Energy Trust Board of Directors
Strategic Planning Workshop

June 13, 2014, 8:00am–5:00pm
June 14, 2014, 9:00am–12:30pm

421 SW Oak Street, Suite 300 Portland, OR 97204 1.866.368.7878 503.546.6862 fax energytrust.org

Agenda

Board Strategic Planning Workshop
Reed College Performing Arts Building, Portland
June 13 & 14, 2014

Friday, June 13

7:30 – 8:00 **Arrival & Breakfast**

8:00 – 8:15 **Welcome & Introductions** (Debbie Kitchin)

8:15 – 8:30 **Context Setting** (Rick Applegate)
- Process to date
- Purpose of meeting

Meeting Rules (Nick Viele)
- Housekeeping items
- Agenda walk-through

8:30 – 9:00 **Opening remarks** (Margie Harris)

9:00 – 10:45 **Renewable Energy Goals**

Staff Presentation (9:00-9:30)
- Long-term renewable energy goal
- Five-year renewable energy goal
- Renewable energy strategies

Board Discussion (9:30-10:45)
- Are the proposed renewable energy goals, which primarily affirm the current approach, appropriate for the strategic plan?

10:45 – 11:00 **Break**

11:00 – 11:15 **Confirm Recap of Renewable Energy Goals**

11:15 – 11:45 **Energy Trust in Action: Reed College Performing Arts Building** (Jessica Rose)
Energy Trust New Buildings Program collaboration and support for energy efficiency features of the building's energy efficiencies

11:45 – 11:55 **Board Photo**

11:55 – 1:00 **Break & Lunch**

1:00 – 3:00 **Energy Conservation Goals**

Staff Presentation (1:00-1:45)
The resource challenge: how the coming five years are different from the past five years

Board choices for energy conservation goals:
- Known-resource without hedged emerging technologies (Base)
- Known-resource with hedged emerging technologies (New Tech)
- Known-resource with hedged emerging technologies and likely opportunities (Expanded)
- The wider bounds of possibility

Strategies to achieve energy conservation goals
- Continuous improvement
- Broadening participation

- Managing costs
- New technology and innovation
- Support state and utility energy and climate goals

Does the board want to explicitly emphasize certain strategies?
- New technologies and innovation
- Broadening participation

Board Discussion (1:45-3:00)
- Which of the three quantitative energy conservation goal options, possibly adjusted in light of uncertainties illustrated in the contingency scenarios, should be incorporated in the draft plan?
- Should Energy Trust emphasize the emerging technology or broadening participation strategy, or should balancing among strategies be done in the course of implementation through annual sector, action and budget planning?
- Does the answer to question 2 change the five-year, quantitative energy conservation goal?
- What is the longer-term, non-numerical energy conservation goal?

3:00 – 3:15 **Break**

3:15 – 4:00 **Confirm Recap of Energy Conservation Goals**

4:00 – 4:45 **Operations**

Staff Presentation (4:00-4:15)
Board Discussion (4:15-4:45)
- Should a five-year operations goal be included in the strategic plan?
- If so, does the operations goal have the right focus?

4:45 – 5:00 **End of day board comments and feedback on the day** (Nick Viele)

5:00 – 6:00 **Break & Travel**

6:00 **Board Dinner**

Saturday, June 14

8:30 – 9:00 **Arrival & Breakfast**

9:00 – 9:30 **Welcome & day-one recap**

9:30 – 10:30 **Reflections on Goals and Strategies**

Board Discussion
Staff presentation
- Next steps and issues for comment

10:30 – 11:00 **Review Vision and Purpose Statements**

11:00 – 11:30 **Summing Up:** Is the board comfortable with—
- The energy conservation goals and strategies?
- The renewable energy goals and strategies?
- The operations goal?

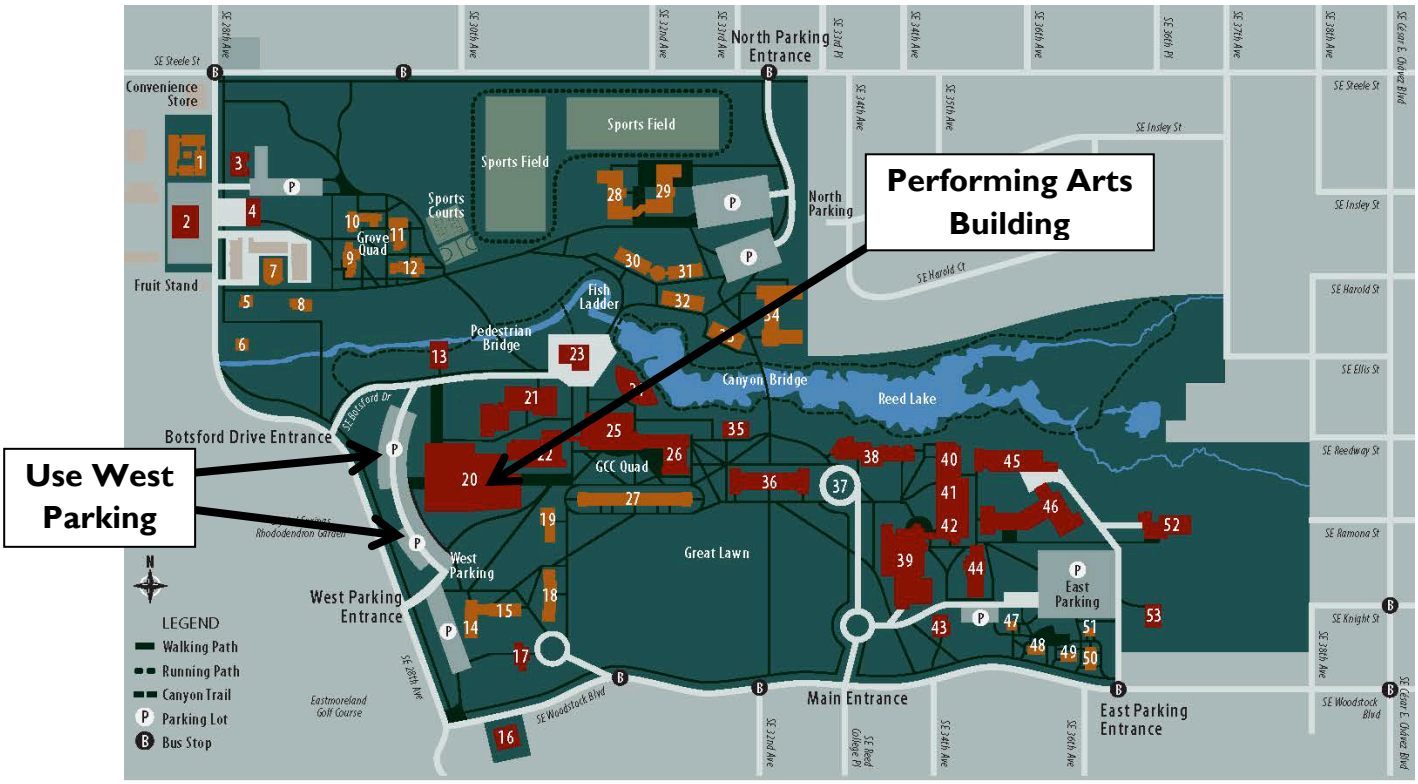
11:30 – 11:45 **Break**

11:45 – 12:15 **Next Steps & Closing Remarks** (Margie Harris)

12:15 **Adjourn & Lunch**

Energy Trust Board of Directors Strategic Planning Workshop

Choral Room in Performing Arts Building at Reed College 3203 SE Woodstock Blvd, Portland OR
Friday, June 13, 2014 at 8:00am
Saturday, June 14 2014 at 9:00am



REED COLLEGE

3203 SE Woodstock Blvd. Portland, Oregon 97202-8199

1. **Birchwood Apartments**
2. **Theatre annex, Reed warehouse**
3. **Health & Counseling Center**
4. **28 West**: community safety, residence life
5. **Garden House** (residence hall)
6. **Farm House** (residence hall)
7. **Reed College Apartments**
8. **Canyon House** (residence hall)
9. **Sequoia House** (residence hall)
10. **Sitka House** (residence hall)
11. **Bidwell House** (residence hall)
12. **Aspen House** (residence hall): Caffè Paradiso, multipurpose room
13. **Greenwood**
14. **Scholz** (residence hall)
15. **Foster** (residence hall)
16. **Parker House**
17. **Prexy**
18. **MacNaughton** (residence hall)
19. **Anna Mann** (residence hall)
20. **Performing Arts**
21. **Sports Center**
22. **Kaul Auditorium**: Gray lounge
23. **Physical Plant**
24. **Cerf Amphitheatre**
25. **Gray Campus Center**: bookstore, commons (dining hall), mail services, international student services, community wellness
26. **Student Union**: Paradox Café
27. **Old Dorm Block** (residence hall): Winch, Winch social room, Quincy, Doyle, Eastport, Westport, Kerr, Abington, Ladd
28. **Naito Hall** (residence hall)
29. **Sullivan Hall** (residence hall)
30. **Griffin** (residence hall)
31. **McKinley** (residence hall)
32. **Woodbridge** (residence hall)
33. **Chittick** (residence hall)
34. **Bragdon Hall** (residence hall)
35. **Student Center**: student activities, multicultural resource center
36. **Eliot Hall**: admission, chapel, registrar
37. **Eliot Circle**
38. **Vollum College Center**: lecture hall, lounge
39. **Library**: Cooley Art Gallery
40. **Physics**
41. **Biology**: auditorium
42. **Paradox Lost Café**
43. **Greywood**: alumni & parent relations, campus information, Center for Life Beyond Reed, SEEDS
44. **Educational Technology Center** (ETC)
45. **Chemistry**
46. **Psychology**: auditorium
47. **Russian House** (residence hall)
48. **German House** (residence hall)
49. **French House** (residence hall)
50. **Spanish House** (residence hall)
51. **Chinese House** (residence hall)
52. **Studio Art**: Feldenheimer Gallery
53. **Dorothy Johansen House**: academic and disability support services

Roadmap

Board Briefing Paper

Draft 2015-2019 Energy Trust of Oregon Strategic Plan

June 13-14, 2014

Summary

The Energy Trust Board of Directors is asked to approve issuance of a draft strategic plan (**Tab 1**) for comment by interested parties over summer 2014. This briefing paper identifies choices regarding the draft plan: (1) five-year and long-term renewable energy goals; (2) a quantitative five-year energy conservation goal; (3) whether to put special weight on one or more energy conservation strategies; (4) whether and how to set a long-term energy conservation goal and (5) an operational goal.

Background

The draft five-year strategic plan is the product of the Energy Trust Strategic Planning Committee: Rick Applegate, Julie Brandis, Susan Brodhahl, Ken Canon, Mark Kendall, Debbie Kitchin, John Reynolds, John Savage and Lisa Schwartz, with contributions from Margie Harris, Fred Gordon, Debbie Menashe, Elaine Prause and John Volkman, and participation by Juliet Johnson, Oregon Public Utility Commission staff liaison to Energy Trust. **Tab 2,** which was prepared to focus consultations in the early planning process, summarizes the early planning process beginning in fall 2013.

The process began with a series of investigations (**Tab 2, p. 2**):

- Situation analysis: Staff analyzed Energy Trust performance over the past five years and strategies going forward
- Survey of strategic ideas: A consultant was retained to identify organizational, planning or program innovations from comparable national and Canadian programs
- SWOT analysis: Staff assessed Energy Trust strengths, weaknesses, opportunities and threats
- "Influentials" input: Informal conversations were held with a group of regional energy and business leaders about how to build on Energy Trust's success
- Targeted studies: Evaluated California's experience with zero-net energy goals and Oregon's experience with demand-side management
- Discussions: Ongoing conversations with the Oregon Public Utility Commission and Energy Trust's funding utilities

These investigations raised a number of possibilities (**Tab 2, p. 2-5**), which the committee discussed with utilities and interested parties in February and March 2014.

In general, these consultations demonstrated strong support for Energy Trust to continue its mission-based delivery of cost-effective local energy conservation, new market transformation activities and new renewable energy resource development. Except in limited areas, there was little support for going beyond this core work.

Analysis

Informed by these investigations and early feedback, the draft plan has three sets of goals: (1) renewable energy, (2) energy conservation and (3) operations.

1. Renewable Energy (see **Tab 3** for analysis)

The proposed renewable energy goals and strategies for the draft strategic plan mainly continue the goals and strategies in the 2010-2014 plan. Staff proposes no change in the long-term goal, which would remain:

> Accelerate the pace at which new, small and mid-scale renewable energy projects are completed, to help Oregon achieve its 2025 goal of meeting at least 8 percent of retail electrical load from small-scale renewable energy projects.

The proposed five-year renewable energy goal puts market development first, representing a change of emphasis from past plans, which focused on generation:

- Sustain a vibrant small and mid-scale renewable generation market that produces continual growth in project installations across all eligible technologies.
- Between 2015 and 2019, achieve an additional 10 average megawatts of renewable energy.

The first element of the proposed goal would focus on market and project development (**Tab 3, p. 3**), and do so via the following strategies (**Tab 3, p. 5-6**):

1. Support a range of renewable energy technologies, including hydropower, geothermal, biopower, wind and solar
2. Emphasize early-stage support for custom renewable energy projects, including hydropower, geothermal, biopower, wind and solar projects
3. Use competitive processes to identify and fund new projects
4. Maintain flexibility to shift resources to capitalize on market opportunities
5. Support state and utility priorities in climate policy and load management
    - Climate and carbon reduction: track and report contribution to achieving state greenhouse gas emission goals
    - Support and collaborate with utilities on peak load management programs with energy conservation potential
6. Emphasize efforts to broaden participation by all contributing ratepayers in Energy Trust renewable energy opportunities and programs. *Included if the board weights the "broaden participation" strategy on p. 5 in this document*.

The proposed five-year generation goal (**Tab 3, p. 4-5**) reflects a more conservative forecast than the current strategic plan. The conservatism is due to changes in state and federal energy tax credits and sustained low prices for power paid by utilities. The proposed goal would continue early-stage support for a range of renewable technologies, use of competitive processes to fund new projects and standard incentives for solar.

Question for the board: Are the proposed renewable energy goals, which primarily affirm the current approach, appropriate for the strategic plan?

2. Energy Conservation (see **Tab 4** for analysis)

The energy conservation goal requires two broad choices, which are analyzed in detail in: (1) a quantitative goal and (2) a decision whether to emphasize a particular strategy in reaching a goal.

A. Quantitative five-year goal

Staff analyzed three options for a quantitative five-year energy conservation goal, and bounded them with two contingency scenarios:

> **Base Option** (**Tab 4, p. 7-8 and 15-17**): This option is most in line with utility long-term planning methods. We achieve all cost-effective conservation based on known technology and well within our funding for large energy users. Achieving this goal would be challenging, but it is the least risky option and results in the lowest level of savings.
>
> Savings: 218 average megawatts (aMW), 22 million annual therms (MMTh)
>
> **New Technology Option** (**Tab 4, p.18**): This option captures Base Option conservation plus savings from emerging energy-saving technologies. The option includes savings from identified technologies with most promise to become cost-effective, solid performers in the next five years.
>
> Savings: 236 aMW (18 aMW over Base) and 24 MMTh (2 MMTh over Base)
>
> **Expanded Option** (**Tab 4, p. 18-19**): This option captures all of the above plus 7 aMW from potential large projects and 2.5 MMTh of gas measures that are contingent on OPUC cost-effectiveness exceptions.
>
> Savings: 243 aMW (7 aMW more) and 26.5 MMTh (2.5 MMTh more)

Contingency scenarios: These scenarios (**Tab 4, p. 19-20**) illustrate uncertainty in savings estimates due to forces beyond our control:

> In a *maximum challenge scenario*, various factors significantly reduce cost-effective conservation potential: falling load growth, low engagement with hard-to-reach customers and even lower avoided costs.
>
> In an *unforeseen opportunity scenario*, events conspire to spur energy conservation: almost every technology that we envision today is cost-effective and reliable within two years, avoided costs rise significantly and hard-to-reach customer engagement is high.

