Conservation Advisory Council Agenda

Virtual meeting

Friday, May 14, 2021
9:30 – 12 p.m.

To join the Zoom meeting, register at this link:
https://zoom.us/meeting/register/tJckdu2vqD4rG9coB_L8AfR2jyPuHUzxDMpV

After registering, you will receive a confirmation email containing information about joining the meeting.

9:30 Welcome and announcements

- Introductions
- Welcome newest members
- Agenda review
- February notes approval
- Organizational announcement

9:35 Measure development and in-progress cost-effectiveness exceptions *(seeking council feedback)*

For this part of the meeting, staff will broadly review the measure development and cost-effectiveness exceptions process. At this point in the year, there are updates in three areas: a heating measure (ductless heat pumps in existing multifamily and residential settings), the New Buildings program whole-building offers and the Manufactured Home Replacement Pilot. The update on the pilot will take place during the next agenda topic.

9:35 – 9:50: Measure development and cost-effectiveness exceptions overview (Alex Novie)

9:50 – 10:10: Ductless heat pump measure cost-effectiveness exception in the Residential program and existing multifamily initiative (Alex Novie, Marshall Johnson, Jackie Goss)

10:10 – 10:40: An update on the New Buildings current cost-effectiveness exception on whole building projects and a proposed extension of the exception (Alex Novie, Jay Olson)

10:40 In-depth update on the Manufactured Home Replacement Pilot *(seeking council feedback)*

Energy Trust staff will present an update on a multi-year Manufactured Home Replacement Pilot and seek input as the pilot transitions to a standard program offering. The pilot leverages several funding sources to replace old, inefficient manufactured housing with new, affordable homes. It has been under a cost-effectiveness exception since May 2020 as staff explored its benefits, costs and an energy-savings impact evaluation. Staff are working now to replace the pilot with a standard offer, including exploring the offer's cost effectiveness with updated savings information, measure requirements, incentive amounts and eligibility criteria. It is anticipated a cost-effectiveness exception may still be warranted for the standard offer. Staff will review the details and key questions surfacing in the analysis and

measure development work, and invites the council and stakeholders to provide feedback on the approaches under consideration.

Presenter: Mark Wyman

11:20 Update on the 2021 business incentives management approach and program changes *(inform with time for feedback)*
There was high demand in 2020 for incentives for some Production Efficiency measures, some Existing Buildings measures and the business lighting initiative. This led to staff adjusting 2021 incentive levels and requirements to manage the 2021 budget more closely. Today's presentation is a follow-on to the February meeting update and will provide information on changes implemented, how the market has reacted and the 2021 outlook for these programs.

Presenters: Oliver Kesting, Adam Bartini, Wendy Gibson, Jessica Kramer

11:50 Public comment

12:00 Adjourn

Meeting materials (agendas, presentations and notes) are available online.

Next meeting: Our next meeting is June 16, 2021.

Conservation Advisory Council Meeting Notes

February 17, 2021

Attending from the council:
Jeff Bissonnette, NW Energy Coalition
Warren Cook, Oregon Department of Energy
Tamara Falls, PGE (for Jason Klotz)
Kari Greer, Pacific Power
Rick Hodges, NW Natural
Tina Jayaweera, NW Power and Conservation Council
Anna Kim, Oregon Public Utility Commission
Kerry Meade, Northwest Energy Efficiency Council
Dave Moody, Bonneville Power Administration
Lisa McGarity, Avista
Tyler Pepple, Alliance of Western Energy Consumers
Elaine Miller, Northwest Energy Efficiency Alliance (for Julia Harper)
Monica Cowlishaw, Cascade Natural Gas (for Alyn Spector)

Attending from Energy Trust:
Hannah Cruz
Peter West
Mike Colgrove
Elizabeth Fox
Julianne Thacher
Alex Novie
Thad Roth
Steve Lacey
Fred Gordon
Tyrone Henry
Sue Fletcher
Oliver Kesting
Jay Olson
Jackie Goss
Amanda Potter
Wendy Gibson
Adam Bartini
Diamante Jamison
Tom Beverly
Abby Spegman
Jessica Kramer
Kenji Spielman
Tara Crookshank

Others attending:
Elee Jen, Energy Trust board
Alan Meyer, Energy Trust board
Lindsey Hardy, Energy Trust board
Aaron Frechette, Cascade Energy
Misti Nelmes, CLEAResult
Dave Backen, Backen Consulting
Cindy Strecker, CLEAResult
Chris Smith, Energy350
Josh Weissert, Energy350
Erik Holman, Cascade Energy
Frederick Randall, Small Business Utility Advocates
Tim Telfer, CLEAResult
Sara Fredrickson, CLEAResult
Jeff Goby
Matt Arndt, Rogers Machinery

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1. Welcome

Hannah Cruz, senior communications manager, convened the meeting at 1:30 p.m. via Zoom. The agenda, notes and presentation materials are available at www.energytrust.org/about/public-meetings/conservation-advisory-council-meetings.

Hannah Cruz summarized the agenda and called for any changes or comments on previous meeting minutes. There were none.

Amanda Potter, the industrial sector lead, provided an update on contracting. A technical review request for qualifications will be released in March. A standard industrial track request for proposals was scheduled to be released this year but staff is asking the board for a one-year extension to the existing contract while it considers program structure options. A combined standard and custom track request for proposals will be released in 2022.

2. Findings from Member Outreach

Topic summary

In January, Hannah Cruz met with council members to get input on meeting facilitation approaches and agendas. Common areas of feedback were desire for opportunities to give meaningful input, providing connection among council members and members of the Diversity Advisory Council, and the council's role in regards to the board and staff.

Discussion

There was no additional discussion or questions.

Next steps

None.

3. Preliminary 2020 Results and 2021 Goals

Topic summary

Director of Energy Programs Peter West shared preliminary results for 2020, including progress toward achieving savings goals. Energy Trust reached 95% of electric and 110% of gas savings goals and 127% of the renewable energy goal. A handful of larger commercial projects pushed into 2021, so savings from those will show up this year. Given the unusual year, the results are notable and benefited from collaborative work with community partners and utilities to reach low-income customers. Peter West provided a reminder on the 2021 organizational goals guiding program strategies and activities for this year.

Discussion

Members asked how the achievement in renewables works with the fixed renewables budget and if Pacific Power incentives are lower than those in PGE territory (Kari Greer). They also asked what part of the Residential portfolio is driving savings (Dave Moody) and how this compares to the previous economic downturn (Lisa McGarity). Members suggested using economic indicators may be helpful in forecasting (Lisa McGarity).

Staff said renewable incentives were supported by carryover and reserve buffers. Pacific Power incentives for renewables are lower than PGE's. Residential savings were mostly driven by lighting and smart thermostats. Staff used the 2008-09 downturn as a model early in the pandemic, but by June 2020 it was not as similar a reference point. The previous downturn was financial in nature; this time, Energy Trust put more offers into the market and let the market choose.

Next steps

None.

4. Business Lighting Changes and Incentive Management

Topic summary

Jessica Kramer provided an overview of business lighting changes. High demand for business lighting incentives in Q4 2020 impacted availability of incentives for 2021 and necessitated changes to the 2021 business lighting incentive budget.

Business lighting incorporates commercial and industrial customers, delivering a third of Energy Trust's incentive portfolio. As COVID-19 slowed Oregon business activity, Energy Trust introduced a wide range of bonuses to help customers get more from their energy dollars when it really mattered. Project activity ramped up quickly in the fall due to bonuses. As a result, Energy Trust took steps to manage its 2020 and 2021 budgets, ending bonuses in October and pausing new applications in November. The organization is spending a large portion of the 2021 budget on those projects. It is typical to spend 20-25% of the annual budget on projects carried over from the previous year; in 2021, it will be 55-77%.

