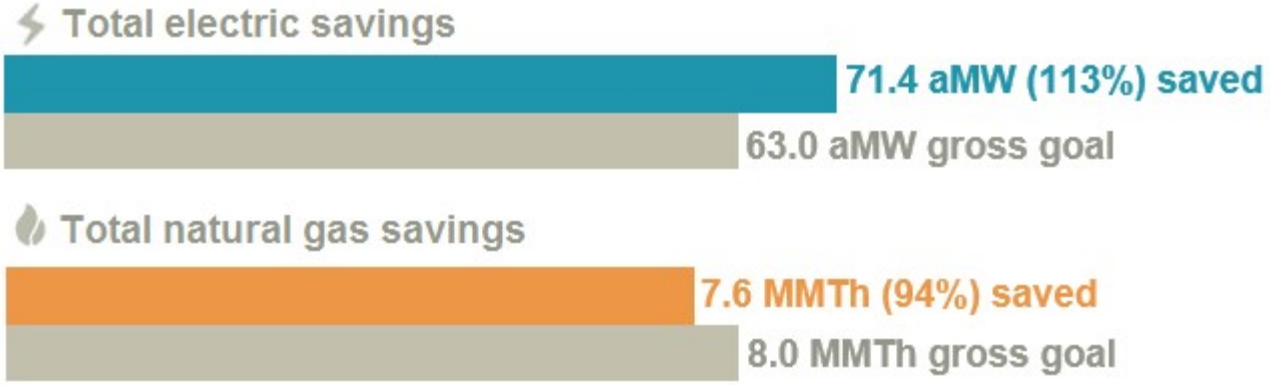
In the body of Energy Trust's annual and quarterly reports to the OPUC, Energy Trust reports results in net savings. Net savings refer to the portion of gross savings that is directly attributable to Energy Trust programs. Net savings do not include savings from participants who would have completed an energy-saving action even in the absence of the program (free riders), and do include estimates of savings from participants who completed an energy-saving action because of awareness of the program but didn't receive a program incentive (participant spillover effect).

Energy Trust's gross energy generation is equal to net renewable energy generation. Because of Energy Trust's mandate to support only renewable projects with above-market costs, these projects are unlikely to move forward without Energy Trust incentives and therefore are not free riders. Based on these factors, Energy Trust claims 100 percent of generation for all renewable energy projects that receive incentives.

Progress toward gross annual efficiency and generation goals

	Annual savings/ generation (gross)	Annual goal (Gross)	Percent Achieved
Electric savings	71.4 aMW	63.0 aMW	113%
Natural gas savings	7.6 million therms	8.0 million therms	94%
Electric generation	4.5 aMW	2.9 aMW	157%

Gross savings



APPENDIX 5: NW Natural industrial demand-side management activities

Since 2009, Energy Trust has provided service to NW Natural's Schedule 31 and 32 non-transport customers, funded through a special rate adjustment mechanism rather than through the public purpose charge. Program costs and therm savings for these customers in 2017 are included in the body of this annual report as a portion of NW Natural savings and reported separately below.

		Annual savings		Annual actual expenditures	Levelized cost/therm
Commericial	Existing Buildings	566,668	$	2,186,044	33.5 ¢
	New Buildings	162,383	$	260,729	12.6 ¢
	Commercial total	**729,052**	**$**	**2,446,773**	**28.4 ¢**
Industrial	Production Efficiency	913,142	$	1,854,885	18.4 ¢
	Industrial total	**913,142**	**$**	**1,854,885**	**18.4 ¢**
	Total	**1,642,194**	**$**	**4,301,658**	**23.0 ¢**

APPENDIX 6: Background, mission and goals

A. Background

Our mission is to help customers and utilities meet their energy needs with the cheapest and cleanest energy available. Since March 2002, we have been entrusted to invest public purpose funds from utility customers and deliver benefits from energy-efficiency improvements and renewable energy generation. We serve customers in coordination with utilities, community and industry organizations, government agencies and two other electric public purpose fund administrators—Oregon Housing and Community Services and the Oregon Department of Energy. This work benefits our state by building a more sustainable and brighter energy future, and contributing to our local and state economy in positive ways.

Energy Trust is an independent 501(c)(3) nonprofit organization funded by and serving Oregon customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista, and NW Natural customers in Washington. We offer energy efficiency and renewable energy programs and services to every type of customer, including those who own, rent or lease a home or building, product manufacturers, small and large businesses and industries, nonprofit and public organizations, farmers and ranchers. New offers and effective collaboration enable us to provide clean energy solutions for a growing number of consumers, businesses, communities and schools. We provide information, technical expertise and financial assistance to help people modify their energy usage habits, choose high-efficiency products, invest in energy-efficient construction and install renewable energy projects. Through these actions, participating customers derive a range of benefits—lower energy bills, greater comfort, better indoor air quality, improved productivity and lower carbon emissions.

As a steward of utility customer dollars, we consistently maintain low administrative and program support costs to ensure the majority of public purpose funds flow back to customers as incentives, services and education. We competitively bid our program management and delivery contracts, assuring the best prices for the services provided. For most programs, Energy Trust leverages specialized local trade and program ally businesses—many of whom employ 20 or fewer staff—who already serve customers in the marketplace. We support and leverage a statewide network of trade ally contractors, allied professionals and participating retailers that are familiar with Energy Trust incentives. By connecting customers directly to this network, Energy Trust keeps costs low, supports our region’s energy services sector and sustains opportunities in the areas we serve.

We are led by an independent board of directors whose members volunteer their time and expertise. Our work is also shaped by advice from two advisory councils comprised of stakeholders. We strive to be inclusive and transparent by holding open meetings and publishing meeting agendas, notes, independent third-party evaluations of programs, draft and final budgets and action plans, reports and audited financial statements on our website.

We comply with legal requirements and minimum performance measures set forth in our contract with the Oregon Public Utility Commission. Annual goals for electric and natural gas energy savings are developed in consultation with PGE, Pacific Power, NW Natural and Cascade Natural Gas and Avista, and built from each utility’s Integrated Resource Plan. This collaboration enables Energy Trust to focus on and be accountable for delivering the lowest-cost energy available to meet the needs of every utility customer. In addition, annual renewable energy generation goals are developed using market knowledge obtained through renewable resource assessments.

B. Purpose statement

Energy Trust provides comprehensive, sustainable energy efficiency and renewable energy solutions to those we serve.

C. Vision statement

Energy Trust envisions a high quality of life, a vibrant economy and a healthy environment and climate for generations to come, built with renewable energy, efficient energy use and conservation.