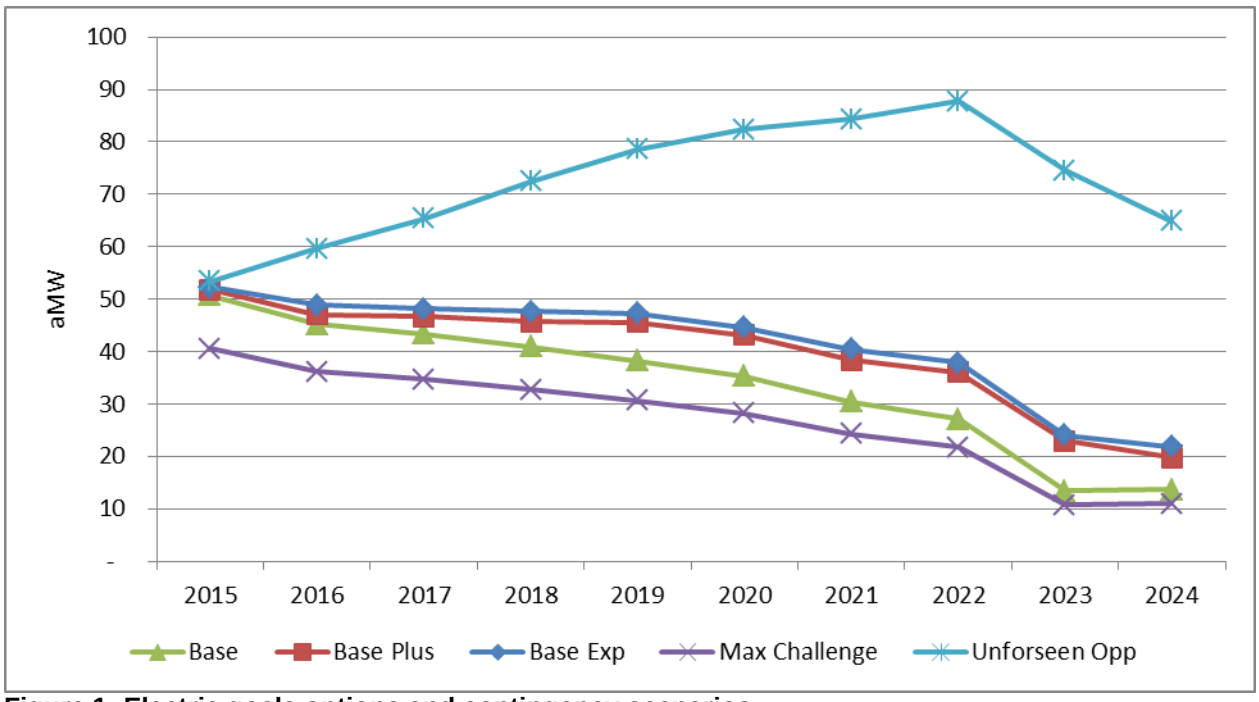


Figure 1: Electric goals options and contingency scenarios

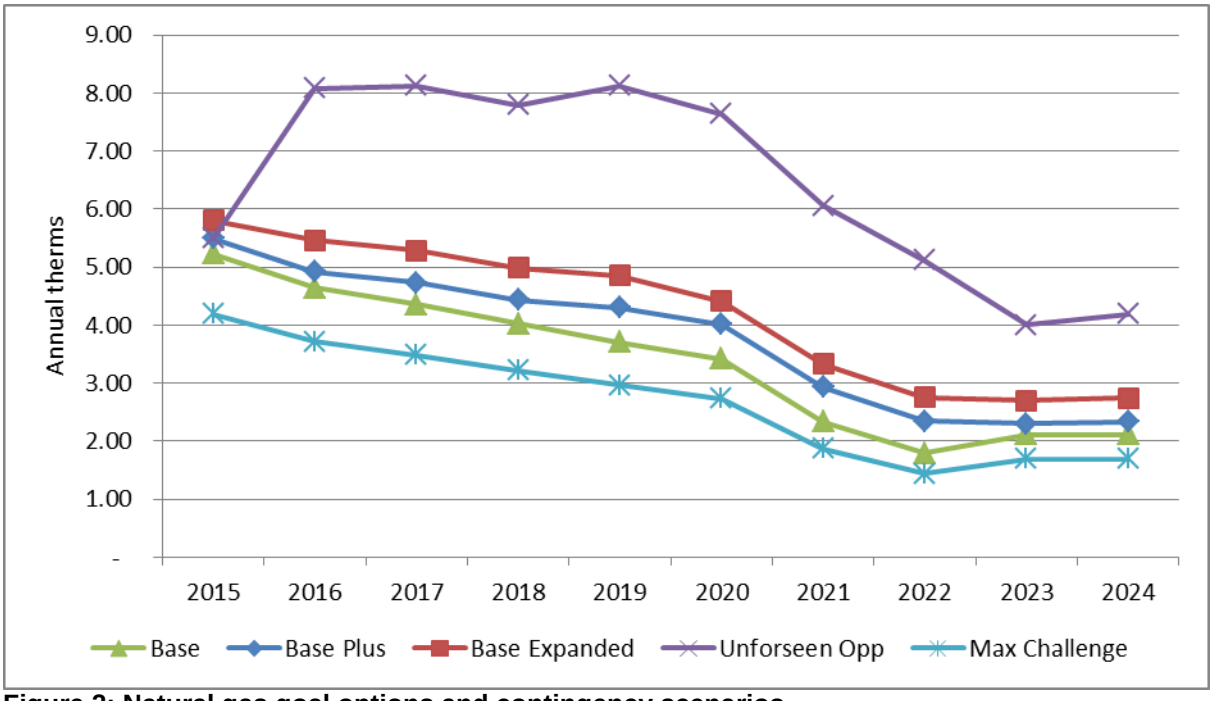


Figure 2: Natural gas goal options and contingency scenarios

B. Strategic emphases

Our experience over the last five years suggests several core strategies for the coming five years (**Tab 4, p. 12-14**):

> **Continuous improvement**: We doubled annual savings since 2008. One of the keys in this success, in addition to the availability of supplemental funding, has been continuous improvement in program design and customer-focused service. Continuous improvement remains a core strategy.
>
> **Broaden participation**: We successfully penetrated many markets over the past 12 years. Over the next five years, we need to serve people and businesses that we have not reached in the past.
>
> **Manage costs**: The cost of saving energy is rising, and the more we lower the total cost, the bigger the cost-effective conservation potential. The draft plan calls for Energy Trust to look for ways to lower costs, especially transaction and delivery costs, recognizing that the task has different implications for different energy conservation programs.
>
> **New technology**: In order to grow energy-efficiency potential in the longer term, we need to identify, test, cull and refine new efficiency technologies and innovations.
>
> **Support state energy and climate goals**: In order to account for unpredictable policy developments, we propose to monitor and, where appropriate, assist efforts to achieve energy and climate goals by quantifying and reporting our contributions to achieving these goals.

We do not assume additional revenues for the coming five years; therefore, some of these strategies can be expected to compete for funding. For example, broadening participation like serving harder-to-reach markets and developing new technology may compete with efforts to reduce costs. Investment in unproven technology may compete with near-term energy savings.

There are several ways to strike a balance among these strategies. One way is to make judgments in the course of implementation. Energy Trust sector leads will develop plans adapting the strategies to industrial, commercial and residential sectors. Energy Trust planning staff will bring the strategies, informed by the sector plans, into utility Integrated Resource Planning. Annual Energy Trust budgets will allocate funding to specific programs and uses. At each point, updated information and professional judgment will help balance strategy.

Another way is for the board to weight one or more of these strategies in the strategic plan. With this in mind and based on discussions during the 2015-2019 Strategic Plan development process, we have analyzed two potential areas of added emphasis: emphasis on broadening participation and emphasis on new technology (**Tab 4, p. 21-25**). Weighting either of these strategies increases the risk of not achieving any one of the five-year energy conservation quantitative goal options, while improving the likelihood of growing the longer-term energy conservation potential. We are unable to quantify either the risk or the additional potential meaningfully. Fundamentally, weighting one of these strategies would signal a shift in Energy Trust intention: that we view

ourselves as a new technology-fostering organization and will gauge our investments accordingly, or as an organization dedicated to engaging all ratepayers and willing to shift our resources to do so.

C. Long-term energy conservation goal (**Tab 1**)

The 2010-2014 Strategic Plan has a long-term energy conservation goal, to "Acquire all cost-effective energy conservation for ratepayers." If the board decides to emphasize the new technology strategy, it could add a second element to this goal: "Build capability to deliver significant energy savings using new technologies and methods." We could add a similar option for "broaden participation" if the board chooses to weight that strategy.

Questions for the board:

- Which of the three quantitative energy conservation goal options, possibly adjusted in light of uncertainties illustrated in the contingency scenarios, should be incorporated in the draft plan?

- Should Energy Trust emphasize the emerging technology or broadening participation strategy, or should balancing among strategies be done in the course of implementation through annual sector, action and budget planning?

- Does the answer to question 2 change the five-year, quantitative energy conservation goal?

- What is the longer-term, non-numerical energy conservation goal?

3. Operations (**Tab 1**)

The operations goal encompasses cross-cutting, high-level principles for Energy Trust operations and management. The goal emphasizes the efficient and effective investment of ratepayer dollars to achieve energy conservation and renewable energy strategic goals. It drives a responsible, transparent and accountable organization culture, responsive to new opportunities in support of our strategic vision and purpose.

Questions for the board:

- Should a five-year operations goal be included in the strategic plan?

- If so, does the operations goal have the right focus?

Tab 1

Draft Plan

Draft 2015-2019 Energy Trust of Oregon Strategic Plan

June 13, 2014

Introduction

Who we are

Energy Trust of Oregon is an independent nonprofit organization that helps 1.5 million customers of four Oregon utilities save energy and generate renewable power. Created in response to 1999 Oregon legislation and overseen by a volunteer board of directors and the Oregon Public Utility Commission, Energy Trust began serving customers in 2002. Energy Trust programs are funded by Portland General Electric and Pacific Power customers under the 1999 Oregon law (SB 1149), and natural gas customers pursuant to agreements with NW Natural (2003) and Cascade Natural Gas (2006).

Energy Trust administers ratepayer funds collected by utilities for electricity and natural gas conservation, electric market transformation and renewable energy programs. Since 2002, these programs have saved billions of dollars by helping consumers reduce energy use and realize utility bill savings, and by helping utilities avoid or defer investment in new and more expensive generation, transmission, distribution and fuel purchases. The discipline for these programs comes from analysis and planning that carefully weigh economic and environmental costs and benefits before making energy investments. The services provided by these programs are delivered by nearly 2,700 private Oregon businesses.

The result, now rooted in many years of practice, is an approach that is widely supported by government, utilities, business and interest groups, and produces clean, reliable and affordable energy. This approach, and Energy Trust's leadership of it, is the basic asset Energy Trust's next strategic plan will leverage.

Role of the strategic plan

Energy Trust programs have been guided by a series of five-year strategic plans, required by a grant agreement with the Oregon Public Utility Commission. As a general matter, these plans, of which this is the latest, have established broad goals and strategies, implemented through two-year action plans and annual budgets. The strategic planning process gives Energy Trust, stakeholders and interested citizens an opportunity to guide the organization's broad direction.

Context

This strategic plan, covering the 2015-2019 period, emerges from a specific context.

By the end of 2013, Energy Trust investments totaling $968 million have helped participating Oregonians save $1.7 billion on their energy bills, and these investments will ultimately save $4 billion over time, as future energy and bill savings accrue.

The pace at which Energy Trust energy-efficiency programs delivered savings changed significantly after 2008. Since 2009, Energy Trust programs have doubled the energy savings added each year. This doubling was made possible by a 2007 law (SB 838), which authorized

the electric utilities to supplement funding for energy conservation beyond the 3 percent charge established in SB 1149, and allowed Energy Trust and the utilities to align efforts to acquire all cost-effective energy conservation. Achieving this level of performance required a focused effort to refine Energy Trust programs, generate faster feedback on program effectiveness, process more incentives and serve more customers with strategies that meet their needs. It also required a larger annual budget, bringing Energy Trust's expenditures for energy efficiency to $121 million in 2013.

In renewable energy, the 2007 law redirected renewable energy funds exclusively to projects of 20 megawatts and less in size, and adopted a state goal of meeting at least 8 percent of retail electrical load from small-scale renewable energy projects. Larger projects are now the realm of utilities, which have mandatory renewable energy standards to meet. In 2011, the State of Oregon significantly trimmed its longstanding renewable energy tax credits. These shifts in law did not affect Energy Trust funding for renewable energy, which continues to be an increment of the 3 percent charge required by SB 1149, approximately $13 million per year. However, since most prior Energy Trust renewable energy incentives were paired with tax credits, the absence of the tax credits significantly reduced Energy Trust's market leverage. After the reduction in state energy tax credits, Energy Trust re-geared its renewable energy program to provide more early-stage support for smaller projects. Effectively helping these projects get off the ground continues to hinge on Energy Trust programs, government programs and subsidies, and larger economic and market forces. By the end of 2013, small-scale, Energy Trust-supported renewable energy projects installed since 2009 were generating 15.27 average megawatts.

Energy Trust conservation and renewable energy programs deliver services through a network of delivery contractors and trade allies. Programs and supporting operations groups have made significant adjustments to respond to changing markets as well as emerging opportunities. Overall, these adjustments have emphasized customer focus, innovation, process efficiency, quality assurance and collaboration. In particular, Energy Trust has worked to leverage communication channels between our affiliated utilities and their customers, and complementary efforts by local, state, regional and national entities.

Looking ahead

The graphs below project the amount of electric and gas savings Energy Trust programs will acquire in the five-year period of 2015 to 2019 given current funding, known technologies and projected avoided energy costs. In Figure 1, the declining electric savings trend is explained by several factors. After 30 years of energy conservation, mainstays such as residential insulation, central heat pumps, energy-efficient showerheads and non-LED efficient lighting are nearing a point of market saturation. Success with these measures is likely to shift programs toward higher-cost measures. This, along with low natural gas price forecasts and lower avoided cost forecasts for electricity, means there is likely to be less cost-effective electric efficiency to pursue. Moreover, limitations on funding electric energy conservation for large customers constrain Energy Trust's ability to deliver all cost-effective savings for those customers and the benefits these savings provide to all customers, utilities and the state as a whole.

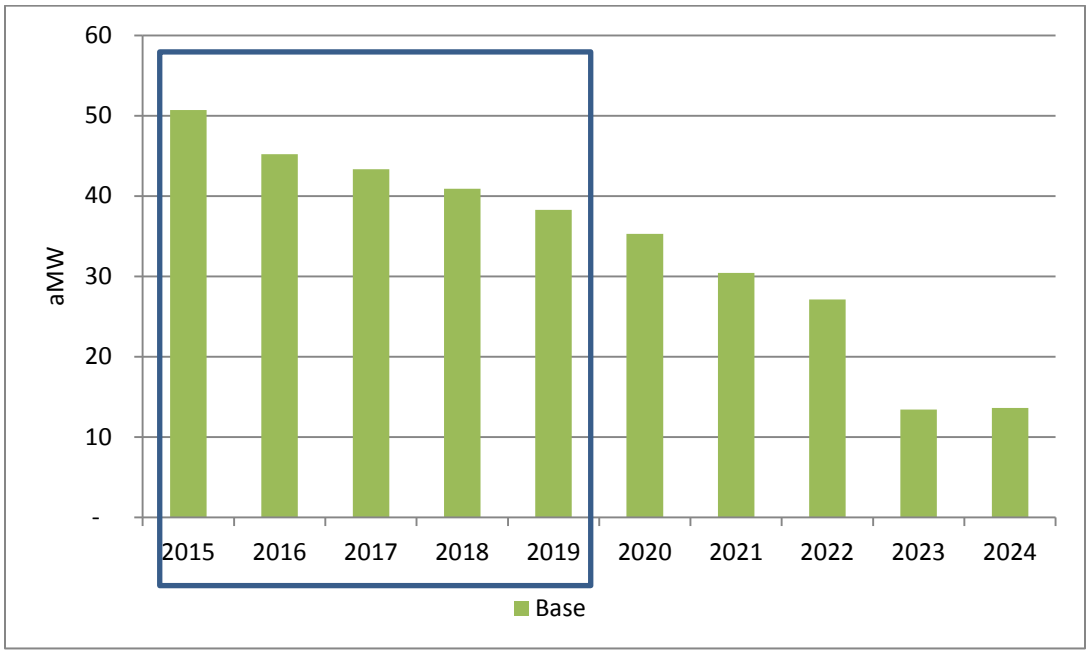


Figure 1: Electric savings

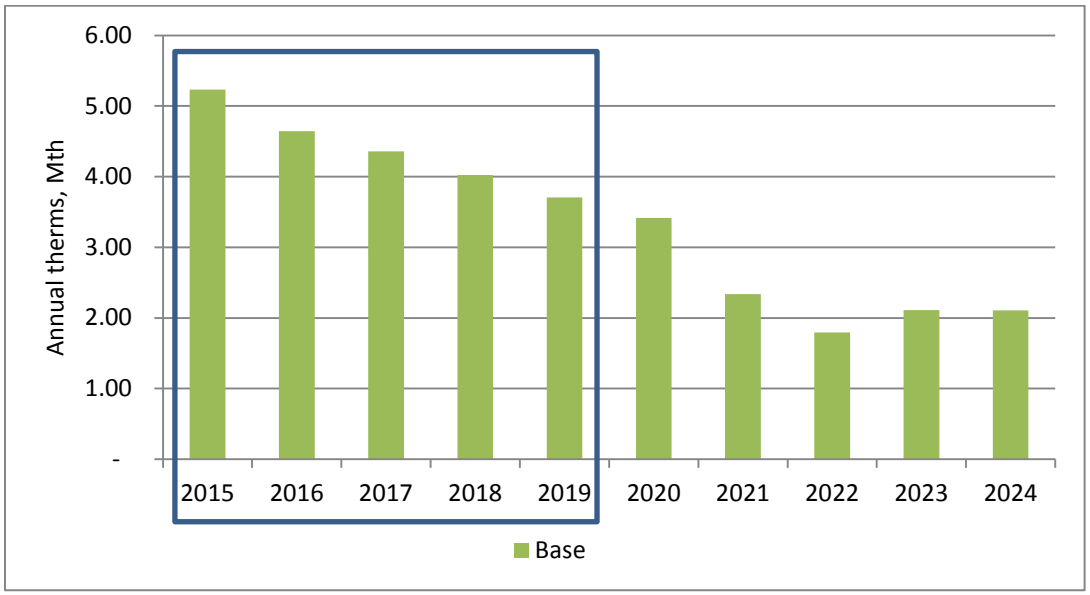


Figure 2: Natural gas Savings

Figure 2 provides a similar picture for natural gas efficiency. The amount of available gas efficiency is still quite large, but much of it costs significantly more than the forecast cost of gas, which limits what Energy Trust can pay.

These projections are conservative in several respects. First, they are based on what is known to Energy Trust *now* about energy-efficiency technologies. It is fully expected that new energy-saving technologies and methods will emerge in the coming years. New load management and

energy storage tools are emerging to allow people to choose how and when they use energy. These tools are likely to help reduce peaks in energy demand, integrate renewable and baseload generation, and, potentially, reduce energy consumption.

Second, these graphs do not account for opportunities that may emerge from external sources. For example, by every indication, energy conservation and renewable energy will play an important role in achieving state energy and climate goals. While recently-proposed federal rules on greenhouse gas emissions from power plants will take years to work out, they have a similar implication: states need a full box of clean energy tools to manage fast-emerging energy and climate challenges. Energy Trust's mission and funding are not explicitly tied to these policy goals, but such policies are expected in areas that influence demand for energy conservation and renewable energy.