To spread incentives out as much as possible for the remainder of the year, only enrolled trade allies may submit lighting incentive applications; new contractors can still enroll in the network. There will be no self-installs except at public K-12 schools and public buildings. Prescriptive incentive levels were reduced by 10-30% with new caps and limits on the number of active projects allowed for each trade ally. There is a shortened application and completion timelines.

The program held a webinar in January to answer questions about the changes and staff is already seeing a lot of activity in February. More than 100 contractors have started signing up for the new program. The deadline for lighting bonus project submissions is February 28, 2021. Any projects that don't move forward by then will be added back into the budget.

Discussion
Members asked what percentage of trade allies who do lighting have applied (Lisa McGarrity) and if the caps would apply to large projects, adding this will give the schools more certainty, even with caps and different incentives (Warren Cook). Members asked about the drivers for these changes (Dave Moody) and if this information went to the Diversity Advisory Council (Rick Hodges).

Staff explained the cap is by individual site address, rather than by school district. Large projects will still be subject to the $6,000 cap. The primary driver behind this new approach is to extend the budget as long as possible for as many customers and trade allies as possible. The program is still seeking a midstream incentive rollout, but right now is concentrated on downstream.

This has not been presented to the Diversity Advisory Council. Staff noted Energy Trust is still seeking new trade allies despite the closed network and is focused on recruiting minority- and women-owned contractors.

Next steps
None.

5. New Buildings Cost-effectiveness Workshops
Topic summary
Jay Olson provided background and an introduction to this discussion, and Cindy Strecker discussed details. Workshops continued through 2020 to determine a path forward for the New Buildings program as the state moves to higher, whole building efficiency levels in the energy code. The new code doesn't allow Energy Trust to incentivize individual measures the way it did previously. Energy Trust has a total resource cost (TRC) cost-effectiveness exception from the OPUC until 2022. Staff briefed the council on these discussions in summer 2020 and provided an informational update on the latest actions taken, including conducting building proxy

analyses that look at different building types where incentive packages may or may not work. Phase 1 of the proxy approach showed cost-effectiveness at the building level for various packages and levels of above-code performance. About 50% of packages met overall TRC. Cost effectiveness wasn't always a function of overall savings. Additional consideration should be given to interactive costs. Phase 2 will include more building types.

Discussion
Hannah Cruz asked how this work and the two-year exception line up with Energy Trust's budgeting process and about the delta between Path to Net Zero and the whole building approach. Members noted it is a complicated change to look at the whole building (Warren Cook) and asked if staff looked at an annual inflation factor for overall site costs or every three years (Lisa McGarity).

Staff is working on budget timelines now and want to have this figured out in time to include in 2022 budgeting. The big questions of how to move forward will come out of this initial study. Significant effort, time and money is required to run each of these packages and building types; staff will need to determine if this will happen each year or if there is another way to do it. That will impact how programs are designed going forward. It has been valuable to have Oregon Department of Energy and Northwest Energy Efficiency Alliance at the table to have a common understanding and goal.

Next steps
None.

6. State Legislative Update
Topic summary
Hannah Cruz provided information on energy-related bills staff is monitored during Oregon's 2021 legislative session, including a bill modifying the public purpose charge (HB 3141). There are limited in-person activities now at the Capitol due to COVID-19. More than 2,100 bills have been submitted so far, although there are indications there may be as many as 4,000 bills introduced. The main areas of focus will be COVID-19, economic recovery, wildfire recovery and racial justice. Staff does not advocate for or against any piece of legislation and can provide information only. Bills monitored are related to the public purpose charge, OPUC powers and duties, renewables, codes and standards, transportation, wildfire recovery, environmental justice and energy equity.

Discussion
Members noted this was a great summary on HB 3141 (Jeff Bissonnette) and asked about the potential impact on Energy Trust's scope and role (Dave Moody). Chris Smith of Energy350 asked for more information about change for large customers.

Hannah Cruz explained under the proposal, the biggest impact for Energy Trust would be continuation of its programs beyond 2025. It would allow additional uses of renewable energy funding and there would be a more official commitment regarding equity metrics, along with more coordination with utilities. Peter West noted there would be little impact to renewables budgets. For efficiency, budgets are set annually based on available opportunities for savings and integrated resource planning goals. This will require the OPUC and utilities to look at these goals in concert with us.

On HB 2398, members commented Energy Trust's EPS could match the REACH code but the question would be whether or not incentives are available at that level (Warren Cook). On HB 2062, an appliance standards bill, members said there is an opportunity to add a communications port to water heaters (Tina Jayaweera). Though it will take some time to build

capacity as new units are purchased, there is potential for this equipment to help with peak management.

Next steps
None.

7. Member Share-out and Meeting Survey
Topic summary
Hannah Cruz asked members to share what their organizations are focused on this quarter or year, particularly actions to support customers during the pandemic. She also asked for feedback on how programs could be more effective during this time. A short survey was shared with members to gauge interest levels on the topics discussed today.

Discussion
Warren Cook of ODOE stated it is watching the same bills as Energy Trust and that HB 3141 is a big deal. Schools and self-direct remain funded. ODOE is also watching a bill about radioactive materials because fracking waste ended up in Arlington. ODOE would have the authority to impose fines along with rulemaking ability.

Warren Cook announced he will retire on April 1 and this is his last Conservation Advisory Council meeting. He is pleased to have served here and on the Energy Trust board as a special advisor. The new ODOE manager in this space will be identified by mid-April.

Lisa McGarity of Avista said it is working to support customers during this time, as are other utilities. They want to advocate and do what they can for customers.

Next steps
None.

8. Public Comment
Tyrone Henry, diversity, equity and inclusion lead at Energy Trust, invited Conservation Advisory Council members to attend our First Thursday is Diversity Day events. The next will be on March 4 and will feature a panel discussion of women inventors.

9. Adjournment
The meeting adjourned at 3:50 p.m. The next meeting will be April 14, 2021, on Zoom.

Measure Development and Cost-effectiveness Exceptions

Summary of Current Practices for Conservation Advisory Council

May 14, 2021

Energy Trust of Oregon

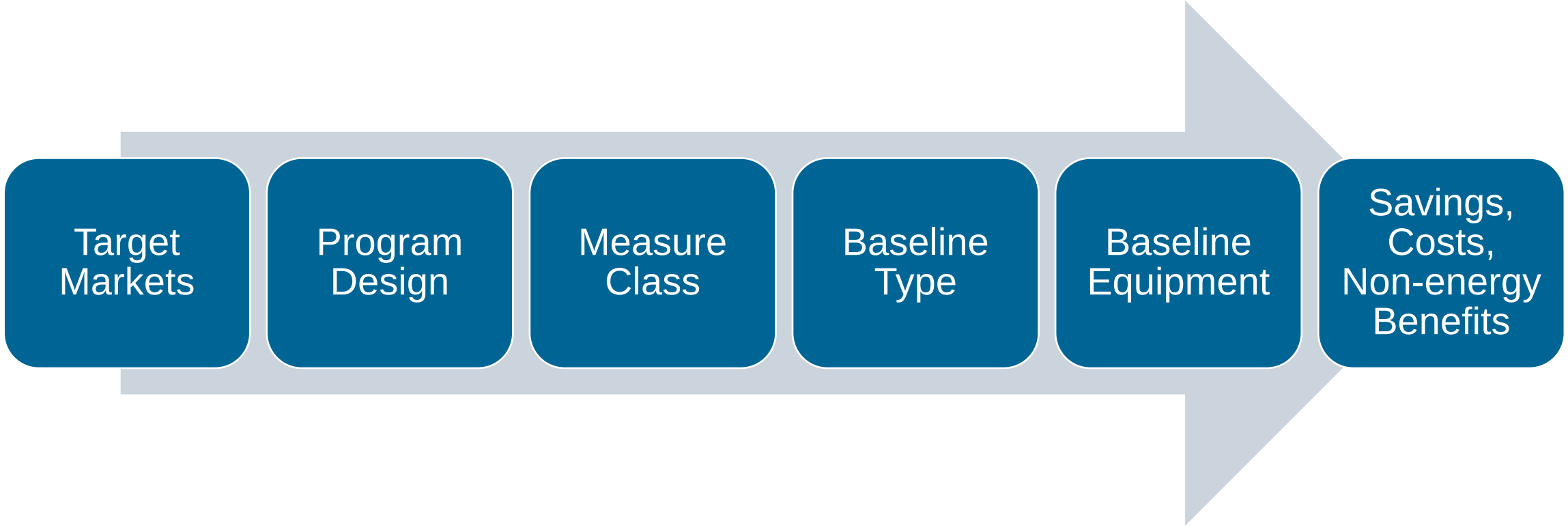
Agenda

- Overview of measure development key concepts
- Recap of measure-level cost-effectiveness inputs and calculation
- Measure cost-effectiveness exceptions process
- Magnitude of exceptions for Energy Trust's efficiency programs