D. 2015-2019 Strategic Plan goals and strategies

- Save 240 aMW of electricity
- Save 24 million annual therms of natural gas
- Install 10 aMW of renewable energy
- Expand participation
- Make energy efficiency more affordable
- Identify new technologies with energy-saving potential
- Continuously improve programs and services
- Provide project development support and incentives for renewable energy projects
- Work more efficiently
- Remain flexible and open to new opportunities

APPENDIX 7: 2017 Energy Trust board of directors; board development guidelines; 2017 advisory council members and meetings

PRESIDENT—Debbie Kitchin, Portland, is the co-owner of InterWorks LLC, a construction company engaged in commercial tenant improvement and renovation and residential remodeling services. InterWorks is an award-winning contractor specializing in sustainable building practices. Prior to joining the family business in 1996, she served as senior economist for the Northwest Power and Conservation Council for 15 years and was a regional economist for the Bonneville Power Administration for three years. Debbie is chair of the Portland Business Alliance and is a board member for Greater Portland Inc. She is past president of the Central Eastside Industrial Council, a past board member of the Portland Building Owners and Managers Association, and a past president of the Portland Commercial Real Estate Women. *Debbie has served as president since February 2014.*

VICE PRESIDENT—Ken Canon, Myrtle Creek, founded in 1981 the Industrial Customers of Northwest Utilities, a regional trade association focused on electric energy issues. Since retiring from that role in 2005, he chaired a committee that examined the performance of NEEA and also managed the Northwest Energy Efficiency Task Force. Earlier in his career, while working for Associated Oregon Industries, he drafted and helped enact Oregon's Business Energy Tax Credit. Later, he helped implement a comprehensive energy-efficiency program at an international paper mill. He has a long history of organizing, managing and advising nonprofit organizations. Applying his expertise to his residence, Ken built the first ENERGY STAR home in Douglas County. Ken, a life-long Oregonian, was born and raised in Medford and graduated from Southern Oregon University and Willamette University College of Law. *Ken has served as vice president since February 2014.*

SECRETARY—Alan Meyer, Salem, retired director of energy management for Weyerhaeuser Company, a diversified forest products manufacturing company. In that role, he was responsible for coordinating energy management activities at numerous manufacturing facilities throughout North America. Prior to joining Weyerhaeuser, he was director of energy for Willamette Industries, holding similar responsibilities. He also worked for PacifiCorp as the Oregon large industrial accounts manager. He previously served on the board of directors of Industrial Customers of Northwest Utilities, a nonprofit advocacy organization focused on energy policies. He has also served for more than 20 years on the City of Salem Morningside Neighborhood Association board. *Alan has served as secretary since February 2013.*

TREASURER—Dan Enloe, Portland, retired supply chain manager at Intel Corporation in Hillsboro, where he worked in varying capacities since 1984. Prior to 1984, he was on active duty in the U.S. Navy and served as a nuclear submarine officer. Since leaving active duty, he served with the Naval Reserve, completed six reserve command tours and retired as a captain in 2009. He is a member of the Naval Reserve Association, the American Legion and the Navy League. A graduate of the U.S. Naval Academy with a degree in electrical engineering, he holds two patents. *Dan has served as treasurer since November 2012.*

Susan Brodahl, Portland, is a vice president in the Portland office of Heffernan Insurance Brokers as well as an owner of Heffernan Group. Heffernan Group has more than 400 employees, and is ranked in the top tier of all privately held brokerages in the country. Susan believes in a creative approach to insurance using a risk funding model. Her philosophy is "clients for life." Susan is a frequent featured speaker at regional and national

conventions as well as published in various trade and mainstream journals. She has been awarded the Lifetime Achievement Award from the Painting and Decorating Contractors of America, and has an economics degree from Willamette University.

Melissa Cribbins, Coos Bay, is a Coos County commissioner and an attorney. Prior to her election in 2012, she worked for the Coquille Indian Tribe as in-house counsel for six years. Before Melissa became an attorney, she worked for the City of Spokane and Eugene Water and Electric Board in the field of water quality. She is a member of the Oregon State Bar and the Washington State Bar, and is active in many organizations both in Coos County and statewide. Melissa is a graduate of Portland State University and Gonzaga University.

Heather Beusse Eberhardt, Portland, is a six-year veteran in the renewable energy field. As project director of development at NextEra Energy Resources, she is responsible for developing distributed generation projects. Prior to NextEra, she held several positions at EDF Renewable Energy in Portland, most recently as director of solar technology evaluation and implementation. Previously, Heather acted as director of partnership development at GLOBIO and worked at Intel in corporate finance where she led the Intel Employee Sustainability Network. Heather currently serves on the board of Burke E. Porter Machinery and volunteers as a member of Social Venture Partners. Her efforts outside of renewable energy included working as a middle school math instructor for Teach For America. Heather graduated from Colby College with a degree in economics and has a Masters of International Management from Thunderbird School of Global Management. *Heather retired from the board in October 2017.*

Roger Hamilton, Eugene, recently retired as a consultant with Western Grid Group, an organization that promotes transmission access for renewable energy projects across the West. He also consults with The Resource Innovation Group on climate change adaptation and mitigation. He owns and operates a cattle and hay ranch in Southern Oregon. He has spent many years in public service as a Klamath County commissioner, an advisor on energy and watersheds to Governor John Kitzhaber and an Oregon Public Utility Commissioner. He has also served on the Oregon State Parks Commission and the National Association of Public Utility Commissioners and the board of directors of the Regulatory Assistance Project.

Lindsey Hardy, Bend, is the project director of the Bend Energy Challenge, a program of The Environmental Center. The Bend Energy Challenge is competing for the Georgetown University Energy Prize, a national, two-year competition to reduce energy use. Most recently Lindsey was the outreach director at Sunlight Solar Energy. She sat on the Steering Committee of the High Desert Branch of the Cascadia Green Building Council for three years and planned Central Oregon's Green and Solar Tour. Previously as an AmeriCorps volunteer with the University of Oregon's Resource Assistance for Rural Environments, she oversaw the Solarize Pendleton campaign, helping neighborhoods benefit from efficiency of scale in residential solar installations. Lindsey graduated from Ithaca College with a Bachelor of Arts in Environmental Studies.

Mark Kendall, Salem, has more than 34 years of experience in energy management and renewable resource development in Oregon. Prior to founding his own consultancy, Kendall Energy, in 2009, he spent 19 years with the Oregon Department of Energy working in commercial and industrial energy management policy, including serving as the governor's appointee to the Northwest Energy Efficiency Alliance board from 2001-2006. Before working for the state, he spent 11 years with the Eugene Water and Electric Board. He also served on the Oregon Low Carbon Fuel Standard Advisory Committee, and facilitated the 2009 Industrial Greenhouse Gas Reduction subcommittee of the Oregon Global Warming Commission. He received his bachelor's degree from Linfield

College with an emphasis in communications and energy management, and his master's degree in organizational development from the Leadership Institute of Seattle City University.

John Reynolds, Eugene, is recently retired as professor of architecture emeritus at the University of Oregon and a is fellow of the American Institute of Architects. He has been involved in energy issues in Oregon since 1972, when he was elected to the Eugene Water and Electric Board. Since then, he has served as chair of the American Solar Energy Society, president of Solar Energy Association of Oregon and member of the board of the International Solar Energy Society. He has served on the Oregon Alternate Energy Commission and the Energy Committee of the Building Codes Structures Board.

Anne Haworth Root, Medford, is co-owner and general manager of EdenVale Winery and Eden Valley Orchards, a destination winery, historic pear orchard and events center in southeast Medford. A second tasting room called Enoteca is located in Ashland. An award-winning entrepreneur, she developed the concept and helped found the Oregon Wine and Farm Tour, an agritourism coalition of Southern Oregon wineries, historic farms and specialty food and cheese companies. She is a graduate of Southern Oregon University, where she was student body president and chair of the Oregon Student Lobby. She pursued postgraduate studies in the Master of Commerce program at Wollongong University in Australia.

Eddie Patrick Sherman, Portland, is a principal with Hilltop Public Solutions and Against the Current Consulting Group and works with clients interested in improving the quality of life in Native American communities. Eddie is a member of the Navajo and Omaha Nations and grew up on the Navajo Nation Reservation. In Navajo tradition, it is customary to identify someone's clan upon introduction: *Ya'at'eeh, Shi ei Eddie Sherman. Nat'oh Dine'e Tachii'nii nishlii doo [Tapa] Omaha Deer Clan ei bashishchiin. Bit'ahnii'nii ei dashicheii, nana [Tapa] Omaha Deer Clan ei dashinali. Todineeshzhee'dee ei naasha.* This translates to: Hello, my name is Eddie Sherman. I am Tobacco People, born for the [Tapa] Omaha Deer Clan. My maternal Grandfather's clan is Folded Arms people and my paternal Grandfather's clan is [Tapa] Omaha Deer Clan. I am from Kayenta, Arizona.