As always, an uncertain future poses opportunities and challenges. In this plan, Energy Trust describes its long-term vision, goals and strategies.

2015-2019 Strategic Plan

Vision *[unchanged from 2010-2014 Strategic Plan]*

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.

Purpose *[unchanged from 2010-2014 Strategic Plan]*

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

Goal 1, Energy Conservation

Long-term energy conservation goal

Acquire all cost-effective energy conservation for ratepayers.

Options:

- ***Build capability to deliver significant energy savings using new technologies and methods***

  OR

- ***Broaden participation in energy conservation programs by all contributing ratepayers***

Five-year energy conservation goals

Between 2015 and 2019, save ____ average megawatts of electricity.
Between 2015 and 2019, save ____ million annual therms of natural gas.

Energy conservation strategies

1. Continuously improve program designs and services to provide excellent customer service and support customers with energy solutions:
    - Fund energy conservation for large energy users to the extent possible, and minimize the effect of constrained funding on efficiency resource acquisition
    - Leverage low-cost metering and data analysis that allow participants to manage their energy use
    - Help build and support a strong delivery market infrastructure that best meets customer needs with energy-efficiency options
    - Invest in market research necessary to better understand current and evolving needs of specific market segments
    - Foster relationships with repeat customers, achieving deep, cost-effective savings over time
    - Accelerate and refine exploration of behavioral strategies: build on strategies that are already succeeding, lower the cost of promising approaches that are now too costly and work to achieve persistent savings
    - Develop and test measures or approaches to reach known yet hard-to-reach efficiencies, e.g., advanced water heaters, condensing commercial rooftop furnaces, more advanced windows and early retirement of windows and furnaces

2. Broaden direct participation by ratepayers who are not reached currently:
    - Invest in research necessary to understand where participation gaps exist, to identify underserved customers and to design effective outreach strategies
    - Increase awareness and engagement: work with communities and representative organizations to help identify and reach underserved markets
    - Explore new delivery approaches to meet needs cost effectively, leveraging trade, program and lending allies to work in and with specific audiences and communities
    - Focus first on underserved groups with significant potential savings and strong opportunities to improve uptake

3. Manage the total cost of delivering efficiency in order to maintain and improve the supply of cost-effective energy-efficiency measures:
    - Identify and optimize cost efficiencies in Energy Trust internal delivery costs
    - Employ alternative supply chain incentives: motivate retailers, distributors and contractors to promote efficient products by providing incentives to them directly, taking advantage of better leverage of wholesale prices
    - Increase awareness: inform participants of the business case of efficiency investments and the average costs and payback they can expect to see so they can make informed decisions

4. Replenish the mid-term and long-term energy conservation resource by developing a portfolio of new technology product development strategies designed to significantly increase the long-term availability of new efficiency measures
    - Take advantage of the Northwest Energy Efficiency Alliance's work on emerging technology and product development
    - In two-year action plans and annual budgets, identify, test, cull and refine new technologies, innovative measures and approaches with longer-term energy-saving potential (five years and beyond)

5. Support government and utility priorities in climate policy and load management
    - Climate and carbon reduction: track and report contribution to achieving state greenhouse gas emission goals
    - Support and collaborate with utilities on peak load management programs with energy conservation potential
    - Remain open to new opportunities stemming from changes in state and national policy that would benefit from clean energy development

Options:

- ***Emphasize efforts to broaden participation by all contributing ratepayers in Energy Trust energy conservation opportunities and programs (strategy 2)***

  OR

- ***Help replenish the mid-term and long-term energy conservation resource by increasing emphasis on new technologies and methods (strategy 4)***

Goal 2, Renewable Energy

Long-term renewable energy goal

Accelerate the pace at which new, small and mid-scale renewable energy projects are completed, to help Oregon achieve its 2025 goal of meeting at least 8 percent of retail electrical load from small-scale renewable energy projects.

Five-year renewable energy goal

- Sustain a vibrant small and mid-scale renewable generation market that produces continual growth in project installations across all eligible technologies.
- Between 2015 and 2019, achieve an additional 10 average megawatts of renewable energy.

Renewable energy strategies

1. Support a range of renewable energy technologies, including hydropower, geothermal, biopower, wind and solar
2. Emphasize early-stage support for custom renewable energy projects, including hydropower, geothermal, biopower, wind and solar projects
3. Use competitive processes to identify and fund new projects
4. Maintain flexibility to shift resources to capitalize on market opportunities
5. Support state and utility priorities in climate policy and load management
    - Climate and carbon reduction: track and report contribution to achieving state greenhouse gas emission goals
    - Support and collaborate with utilities on peak load management programs with renewable energy potential
6. Emphasize efforts to broaden participation by all contributing ratepayers in Energy Trust renewable energy opportunities and programs

Goal 3, Operations

Five-year operations goal

Align internal operations and management to support Energy Trust strategic goals and objectives by optimizing human resources and maintaining an effective open, transparent and accountable business model and structure.

Operations strategies

1. Establish metrics for strategies and evaluate progress toward goals, to be reflected in annual reports
2. Continuously improve internal operations:
    - Employ and improve efficient business practices and systems to free up resources to achieve strategic energy conservation and renewable energy goals
    - Where possible, establish benchmarks and measurement tools to evaluate business and operations efficiency and productivity gains and reflect these in two-year action plans and annual budgets
    - Manage risks flexibly and sensibly by hedging significant operational and program design risks
3. Address key recommendations from the 2014 Management Review, particularly related to administrative costs, staffing, organization structure and enhancements to budget process and reporting
4. Establish and implement succession plan for senior management
5. Continuously improve program delivery efficiencies:
    - Continue focus on customer service and delivering ratepayer benefits
    - Effectively support and leverage Program Management Contractors, Program Delivery Contractors and trade allies to achieve strategic energy goals and meet all OPUC minimum performance measures
    - Capture opportunities for program delivery efficiencies through automation and ongoing Information Technology systems development and support
    - Align outreach activities to support program strategies and strategic opportunities
    - Optimize planning and evaluation services to support program priorities and strategic opportunities
6. Formulate and establish effective strategic partnerships and relationships with community leaders and organizations in support of strategic energy conservation and renewable energy goals, considering the following:
    - Common interests and mutual benefits
    - Access and resources to support collaborative investments
    - Demonstrated ability to jointly collaborate and deliver results

Tab 2

Early Planning

The Early Planning Process

(February 13, 2014 paper, "Strategic Plan Discussion Topics and Opportunities")

Energy Trust is developing a strategic plan for 2015-2019. Before developing a draft plan, Energy Trust invites discussion of topics that should shape a plan, i.e., those that may or should drive Energy Trust programs and operations over the coming five years.

Energy Trust anticipates that a draft plan will be issued for public comment after the Board's June, 2014 strategic planning retreat. Comment would then be solicited, and a final plan would be adopted in October, 2014.

A. Context

Energy Trust administers funds collected by utilities for electricity and natural gas conservation, electric market transformation and renewable energy programs. Since 2002, these programs have saved billions of dollars by reducing consumers' energy bills and helping utilities avoid or defer investment in new generation, transmission and distribution facilities. The discipline for these programs comes from analysis and planning that carefully weigh economic and environmental costs and benefits before making energy investments. The services delivered by these programs are delivered by thousands of private businesses distributed throughout Oregon. The result, now rooted in many years of practice, is a system that is widely supported by government, utilities, business and interest groups, and which produces clean, reliable and affordable power. This system, and Energy Trust's role in it, is the basic asset that Energy Trust's next strategic plan will leverage.

At the same time, as investment advisors remind us, past performance is no guarantee of future returns. A number of developments are rearranging the landscape in which Energy Trust programs will operate in the coming years:

- The energy conservation resource is changing. Mainstays such as home insulation and efficient lighting continue to play important roles, but after 30 years of energy conservation programs there are fewer of these things to do. Meanwhile, new measures involving innovative operations, maintenance, behavioral approaches and technologies are emerging. Community-based initiatives are being explored, in which energy, transportation, land and water use are viewed holistically. To what degree should these innovations be integrated into Energy Trust programs?
- Oregon's energy system is de-carbonizing. The Sixth Northwest Power Plan predicted that energy conservation, renewable energy requirements and reduced coal plant emissions would reduce Northwest carbon emissions below 1990 levels by 2020. So far, this prediction is on track. Continuing the trajectory, however, will take sustained and even accelerated performance from low-carbon energy resources such as renewable energy and conservation.
- The economic underpinnings of the traditional energy utility business model are beginning to shift. Load growth has been modest or negative for several years, locally and nationally. Increasing quantities of renewable energy that run for part of the day are making the business of owning baseload plants more difficult.
- New load management tools are emerging to help integrate new renewable energy generation and baseload generating plants: Smart Grid technologies that allow more active management of energy supply and demand; more extensive demand response

programs that use pricing and other incentives to reduce energy demand in peak periods; technologies that store surplus energy for use at times of high demand; and markets that pay more for flexible, fast-ramping services. How can energy conservation and renewable energy programs leverage these new tools?
- With hourly metering of homes and businesses, lower-cost information recording techniques, and customer-focused analysis software, energy management is becoming more feasible. In some cases, these innovations may become a deeper source of savings. But the best approaches, data sources, and management strategies differ for different customers, and are complicated by a flood of new opportunities and ideas.

The basic question is this: how should Energy Trust efficiency and renewable energy programs build on current strengths and capitalize on this changing landscape? To illuminate this question, Energy Trust undertook several analyses:

- The "situation analysis," [attachment in original] discusses Energy Trust's current mission and goals, and identifies issues that Energy Trust's current programs are likely to face in the 2015-2019 time period.
- The survey of strategic ideas from other energy conservation organizations, [attachment in original], reports on how other organizations are approaching missions that resemble but also differ importantly from Energy Trust's mission.
- In addition, Executive Director Margie Harris engaged policy and business leaders in a series of conversations about Energy Trust's work and role. Notes summarizing key points from these conversations are contained in [attachment in original].
- Energy Trust has in some cases done additional analysis to help understand whether particular issues belong in strategic planning. Energy Trust consultant Dave Hewitt's paper summarizes zero net-energy goals in California [included as attachment]; and a staff paper explores peak-load management opportunities [attachment in original].

Energy Trust also identified operational and strategic issues in staff SWOT workshops, which are reflected below. Energy Trust expects to complete further analysis of several of these topics between now and June. These analyses and discussions with interested parties will inform the board's consideration of a draft strategic plan in June, 2014.

The issues discussed below do not address Energy Trust management, infrastructure or delivery model. We do expect these considerations to arise in the draft and final strategic plans as we determine how to meet strategic goals.

These topics also do not address whether the current cost-effectiveness framework is appropriate, a question that is involved in the Oregon Public Utility Commission docket no. UM 1622. These topics do address the role of the current cost-effectiveness framework in balancing considerations in section 1.B.

B. Discussion Topics and Opportunities:

1. Energy Trust goals for 2015-2019 given current resource assessments, funding and authorities

A. Energy efficiency goal: Assuming no major change in projected availability of energy savings, Energy Trust forecasts show annual achievable energy savings leveling off and beginning to decline over the next five years. Acknowledging that these are forecasts,

subject to unforeseen economic, technological, policy and other developments, they raise several planning issues:

(1) Are forecasted annual savings levels, built upon known, commercially available and cost-effective resources, the most appropriate basis for a 2015-2019 goal?
(2) Energy Trust resource assessments assume no limit on funding for cost-effective energy savings, yet there are legal limits on funding for large energy users. To what degree will these limits constrain Energy Trust's ability to achieve its goals? How should these constraints be managed?

B. How can Energy Trust help grow the energy conservation resource?

(1) New technology and methods: Energy Trust currently funds NEEA to monitor and help develop emerging technologies. Should additional efforts, through NEEA or otherwise, be undertaken?
(2) Reduced costs: Low gas prices and other factors point to the need to reduce costs to maintain a robust conservation resource. Should Energy Trust put a high priority on reducing costs?
(3) Reaching under-served markets: Energy Trust programs try to reach everyone who pays public purpose charges, including rural communities, renters, multifamily dwellings and low-income households. Would deeper penetration of these markets add to the conservation resource? With what implications for cost-effectiveness? What tools and strategies should be used to reach these markets?
(4) Cost-effectiveness: The current cost-effectiveness framework has various sources of flexibility. How this flexibility is used could influence Energy Trust measures and programs that entail more risk, or produce important non-energy benefits. Is this enough flexibility to reach 2015-2019 goals?
(5) A risk budget: Should part of Energy Trust's budget be reserved for measures and efforts that are not demonstrated to be cost-effective, as a way to explore new technologies, or reach under-served populations? Should Energy Trust establish zero-net energy goals (Attachment 4) for new construction, for example? What might be an alternative framework for Energy Trust accountability?
(6) Behavior: Would more emphasis on behavioral approaches to residential energy conservation produce significantly more or less costly savings, as it has in industrial and commercial strategic energy management?
(7) Weighing trade-offs: Some of the above considerations pose trade-offs. How should efforts to reduce customer cost be balanced with efforts to find new technologies, investment in non-cost-effective measures, and efforts to reach under-served markets? Should Energy Trust be driven by energy savings volume above other considerations, or pursue these objectives simultaneously?

C. Renewable energy goal for 2015-2019: Energy Trust's early forecast for the next five years is 10 average megawatts (aMW) of renewable generation, which translates to two aMW per year. This is a more conservative forecast than the last strategic plan, reflecting changes in Oregon's energy tax credits and sustained low prices for power paid by utilities to renewable producers. It assumes continued Energy Trust emphasis on early-stage support for a range of technologies -- biopower, hydropower, wind and geothermal -- and standard incentives for solar. We expect to measure success according to new metrics relating to impacts on renewable energy markets and project development.

(1) Is it still appropriate for Energy Trust to emphasize support in early stages of project development?

(2) Is it still reasonable to support a range of technologies -- biopower, hydropower, small wind, geothermal and solar?
(3) Is it reasonable to measure success in terms of market and project-development considerations?
(4) Given current funding constraints should Energy Trust develop long term "exit strategies" and visions for success for each technology to help frame the short term decisions for funding allocations between technologies??
(5) Given the pace of change in renewable energy policy, should Energy Trust continue to limit its support to projects with commercially available technologies? Should it pilot approaches that support policy innovation?
(6) Should Energy Trust play a larger role in articulating a positive vision for distributed generation and a clean energy future in Oregon?
(7) How might we better take advantage of other environmental efforts happening in the state and their intersection with energy?

2. Should Energy Trust's scope be broader?

A. Aspirational goals. California established zero-net energy goals for commercial and industrial efficiency without necessarily having either a cost-effective path or the infrastructure to achieve the goals, which they are building now. Is there value in having aspirational goals such as this, perhaps with longer-term (ten-year) time horizons? Should Energy Trust incorporate a zero-net energy goal even though programs to achieve it cannot be proven cost-effective today?

A. Beyond efficiency and renewable energy generation.
(1) Greenhouse gas goals: The State of Oregon and energy conservation organizations in other states (e.g., Vermont Energy Investment Corporation, Austin Energy, and the State of Connecticut) have greenhouse-gas reduction goals. Should Energy Trust? Should Energy Trust work with compressed natural gas, transportation or other customer groups to help achieve such goals?
(2) Reaching under-served customers: Should Energy Trust have an explicit goal to return benefits to all customers who pay public purpose charges?
(3) Peak load management (attachment in original): Utility investments in generation, transmission and distribution facilities are typically geared to serve demand that occurs only in certain peak periods. Delaying or reducing this investment by saving energy in peak periods could produce significant savings. It is increasingly difficult for utilities to manage fluctuations in supply and demand. How might energy efficiency, distributed renewable generation and demand response programs fit together to lower ratepayer costs? Should Energy Trust play a role in helping to manage load, for example:
(a) Offering higher incentives for energy efficiency measures that reduce peak demand more than other measures?
(b) Tracking and reporting estimated contributions to peak savings? Would such estimates add value to Energy Trust programs, the board, OPUC or utilities?
(c) As the value of load management becomes clearer, working with electric utilities on integrated controls for water heating, industrial refrigeration, and other flexible loads that save energy while balancing wind?
(d) Exploring opportunities to use load management technology such as thermal storage to provide a market for intermittent resources?

(e) Exploring the use of integrated distributed generation and DSM programs, including Smart Grid, to help manage demand and support electric system resiliency to withstand storms or other disruptions?

3. How can Energy Trust ensure that its strategic plan appropriately complements plans of state, regional and other organizations?

Energy Trust's strategic planning process will incorporate input from other organizations and interested parties at several points. The Oregon Public Utility Commission and the Oregon Department of Energy participate on Energy Trust's strategic planning committee. Comments and consultation on this document is actively sought. Similarly, public input will be invited on a draft strategic plan. Energy Trust will actively consult its advisory councils in this process.
At the same time, energy planning is occurring at many other levels. The Oregon Governor's office has a 10-Year Energy Plan. The Oregon Department of Energy, the Northwest Power and Conservation Council, the Northwest Energy Efficiency Alliance and others are engaged in strategic planning. Are there ways in which Energy Trust should complement these planning efforts apart from the consultation and comment processes that are already anticipated?

Tab 3

Renewables

Briefing Paper
Renewable Energy Programs
Setting the 5 year and long-term renewable energy goals
June 13, 2014

Introduction
This paper provides background and support for the Renewable Energy sector's proposed Long-term renewable energy goal, the five-year renewable energy goals, and the renewable energy strategies included in this planning document.

The proposed long term goal remains unchanged from the 2010-2014 Energy Trust strategic plan:

Accelerate the pace at which new, small and mid-scale renewable energy projects are completed, to help Oregon achieve its 2025 goal of meeting at least eight percent of retail electrical load from small-scale renewable energy projects.