Note: Throughout this presentation, we will use TRC and UCT to represent the Total Resource Cost Test and Utility Cost Test. More information on how we use these tests is on our website.

Measure Development Overview

- Measure development starts with understanding the program design
- Understanding what would have happened without our intervention requires understanding customers' options at that time
- Different program designs reach customers at different decision points



Key Concepts in Measure Development

Baselines are what would have happened in absence of the offering

Incremental costs represent the difference between measure costs and baseline costs for discrete populations or market segments

Energy savings values are the result of comparing the efficient condition to the baseline condition

The Big Picture of Cost Effectiveness

- Cost effectiveness is **central** to how we plan and deliver energy efficiency programs

- Measure-level cost effectiveness is **required** in Oregon by UM-551 to ensure that Energy Trust is making good investments for ratepayers with public purpose charge funds

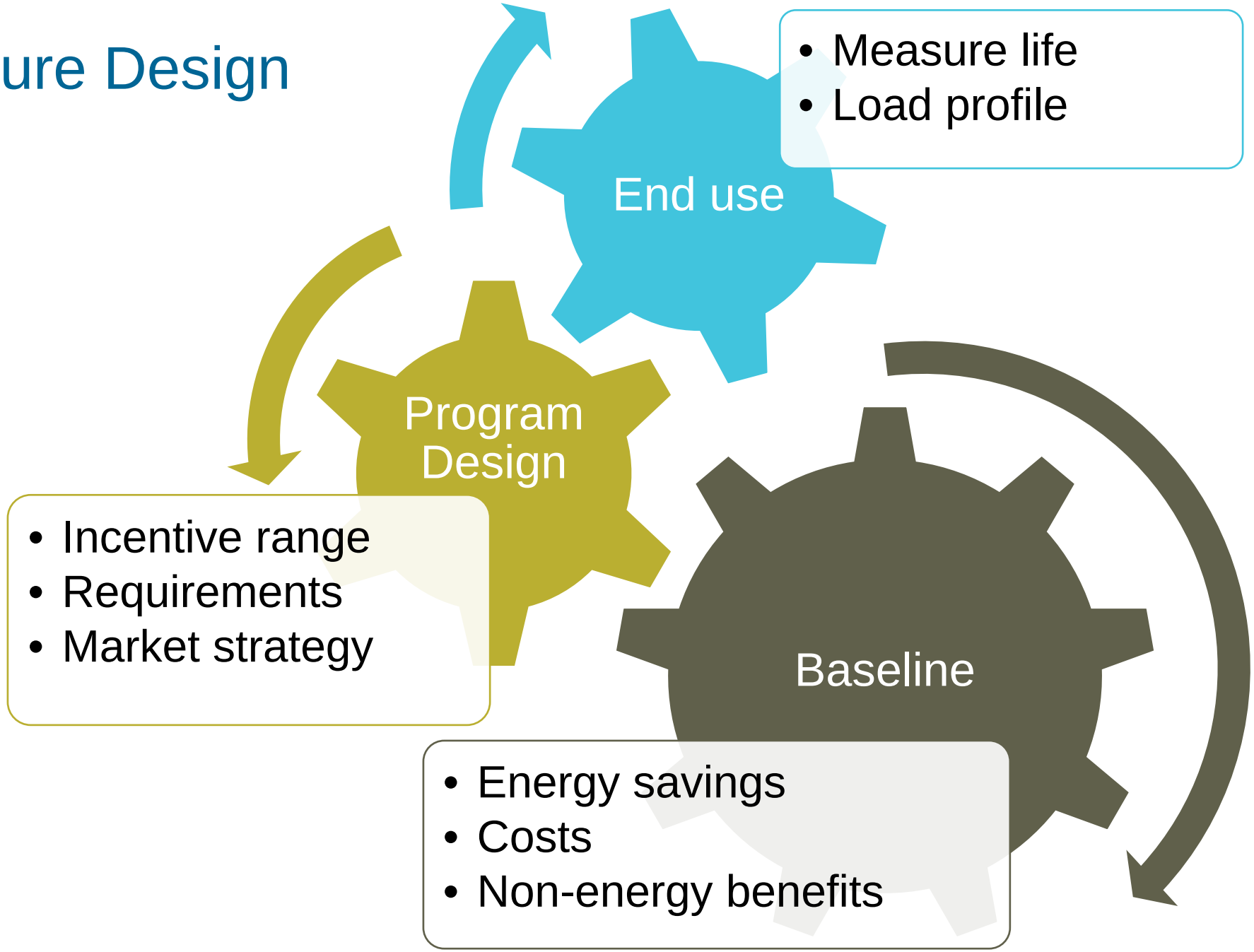
- Aligns with utility long-term integrated resource planning (IRP) - **efficiency is a *resource*** used to meet demand on par with supply resources

- Informs which measures Energy Trust offers and places an **upper bound on incentive amounts**

Cost-effectiveness Tests

Test	**Total Resource Cost (TRC) Test**	**Utility Cost Test (UCT)**
Purpose	To determine if we can offer a measure or approve a project	To determine range of incentives for a measure
Benefits	Avoiding the cost of more expensive energy Quantified non-energy benefits	Avoiding the cost of more expensive energy
Costs	Incremental cost of measure compared to baseline	Incentive cost
Measure passes if …	$\frac{\text{Benefits}}{\text{Costs}} \geq 1$	$\frac{\text{Benefits}}{\text{Costs}} \geq 1$

Measure Design



Non-energy Benefits and Quantification

Quantifiable non-energy benefits are included in cost-effectiveness calculations and applied to the TRC test and fit the following criteria:

- Above the measure baseline
- Benefit the end user, or building owner or occupant
- Quantified into dollars per year

Quantifiable and Applied	In Progress	Not Quantifiable
• Water & sewer • Other avoided fuel costs (wood, propane) • Out of territory savings	• Bill savings for low-income participants • Health benefits • Fire prevention	• Space savings • Pollution • Comfort • Customer interest

Measure-level Cost-effectiveness Calculation

Measure Inputs		Avoided Costs		Calculation Results
• Annual savings • Load profiles • Measure life • Annual non-energy benefits • Incremental costs	×	• Costs of generation or purchase of energy (time based) • Deferral of T&D updates • 10% efficiency credit • Discount rate	=	• Utility Cost ratio (UCT) at max incentive • Total Resource Cost ratio (TRC) • Maximum incentives • Gas and electric allocations