Prior to Against the Current Consulting Group, he was the communications and development manager for ONABEN, a nonprofit founded by four Oregon tribes to encourage private sector development on reservations. He currently is chairman of the board of the Native American Youth and Family Center, NAYA, co-chairs the Affiliated Tribes of Northwest Indians Energy Committee, co-chairs on the Steering Committee for JustPortland and is President of the board for the Oregon Native American Chamber. Eddie received his bachelor's degree in International Political Economy from Colorado College.

ex-officio

Steve Bloom, Salem, is one of three Oregon Public Utility Commissioners. He was a water rights lawyer in Pendleton and part-time U.S. magistrate judge. In 2005, he joined the Peace Corps and went to Armenia. He worked on amending that country's constitution; a national election was held and it was amended. He was then asked to head a judicial reform program. Upon returning to Oregon, he was counsel to an international wind energy company for four years. He was appointed to the OPUC in 2011. He was recently re-appointed for another four-year term. He attended Dartmouth and Stanford and has a B.A. in English. He also has a J.D. from Willamette College of Law.

Oregon Department of Energy Special Board Advisor

Warren Cook, Salem, retired from the Board in March 2017. He is the manager of Energy Efficiency and Conservation at the Oregon Department of Energy. In this role, Warren develops and implements programs and

services for the public sector, schools, and industrial and agricultural facilities. With more than 30 years of experience in energy efficiency, Warren has worked in residential and commercial program design and development, and provided technical training to trade allies and technical schools. Warren started his career as a weatherization contractor in eastern Washington during the initial launch of energy-efficiency programs in the region. As a U.S. Department of Energy trained Residential Conservation Service auditor and trainer, he performed more than 2,000 residential audits and developed early software for energy retrofit assessments. Warren supported the development of the Northwest Energy Code and Washington State Energy Code. He is a corresponding member of the Northwest Power and Conservation Council's Regional Technical Forum, an Associate at the American Society of Heating, Refrigerating and Air-Conditioning Engineers, and holds certification in Information Technology from Willamette University. *Warren began serving on the board in May 2015.*

Oregon Department of Energy Special Board Advisor

Janine Benner, Salem, joined the Board in April 2017. Janine joined ODOE in 2017 as assistant director for planning and innovation. In this role, she lead the department's work on clean energy policy development and implementation of energy efficiency programs and services. Janine came to ODOE from the U.S. Department of Energy (DOE), where she was served as associate assistant secretary in the Office of Energy Efficiency and Renewable Energy, the largest government funder of clean energy research and development. Before that, she served as deputy assistant secretary in DOE's Office of Congressional and Intergovernmental Affairs. Janine also spent 12 years working for Congressman Earl Blumenauer (D-OR), first as an energy and environmental policy advisor and then as deputy chief of staff. She grew up in Portland, Oregon and has a degree in history from Princeton University.

Board Development Guidelines

Energy Trust's board of directors is a non-stakeholder, volunteer board. The board oversees Energy Trust management, provides strategic and policy direction and approves the organization's budget and major expenditures. The board carries out its oversight role collectively and through several committees. The board's bylaws ensure that Energy Trust board meetings and other processes are clear, open and accessible to the public.

The Oregon Public Utility Commission grant agreement with Energy Trust calls for the Energy Trust board to include the skills, broad representation and diversity necessary to achieve the nonprofit's mission.

The initial board of directors included nine members from a variety of energy and business backgrounds, and one non-voting ex-officio member from the OPUC. As board openings arise, the board consults advisory councils, individuals and collaborating organizations to identify candidates with appropriate experience from throughout the state. To allow further diversity, the board expanded its size to 13 voting members.

The 2017 board included voting members with background in business (agriculture, industry/ manufacturing, construction/remodeling, restaurant), private consulting, nonprofit and higher education. Members come from Bend, Coos Bay, Eugene, Medford, Myrtle Creek, Salem and the Portland area. Of the 13 voting members at the end of the year, five were women. The board's OPUC ex-officio member is Commissioner Steve Bloom. The board created an additional non-voting position for an appointee of the Oregon Department of Energy. Warren Cook, Oregon Department of Energy energy conservation manager, was special advisor since May 2015 and

retired from the Board in March 2017. Janine Benner, Oregon Department of Energy director, stepped in as special advisor in April of 2017.

All regular board members complete and sign disclosure of economic interest forms each year. The OPUC ex-officio board member and the special advisor from the Oregon Department of Energy do not receive confidential information. Once each year, board and staff members participate in a planning session to review progress and discuss Energy Trust's strategic direction. Board development is a part of this public planning session, if warranted.

2017 Advisory Council Members and Meetings

Conservation Advisory Council
Brent Barclay, Bonneville Power Administration
JP Batmale, Oregon Public Utility Commission
Holly Braun, NW Natural
Warren Cook, Oregon Department of Energy
Tony Galluzzo, Building Owners and Managers Association
Wendy Gerlitz, NW Energy Coalition
Charlie Grist, Northwest Power and Conservation Council
Julia Harper, NEEA
Garrett Harris, PGE
Andria Jacob, City of Portland Bureau of Planning and Sustainability
Don Jones, Jr., Pacific Power
Liz Jones, Oregon Citizens' Utility Board
Lisa McGarity, Avista
Tyler Pepple, Industrial Customers of Northwest Utilities
Stan Price, Northwest Energy Efficiency Alliance
Allison Spector, Cascade Natural Gas

2017 Meeting Dates	Major Discussion Topics
February 8	Preliminary annual results; Residential assessment project; key measure updates; Residential air conditioning measure opportunity scan, New Buildings pilots
May 3	Legislative update; Existing Buildings Pay for Performance offering; Residential trends in Existing and New Homes; Portland Home Energy Scoring Ordinance, Diversity Initiative
June 21	Legislative update; Large customer funding analysis; New Buildings program update; cannabis market update, Business customer reports overview; Residential lighting market update
August 2	Residential sector RFP results; Quarter 2 highlights; factors impacting 2018 measure development and budget; Sector trends analysis
September 13	PGE large customer funding compliance; 2018 measure development and incentive updates; Draft participation rate and penetration rate analyses; Draft 2018-2019 action plans

October 25	Draft 2018 budget; Net-to-gross methodology; Residential sector 2018 incentive changes; Existing Multifamily 2018 incentive changes; Agriculture 2018 incentive changes; Commercial Strategic Energy Management 2018 incentive changes
November 15	Measure updates; Pilot updates; Residential sector staffing structure changes; Changes to draft 2018 budget; Update on diversity, equity and inclusion strategy

Renewable Energy Advisory Council

Erik Anderson, Pacific Power
Bruce Barney, Portland General Electric
JP Batmale, Oregon Public Utility Commission
Adam Schultz, Oregon Department of Energy
Jason Busch, Oregon Wave Energy Trust
Kendra Hubbard, Oregon Solar Energy Industry Association
Suzanne Leta-Liou, SunPower
Matt Mylet, Beneficial State Bank
Michael O'Brien, Renewable Northwest
Les Perkins, Farmers Irrigation District
Frank Vignola, Solar Monitoring, University of Oregon
Dick Wanderscheid, Bonneville Environmental Foundation
Peter Weisberg, The Climate Trust