The proposed Five-year renewable energy goals are as follows:

- Sustain a vibrant small and mid-scale renewable generation market that produces continual growth in project installations across all eligible technologies.
- Between 2015 and 2019, achieve an additional 10 average megawatts of renewable energy.

The renewable energy strategies are as follows:

1. Support a range of renewable energy technologies, including hydro, geothermal, biopower and wind, and solar
2. Emphasize early-stage and market development support for custom renewable energy projects, including hydropower, geothermal, biopower, solar and wind projects
3. Use competitive processes to identify and fund new projects
4. Maintain flexibility to shift resources to capitalize on market opportunities
5. Support state and utility priorities in climate policy and load management
    - Climate and carbon reduction: track and report contribution to achieving state greenhouse gas emission goals
    - Support and collaborate with utilities on peak load management programs with energy conservation potential

Background
In the 2010-14 Strategic Plan four strategies were identified that drove our approach to the market.

- Support a portfolio of resources and technologies
- Design for the funding plateau
- Go further upstream in the project cycle to support project development
- Expand market opportunities.

This approach has been reviewed annually and reaffirmed by the RAC, and it underlies the development of the renewable energy budget and two-year action plans approved by the Board.

Since 2010 the strategies above have evolved. In 2012 competitive processes for custom non-solar projects were utilized to manage our spending of unallocated funds for both utilities. This competitive process was our design solution to address incentive demands beyond budget availability.

In 2013, we initiated an expanded development assistance offering to provide a more comprehensive solution to support new development of non-solar projects in the state. The goal of this expanded assistance was to better target our limited funding and to rebalance our focus from primarily providing project incentives at commercial operation to a greater role in the development process.

The final change to the strategies above was a change in the OPUC performance measure for the renewable programs. Prior to 2012 the program had a single generation goal of a rolling average over three years of 3 aMW. In 2013, a new four-part measure was approved that eliminated an annual generation goal for the program and replaced it with funding priorities supporting development assistance, a minimum generation target for standard solar, a cap on the average cost of non-solar projects, and a process to fund unbudgeted solar projects.

Analysis Supporting 2015-19 Goals and Strategies

For the 2015-2019, Energy Trust Strategic Plan, the renewable program proposes to continue to support the long term goal, five-year goals and program strategies in the 2010-14 Plan, with targeted adjustments.

Long Term Goal –
We propose no change in the long-term goal as described in 2010-14 Strategic Plan. This goal continues to help focus our efforts both on near term generation goals and long term market development necessary to expand the contribution of small scale renewable generation in the state. It is an excellent match for our legislative requirements and aligns with the state's efforts.

Five-year energy goals –
In the current 2010-2014 Strategic Plan there are two energy goals:

- Between 2010 and 2014, achieve an additional 23 average megawatts of renewable energy
- Flexibly expand markets including hydro, solar, geothermal, biopower and wind

Going forward, we propose a broader focus on market development and project development activities that sustain continual growth of projects, and a generation goal that matches our funding and current market conditions.

Our proposed five-year energy goals are as follows:

- Sustain a vibrant small and mid-scale renewable generation market that produces continual growth in project installations by expanding market opportunities across all technologies.
- Between 2015 and 2019, achieve an additional 10 average megawatts of renewable energy.

The proposed five-year goal primarily represents a change of emphasis toward market development, followed by a generation goal.

As we have discussed on a regular basis over the last few years, the market conditions for small renewable generation projects has deteriorated. Federal tax incentives, a mainstay of support over the last five years, have expired for some non-solar technologies (Production Tax Credit) and are scheduled to expire in the next few years for solar (Investment Tax Credit). State support for non-residential projects has all but disappeared and the key residential tax credit supporting our standard solar program is scheduled to expire at the end of 2017. Avoided cost rates for qualifying facilities selling wholesale power to utilities have also declined over the last few years and aren't expected to rebound soon. As a result, we anticipate that we'll see above market costs increase along with need for our funds. With no increase to our funding, generation acquisition is expected to decline.

The proposed five-year market-development goal: "Sustain a vibrant small and mid-scale renewable generation market that produces continual growth in project installations by expanding market opportunities across all technologies" represents our efforts to focus on market development activities that better matches our funding and expertise.

Faced with the current market conditions and our limited funding, we are proposing to expand our efforts in market and project development to improve the performance of projects across all technologies, direct development where the opportunities are most attractive, and support a sustainable market for small renewable generation.

Two examples of market development activities we are currently developing in our internal renewable planning process are cost reduction strategies for non-solar technologies and soft cost reduction for standard solar.

Non-solar strategy

Since 2010 eleven new biogas plants have been installed in Oregon. A significant opportunity to improve the financial performance and viability for these projects is to reduce O&M costs for engines and gas cleaning equipment. There is little experience with this equipment by project owners and there are few services available to support this need. Energy Trust is uniquely situated to fill these gaps in knowledge and services. We are currently working with project owners to identify their needs, help develop best practices for engine and gas cleaning equipment O&M, and establish cost benchmarks for various technologies.

While this example is unique to biopower there are various other examples to apply this approach to improving performance and viability with in each technology space. Over the next few months staff will be reviewing program plans and developing a strategy to identify development opportunities for each technology and how they will be implemented in coordination with other technologies.

Solar soft-cost reduction strategy

Falling equipment costs have driven dramatic growth in global solar markets over the last five years. In Oregon, average installation prices have fallen from almost \$9.00/watt$_{DC}$ (2008) to less than \$5.00/watt$_{DC}$ (2013). With this cost reduction, Energy Trust has been able to cut incentive rates in half; supporting more solar projects at a lower cost.

Most of the reduction in solar costs over the past five years was due to a dramatic drop in the price of photovoltaic modules. Module supply exploded as new manufacturing capacity was built worldwide. Now more than half of a solar installation price tag can be due to non-equipment "soft costs." Unlike solar module and inverter prices, these costs can't be reduced by simply

scaling up global manufacturing. Instead, these soft costs—which include the contractor's costs of acquiring customers, permitting, installing and interconnecting systems, and applying for incentives—need to be addressed at the local level. Reducing soft costs will require public policy changes aimed at removing market barriers and accelerating deployment.

This will be a challenge for Oregon, where costs are already higher than in other states with similar markets. It also presents an opportunity for market transformation. In the next five years, Energy Trust will support the growth of the Oregon solar industry by addressing the sources of soft costs that drive up solar installation prices. This work will include efforts to better understand and educate the industry on cost drivers, improve the efficacy of solar marketing and sales expenditures, and streamline the parallel paper trails required to install a solar system. Building on a national soft-cost roadmap developed for the U.S. Department of Energy SunShot Initiative, Energy Trust will collaborate closely with utilities, jurisdictions, and solar stakeholders to find and take advantage of opportunities to make solar faster and easier to buy and install.

While these two examples of market development activities are different in scope and impact, the overall goal is the same, improve performance and financial viability of technologies beyond direct incentives. These development activities tend to have much lower cost than direct incentives, leveraging the limited resources available in the current market.

The proposed five-year generation goal: Between 2015 and 2019, achieve an additional 10 average megawatts of renewable energy.

This proposed goal follows the same format in our current strategic plan. The key difference is the size of the goal. In the current plan our generation goal is 23 aMW. By the end of 2014 we expect to secure ~16 aMW. The primary drivers for the shortfall were numerous and have been described elsewhere but can be summarized as declining state and federal incentives, low wholesale energy rates, and long development cycles for non-solar projects.

We propose that the generation goal for the new Plan be 10 aMW. This goal is intended to reflect incentives funding available based on forecast annual revenues of ~$14 million beginning in 2015
The proposed goal was established based on analysis from two perspectives. We began by allocating the forecast five year budget between solar and non-solar technologies based on current allocation methodologies (i.e. $xx amount of the budget goes to standard solar and $xx amount goes to non-solar technologies). Using current and forecast solar costs we calculated the necessary incentive cost ($/aMW) to acquire generation and applied that incentive to the forecast incentive funding available over the five year period to determine the total aMW acquired for the five year period.

For the non-solar estimate the approach was the same. However the deviation around the necessary incentive cost to acquire generation from non-solar projects created less certainty as to the aMWs that were reasonable to assume could be captured. This approach also presented additional uncertainty due to the long time frames necessary to develop non-solar projects resulting in projects not completing during the five year period.

With this approach we determined that on average we could secure 1 aMW from standard solar and 1.4 aMW annually leading us to a total of 12 aMW for the five year period under consideration.

The second analytical approach used tried to reduce the risk associated with uncertainties around the incentive cost and likely completion of non-solar projects. This approach established a five year generation goal based on how much generation could be acquired if all incentive dollars available were utilized to acquire a standard solar resource only. (Note: We are not proposing to provide incentives only to solar technology but simply to establish a five-year energy goal). The approach used to determine the total generation was the same as for the first option, establish an incentive cost per aMW and apply that cost to the total incentive dollars available.

Using this approach we determined that the five year generation total of over 10.5 aMW could be acquired. We chose to round this total down to 10 aMW for the five year goal recognizing that there continues to be risk associated to the reduction of the federal Investment Tax Credit in 2017 from 30% to 10% and the potential expiration of the Residential Energy Tax Credit at the end of 2016.

After evaluating both approaches we selected the second option, using standard solar as a proxy to establish our five-year goal. The value of this approach is that the incentive cost for standard solar is more predictable, there is less deviation in terms of incentive cost across project types, and there is adequate development capacity available in the state to achieve the predicted generation totals.

This approach is also attractive because the cost to acquire solar provides an incentive cost benchmark for our programs. Currently solar is the most expensive technology from a cost per a MW basis (with the exception of small wind). However as noted elsewhere the costs have been declining quickly. As such it provides a good market based benchmark for the program as we allocate funding across technologies.

It is important to recognize that our ability to deliver savings could be a lot larger, or smaller, depending on external variables, including QF rates, avoided costs, the economics of a small number of fairly large projects (relative to our budget) and the availability of a wide range of other sources of Federal, state, and private funds. This is an attempt to identify a number in the middle of that range.

Five year renewable strategies

The final component of this paper is a review and justification of the five year renewable strategies. The strategies proposed below have been effectively utilized in our programs over the last five years. We are proposing to continue these strategies and to continue to expand our early stage development and market development activities.

- Support a range of renewable energy technologies, including hydro, geothermal, biopower and wind, and solar
    - Allows flexibility to respond to market opportunities
    - Allows the market to choose winning technologies
    - Supports a diversity of technical solutions and geography
    - Maximizes our effectiveness at meeting generation goals through having a variety of technology options in our portfolio
- Emphasize early-stage and market development support for custom renewable energy projects, including hydropower, geothermal, biopower, solar and wind projects
    - Provides a valuable tool to support pipeline building for programs
    - Identifies and reduces barriers to project development
    - Leverages limited funding

    - Improves project performance reducing the reliance on external incentives
- Use competitive processes to identify and fund new projects
    - Effective way to allocate scarce resources
- Maintain flexibility to shift resources to capitalize on market opportunities
    - Provides a mechanism to respond to market and project development cycles
- Support state and utility priorities in climate policy and load management
    - Climate and carbon reduction: track and report contribution to achieving state greenhouse gas emission goals
    - Support and collaborate with utilities on peak load management programs with energy conservation potential

Questions for the Board

Recommendations for long term goals, five year goals and programs strategies for the 2015-2019 strategic plan represent a continuation of our goals and strategies in our current plan. The key changes in new plan focus on continuing our expansion into market and project development activities and reduction in our generation goals due to limited Energy Trust funding resources and significant reduction in state and federal incentives.

- Does the switch in order of emphasis of goals from the last strategic plan better characterize our RE strategies?
- Would the Board be interested in additional metrics to document our efforts to "Sustain a vibrant small and mid-scale renewable generation market that produces continual growth in project installations across all eligible technologies" that support our market and project development activities?

Tab 4

Energy Conservation

Briefing Paper
2015-2019 Energy Conservation Acquisition Projections
Setting the 5 year and long-term energy conservation goals
June 13, 2014

Summary of Choices

This discussion presents two primary choices for board consideration and discussion:

1. Quantitative savings goal
2. Strategic emphasis in program management

A major component of Energy Trust's new Strategic Plan will be the 5 year energy conservation savings goals. For the draft plan, three options for goals are presented to the Board for consideration and ultimately one option or one combination of options will be adopted in the final 2015-2019 Strategic Plan. The three options include:

1. Base Option - Known-resource without hedged emerging technologies
2. New Technology Option - Known-resource with hedged emerging technologies
3. Expanded Option - Known-resource with hedged emerging technologies and possible opportunities

Each goal option starts with our estimate of savings opportunities from the current 2015 budget and action plan. This estimate will be updated this summer/fall and will be integrated into the final Strategic Plan.

The first option is most in line with typical utility long term planning methods for conservation. Although it will be very challenging to achieve all cost effective resource residing in this option, it's considered the least risky of the three options and results in the lowest 5 year savings estimated at 218 aMW and 22 MMTh (million therms). Only cost-effective measures and potential that is well within our large user funding limitations are included.

The second option builds on the first with the inclusion of some measures which are still considered to be emerging technologies but hold the most promise to become cost effective and solid performers within the scope of the next five years. The added difference is 18 aMW and 2 MMTh in 5 years.

The third option further increases goals by adding in expectations for 7 aMW of likely large electric opportunities not currently in the resource assessment. It also assumes gas measures now being worked through cost effectiveness exceptions with the OPUC will continue to be offered after 2014, adding 2.5 MMTh.

The numeric differences between each option is small but the level of risk in assuming additional resource is notable and worthy of discussion and board direction.

Two scenarios and two emphasized strategies are then presented to help put the goal options into perspective.

The two scenarios describe the bandwidth of uncertainty around the goal estimates. They describe the impacts of future conditions we cannot influence ("Maximum Challenge" and "Unforeseen Opportunity.") These two scenarios are not considered "options" but describe the extreme possibilities.

"Maximum Challenge" describes the impact of factors such as reduced load growth and consequent reduced conservation potential, less participation from "hard to reach" customers, and yet lower avoided cost forecasts leading to less cost-effective efficiency. The "Unforeseen Opportunity" scenario assumes that almost every technology that we can envision today becomes cost-effective and reliable within two years, that we experience a breakthrough regarding a persistent and reliable high-savings approach to home energy management, and also assumes high avoided costs and high engagement by all customer groups.

Two strategies are proposed for consideration should the board prefer to emphasize specific planning and delivery strategies more than they are included in the base case over the next five years. "Broadening" and "More New Technology" strategies would trigger deliberate adjustments to our actions towards meeting our goals. Each scenario is meant to provide additional food for thought and may influence how we choose to adjust our goals or other non-numeric achievements within the plan.

Figure 1 gives a sense for how the three goal options compare for electric savings plus how the two scenarios differ and offer a large bandwidth of uncertainty around the goals. Relative impacts between options are similar for gas.

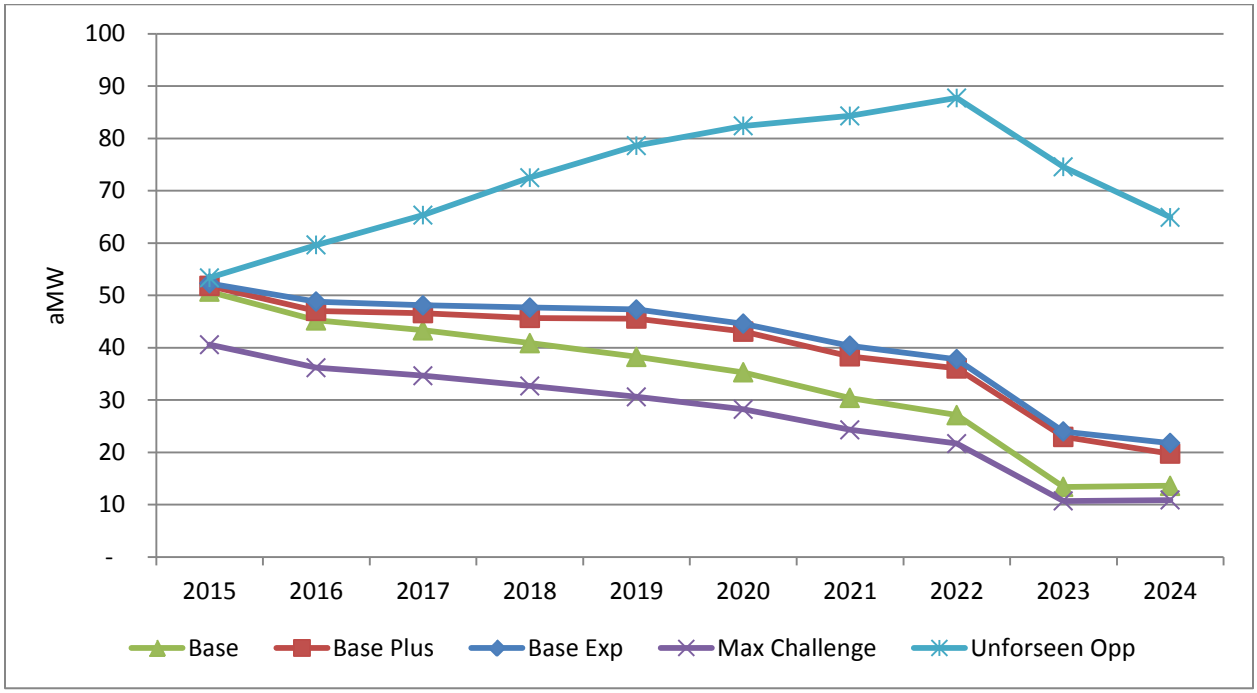


Figure 1: Annual electric savings by option with scenarios

This paper further explains the individual 5 year goal options and provides supplemental information regarding each. The tools used to develop forecasts are described along with their limitations. Each goal option assumes the critical strategies for successful acquisition of efficiency savings identified in the strategic planning process will be realized. The efficiency strategies are:

1. Continuously improve program designs to provide excellent customer service and support customers with energy solutions
2. Broaden participation by serving people and businesses we have not yet reached
3. Manage the total cost of efficiency to maximize cost-effective conservation potential; lowering the total cost of energy-saving projects and associated delivery transactions will help maintain and improve the supply of cost-effective energy efficiency measures
4. Replenish the mid-term and long-term energy conservation resource available by investing in new technology product development strategies and innovations
5. Support government and utility climate and load-management priorities

Before looking forward, a brief recap of performance to date and current opportunities provides context.