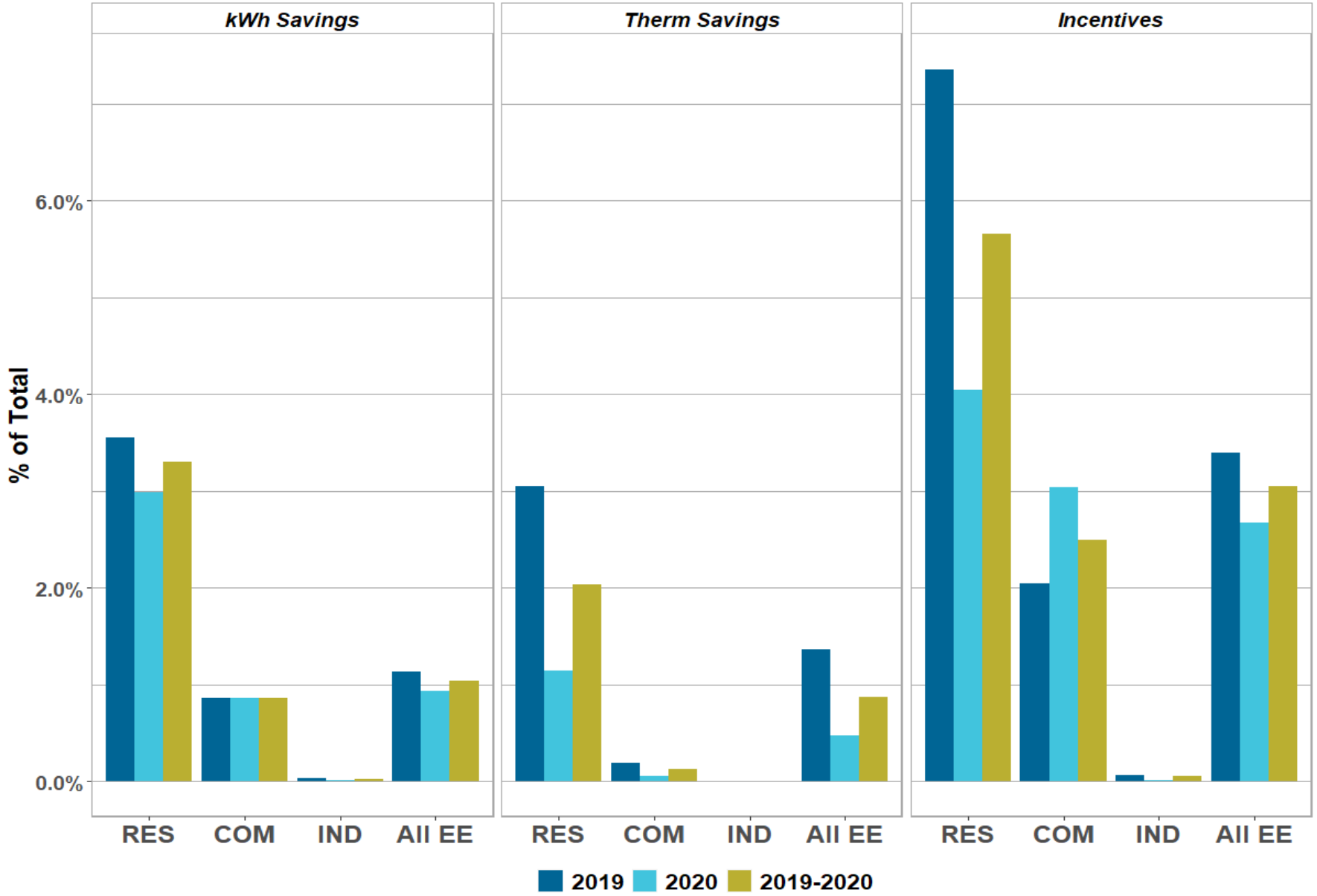
Measure Exception Criteria in UM-551

A. Measure produces significant non-quantifiable non-energy benefits
B. Inclusion of the measure is expected to lead to reduced cost of the measure
C. Measure is included for consistency with other DSM programs in the region
D. Measure helps to increase participation in a cost effective program
E. The package of measures cannot be changed frequently and the measure will be cost effective during the period the program is offered
F. Pilot or research project, intended for a limited number of customers
G. The measure is required by law or is consistent with Commission policy

Types of Measure Exceptions

	Minor Exception	Major Exception
Volume	Less than 5% of program's fuel savings and incentives	More than 5% of program's fuel savings or incentives
TRC	>0.8	≤0.8
OPUC Decision Process	• OPUC staff reviews, analyzes and discusses with Energy Trust staff • OPUC staff provides written response to Energy Trust, granting or not granting the exception and, if applicable, noting any limitations or requirements	• OPUC staff reviews Energy Trust's request • OPUC staff summarizes request, makes recommendation to the commission • Commissioners discuss at public meeting • Public feedback period • Commissioner discussion at public meeting • Commissioners issue ruling in form of an order

Magnitude of Measure Exceptions: 2019 – 2020 Actuals



Anticipated Major Exception Requests in 2021

Ductless heat pumps in single-family and small multifamily settings

- TRC exception anticipated for some housing types and climate zones
- UCT exception anticipated for small subset of higher incentive offers in supplemental fuel homes

New Buildings commercial whole-building offers

- TRC exception anticipated

Manufactured Home Replacement

- TRC exception anticipated

Exception requests for 2021 will inform 2022 budgets and program planning

Thank You!

Alex Novie

Measure Development Manager – Energy Programs

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Energy Trust of Oregon

Residential and Multifamily Ductless Heat Pumps (DHP) Cost-effectiveness Exceptions Update

Conservation Advisory Council

May 14, 2021

EnergyTrust of Oregon

Agenda

- Background
- Total Resource Cost Test cost-effectiveness exception report out
- 2020 program changes
- Utility Cost Test cost-effectiveness exception report out
- Participation trends

Note: Throughout this presentation, we will use TRC and UCT to represent the Total Resource Cost Test and Utility Cost Test. More information on how we use these tests is on our website.

Background

- DHPs provide an efficient heating and cooling solution for homes with zonal electric heat and electric forced air furnaces
- DHPs represented over 14% of Residential and 9% of Multifamily electric savings in 2020
- Since 2008, Energy Trust has provided incentives for over 22,000 units across existing residential and multifamily homes
- TRC exception first approved (2014)
- UCT exception for targeted applications (2020)
  - Ensures consistent incentives for the market even if value of savings for Energy Trust differs by the DHP application (e.g., homes with supplement heating fuel)

Current Measures

Measure	Measure Life (years)	Savings (kWh)	Incremental Costs ($)	Total NEB (Annual $)	Max Incentive ($)	UCT BCR at Max Incentive	TRC BCR
Single Family DHP Zonal HZ 1	18	2,212	$4,164	$37	$2,912	1	0.8
Single Family DHP Zonal HZ 2	18	2,756	$4,164	$37	$3,628	1	1
Single Family DHP FAF HZ 1	18	3,863	$4,148	$36	$4,148	1.2	1.3
Single Family DHP FAF HZ 2	18	3,619	$4,148	$36	$4,148	1.1	1.2
Manufactured Home DHP Zonal HZ 1	18	3,894	$3,596	$95	$3,596	1.4	1.7
Manufactured Home DHP Zonal HZ 2	18	3,894	$3,596	$82	$3,596	1.4	1.7
Manufactured Home DHP FAF HZ 1	18	3,324	$3,360	$119	$3,360	1.3	1.7
Manufactured Home DHP FAF HZ 2	18	3,324	$3,360	$162	$3,360	1.3	1.9
Single Family DHP Zonal HZ 1 – Sup Fuel	18	1,463	$4,164	$402	$2,000	0.9	1.6
Single Family DHP Zonal HZ 2 Sup Fuel	18	440	$4,164	$402	$2,000	0.3	1.3
Single Family DHP FAF HZ 1 – Sup Fuel	18	3,512	$4,148	$401	$4,148	1.1	2.3
Single Family DHP FAF HZ 2 – Sup Fuel	18	3,512	$4,148	$401	$4,148	1.1	2.3
Multifamily DHP HZ 1	18	1,429	$3,906	$39.89	$2,000	0.9	0.6
Multifamily DHP HZ 2	18	1,571	$3,906	$39.89	$2,027	1	0.7
Multifamily DHP HZ 1 - Sup Fuel	18	1,257	$3,906	$76.39	$2,000	0.8	0.7
Multifamily DHP HZ 2 - Sup Fuel	18	1,381	$3,906	$76.39	$2,000	0.9	0.7