2017 Meeting Dates	Major Discussion Topics
February 8	PGE's tests of torrefied biomass at the Boardman Power Plant; Energy Trust's work on hydropower and biopower; Preliminary year-end results; Discussion and feedback about budget presentations; Update on wave energy in Oregon and DOE grant
March 15	Solar wrap-up of 2016 and a brief look ahead; Solar plan for Oregon from OSEIA; Underwriting and risk analysis for renewable projects; Update on the legislative session
May 3	Solar budget update; Energy Trust's Diversity, Equity and Inclusion strategy
August 2	Small and community-scale wind incentives; Irrigation modernization program update; Solar strategy for 2018
September 15	Low-to-moderate income solar update; Draft 2018-2019 action plans
October 25	Opal Springs hydro project; Three Sisters Irrigation District Watson hydro project; Three Sisters Irrigation District McKenzie hydropower project; Draft 2018 budget
November 17	Update on community solar; Review of REC costs; Diversity, Equity and Inclusion processes; Budget update

APPENDIX 8: Energy Trust impacts on utility peak demand

This appendix provides an annual update on Energy Trust's impacts on utility demand. This information is in response to an OPUC staff request that Energy Trust identify and implement incremental approaches to work with utilities and other stakeholders to modify energy use and leverage distributed energy generation to alleviate local distribution system constraints and operations costs for the benefit of ratepayers. The OPUC identified specific information to be reported back as follows:

- Report the value of current program impacts more broadly, connecting to large grid efficiency contributions.
  - Add expected winter and summer coincident peak capacity contribution estimates from energy goals for energy efficiency and renewable generation.
  - Work with utilities to identify where and how Energy Trust programs reduce demand on critical elements of the power delivery system.

- Assess data and tools needed to link utility grid objectives to specific Energy Trust actions. These might include:
  - Actionable information about opportunities to avoid specific grid investments.
  - Tools for linking the areas where investments are needed to demographic and load data for program targeting.
  - Possible enhancements to cost-effectiveness analyses considering capacity and other values to the grid.

- Identify 1-2 possible complementary pilots to achieve energy efficiency and control equipment to meet grid optimization objectives, to be developed in coordination with utilities.

A. Report the value of current program impacts more broadly, connecting to large grid efficiency contributions

Many energy-efficiency measures save energy during times of peak system demand (peak demand) and therefore reduce demand on the utility system. The avoided costs used to calculate measure and program benefit cost ratios for electricity and natural gas include a valuation of the energy saved during periods of peak demand, but the capacity value is spread evenly over all hours of the year. Energy Trust is presently working with the OPUC and utilities to refine the methodology to quantify this value so that it more accurately reflects the value of peak savings for specific energy efficiency end-uses.

Energy Trust is working to improve its understanding of how energy efficiency savings and renewable generation contribute to peak demand reduction. Energy Trust is incorporating this evolving knowledge into its methodology to estimate impacts of energy efficiency and renewable energy activities on utilities' peak demand.

Peak Demand Reduction Estimates from Energy Efficiency

In 2017, Energy Trust estimated peak demand reduction from electric and gas energy-efficiency projects by calculating the fraction of the annual energy saved during system peak times identified by the utilities. Energy Trust used the peak factors provided by PGE and Pacific Power for electric peak reduction calculations and the peak factors provided by NW Natural for gas peak reduction calculations. Energy Trust uses load profiles taken from the Northwest Power and Conservation Council's Seventh Power Plan[25] for electric peak reduction calculations and load profiles from NW Natural for gas peak reduction calculations, to estimate this value for each end use at the measure level.

[25] https://nwcouncil.app.box.com/s/ph0by9u53vygowx42rms5oytojhdmg5x

Energy Trust electric efficiency programs resulted in the following peak demand reduction estimates for 2017. The 2017 electric efficiency demand reduction estimates look significantly larger than the 2016 estimates for a couple reasons. First, the 2017 estimates encompass a full year and the 2016 estimates were from roughly September to December 2016. Second, the peak factors from the electric utilities were updated for the analysis that was used to generate the 2017 estimates.

Table 1: 2017 Net electric efficiency peak demand reduction estimates (MW) at generator

Utility	Summer MW	Winter MW	Total MW
PGE	39	55	**93**
Pacific Power	21	30	**51**
Total	**59**	**84**	**144**

For gas measures, Energy Trust calculated peak-day and peak-hour natural gas savings, presented in the table below.

Table 2: 2017 net natural gas efficiency peak demand reduction estimates (Therms)

Utility	Peak day therms	Peak hour therms
NW Natural	63,431	3,199
Cascade Natural Gas	6,202	409
Avista	4,595	290
Total	**74,228**	**3,897**

Peak Demand Reduction Estimates from Solar Electric Generation

Energy Trust also estimated 2017 average peak contribution from residential and non-residential solar electric projects. Energy Trust estimated average generation from installed solar projects for multiple locations throughout Energy Trust territory during peak hours by using monthly generation profiles for representative project types based on variation caused by tilt, orientation and geographic location. Actual peak contributions for each project will vary based on time of day and weather. The table below presents the results by utility and season.

Table 3: 2017 Solar PV Generation Peak Demand Reduction Estimates (MW)

Utility	Summer MW	Winter MW	Total MW
PGE	2.4	0.4	**2.8**
Pacific Power	6.0	1.4	**7.4**
Total	**8.4**	**1.8**	**10.2**

Tables 1-3 **exclude** demand reduction estimates from:

- Renewable energy generation projects other than solar electric projects. Energy Trust has not incorporated these impacts into reporting because there are a small number of projects with high degrees of production variability. More work is required to estimate the demand contributions of these projects and Energy Trust will consider doing so in future reporting.
- Northwest Energy Efficiency Alliance activities. Energy Trust has not yet disaggregated program savings into end uses to quantify demand savings.

B. Assess data and tools needed to link utility grid objectives to specific Energy Trust actions

Energy Trust has been engaged in conversations with Portland General Electric, Pacific Power and NW Natural regarding the value of efforts to alleviate pressure on constrained portions of their distribution systems. The primary outcomes from these conversations are the pilots and activities outlined in Section C below.

In addition, Energy Trust is working with Kevala Analytics to support development of data mapping software to facilitate planning for the interconnection and integration of distributed energy resources on the grid. Kevala Analytics was awarded a U.S. Department of Energy grant to develop an analytical tool targeted at project developers and based on publically available information to help provide transparency into potential localized grid constraints. The tool may also be useful in facilitating longer-term planning for distributed energy resources, including renewable energy and energy efficiency projects in different areas of the distribution systems. Energy Trust is providing past renewable project and energy efficiency project information for Kevala's work. Energy Trust discussed this opportunity with the OPUC, PGE and Pacific Power. There was agreement that outcomes of a study focused in Energy Trust territory could be beneficial for expanding the collective knowledge base regarding distributed energy resources in Oregon. All results will be shared with PGE and Pacific Power.

C. Identify and implement pilots and activities to achieve energy efficiency and equipment control to meet grid optimization objectives, to be developed in collaboration with utilities

Energy-efficiency programs have the potential to help electric and natural gas utilities address demand-related challenges. Energy Trust may be able to provide further benefit to utility systems by increasing the saturation of energy efficient, demand response-capable equipment (such as internet connected thermostats and heat pump water heaters with built in Wi-Fi), providing additional options for utilities when considering potential demand response programs. Utility demand response programs can use this equipment as a resource in reacting to peak demand events. Through targeted load management pilot designs, Energy Trust is exploring offering additional incentives for measures and services that contribute to coincident peak demand reduction.