Efficiency Performance to Date

Over the last strategic plan horizon 2010-2014, assuming our 2014 results meet our annual goals, Energy Trust will acquire 106% of the electric savings goal and 114% of the gas savings goal posited in the 2009 Strategic Plan. [1]

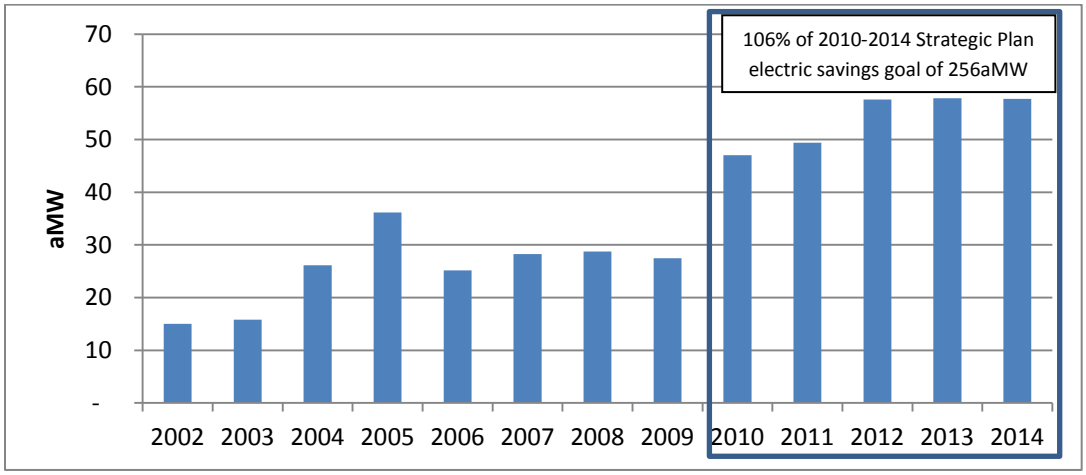


Figure 2: Progress toward Electric Savings Goals from 2009 Strategic Plan

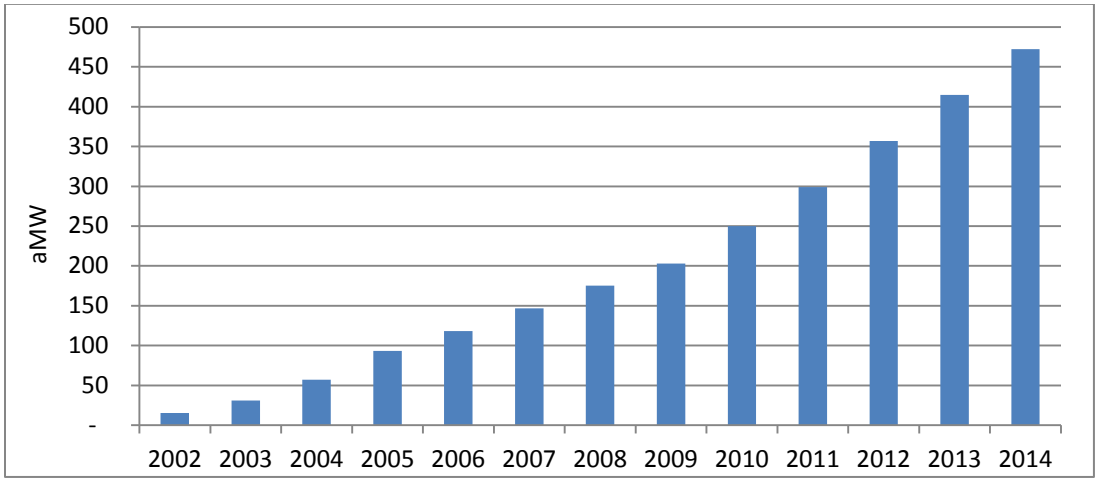


Figure 3: Cumulative Electric Savings Goals through Forecasted 2014

[1] Including savings from customers who self-direct through ODOE.

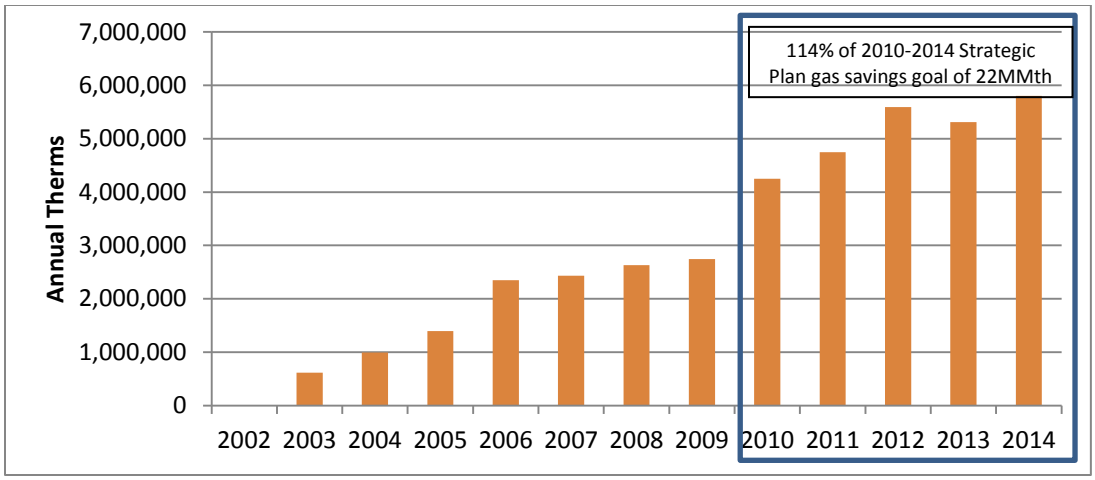


Figure 4: Progress toward Gas Savings Goals from 2009 Strategic Plan

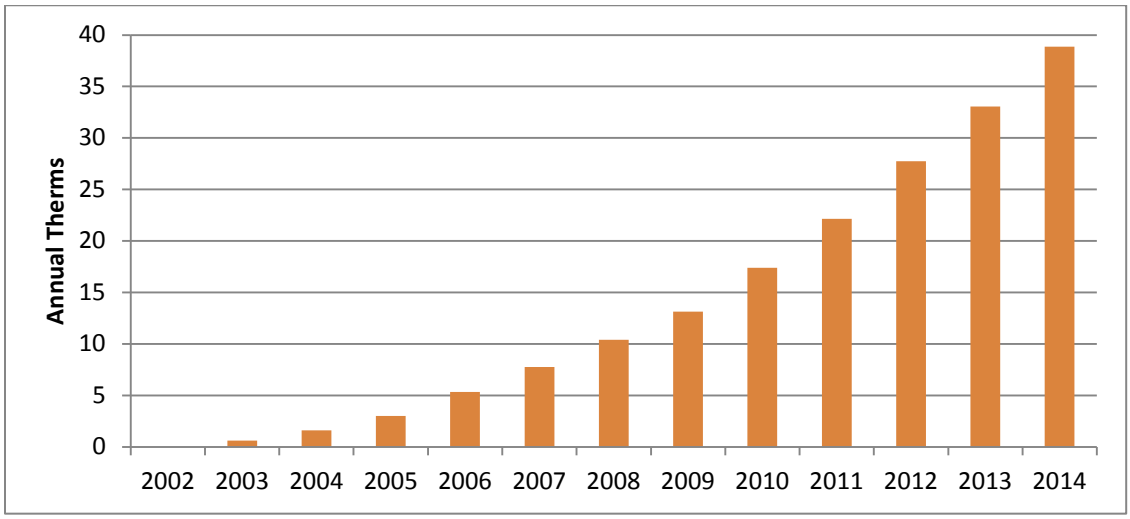


Figure 5: Cumulative Gas Savings through Forecasted 2014

For both fuels it was a period of significant growth in savings, resulting in a doubling of annual savings acquisition between 2009 and 2014.

Where have our savings come from? For electric, a total 414 aMW of savings acquired in the years 2002-2013 have been divided nearly equally across sectors: 33% residential, 35% commercial and 32% industrial savings, respectively (Figure 4). Current electric utility retail sales are more heavily weighted towards commercial and residential: 39% residential and commercial each and 22% industrial, reflecting deeper relative penetration of industrial electric programs.

For gas, residential savings has been most prominent with a 46% share, followed by slightly smaller commercial savings at 43% and industrial savings with 11% (Figure 5). Industrial programs were first funded to offer gas incentives in 2009 and have quickly ramped up to represent approximately 20% of our annual gas savings goal for 2014.

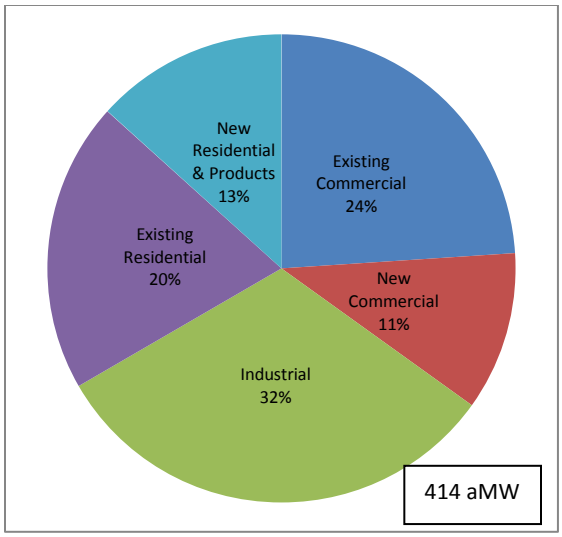


Figure 6: 2002-2013 electric savings by program, 414 aMW

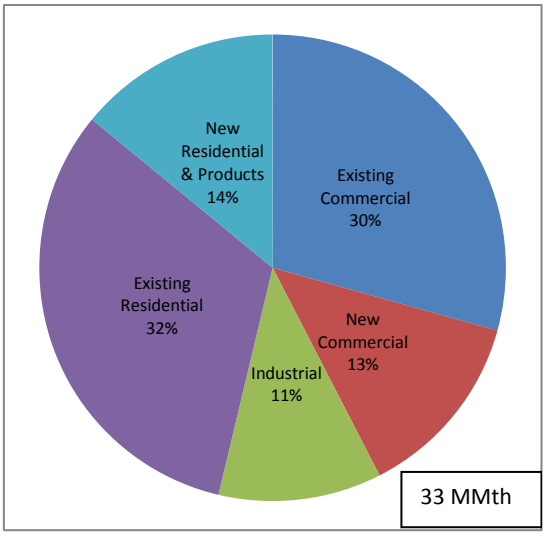


Figure 7: 2003-2013 gas savings by program, 33 MMTh total

Current Focus Areas for programs

Starting in July 2014, program staff will begin to develop a draft action plan for the 2015/2016 budget which will identify expected major areas of emphasis for each program. Examples are likely to include:

For residential programs:

- Additional lighting savings from specialty bulbs and LEDs, offsetting some decreases in appliance savings from changes in product savings for electric savings
- New homes construction growth at 20%+ market share, driving gas savings steadily upward
- Continued reliance on kits with showerheads and aerators for existing homes over the next few years as cost effectiveness of weatherization and future delivery is considered by the OPUC this year
- Ductless heat pumps, heat pump water heaters, gas hearths and window replacements continuing as mainstays of gas program savings

For commercial programs:

- Growth in LED applications
- Continued focus on small-medium existing commercial customers, given larger customers have achieved higher saturations of some efficiency measures
- New market solutions packages for small new construction
- Strategic Energy Management (SEM) as a significant contributor to cost effective savings, especially for gas
- Expansion of custom offerings for existing multifamily sites
- Mid-stream incentives for distributors of multifamily equipment
- Custom approaches for datacenters with forecasted sustained interest in the region
- Long term key customer relationship management

Industrial Programs:

- Small industrial and streamlined track projects projected to deliver significant savings

- Strategic energy management
- Steady pipeline of custom projects
- Gas savings from greenhouse market remain strong
- Lighting and compressed air common to multiple market segments

Contribution to Peak Load

Energy Efficiency measures save energy and also reduce loads disproportionately during high use periods and peak hours, times when they can reduce utility costs the most. Since Energy Trust's inception, the impact of efficiency on these periods has been quantified and factored into the estimates of the value of efficiency used in cost-effectiveness analyses. The best available regional savings shape estimates are applied to each major class of measures Energy Trust supports. Using these tools, Energy Trust programs have delivered almost 30% more savings on peak than on average during the year. Said another way, the 57.8 aMW of energy savings acquired in 2013 helped to lower peak demand by 75MW.

The profound impact of efficiency on the size of peak loads is illustrated by analysis recently completed by Tom Eckman of the NW Power and Conservation Planning Council. Tom used new metered data on load shapes of specific home end uses and comparing them to similar data from the 1980's.

Figure 8 shows how the daily load profile from water heating has shifted over the last 30 years. Successions of improvements to efficiency have saturated most homes. These have included more efficient water tanks, shower heads and faucet aerators. In addition, more efficient dishwashers and washing machines have reduced hot water use.

The graph shows not only are overall loads much lower, they are much less "peaky," meaning loads increase less during peak use hours. In this graph, Residential Building Stock Assessment data through the NW Energy Efficiency Alliance (NEEA) reflects contemporary energy use, compared to End Use Load and Consumer Assessment Program (ELCAP) data recorded almost thirty years ago.

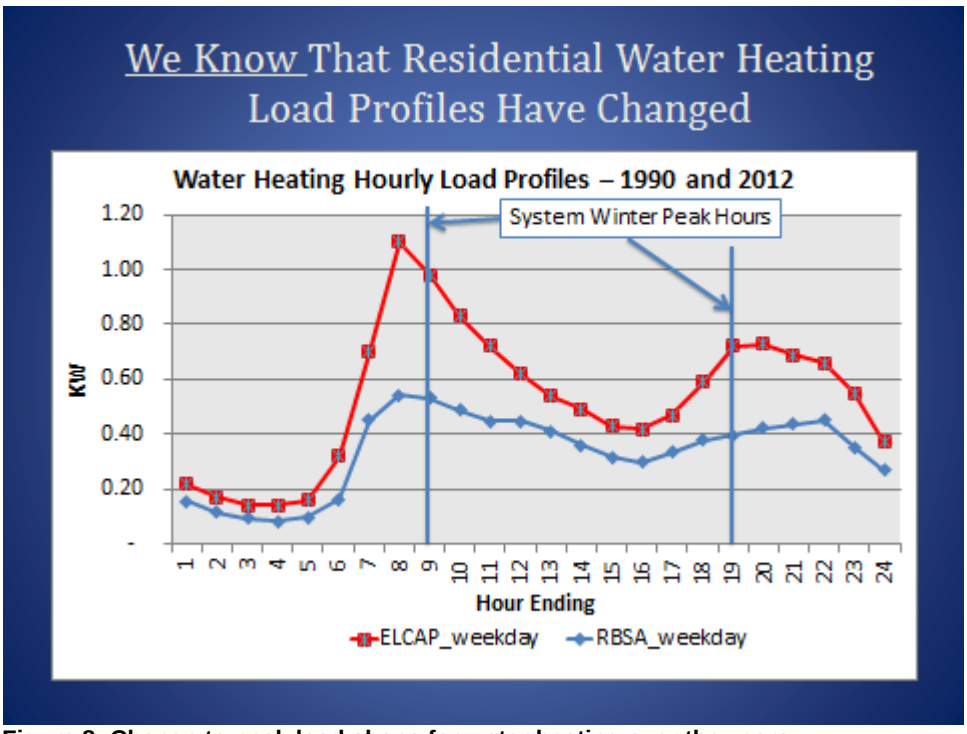


Figure 8: Change to peak load shape for water heating over the years

Similar analysis shows that efficient space heating systems, and even refrigerators are less "peaky." This new information will be incorporated into Power Council efficiency load shapes and then integrated into Energy Trust planning estimates for savings.

Creation of 5 year Goal Options

Base

A combination of short and long term forecasting approaches help inform our proposed 5 year savings goal. For the next 1-2 years, our forecasts are heavily influenced by our current program-specific knowledge of where the savings are coming from and how that compares to past program activity levels. This occurs through the annual process of budget and action plan development. These trends are described in the previous section. Program managers and staff, Program Management Contractors, Program Delivery Contractors and others work together to monitor trends and project pipelines to inform a reasonable range of short term goals.

Beyond 1-2 years, we begin to look to other sources that help define the longer term resource and incorporate those findings into our 20 year acquisition plan. The main tool most used at Energy Trust and among our peers for longer-term efficiency planning is the resource assessment. This complex study combines hundreds of assumptions regarding current energy use, future energy use without efficiency, and ways to save energy to assess how much cost effective savings are possible to be acquired in the next 20 years. The study begins with utility load forecasts by sector starting with the base year 2014. Utilities are able to forecast loads by business type for commercial and industrial as well as between single family, multifamily and manufactured home for residential through 2033. New commercial and residential construction is also projected as a portion of this load breakdown.

By sector and utility fuel, the 5 and 10 year load growth projections are shown in Table 1.