TRC Exception: UM 1696 Order No. 19-301

- Major exception granted for use January 2020 through March 2022 for:
  - Zonally heated single-family homes located in heating zone 1 (west of the Cascade range)
  - Small multifamily homes in all heating zones
- 2020 Results:

2020 Residential (Home Retrofit) Participation					
Measure	**TRC BCR**	**Count of Projects**	**% of Residential DHP Projects**	**% of Home Retrofit Savings**	**% of Home Retrofit Incentives**
DHP for SF Zonal HZ1	0.8	748	67%	8%	13%
2020 Multifamily Participation					
Measure	**TRC BCR**	**Count of Projects**	**% of Multifamily DHP Projects**	**% of Multifamily Savings**	**% of Multifamily Incentives**
DHP for MF HZ1	0.6	640	95%	8.5%	21%
DHP for MF HZ2/3	0.7	35	5%	0.5%	1.3%
Total		**675**	**100.0%**	**9.0%**	**22.3%**

TRC Exception: Program Adjustments

- Updated DHP requirements to improve savings performance, April 1, 2020
  - Must locate primary indoor unit to displace functioning electric resistance heat in primary living area of the home
  - Reinforced eligibility requirements and increased Quality Assurance (QA) review and inspections
- Reduced standard incentive for market rate residential DHPs from $800 to $500; implemented enhanced incentive offers limited to cost effective application (single indoor heads / 1:1 installations)
- Introduced measure for homes with supplemental heating (e.g, wood heat) with $500 incentive
- DHP controller pilot to assess increased savings and demand response benefits

UCT Exception: UM 1696 Order No. 20-105

- Major exception granted in March 2020 for:
  - Heating zones 1 & 2 zonally heated single-family homes with supplemental fuel
  - Heating zone 1 multifamily residences
  - Heating zones 1 & 2 multifamily residences with supplemental fuel
- 2020 Results:

Residential (Home Retrofit) UCT measure Exception Volume, 2020						
Measure Description	**Measure Incentive**	**UCT BCR**	**Project Count**	**% of Residential DHP Projects**	**% Home Retrofit Savings**	**% of Home Retrofit Incentives**
DHP for SF Zonal HZ2/3- Sup Fuel (Fixed Price)	$2,000	0.3	5	0.4%	0.01%	0.2%
DHP for SF Zonal HZ2/3- Sup Fuel (SWR and Rentals)	$1,000	0.6	1	0.1%	0.01%	0.02%
DHP for SF Zonal HZ1- Sup Fuel (Fixed Price)	$1,800-$2,000	0.9	25	2.1%	0.22%	1.0%
Total			**31**	**2.7%**	**0.24%**	**1.2%**
Existing Multifamily UCT Measure Exception Volume, 2020						
Measure Description	**Measure Incentive**	**UCT BCR**	**Project Count**	**% of Multifamily DHP Projects**	**% Mutifamily Savings**	**% of Multifamily Incentives**
DHP for MF HZ1 (Fixed Price)	$2,000	0.9	98	15%	1.3%	6.1%

Next steps

- Continue strategies to improve savings performance and cost-effective installation scenarios
- Reduce incentive levels for Multifamily promotions using measures under UCT exception
- Explore more targeted DHP offers in low- and moderate-income communities
- Reanalyze DHP measure inputs(SF, MF, manufactured homes) for use beginning April 2022
- Request OPUC cost effectiveness exception
  - Adjust program design and incentives accordingly