Energy Trust is working on the following demand-management related efforts:

Coordination with Portland General Electric
In 2017, Energy Trust worked with PGE to help expand the number of smart thermostats that could be enrolled in PGE's demand response program. An example of this was the $25 bonus for smart thermostats in November. PGE marketed the bonus offer to customers along with additional incentives for enrolling in Rush Hour Rewards. Together, these offers reduced the cost of some Nest devices to less than $100.

Energy Trust also made plans to collaborate with PGE on pilot programs that deliver both demand response and energy efficiency benefits, with a plan to work with Whisker Labs in 2018 to explore the effectiveness of Whisker Labs' set point automation of third-party thermostats.

Targeted load management pilots with utilities
In 2017, Energy Trust collaborated with Pacific Power and NW Natural to design and implement targeted load management pilots.

In Q4 2016, Energy Trust and Pacific Power began planning a targeted community pilot in the North Santiam Canyon community east of Salem. This area was selected to test new ways of promoting energy efficiency with the potential to bring additional value to growing communities. Specifically, the pilot was designed to test a rapid deployment of current Energy Trust program service offerings and the capacity reducing effect it had on a targeted area as compared to historical averages. The two-year pilot was deployed in Q3 2017 and included outreach events, direct mail and advertising in partnership with Pacific Power. Mid-term findings indicate demand reductions were driven significantly by large industrial customers. The findings further identified that a greater focus needs to be made on deploying peak-reducing electric measures. The North Santiam pilot will continue through 2018.

Quantifying peak natural gas savings with NW Natural

Energy Trust is working with NW Natural to quantify the amount and value of natural gas saved on a peak day and peak hour from past and future Energy Trust activity as a component of the resource potential study conducted for NW Natural's 2018 IRP. NW Natural updated the method for quantifying these previously included benefits. NW Natural improved its avoided cost methodology to better account for costs avoided and better assess resources in relative terms. Work is also underway to determine whether peak savings from energy efficiency can cost-effectively help defer or avoid capital projects to address capacity constraints in NW Natural's distribution system.

In response to an action item included in NW Natural's 2016 acknowledged IRP action plan, beginning in 2017 and early 2018, In Q3 2017, Energy Trust and NW Natural began a collaborative effort to develop a pilot proposal for a targeted load management pilot in Silverton. The proposal included pilot design, a hypothesis, key research questions and overall objectives of the pilot. NW Natural will file the pilot proposal with the OPUC in mid-2018 to gain approval to move forward with pilot implementation and planning. This project will identify the costs of acquiring peak savings to determine whether projects of this nature can be an alternative to physical capacity upgrades. Energy Trust and NW Natural are moving forward to plan the effort for full implementation in early 2019.

This effort is the result of the following action items in NW Natural's 2016 Integrated Resource Plan:

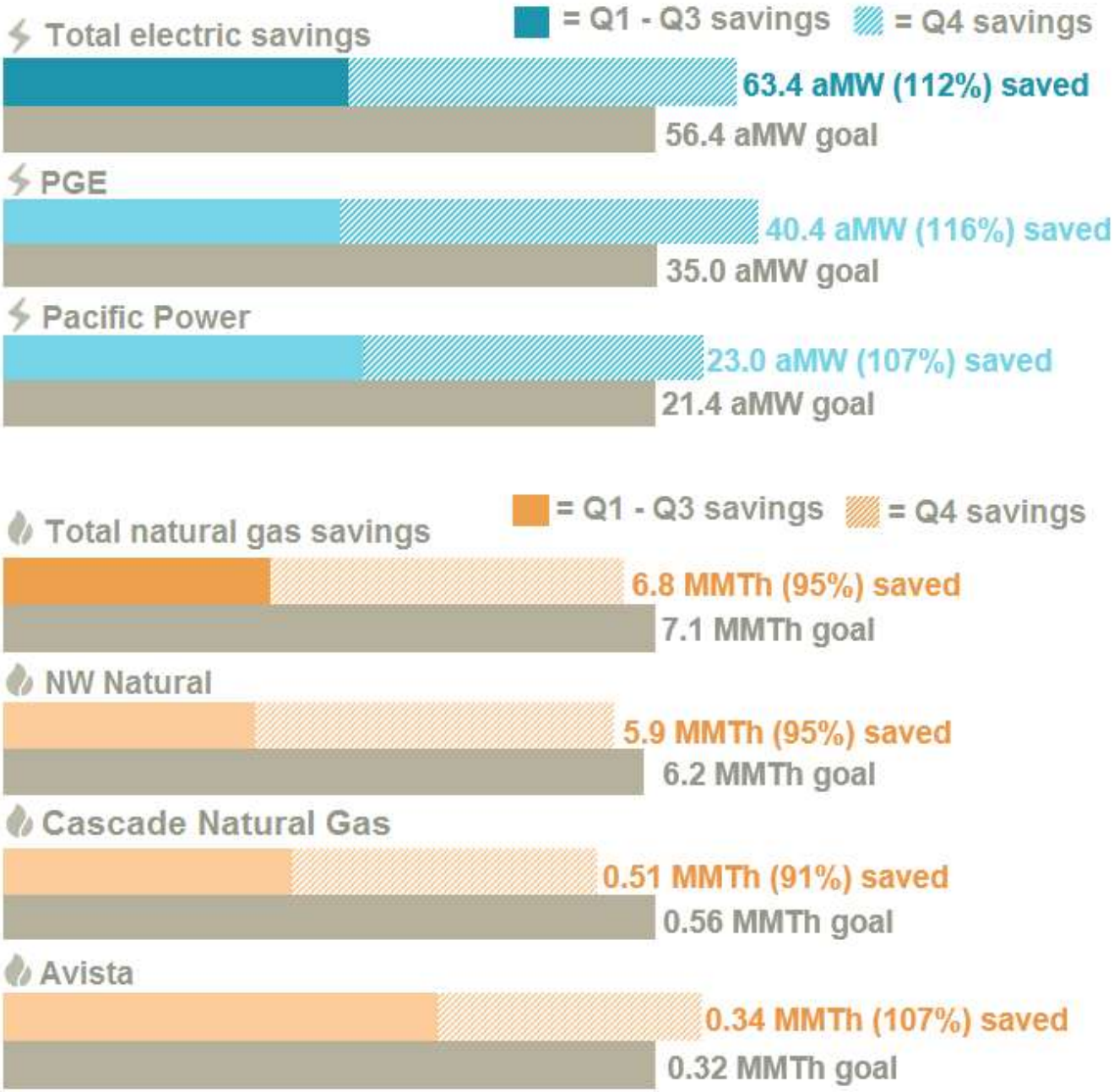
- "Work with Energy Trust of Oregon to further scope a geographically targeted DSM pilot via accelerated and/or enhanced offerings ("Targeted DSM" pilot) to measure and quantify the potential of demand-side resources to cost-effectively avoid/delay gas distribution system reinforcement projects in a timely manner and make a Targeted DSM pilot filing with the Oregon Public Utility Commission (OPUC) in late 2017 or early 2018[26]."
- "Contingent on Commission acknowledgment of the idea of a geographically targeted DSM pilot via accelerated or enhanced offerings ("Targeted DSM") to measure and quantify the potential of demand-side resources as a capacity resource to address weaknesses in NW Natural's distribution system, NW Natural and Energy Trust of Oregon will file a detailed pilot project for review."[27]