	Electric				Gas			
	2015-2019		2015-2024		2015-2019		2015-2024	
	aMW increase	Avg. annual growth	aMW increase	Avg. annual growth	MMTh increase	Avg. annual growth	MMth increase	Avg. annual growth
Residential	72	1. 0%	167	1. 1%	30	1. 3%	77	1. 7%
Commercial	85	1. 1%	202	1. 4%	15	1. 0%	40	1. 3%
Industrial	144	3. 2%	241	2. 7%	3	0. 5%	3	0. 2%
Total	300	1. 5%	609	1. 6%	48	1. 1%	119	1. 4%

Table 1: Utility load forecasts by sector and fuel

To this base assumption of future energy use, we apply regional study and evaluation data to divide load data into various end uses. Examples include lighting, space heating, process load, and plug load. Additional studies and evaluations further inform and match measures to specific end uses at the site level given the typical existing equipment. Studies of existing conditions such as the Residential Building Stock Assessment (RBSA) and Commercial Building Stock Assessment (CBSA) from NEEA are used to understand what the current energy use patterns are and what the penetration rate is for efficient measures. These studies also provide insight into how much more savings remains.

20-year Resource Potential Results

The “technical potential” is a measure of how much savings is technically possible to achieve without cost or other market barrier constraints to adoption. The “achievable potential” accounts for some market barriers, understanding not everyone will participate. Achievable potential is generally recognized in the industry as 85% of the technical potential. Finally, the “cost effective potential” is the achievable resource screened for likelihood of passing the Total Resource Cost (TRC) test, a prime standard for determining cost effectiveness. The TRC test calculates total cost for the measure compared to total benefits from the measure. The calculation accounts for avoided energy costs and benefits realized such as operations and maintenance and water savings. This cost effective achievable resource potential is used in our forecasted annual acquisition plans and provided to each utility for use in their Integrated Resource Planning (IRP).

Energy Trust assumes we will acquire all cost effective savings potential over the 20 year IRP horizon. Lost opportunities such as new construction and replacing equipment when it fails can only be acquired in the year the action occurs, leaving little flexibility for timing of its acquisition. By contrast, savings from retrofit measures are immediately available, provide greater flexibility in acquisition and also have market barriers and cost implications which can prevent very short term acquisition.

Sector	Technical Potential (aMW)	Achievable Potential (aMW)	Cost Effective Achievable Potential (aMW)	CE % of 2033 Retail Sales
Residential	396	337	228	12%
Commercial	319	271	214	11%
Industrial	207	176	175	13%
Total	922	784	617	12%

Table 2: Electric Conservation Potential

Sector	Technical Potential (MMth)	Achievable Potential (MMth)	Cost Effective Achievable Potential (MMth)	CE % of 2033 Retail Sales
Residential	104	88	22	3%
Commercial	44	37	19	5%
Industrial	28	24	24	22%
Total	176	150	64	6%

Table 3: Gas Conservation Potential

Compared to our 2012 Resource Assessment Update the 2014 study identifies 4% less cost effective conventional electric potential and 43% more cost effective conventional gas potential. While nearly 80% of achievable of electric potential is cost effective, just 43 % of gas achievable potential is cost effective based on the gas utilities' current forecasts of future gas prices. An increase to gas avoided costs forecasts of nearly 500% would be required for 80% of the gas achievable potential to be cost effective.

Although the efficiency resource reduction from low avoided costs is striking, a significant amount of savings potential remains. Available future savings are 150% of electric achievements to date and almost two times gas savings achievements to date. This varies by customer type as shown below in Table 4.

Savings Type	Electric Savings to date (aMW)	20 year cost effective electric potential (aMW)	Gas Savings to date (MMth)	20 year cost effective gas potential (MMth)
Existing Commercial	99	141	9. 7	16. 5
New Commercial	45	73	4. 3	2. 5
Industrial	131	175	37. 3	23. 5
Existing Residential	83	120	10. 6	11. 9
New Residential & Products	55	108	4. 6	9. 9
	415	617	33. 1	64. 4

Table 4: Comparison of achievements to date to resource potential

Within the resource assessment, savings are categorized as conventional or emerging technology. Conventional are well known and fully deployable savings today. The savings estimates have high confidence levels, the measures are cost-effective and are available as low-defect rate commercial products. There may still be challenges regarding how to successfully market and/or deliver the measure.

Experience working with resource assessments tells us it is overly limiting to consider only fully commercially available resources at current performance and cost. To address this, emerging technologies are included in the supply curves for the first time in this document. By definition, they are less well established measures from a technical perspective. In some cases they have no market presence. Others are known to the market, but we may have no validation of savings, or the measures are not yet cost-effective. There is a higher uncertainty regarding whether, when, and at what cost these measures will become available in a form with predictable costs and savings.

Energy Trust's emerging technology supply curves focused on the most promising and impactful of the possible energy savers. They are expected to become cost effective during the time span of the analysis, or stand a reasonably good chance of doing so. Examples of past emerging technologies that are now fully available conventional measures include specialty compact fluorescent bulbs, ductless heat pumps and heat pump water heaters.

The following charts show cost effective achievable potential by sector and conventional (existing) versus emerging technologies (ET) for both electric and gas.

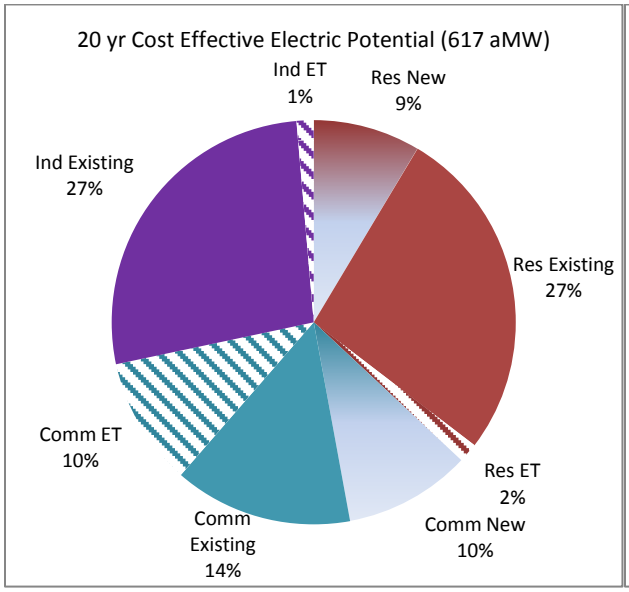


Figure 9: 20 year Electric CE potential by program type

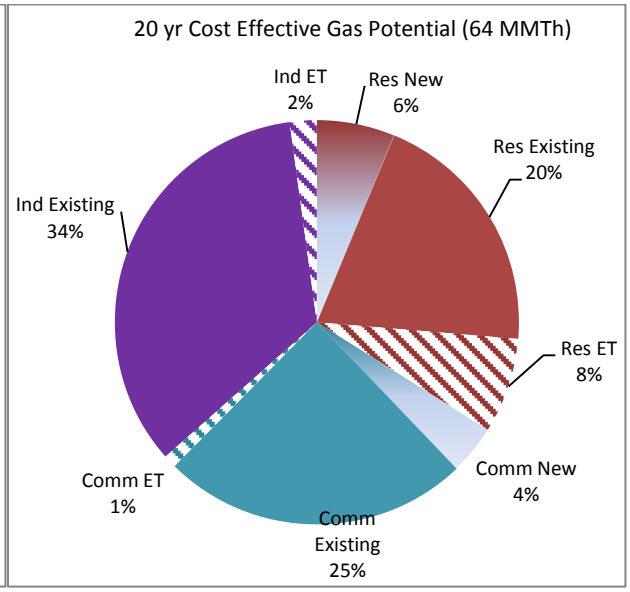


Figure 10: 20 year Gas CE potential by program type

For electric efficiency, 13% of the 20 year cost effective potential is emerging technology. 70% of the emerging technology incorporated into the electric supply curves is in various applications of LEDs with commercial customers seeing the majority of potential future savings. These are LED applications or efficiencies beyond those available today. For gas, 11% of total potential is emerging. Residential emerging technologies dominate with absorption heat pump water heaters and smart home automation providing much of the savings.

For both fuels, performance of each of the emerging technologies is "hedged" against a matrix of risk factors. Market, technology and data source risks are weighted and applied to each measure before they are included in the model. This approach of including "hedged" emerging technologies provides some reasonable consideration for those savings with a high likelihood of developing into firm resources. We consider this outlook of future resource our **base case** of supply. Higher levels of emerging technologies are possible, but increasingly less certain.

Limitations

Before combining these 20 year potential results with short term market outlooks to form the 5 year goals, itis important to consider the limitations of the resource assessment. We need to understand what is included, what's not included, and where it makes sense to apply these results directly or augment with other data sources, industry experience, and reasoned judgment.

Although the studies are grounded with the best available characterization of current energy use and ways in which energy can be reduced, there are limitations that need to be considered when forecasting future savings goals.

- The methodology is reasonable for assessing savings potential across the ***aggregate*** of sites but does not provide insight into site specific targeted savings opportunities. In other words, the total savings potential across the broad range of sites provides a reasonable estimate of average savings but each level of detail below the aggregate provides less meaningful results.

- Not all savings opportunities are represented in the resource assessment due to their very site specific nature. Some of the measures discussed below have provided significant actual savings in past years:
    - We consider fossil-powered combined heat and power (CHP) systems to be an electric efficiency compared to the efficiency of the grid. With lower natural gas prices, CHP may prove to be a cost effective option for more businesses. Based on PacifiCorp's 2012 IRP study, 15 aMW of natural gas fired CHP potential resides in Oregon. If we assume 50% of that is realized in 10 years, we may see an average of 0.75 aMW/yr or 1. 5 aMW every other year. It may be reasonable to foresee 3 aMW in the next five years.
    - Over the next 20 years the rise of electric vehicles may be significant with efficiency opportunities in charging stations. The magnitude of this opportunity is not represented in the study and is estimated to be ~1aMW in 5 years,
    - New data centers have proven to be very large, low cost and largely unforecasted opportunities for savings in our portfolio. In 2013, 5.9 aMW of savings came from new data centers. The New Buildings program is estimating ~ 2 aMW from enterprise level data centers in 2014 and 2015. These types of opportunities are not included in resource potential studies because the loads were not included in utility load forecasts. The highly confidential nature of data center development and placement make utility load forecasting for this large load addition extremely challenging. Some increases in data center load within commercial and industrial facilities are included in the resource assessment. However, we have not included any "huge honking" enterprise level data centers. This could represent ~6aMW in 5 years.
    - Similarly to new data centers, projects that have been "mega projects" for Energy Trust in past years are also not well represented in the resource assessment. It is largely an "average" site look at typical end uses, not a reflection of highlighted or unique opportunities. In 2013, an industrial megaproject provided 17% of the electric savings for the program, over 2.5 aMW or~2aMW in 5 years.
    - Only cost effective measures are included in our base outlook. Gas measures which currently have an exception from the OPUC and for which we will request a longer term exception are not included. This equates to 40% of the cost effective residential gas potential or10 MMTh in 20 years.
    - Only measures that are cost effective based on our current understanding of future energy values are included in our savings acquisition plans provided to the utilities for use in their IRPs. We are aligned with utility market fundamental assumptions. However, the "middle case" load forecasts from utilities that drive the supply curves do not consider future high energy cost paradigms or high carbon tax futures. For electricity, we add a "hedge" or "premium" value to avoided costs to address this risk, and this provides for more cost effective measures. There is currently no such adjustment for gas. Northwest Natural has

committed to studying this issue in 2015. This adjustment reflects the possibility of higher costs, but on a risk-adjusted basis, not the highest possible case.

- Lastly, only cost effective commercially available resources are included in IRP planning. We and a few utilities have made strides to include what are described as "hedged" emerging technology in this study while acknowledging more work remains to really understand how to incorporate development of future innovations when planning today. Having taken this firm step, we hope to improve our ability to incorporate additional savings over the next several years.

In summary, the resource assessment provides a good sense of the aggregate savings potential across all sectors and does not necessarily result in a detailed measure level look at rigorously defined savings estimates for specific measures. The potential study uses an industry standard approach to planning for conventional, commercially available, cost effective savings and includes some conservative limitations. The inclusion of hedged emerging technologies is a newapproach. Considering the additional list of limitations above, if broadly assigned, could add up to an additional 12 aMW of electric potential savings in 5 years and 10 MMTh more gas potential over 20 years.

Strategies Needed to Meet Goals

Throughout the information gathering stage of this strategic planning process, how to build upon our organizational strengths and recognize and address areas for improvement were considered. Strengths readily translated into five strategies we know we will need to employ in the next five years to achieve any quantitative savings goal the board establishes:

1. Continuously improve program designs to provide excellent customer service and support customers with energy solutions
2. Broaden participation by serving people and businesses we have not yet reached
3. Manage the total cost of efficiency to maximize cost-effective conservation potential; lowering the total cost of energy-saving projects and associated delivery transactions will help maintain and improve the supply of cost-effective energy efficiency measures
4. Replenish the mid-term and long-term energy conservation resource available by investing in new technology product development strategies and innovations
5. Support government and utility climate and load-management priorities

1. Continuously improve program designs to provide excellent customer service and support customers with energy solutions. This has been our most successful strategy for delivering savings to customers. Looking forward, we can build on a strong, trusted brand in the market. In the next five years, it is critical that we tailor our approach to customer needs and interests. We'll do so by:

- Funding energy conservation for large energy users to the extent possible, and minimize the effect of constrained funding on efficiency resource acquisition
- Leveraging low-cost metering and data analysis to allow participants to manage their energy use
- Helping build and support a strong, self-sustaining delivery market infrastructure that best meets customer needs with energy-efficiency options.
- Investing in market research necessary to understand current and evolving needs of specific market segments. We can meet customer needs only if we fully understand them. Once we do, we can design programs that build in these aspects efficiently
- Fostering relationships of repeat customers, achieving deep, cost-effective savings over time

- Accelerating and refining exploration of behavioral strategies, building on strategies that are already succeeding, lowering the cost of promising approaches and working on achieving persistent savings
- Developing and testing measures or approaches to reach known yet hard-to-reach efficiencies, e. g. advanced water heaters, condensing commercial rooftop furnaces, more advanced windows, early retirement of windows and furnaces

2. Broaden participation by serving people and businesses we have not yet reached*. This* may seem like such a basic premise that it may not need to be called out as a specific strategy. However, doing this effectively and well can be time consuming and more costly, and in turn compete for financial and staff resources focused on meeting short term acquisition goals.

Though we have programs designed and available for every type of customer, they may not currently offer the technical and services approaches that directly address the needs of some customer groups, may not be speaking the customer's language, or may not be as accessible to some ratepayers as they are to others. The resource potential study does not differentiate or call out these market barriers and instead views all sites as equally likely to be able to participate. We will need to reach everyone if we are to capture more of the resource potential identified. Actions that fall under this strategy include:

- Invest in research necessary to understand where participation gaps exist, to identify underserved customers and to design effective outreach strategies
- Increase awareness and engagement: work with communities and representative organizations to identify and reach under-served markets
- Explore and test new delivery approaches to meet needs cost effectively and leverage trade, program and lending allies to work in and with specific audiences and communities
- Focus first on under-served groups with significant savings potential and strong opportunities to improve uptake

The "base case" strategy emphasizes broadening services to the remaining underserved audiences where the impact may be the largest. Our current view is that these markets include homes outside the tri-county area and small business customers. Other high-yield target markets may be identified over time. This strategy is called out later in this paper as a possible area where the board may want to place further emphasis and expand even further to other markets.

3. Manage the total cost of efficiency to maximize cost-effective conservation potential. This is expected to become a much more important strategy in the next five years. We are noticing generally across all sectors that it is taking more resources (money, labor, time) to achieve the same amount of savings. To meet savings goals, we've had to increase incentives while making participation easy, both leading to higher overall delivery costs. To address the overall issue of cost of efficiency, our strategy involves action directed towards each perspective of the efficiency market – including us!

- Identify and optimize cost efficiencies in Energy Trust internal delivery and transaction costs through automation and process efficiencies wherever possible
- Employ alternative supply chain incentives: motivate retailers, distributors and contractors to promote efficient products by providing incentives to them directly, taking advantage of better leverage at wholesale prices

- Increase awareness: inform participants of the business case of efficiency investments, and the average costs and payback they can expect to see so they can make informed decisions
- Cost of services provided by contractors. In some areas we may need to encourage a more competitive, lower-margin approach to continue offering program services, possibly discouraging a "high touch" customer approach.

4. Invest in development of new technologies to replenish the mid and longer term supply of the cost effective energy conservation resource. This has become a key strategy, as the remaining supply of conservation from proven measures is diminished by our successes, by more stringent appliance standards and building codes, and by the increasing energy sophistication of markets. We will pursue this mostly through funding and integrated development of high-function new technologies and pilot offerings with NEEA but also through our own pilot activities. Examples of this work over the past few years include field testing residential behavior strategies (Blue Line, Opower), residential equipment pilots (heat pump water heaters and ductless heat pumps) and evolving Strategic Energy Management into a reliable resource for businesses. In our base five-year strategy we would call out this current activity more intentionally within our two-year action plans and annual budgets. This means we would itemize our expenditures and the staff time we plan to allocate to new technology development.

Right now, emerging technology costs are included in the cost side of Energy Trust's annual reporting of cost/benefit ratios for programs, even though the purpose of these investments is more about future year savings than savings in the year being reported. To address this issue, Energy Trust could develop and propose to the OPUC separate metrics for emerging technology development efforts. If the OPUC approved, we would then exclude the costs from annual cost/benefit ratios. An example of this new metric might be success at reaching specific milestones in establishing market-readiness for several technologies and energy management strategies. Such metrics would be included in Energy Trust's annual reporting and with OPUC support, would hopefully be included in adjustments to our minimum OPUC performance metrics.

Use of new metrics would likely first begin with NEEA's emerging technology investments because they are clearly delineated and already measured in this way. We could then explore the feasibility of distinguishing work within Energy Trust programs that is primarily focused on making new technologies ready for market. In many ways, these metrics would resemble the current Renewable Energy metrics for market development and transformation along with the renewable energy practice of occasionally funding early demonstrations of the most promising, newly commercial and not entirely field-proven technologies.