Thank You

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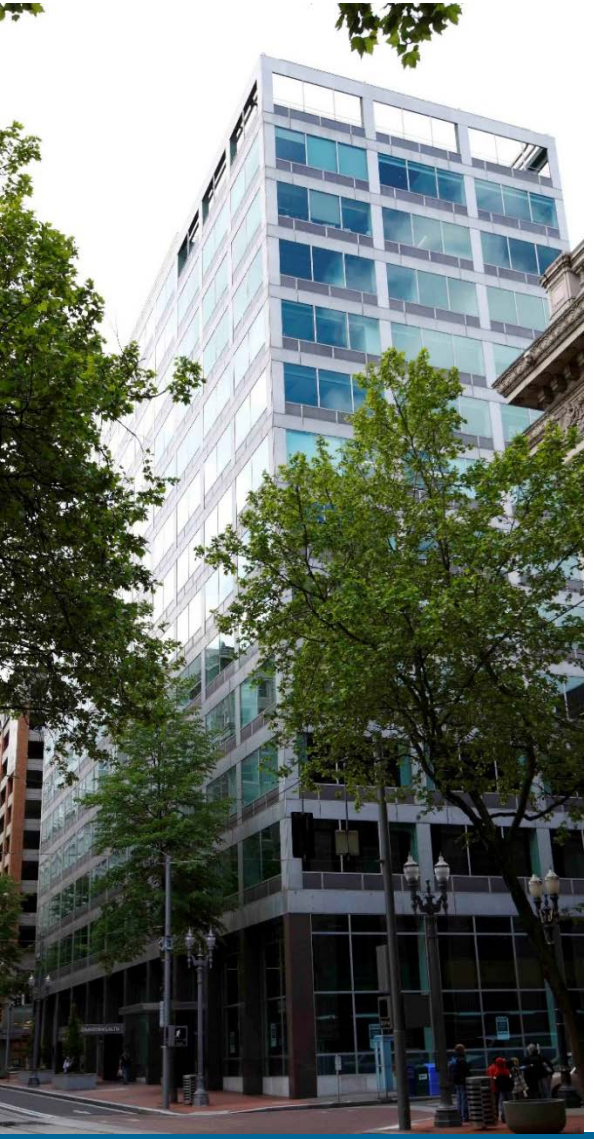
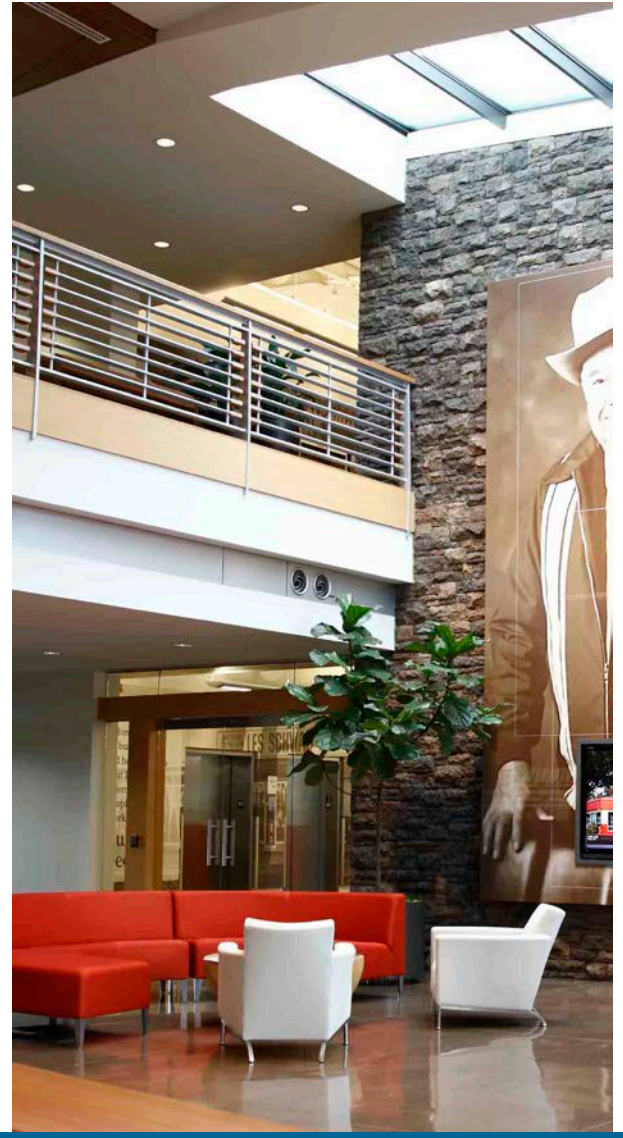
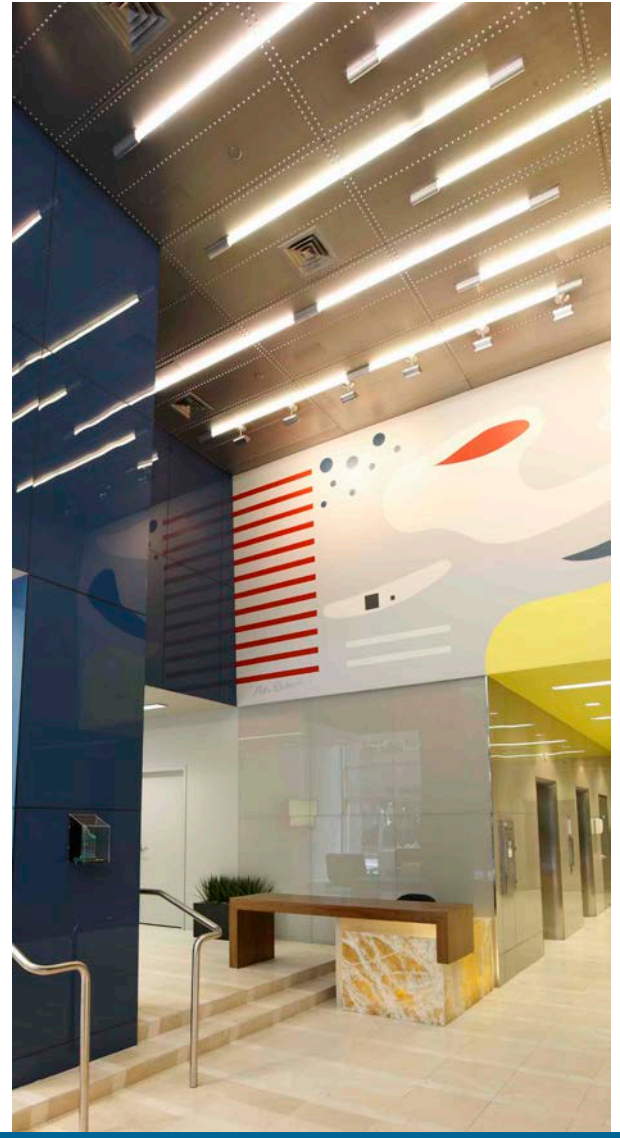
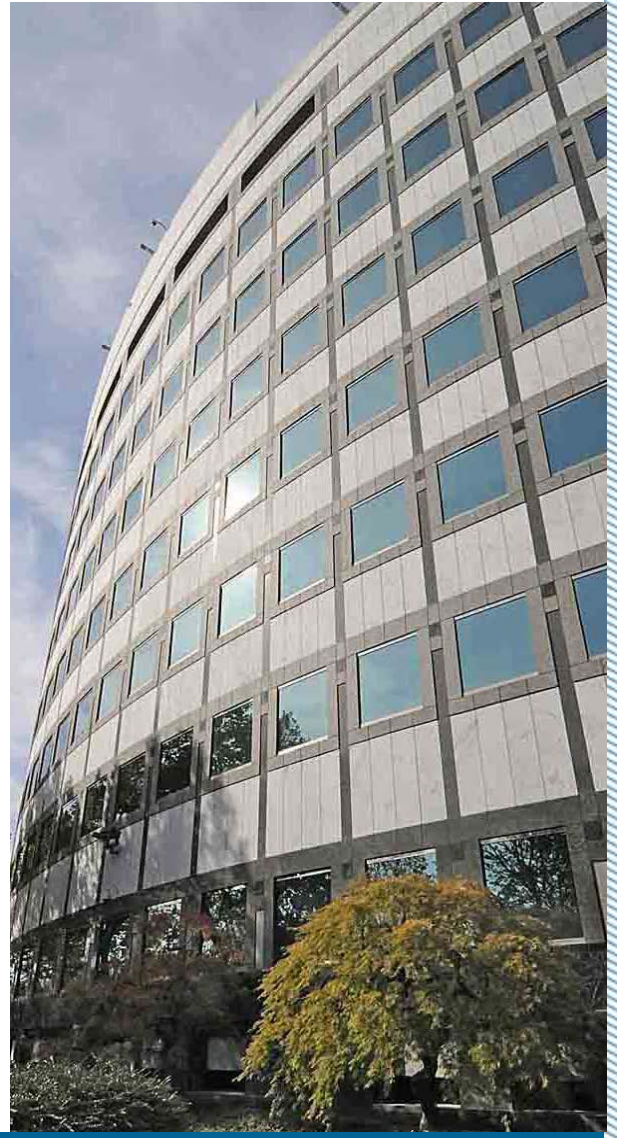
EnergyTrust of Oregon

New Buildings Program and Code Alignment

Conservation Advisory Council Meeting

May 14, 2021

EnergyTrust of Oregon

Agenda/outline

- Recap the challenge of aligning whole building offerings with the code
- Proxy approach was unable to produce incremental cost thus unable to calculate the Total Resource Cost test (TRC)
  - ** See appendix for detailed analysis and results of proxy approach*
- Program will be requesting an extension of the TRC for whole building projects
- If extension is granted, program will propose the design of a training, education and information consultative approach
- Comments and feedback from members and invited industry stakeholders

Recap of Phase 1 Work Plan (2020 - 2021)
“Proxy Approach to Screen for Cost Effectiveness”

Recap commercial code change

- 2019 Oregon code moved from a measure-based code to a whole building performance-based code with ODOE's intent to allow building owners greater flexibility in design options and systems selection
- Impact on Energy Trust program design
  - Doesn't provide a specific baseline set of building characteristics or technologies to estimate costs
- TRC exception for whole building projects granted in 2019 for 2020 - 2021 program years
  - TRC exception applies to Market Solutions and Custom Whole Building projects

Initial problem statement (2020)

Initial research question:

- *How does the New Buildings program align with the market and support customers with the new whole building code?*