[26] NW Natural 2015 Integrated Resource Plan, page 1.18, https://www.nwnatural.com/uploadedFiles/2016_IRP.pdf
[27] NW Natural 2015 Integrated Resource Plan, page 6.33, https://www.nwnatural.com/uploadedFiles/2016_IRP.pdf

APPENDIX 9: Quarter four results tables

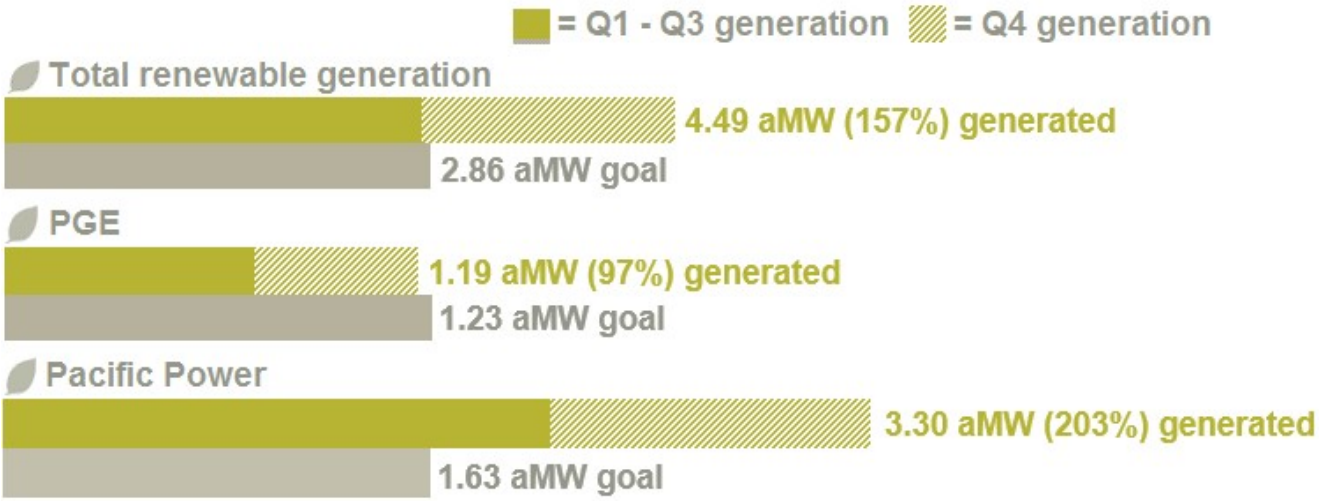
I Q4 2017 activity at a glance[28]

Savings

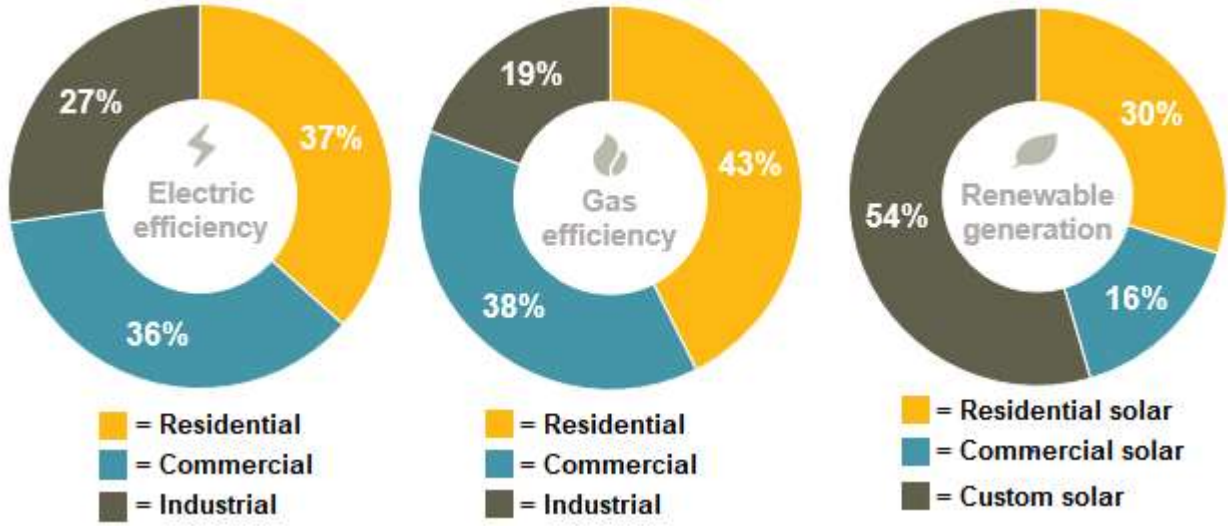


[28] This document reports net savings, which are adjusted gross savings based on results of current and past evaluations.
NOTE: aMW indicates average megawatts, MMTh indicates million annual therms and M is million.

Generation



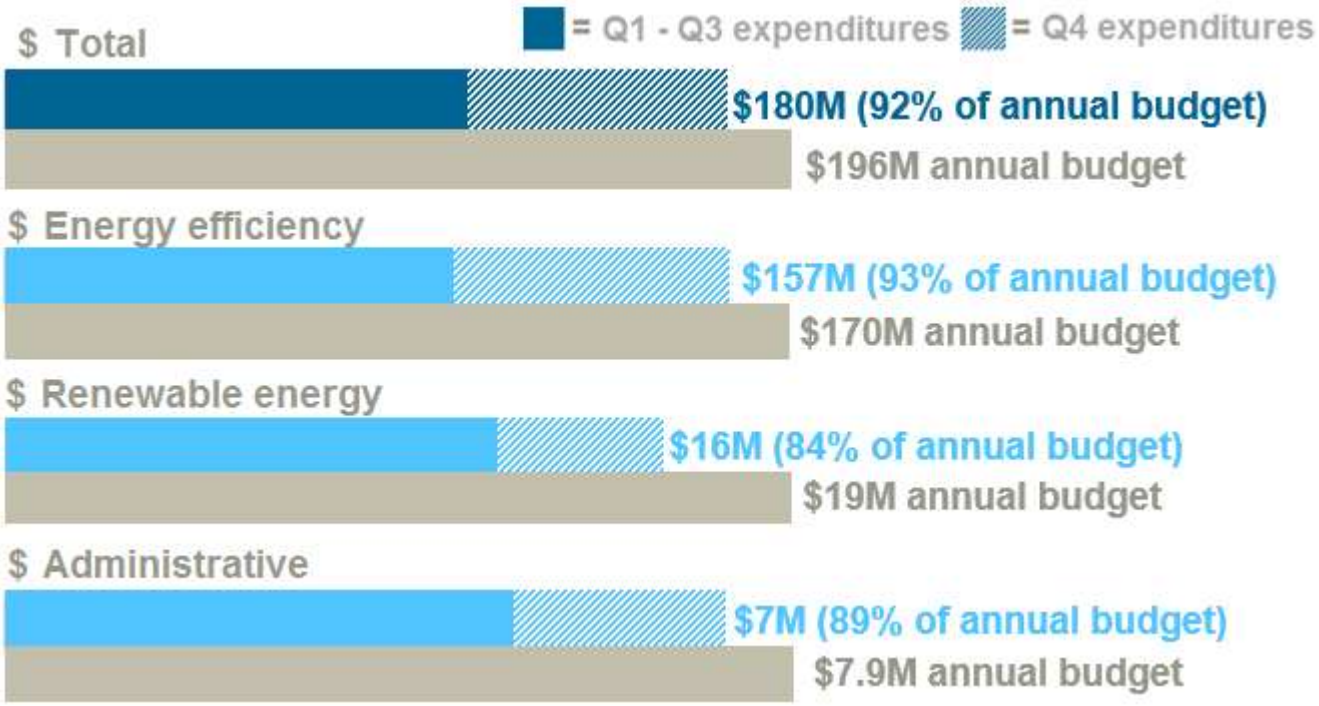
Percent of 2017 savings and generation by sector