This strategy is also called out later in this paper as an optional area of additional emphasis beyond this base case strategy.

5. Support state and utility climate and load-management priorities. These are clear ways for Energy Trust to meet savings goals while helping others achieve their goals. Specific actions that fall within this strategy generally represent our readiness and willingness to acquire savings while supporting climate and load management goals of others, and our openness to apply our abilities as new opportunities arise.

- Climate and carbon reduction: track and report contribution to achieving state greenhouse gas emissions goals

- Support and collaborate with utilities on peak load management programs with energy conservation potential
- Remain open to new opportunities stemming from changes in state and national policy that would benefit from clean energy development

5 year Goal Options

Understanding our commitment to follow our five strategies, we can first define the "base case" savings opportunities within the framework of our quantitative planning tools.

Each 5 year strategic plan goal will be built from our 2015 budget and action plan savings goals. The 2015 and 2016 proposed budget goals and draft action plan will be reviewed by program staff, CAC and RAC members, the OPUC, utilities and other stakeholders this summer and fall. The final strategic plan will align with those final, more updated looks at the current market potential. For now, the current budget serves as a reasonable starting point for savings expectations and aligns with current utility IRPs.

From 2016 forward, we will build off 2015 savings forecasts and shape the remaining efficiency resource over the next 19 years, largely by capturing as many lost opportunities (new construction and equipment replacement) as possible AND acquiring cost-effective retrofit opportunities as much as possible in the earlier years. The pace of acquisition is constrained in our forecasts by market barriers, the objective to maintain continuity of efforts, and the need to work within "reasonable costs". "Reasonable costs" is a subjective constraint that recognizes that the gradual acquisition barrier at a moderate cost is better for ratepayers and trade allies than acquiring savings at a high cost and then suddenly ending programs. In our base case scenario, once retrofit savings acquisitions are largely completed in the first ten years, later year savings opportunities come largely from maintaining lost opportunity programs.

Option 1: Base Goal

1. Between 2015 and 2019, save 218 aMW of electricity (Figure 11)
2. Between 2015 and 2019, save 22 million annual therms of natural gas (Figure 12)

Major assumptions of Option 1, the base goal:

- Each of the five energy efficiency strategies are employed with emphasis placed on #1, continuously improving program design to meet customer needs. We continue to broaden our services cost effectively to all customers (#2) and do not necessarily set metrics to track and measure penetration rates by select customer groups. The focus is mainly on the underserved groups with the highest potential savings. We work to manage costs to maintain cost effective resource (#3) and we keep existing levels of focus on new technologies and approaches (#4).
- While this is a "base" case, it is quite challenging. We'll need to use all strategies, succeed in all markets, and might not see opportunistic projects to help fill gaps.
- All currently known cost effective resources are acquired over the twenty year period of 2014-2033. No added savings from emerging technologies are assumed.
- Retrofit acquisition rates resemble current retrofit acquisition capabilities with graduated declines until resources are depleted
- Gas existing home weatherization and water heating measures are not included because they are not cost effective and our exception from the OPUC expires in late

2014. Over the 20 year resource assessment, 10. 6 million annual therms are estimated to be available for these non-cost effective measures. If OPUC exceptions are continued, an additional 275,000-500,000 annual therms could potentially be acquired.

- Opportunistic (i.e., unforecasted) large projects are not included in these projections but are reasonably likely to occur at some point in the next 5 years. On the other hand, in any five year period, some loads also unexpectedly end due to business closures, reducing opportunities for efficiency.
- All cost effective efficiency resources for large electric energy users (>1 aMW) ***within our funding cap*** are included within the 5 year acquisition plan. In PGE territory, increased recent interest by large energy users in efficiency projects has caused program spending to weight more heavily towards large users than in the baseline period (pre SB838, 2004-2007) bringing spending up to the cap on large customer expenditures. The spending cap was negotiated at the time additional funding became available through SB 838[2]. If we project savings from these users will continue at the current pace, this would result in a $1.5M-$2M per year reduction in total incentives to PGE customer sites using >1 aMW. Over the next 5 years, a conservative estimate for savings "lost" is 8-9 aMW. In the short term, this $1. 5M to $2M per year might be used to fund projects at PGE customer sites using <1aMW but with higher average acquisition cost per kWh ($0.35/kWh vs. $0.11/kWh based on 2010-2012 average incentive dollars per savings). In the long-run, however, Energy Trust is already planning to acquire all those savings. Therefore reduced large customer activity will produce a net reduction in overall savings. The net impact is estimated to be a 5-6 aMW reduction in the savings identified in the resource assessment.

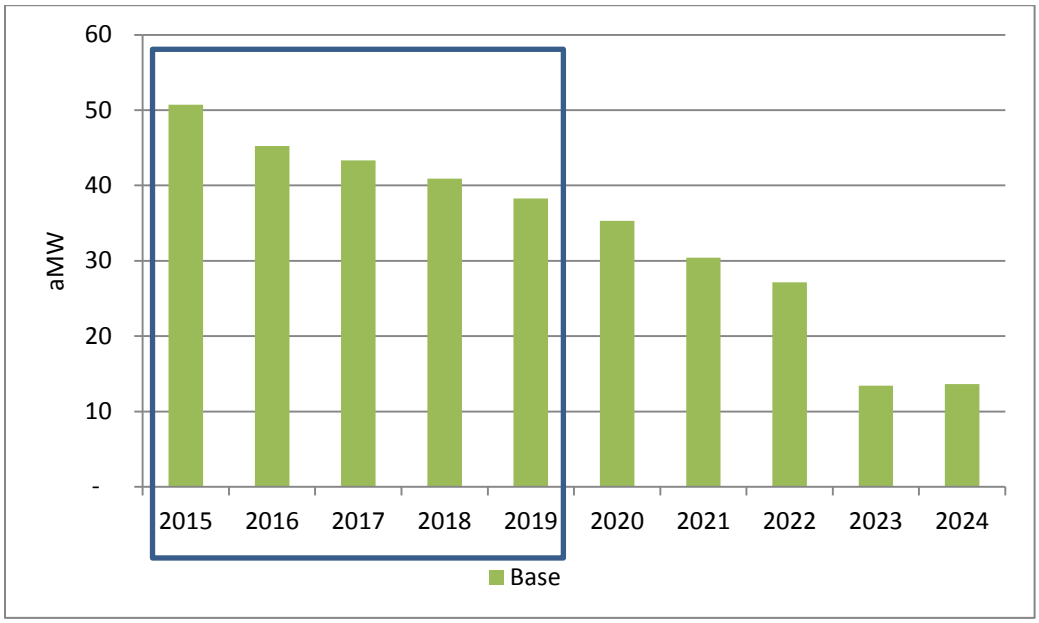


Figure 11: 10 year electric savings acquisition plan, 5 year goal of 218 aMW

[2] SB838 allowed for additional Energy Trust electric efficiency funding but did not include funding from >1 aMW customers, and precluded larger customers from deriving additional Energy Trust services as a consequence of that additional funding. A stakeholder group convened by the OPUC in 2008 agreed the way to implement this limitation on services was to cap larger customer funding, in aggregate, at the level of historic funding prior to SB 838. This issue is discussed further in other parts of the board strategic plan packet.

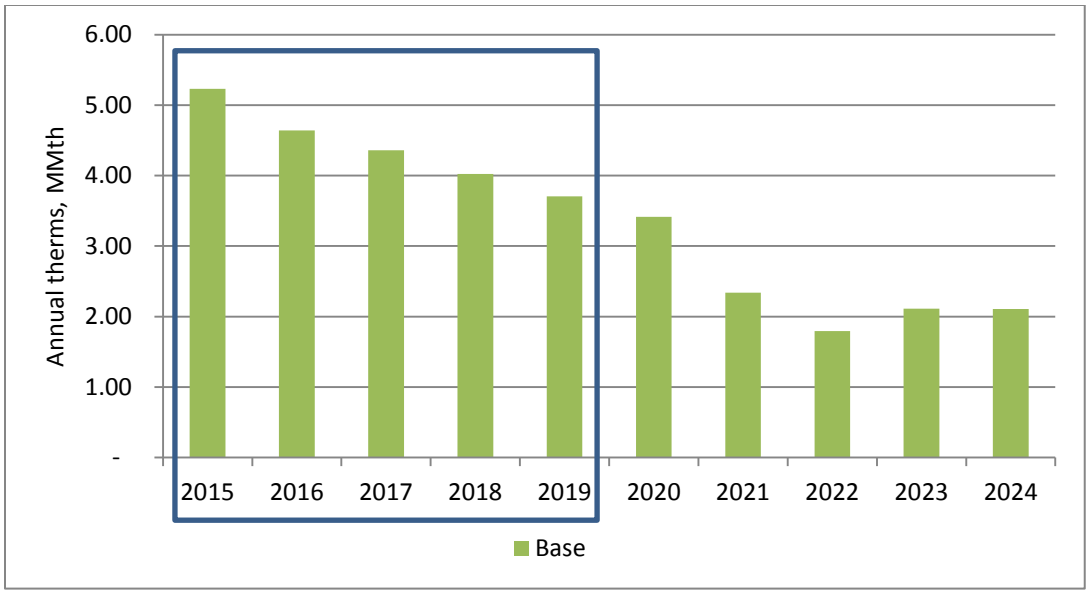


Figure 12: 10 year gas savings acquisition plan, 5 year goal of 22 million annual therms

Impacts of Option 1 Base Goal:

- By 2019, efficiency meets 73% of electric 5 year load growth and 46% of gas 5 year load growth.
- Roughly 285 MW of peak hour load is reduced in the electric system.
- Between 2010 and 2020, Oregon Greenhouse Gas (GHG) emissions need to decline by 12. 2 MM tons of CO2 to meet the state goal of achieving 10% below 1990 emissions by 2020. With this acquisition plan and an assumed renewable project contribution, Energy Trust would help meet 25% of the targeted reduction. (Figure 13)

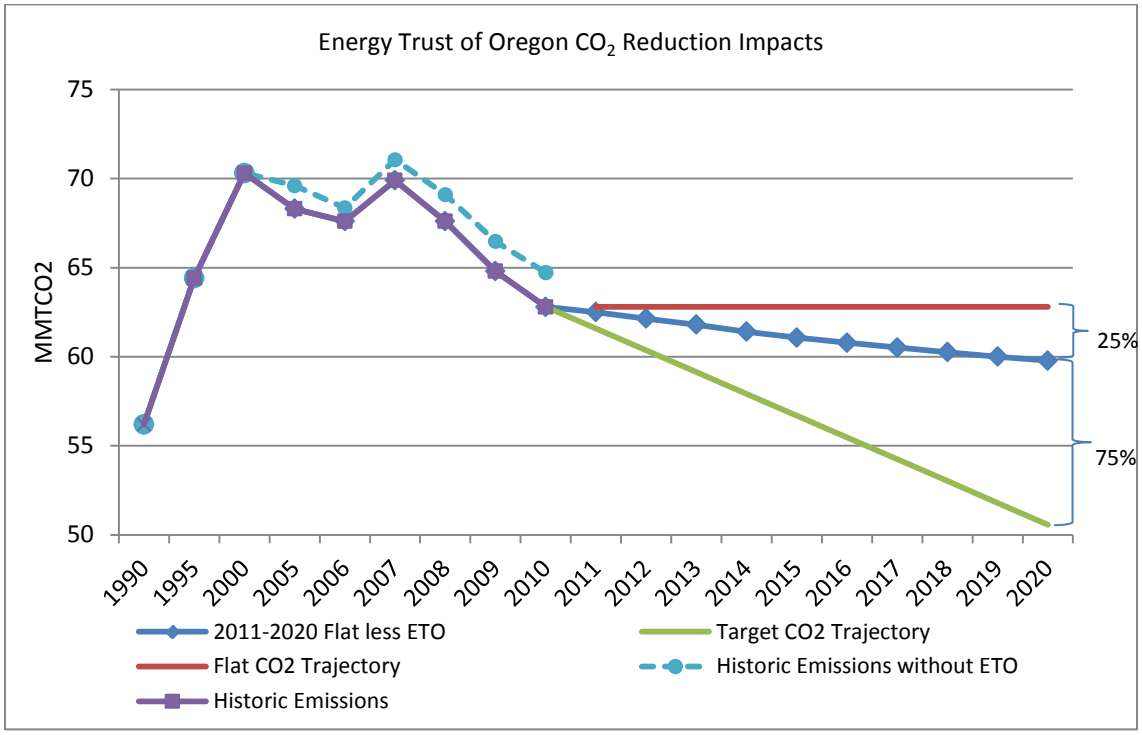


Figure 13: Energy Trust Contribution to State GHG Reduction Goal

The known limitations of the resource assessment lead us to define two additional options to consider in setting our 5 year savings goals.

Option 2: New Technology, Option 1 plus "hedged" emerging technologies

1. Between 2015 and 2019, save 237 aMW of electricity (additional 18aMW, 8% increase)
2. Between 2015 and 2019, save 24 million annual therms of natural gas (additional 2MTh, 9% increase)

Major assumptions of Option 2, New Technology:

- Same as Option 1 plus…
- All currently known cost effective resource plus 10-13% (electric/gas) additional emerging technology resource is acquired over the twenty year period of 2014-2033
- Our "hedged" assumptions for emerging technologies have reasonably constrained the risk associated with their development to a level at which utilities are able to base long term planning assumptions and include them as a resource.
- Not all technologies have to work as hoped and on schedule to meet these targets, but if some disappoint, others must exceed the hedged expectations.

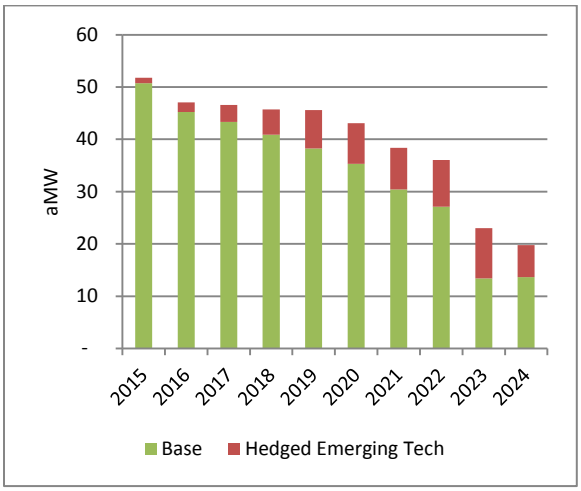


Figure 14: Electric acquisition with hedged emerging technology

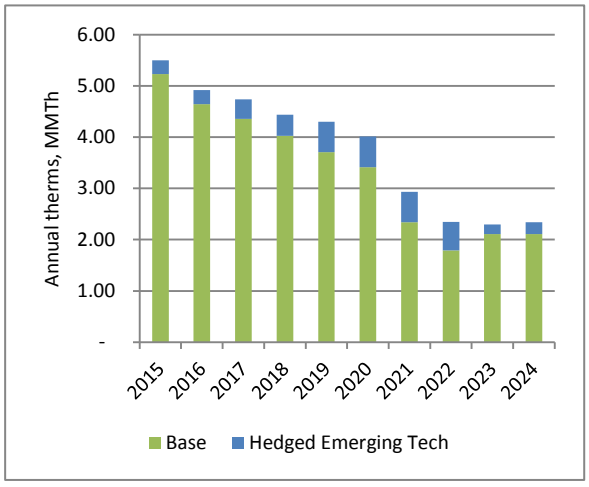


Figure 15: Gas acquisition with hedged emerging technologies

Impacts of Option 2, New Technology:

- By 2019, meet 79% of electric 5 year load growth and 50% of gas 5 year load growth.
- Roughly 308 MW of peak hour load is reduced in the electric system.

Option 3: Base Expanded and Option 2 expanded to include opportunities for large projects and cost effectiveness exceptions

1. Between 2015 and 2019, save 244 aMW of electricity (additional 7aMW, 3% increase)
2. Between 2015 and 2019, save 26. 5 million annual therms of natural gas (additional 2. 5 MMTh, 10% increase)

Major assumptions of high emerging technology and large projects:

- Same as Option 2 plus…

- For electric, 3 aMW of CHP, 1 aMW for electric vehicle charging efficiency, and another 3 aMW from megaprojects including potential new data centers are added to the 5 year acquisition
- For gas, all measures with current cost effectiveness exceptions are included in the 20 year potential (2.5 MTh achieved in 5 years).

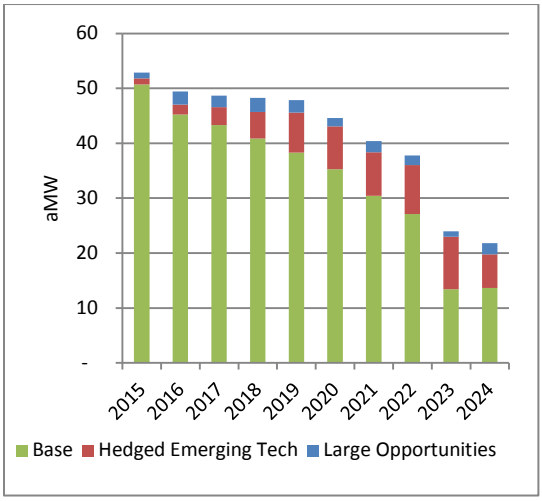


Figure 16: Electric acquisition with large opportunities

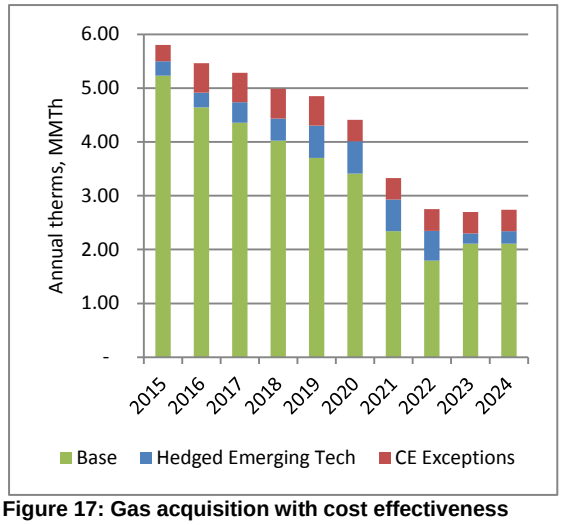


Figure 17: Gas acquisition with cost effectiveness exceptions continuing

Impacts of Option 3, Expanding both Base and Option 2:

- By 2019, meet 81% of electric 5 year load growth and 55% of gas 5 year load growth.
- Roughly 317 MW of peak hour load is reduced in the electric system.
- Although large opportunities may surface if we were to select Option 1 or Option 2, selecting Option 3 would drive us to look more thoroughly for these opportunities. .
- For example, our support of natural gas fired CHP studies would be well justified if one or two projects were to move forward with our assistance. This pursuit of large projects would continue to be tempered by >1 aMW funding constraints.
- Gas measure cost effectiveness exceptions will be determined by the end of 2014.