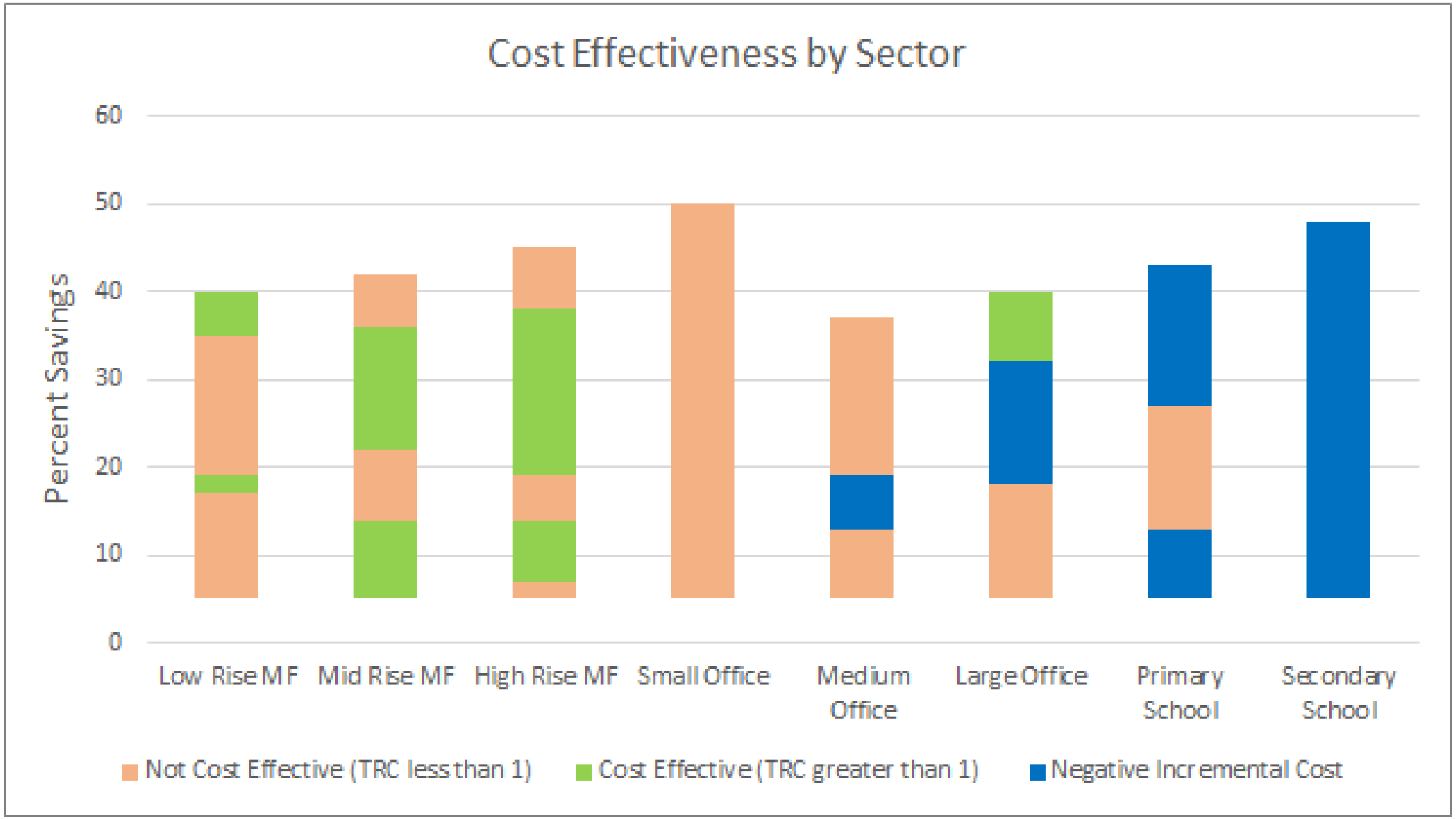
Challenges for the New Buildings program

- Cost-effectiveness screening
  - Not able to calculate incremental cost for whole building projects, approx. 50% of New Buildings program savings
  - Utility Cost Test (UCT) not challenged
- Lack of completed projects under new 2019 code
- Similar challenge for other program administrators across U.S.

Phase 1 work plan overview

- Formed internal and external stakeholder team to determine approach to align with new code and future code updates
- Proxy approach was unanimously agreed upon with the expectation that prototype projects would serve as a reliable source of energy savings, cost and cost-effectiveness information
- Proxy approach entailed modeling and costing multiple building types and sizes at code as well as a series of incremental better-than-code packages

Results of proxy approach: No consistent trends



Updated problem statement (2021)

- Oregon’s new commercial construction code does not provide a specific baseline set of measures to estimate costs and, in practice, makes it impractical to estimate the added costs of efficiency in Energy Trust building analysis
- Oregon new commercial construction market still adjusting to new code
- Current TRC exception for whole building projects expires at the end of 2021
- Seeking extension request of TRC exception for whole building projects

Outline Phase 2 Work Plan (2021 – 2023)
“Informative Consultative Approach”

Leverage New Buildings' market transformation position

- Next phase transitions from the proxy approach to a training, education and information approach
- This will require an extended whole building exception by the OPUC
- New Buildings is an established market transformation program through its history of in-depth trainings on modeling, high-performance buildings strategies and technologies, and new codes
- Audiences for these trainings include energy modelers, engineers, architects, developers, owners, sustainability consultants and contractors

Existing New Buildings program information and education services

- The program educates the design and development community through our Net Zero Fellowship research initiative
- Informative collateral, including technical case studies are resourced by owners and designers, to gain insights on specific building types and innovative building systems and strategies
- Participants rely on New Buildings for early design assistance, commissioning and modeling
- New Buildings launched an offering to consult with the owner to determine energy efficiency and renewable energy targets prior to design
- New Buildings sees a continuation and advancement of these offerings as a means to work with owners and designers in a way that does not restrict the flexibility of the new code

Proposed Approach to Serving Whole-Building Projects

Informative solutions for customers and designers

- High-level
  - Building Simulation Efficiency Forum trainings for energy analysts and modelers
  - New and future code trainings
  - Emerging technologies e.g., Luminaire Level Lighting Controls
  - Allies for Efficiency trainings that are real world based, recently completed high performance (net zero, passive house) buildings conducted by owners, design team and contractors
  - Collateral and video case studies
- Project level 1:1 support of customers and design teams with:
  - Cost-effectiveness analysis allowing owners and their teams to make informed decisions
  - Emerging technologies and design strategies
  - Case study library of high-performance buildings by type
  - Cost analysis tools/calculators

Discussion: CAC Members and Stakeholders

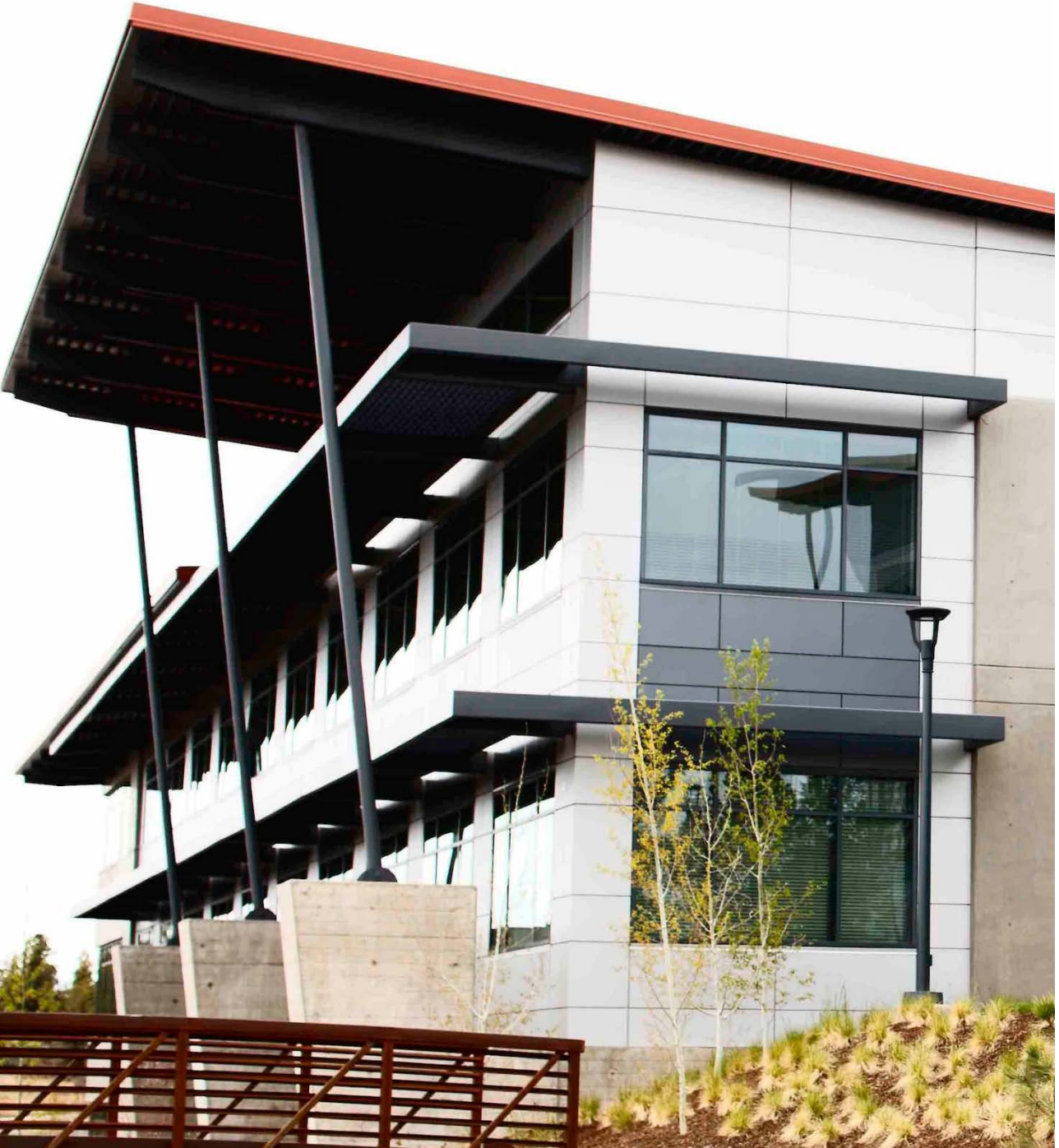
Phase II Approach: Questions, Comments & Feedback