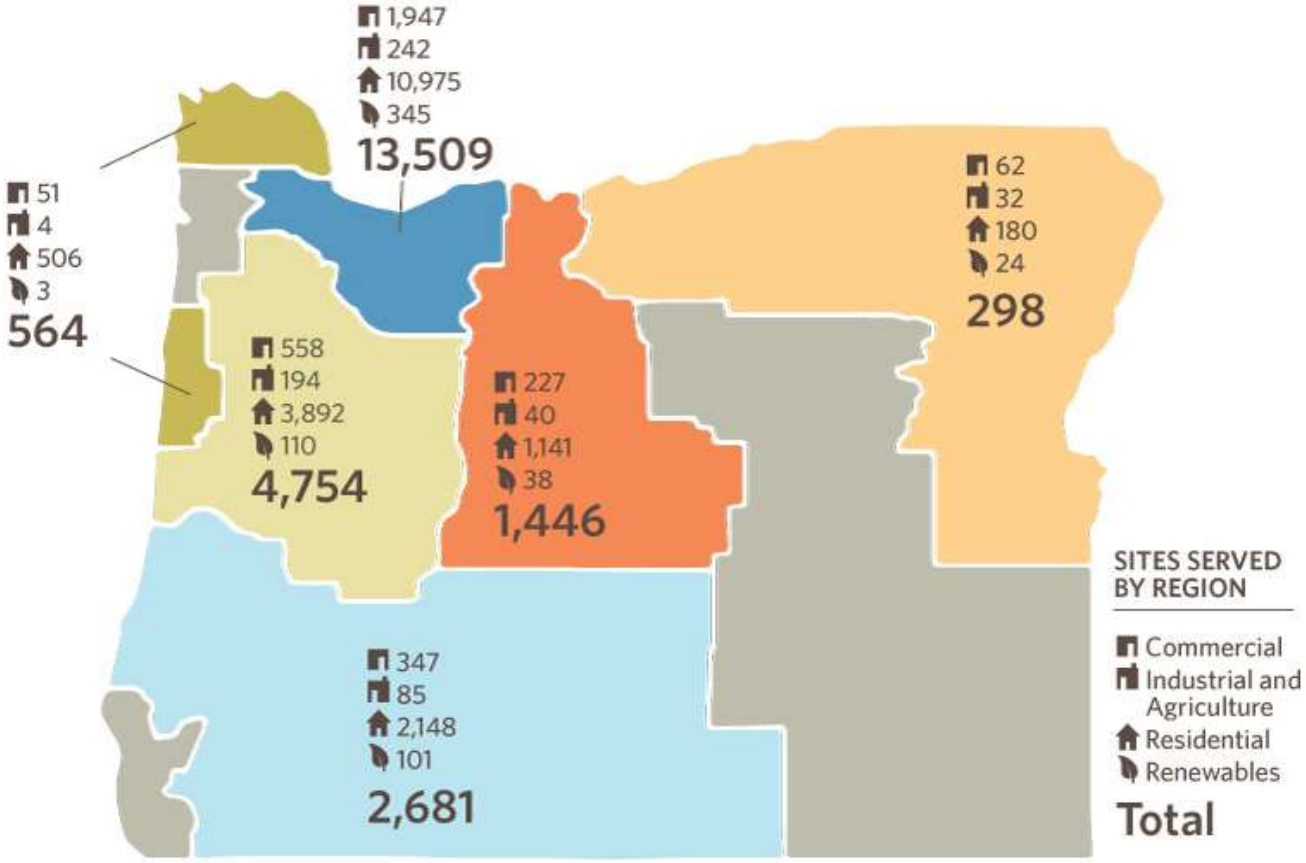
Customer satisfaction[29]

[29] From December 2017 to February 2018, Energy Trust delivered a short telephone survey to 554 randomly selected participants in five Oregon programs who completed projects between October and December 2017 and received an incentive or discount from Energy Trust. Results indicate high satisfaction with overall program experience.

Expenditures



Sites served by region in Q4[30]



[30] This document reports on Energy Trust services to Oregon customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista. Areas in gray are not served by these utilities.

II Revenue and expenditure tables[31]

A. Revenues

Revenues includes public purpose revenue plus incremental electric revenue from SB 838. Incremental revenues are those authorized under SB 838 to support capturing additional cost-effective electric efficiency savings above the amount supported by funding through SB 1149.

Source		Q4 actual revenues		Q4 budgeted revenues
Portland General Electric	$	8,987,306	$	8,791,965
PGE Incremental	$	15,462,802	$	17,029,055
Pacific Power	$	6,697,686	$	7,150,152
Pacific Power Incremental	$	7,846,802	$	9,229,342
NW Natural	$	2,958,673	$	3,214,598
NW Natural Industrial DSM	$	2,200,000	$	2,200,000
Cascade Natural Gas	$	568,264	$	1,075,195
Avista	$	361,470	$	384,426
Total	**$**	**45,083,004**	**$**	**49,074,734**

B. Expenditures by utility[32,33]

Source		Q4 actual expenditures		Q4 budgeted expenditures
Portland General Electric	$	33,921,759	$	38,932,747
Pacific Power	$	21,637,811	$	23,193,857
NW Natural	$	5,857,636	$	6,262,758
NW Natural Industrial DSM	$	2,235,651	$	3,659,862
Cascade Natural Gas	$	821,632	$	1,127,565
Avista	$	353,654	$	338,093
Business development	$	17,491	$	-
Low and moderate income grant	$	50,651	$	-
Total	**$**	**64,896,285**	**$**	**73,514,882**

[31] Columns may not total due to rounding.
[32] In Q4 2017, Energy Trust invested organizational contingency pool funds to explore new business opportunities. Organization contingency pool funds are unrestricted donations and consulting fees, and are independent of ratepayer funds.
[33] Energy Trust received a grant from the U.S. Department of Energy to collaborate with the Oregon Department of Energy to increase access to solar energy for low- and moderate-income communities.

C. Expenditures by sector and program[34,35]

			Q4 actual expenditures		Q4 budgeted expenditures
Commercial	Existing Buildings and Multifamily	$	20,383,300	$	27,604,509
	New Buildings	$	7,713,965	$	6,392,193
	NEEA Commercial	$	652,629	$	770,439
	Commercial total	**$**	**28,749,894**	**$**	**34,767,140**
Industrial	Production Efficiency	$	12,873,000	$	14,176,821
	NEEA Industrial	$	(162,114)	$	75,392
	Industrial total	**$**	**12,710,886**	**$**	**14,252,212**
Residential	Existing Homes	$	6,176,403	$	5,880,725
	New Homes and Products	$	9,960,740	$	9,572,686
	NEEA Residential	$	1,114,613	$	1,517,897
	Residential total	**$**	**17,251,757**	**$**	**16,971,308**
	Energy efficiency total	**$**	**58,712,537**	**$**	**65,990,661**
Renewables	Solar	$	3,343,221	$	4,190,364
	Other Renewables	$	696,212	$	1,382,870
	Renewable generation total	**$**	**4,039,433**	**$**	**5,573,234**
Administration	**Administration**	$	2,076,174	$	1,950,987
	Administration total	**$**	**2,076,174**	**$**	**1,950,987**
Other	**Business development**	$	17,491	$	-
	Low and moderate income grant	$	50,651	$	-
	Total expenditures	**$**	**64,896,285**	**$**	**73,514,882**