Scenarios Bounding Uncertainty

Two scenarios were created to describe the bandwidth of uncertainty surrounding the three different goal options. They describe the impacts of future conditions that we cannot influence, ranging from “Maximum Challenge” to “Unforeseen Opportunity.” These two scenarios illustrate the bandwidth of possibilities. “Maximum Challenge” describes the impact of factors such as reduced load growth and consequent reduced conservation potential, less participation from “hard to reach” customers, and lower avoided cost forecasts leading to less cost-effective efficiency. The “Maximum Challenge” scenario is largely beyond our control.

The “Unforeseen Opportunity” scenario assumes that almost every technology we envision today becomes cost-effective and reliable within two years and, there are radical innovations in how to deliver high savings from behavioral efficiency. Alternatively, the savings can come from major efficiency innovations not on our radar today. It also assumes high avoided costs and high engagement by all customer groups. There is no limitation to funding >1aMW customers and all efficiency resources are achievable. Higher investment in emerging technology

increases the possibility of getting closer to “Unforeseen Opportunity” and the results are still not predictable.

The “Unforeseen Opportunity” scenario is similar to goals others have set. For example, California’s Energy and Utility Commissions have set goals for getting the entire housing and building stock to zero net energy. These goals were initially unsupported by any analysis showing this could be done cost-effectively. The Commissions elected to set the goals regardless, and redesigned the entire program, regulatory and code development structures to help support the goals.

Ensuing pilot work, which would not have proceeded in the same way without these imagination-based goals, has shown increased chances the efficiency portion of meeting the goal can be achieved cost-effectively. This illustrates the power of goal-setting as an exploratory tool. The California example, however, also illustrates what it takes to move toward those goals, including the state policy apparatus setting zero net as a goal that exists in parallel to the cost-effectiveness regulatory structure and redirecting the design of the entire program apparatus around these goals. Oregon’s state policymakers have not made a similar decision.

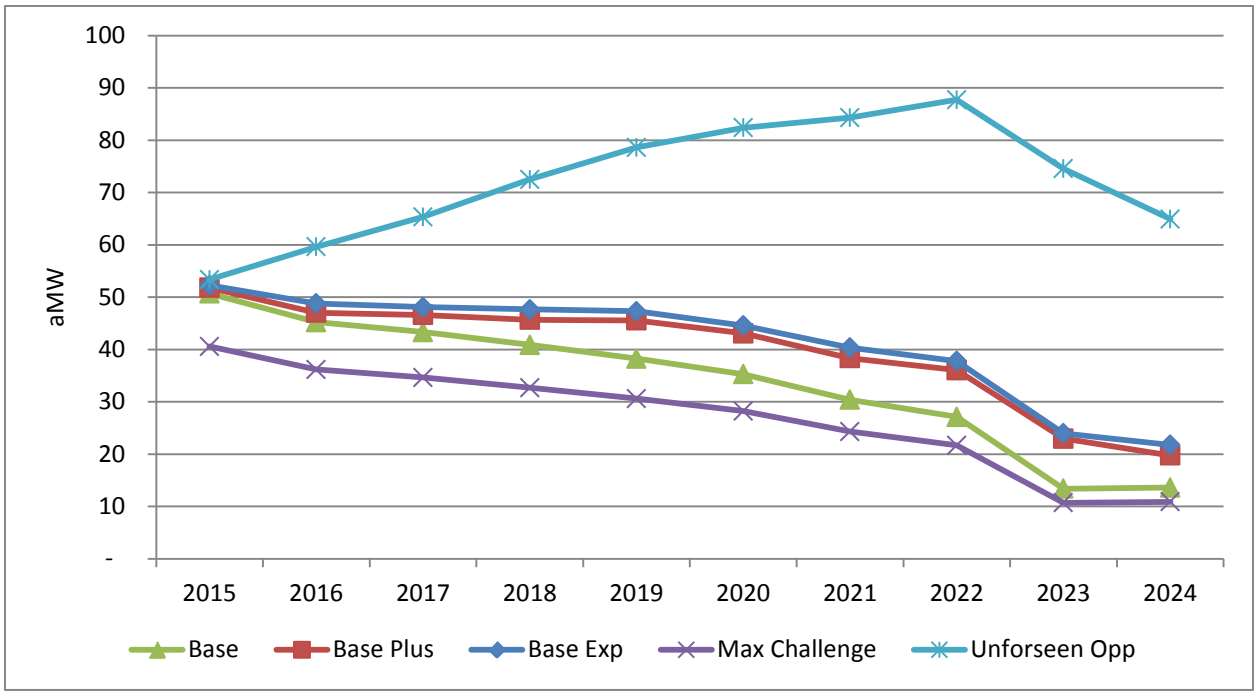


Figure 18: Electric goals options with market contingency bands

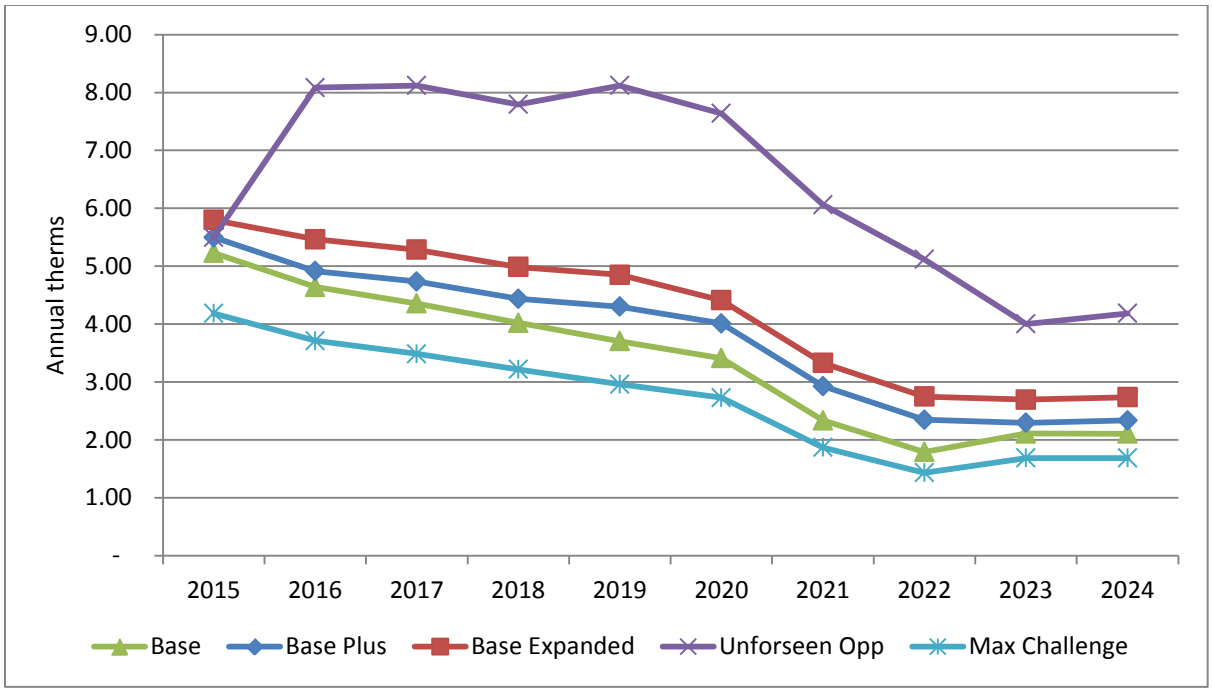


Figure 19: Gas goal options with market contingency bands

How might these scenarios impact our 5 year goal setting?

- Additional recognition of future uncertainty in market and policy aspects beyond our control could be added to the plan. Budget and action plans are updated every year to fine tune short term savings and utility Integrated Resource Plans are updated every two years. We continuously update our short term (1-2 year) outlook in coordination with utilities and stakeholders. These tools can help address changes in markets should they occur.
- As market and policy opportunities arise that could lead to new or expand funding streams dedicated to similar purposes of saving energy, we can be positioned to take on new, additional targets. Early plan feedback from stakeholders supported Energy Trust being ready to act if and when asked to contribute in new ways. Possible new roles are illustrated within the Unforeseen Opportunity scenario line in the above graph should new/additional resources be acquired. The board may choose to clearly state in the strategic plan that as opportunities arise, Energy Trust will actively consider what our role and contribution could be.

Strategy Emphasis

Because we assume no additional staff resources or revenues for the coming five years, we would expect each of the strategies to compete for funding. For example, broadening participation to serve harder-to-reach markets and developing emerging technologies may compete with cost reduction.

The base goal proposes to balance the competition in implementation processes: Energy Trust sector managers would develop plans adapting the strategies for industrial, commercial and residential sectors. Energy Trust planning staff would bring the strategies into utility Integrated Resource Planning. Energy Trust annual budgets would allocate funding to specific programs

and uses. At each point, current information and professional judgment would help balance strategies.

For any number of reasons, it may be the board wants to ensure that one or more of the strategies is brought forward in implementation. With this in mind, we analyzed two scenarios: "Broadening" and "More New Technology." These two were chosen as areas of emphasis primarily because of all the ideas for potential new or expanded Energy Trust roles to take on vetted through the Strategic Planning process; they rose to the top for staff and stakeholders.

Emphasizing one of these strategies would signal an identity change for Energy Trust—that we want to become a new emerging technology fostering organization, or an organization known for its dedication and ability to engage all ratepayers.

Strategy Emphasis #1: New technologies and approaches

Strategy emphasis #1 prioritizes support for new technologies and approaches. In the base case, the most promising technologies are addressed in Energy Trust's work with NEEA and through current established Energy Trust pilot programs and testing.

This strategy increases our commitment to field testing and refining efficient products and behavioral program strategies to increase the amount of available efficiency. This strategy does not include "upstream" work to invent new technologies or bring them to market, which is clearly in NEEA's domain. It may include an occasional effort to help manufacturers refine the *performance* of a crucial new technology to assure savings, as was done over the last five years with heat pump water heaters.

In the information gathering stage of the planning process, our benchmarking study identified the technology development work of NYSERDA. To us, they represent the outlier. They have significant dedicated funds to emerging tech, about $20M a year, and will often fund projects at an earlier point in their life cycle than NEEA or Energy Trust has done. At some point we will most likely benefit from the work they have done. We do not believe Energy Trust is well suited for a similar role. The funding resources and staff experience needed are currently outside of our capabilities.

Our focus in emphasizing this strategy would be to refine the plethora of products entering the market that have yet to be fully tested, demonstrate how tmuch energy they can save, or test effectiveness of new program and market infrastructure and delivery systems. This would be done by redirecting some resources from near-term resource acquisition. In particular, program managers and Program Management Contractors would spend a larger proportion of their time working on field tests. The results might include significant new added savings, and there is no certainty of results. The most promising technologies are addressed in the base case through Energy Trust's work with NEEA and its current level of pilot testing.

Due to so many uncertainties associated with the direct savings that could be realized from this approach, we do not offer a numerical difference to the 5 year base savings goal. Energy Trust does not anticipate it will have the staff, budget, or other resources to emphasize everything equally.Greater emphasis here could only occur by trading off emphasis on other objectives. The net result might be slightly less near-term savings and an unknown chance of significantly higher savings overall.

Strategy Emphasis #2: Broaden Participation

The "Broadening" strategy would redirect Energy Trust resources such as staff and contractor time, market research resources, management attention, and incentive dollars away from near-term savings opportunities to additional markets not deeply engaged in energy efficiency. Energy Trust would vigorously pursue the largest underserved markets with the most potential savings within the base scenario. These include expanded efforts to address customers outside of the Portland metro area and small commercial and industrial customers. The "Broadening" scenario would also expand efforts to reach groups which may have more limited savings and more difficult language or income barriers. By addressing these customers vigorously over the next five years it may be possible to acquire more savings from them over a twenty-year timeframe. However, by redirecting resources toward these customers, Energy Trust will have fewer resources invested to meet near-term goals, and savings over the five year planning period maybe less.

With this emphasis, we are choosing to focus on identifying, understanding, targeting and reaching these markets sooner than we would have if we chose to serve them more gradually.

Who are the "underserved"?

Over the 12 years in which Energy Trust has delivered efficiency programs, we have touched an ever increasing number of ratepayers with our efforts. Many first time participants return in future years. This creates economies for us and also leads us to naturally favor going back to existing relationships to meet savings goals.

There are several general categories of customers which are most likely to show some underserved gaps.

Residential Sector

- Rural, clearly outside of the Portland tri-county area
- Low to moderate income residential
- Non Caucasian
- Renters

Our evaluation group conducted an analysis of the differences in the distribution of savings and incentives per household between census tracts with varying amounts of households across three categories; income, race/ethnicity, and geography by year from 2004 to 2013. The main finding was that there is a significant disparity in participation between the Portland Metro areas, with much higher participation, and the rest of Oregon, with lower participation, A year-by-year view did not show any trends where this disparity increased or decreased. The study could not find significant differences in overall participation between census tracts with concentrations of multifamily, minority, or low income populations and other census tracts with one exception. There was some indication of under-participation by Hispanic households. This is not to say that other such differences do not exist, only that if they exist they are probably of a far smaller magnitude than differences by geographic area.

Commercial Sector

- Rural
- Small commercial, < 25,000 SF

We have suspected that small commercial sites have been underserved by our programs because they are many in number and difficult to serve. The amount of savings per site is so much less than medium to large sites that the cost of delivering services cannot be justified by the savings. Another approach might be needed. Initial investigations into our penetration of small commercial sites shows that we are doing better in this market than we had suspected. In 2013, 42% of electric savings in Existing Buildings was from sites 50,000 SF or under and 30% of savings were from sites 25,000 SF or less. For gas savings, 51% of savings came from sites 50,000 SF or less and 27% of savings was from 25,000 SF and under. This compares to market data showing that 45% of commercial space is less 50,000 SF and under and 30% of commercial space is less than 25,000 SF.

Existing Buildings Site type	% 2013 Electric Savings	% 2013 Gas Savings	CoStar Market Data Base - % market SF
Up to 50kSF	44%	51%	46%
Up to 25kSF	31%	27%	31%

Reaching rural small commercial is still an opportunity we would like to better understand. There are fewer trade allies in those areas and working with the delivery markets in new ways may be just what is needed to expand our reach to them.

Industrial Sector

- Small industrial

We know we've reached ~95% of the large industrial sites and small industrial sites remain a source of unknown potential. We're expanding our efforts now to reach them and have yet to really quantify the exact potential. From our resource assessment, we know that over 60% of the industrial savings is estimated to reside with large users leaving a smaller yet significant portion to focus upon. We know our approach to serving large customers may be too costly to serve smaller sites based on the relative magnitude of site specific savings potential. Investing in redesigning our approach to leverage tools such as savings calculators and streamline audits will improve our delivery efficiency and are currently in development. The time and funds invested now to achieve these efficiencies will pay off in future years.

What concrete differences from our base goal actions would result from emphasizing broadening our base of participants?

- Our approach would be to undertake a thorough analysis to identify who we are reaching and not reaching by:
  - Geography
  - Ethnicity
  - Income level
  - Owner/renter markets
  - Business type and size - commercial/Industrial market segments
  - Does our mix in reach mirror the mix of ratepayers?
- From this work, we would develop a plan for prioritizing activities needed to reach segments based on complexity and potential savings

- Program Manager Contracts would reflect their implementation roles for these plans in coordination with us. Milestones such as program design ideas and projects completed by target customer type would be defined.
- As we have engaged marketing contractors to guide our overall awareness activities and marketing strategies, we would expand this market understanding to target types of customers and to help us adjust our approach to meet their specific needs. We anticipate collaboration with communities and representative organizations will be needed to help reach underserved markets.
- Budgets and action plans would specify activities specifically for underserved markets and plan for the next year.
- We would report against the plan to show progress and where we need to place emphasis next.
- Cost/kWh and therm saved are likely to be slightly higher for five years under this option because these markets require more focused efforts to deliver and acquire savings.
- Existing efforts such as the Small Industrial program expansion would be fully supported within the program budget.
- With this option comes trade off of staff time and resources which would somewhat reduce the focus on achieving base goals.

Summary – Setting the Five-Year Energy Conservation Goal

- Should Energy Trust's efficiency goals be based on Option 1 - Base (conventional analysis), Option 2 - New Technology (plus hedged emerging technology) or Option 3 - Expanded (assumes several other elements proceed optimally and resources not in the supply curves are achieved).
- Should Energy Trust balance among the strategies in the course of implementation through annual sector, action and budget planning, or should we place place more emphasis on emerging technology or broadening participation at the expense of the other strategies?
- Does the answer to the second question regarding strategy emphasis change the five-year, quantitative energy conservation goal selected?