D. Incentives paid

Quarter	PGE efficiency	Pacific Power efficiency	NW Natural efficiency	Cascade Natural Gas efficiency	Avista efficiency	PGE generation	Pacific Power generation	Total
Q1	$4,552,627	$3,086,395	$1,139,036	$167,746	$39,665	$1,967,134	$1,103,469	$12,056,072
Q2	$13,194,287	$6,836,569	$2,788,465	$173,489	$147,525	$2,354,040	$2,095,317	$27,589,691
Q3	$8,954,386	$4,868,491	$1,884,334	$184,843	$130,015	$874,279	$1,080,360	$17,976,708
Q4	$21,664,521	$13,436,280	$5,793,832	$557,049	$229,807	$1,804,201	$1,463,937	$44,949,628
Total	**$48,365,821**	**$28,227,735**	**$11,605,667**	**$1,083,127**	**$547,012**	**$6,999,654**	**$5,743,083**	**$102,572,099**

[34] In Q4 2017, Energy Trust invested organizational contingency pool funds to explore new business opportunities. Organization contingency pool funds are unrestricted donations and consulting fees, and are independent of ratepayer funds.
[35] Energy Trust received a grant from the U.S. Department of Energy to collaborate with the Oregon Department of Energy to increase access to solar energy for low- and moderate-income communities.

III Savings and generation tables[36, 37, 38,]

A. Savings and generation by fuel

	Q4 savings/generation	YTD savings/generation	Annual goal	Percent achieved YTD
Electric savings	33.5 aMW	63.4 aMW	56.4 aMW	112%
Natural gas savings	3,852,068 therms	6,753,074 therms	7,130,306 therms	95%
Electric generation	1.69 aMW	4.49 aMW	2.86 aMW	157%

B. Progress toward annual efficiency goals by utility

	Q4 savings	YTD savings	Annual goal	Percent achieved YTD	Annual IRP target	Percent achieved YTD
Portland General Electric	22.3 aMW	40.4 aMW	35.0 aMW	116%	32.7 aMW	124%
Pacific Power	11.1 aMW	23.0 aMW	21.4 aMW	107%	19.1 aMW	120%
NW Natural	3.5 million therms	5.9 million therms	6.2 million therms	95%	4.7 million therms	125%
Cascade Natural Gas	262,955 therms	510,350 therms	563,862 therms	91%	563,862 therms*	91%
Avista	128,512 therms	340,738 therms	318,332 therms	107%	318,332 therms**	107%

* Integrated Resource Plan for Cascade Natural Gas is pending acknowledgement by the OPUC.

** Energy Trust and Avista have not yet determined an IRP target for 2017. Energy Trust's program goal is used in lieu of a 2017 IRP target.

C. Electric savings by sector and program

		Q4 savings aMW	YTD savings aMW	Annual goal aMW	Percent achieved YTD
Commercial	Existing Buildings and Multifamily	7.5	14.8	14.7	100%
	New Buildings	3.8	6.3	6.3	99%
	NEEA Commercial	1.1	1.9	1.5	128%
	Commercial total	**12.5**	**23.0**	**22.5**	**102%**
Industrial	Production Efficiency	11.2	17.1	13.6	126%
	NEEA Industrial	0.074	0.111	0.077	145%
	Industrial total	**11.3**	**17.2**	**13.7**	**126%**
Residential	Existing Homes	1.1	2.8	3.9	72%
	New Homes and Products	5.5	15.0	10.9	138%
	NEEA Residential	3.1	5.4	5.4	99%
	Residential total	**9.7**	**23.2**	**20.2**	**115%**
	Total electric savings	**33.5**	**63.4**	**56.4**	**112%**

[36] Columns may not total due to rounding.
[37] Electric savings also include transmission and distribution savings.
[38] The gas savings do not include results for NW Natural in Washington. These results are available in a separate report on activities for NW Natural in Washington at www.energytrust.org/reports.

D. Natural gas savings by sector and program

		Q4 savings thm	YTD savings thm	Annual goal thm	Percent achieved YTD
Commercial	Existing Buildings and Multifamily	1,101,334	1,629,945	2,200,792	74%
	New Buildings	523,075	937,631	946,372	99%
	Commercial total	**1,624,409**	**2,567,576**	**3,147,164**	**82%**
Industrial	Production Efficiency	1,087,772	1,307,844	1,071,174	122%
	Industrial total	**1,087,772**	**1,307,844**	**1,071,174**	**122%**
Residential	Existing Homes	552,216	1,052,651	1,112,252	95%
	New Homes and Products	587,670	1,825,003	1,799,715	101%
	Residential total	**1,139,887**	**2,877,654**	**2,911,967**	**99%**
	Total natural gas savings	**3,852,068**	**6,753,074**	**7,130,306**	**95%**

E. Renewable energy generation by utility

	Q4 generation aMW	YTD generation aMW	Annual goal aMW	Percent achieved YTD
Portland General Electric	0.47	1.19	1.23	97%
Pacific Power	1.22	3.30	1.63	203%
Total	**1.69**	**4.49**	**2.86**	**157%**

F. Renewable energy generation by program

	Q4 generation aMW	YTD generation aMW	Annual goal aMW	Percent achieved YTD
Other Renewables program	0.0000	0.0017	0.0012	139%
Solar program	1.69	4.49	2.86	157%
Total generation	**1.69**	**4.49**	**2.86**	**157%**

G. Incremental utility SB 838 expenditures[39]

Utility		2017 Q4 SB 838 Expenditures		YTD SB 838 Expenditures
Portland General Electric	$	196,546	$	801,601
Pacific Power	$	439,880	$	1,039,162
Total	**$**	**636,426**	**$**	**1,840,763**

[39] Reflects expenditures by Pacific Power and PGE in support of utility activities described in SB 838. Reports detailing these activities are submitted annually to the OPUC.

APPENDIX 10: 2017 energy efficiency results for SB 1149 and SB 838 funds

2017 SB 1149 Electric Efficiency Results	PGE aMW Saved	Pacific Power aMW Saved	Total aMW Saved	Expenses	mil $ /aMW
Commercial	4.35	3.02	7.38	$20,466,623	$2.77
Industrial	8.61	2.81	11.41	$17,015,751	$1.49
Residential	4.01	3.36	7.37	$12,054,912	$1.64
Total Electric Efficiency Programs	**16.97**	**9.19**	**26.16**	**$49,537,285**	**$1.89**

2017 SB 838 Electric Efficiency Results	PGE aMW Saved	Pacific Power aMW Saved	Total aMW Saved	Expenses	mil $ /aMW
Commercial	10.09	5.50	15.59	$45,377,694	$2.91
Industrial	3.45	2.33	5.78	$14,724,963	$2.55
Residential	9.87	5.98	15.85	$30,265,311	$1.91
Total Electric Efficiency Programs	**23.41**	**13.81**	**37.21**	**$90,367,968**	**$2.43**

2017 SB 838 Utility Expenditures	Q1	Q2	Q3	Q4	Total
Portland General Electric	$181,774	$210,980	$212,301	$196,546	$801,601
Pacific Power	$145,428	$169,734	$284,120	$439,880	$1,039,162
Total Electric Efficiency Programs	**$327,201**	**$380,714**	**$496,371**	**$636,426**	**$1,840,763**