CAC members

- Do you have any questions or thoughts about our reasoning or conceptual proposed approach?

Industry participants

- Does the proposed approach align with the market and support participants with the new whole building code?
- Are there specific areas of information-based services and support that owners and project teams help with EE ROI decisions?



Thank you

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EnergyTrust of Oregon

Appendix
"Details and Results of Proxy Analysis"

Example Costing Matrix: Low-Rise

Table 1
Low-Rise Multifamily Residential

Location	Portland
GC Markup	1.11
GSF	21,610

Category	Technology	Appendix G	Baseline	Package 1	Package 2	Package 3
Envelope	Wall Insulation		R-13 cavity, R-7.5 cont (U-0.051)			R-21 cavity, R-12 cont
	Cost per GSF					$1.12 /GSF
	Roof Insulation		R-30 for wood-framed attic			R-38 for wood-framed attic
	Cost per GSF					$0.69 /GSF
	Foundation Insulation		R-15 for 24" (F-0.520)			
	Cost per GSF					
	Window Performance		0.36-U, 0.4-SHGC			0.22-U, 0.4-SHGC
	Cost per GSF					$0.26 /GSF
	Window to wall ratio		30%			20%
	Cost per GSF					-$0.33 /GSF
	Overhangs		None			Yes, 2.5 ft
	Cost per GSF					$4.47 /GSF
	Air Tightness		0.4 CFM/ft2	0.08 CFM/ft2	0.08 CFM/ft2	0.2 CFM/ft2
	Cost per GSF			$0.70 /GSF	$0.70 /GSF	$0.26 /GSF
HVAC	Heating/Cooling		PTAC 3.23 (11.02 EER no fan) w/ boiler, 80% eff		DHP, 3.925 COP (13.39 EER no fan) cooling, 3.984 COP heating	VRF, 3.679 COP (12.55 EER no fan) cooling, 3.939 COP heating
	Cost per GSF		$13.08 /GSF		$7.00 /GSF	$4.58 /GSF
	Ventilation - Bath Fans		Bath fans, 0.3 W/cfm	High-efficiency bath fans, 0.1 W/cfm	High-efficiency bath fans, 0.1 W/cfm	High-efficiency bath fans, 0.1 W/cfm
	Cost per GSF		$0.26 /GSF	$0.11 /GSF	$0.11 /GSF	$0.11 /GSF
Lighting	Interior Lighting Power Density		0.182 W/SF	0.15 W/SF	0.15 W/SF	0.15 W/SF
	Cost per GSF			$0.30 /GSF	$0.30 /GSF	$0.30 /GSF
	Exterior lighting		535 W		375 W	375 W
	Cost per GSF				-$0.03 /GSF	-$0.03 /GSF
Domestic Hot Wate	Heating equipment - gas		80% eff gas, central system		94% eff gas, central system	
	Cost per GSF		$0.21 /GSF		$0.02 /GSF	
	Heating equipment - electric		Electric - 1.0 COP			HPWH, 2.85 average COP
	Cost per GSF		$0.22 /GSF			$0.01 /GSF
	Low flow fixtures		2.5 GPM showerheads, 2.2 GPM faucets	1.5 GPM showerheads, 1 GPM faucets	1.5 GPM showerheads, 1 GPM faucets	1.5 GPM showerheads, 1 GPM faucets
	Cost per GSF		$1.17 /GSF	$0.02 /GSF	$0.02 /GSF	$0.02 /GSF
			Total Cost Premium	$1.13 /GSF	$8.12 /GSF	$11.47 /GSF

Cost Effectiveness – Low-Rise in Portland

Low Rise										
Measure Category	**Strategy**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**
HVAC	Bath Fans	X	X	X	X	X	X	X	X	X
	DHP				X					
	VRF	X					X	X		
Envelope	Wall Insulation						X	X		
	Roof Insulation						X	X		X
	Foundation Insulation									
	Air Tightness	x	X	X	X	X	X	X	X	X
	Windows						X	X		
	WWR	X		X			X	X	X	X
	Overhangs							X		
Lighting	Living Space LPD Reduction	X	X	X	X	X	X	X	X	X
	Whole Building LPD Reduction							X		
	Exterior LPD Reduction				X		X	X	X	X
	Bi-level Control							X		
DHW	Aerators	X	X	X	X	X	X	X	X	X
	Condensing DHW	X			X	X				
	HPWH						X	X	X	X
Percent Savings		7%	16%	17%	19%	21%	21%	24%	35%	35%
TRC		0.1	0.7	1.4	0.2	0.8	0.3	0.2	3.9	2.9

Cost Effectiveness – Mid-Rise in Portland

Mid Rise											
Measure Category	**Strategy**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**
HVAC	Bath Fans	X	X	X	X	X	X	X	X	X	X
	DHP			X				X			
	VRF								X	X	X
Envelope	Wall Insulation					X	X		X	X	X
	Roof Insulation						X		X		X
	Foundation Insulation								X	X	X
	Air Tightness	X	X	X	X	X	X	X	X	X	X
	Windows		X	X				X	X	X	X
	WWR		X						X	X	X
	Overhangs										X
Lighting	Living Space LPD Reduction	X	X	X	X	X	X	X	X	X	X
	Whole Building LPD Reduction						X		X	X	X
	Exterior LPD Reduction		X	X		X	X	X	X	X	X
	Bi-level Control								X	X	X
DHW	Aerators	X	X	X	X		X	X	X	X	X
	Condensing DHW			X							
	HPWH				X	X	X	X	X	X	X
Percent Savings		4%	8%	14%	22%	24%	25%	28%	36%	36%	37%
TRC		1.2	25.5	0.3	4.4	3.1	1.3	1.1	0.5	0.6	0.3

Cost Effectiveness – High-Rise in Portland

High Rise											
Measure Category	**Strategy**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**
HVAC	Bath Fans	X	X	X	X	X	X	X	X	X	X
	DHP		X	X	X	X		X			
	VRF								X	X	X
Envelope	Wall Insulation			X	X	X			X	X	X
	Roof Insulation				X		X		X	X	X
	Foundation Insulation								X	X	X
	Air Tightness	X	X	X	X	X	X	X	X	X	X
	Windows									X	X
	WWR					X			X	X	X
	Overhangs										X
Lighting	Living Space LPD Reduction	X	X	X	X	X	X	X	X	X	X
	Whole Building LPD Reduction								X	X	X
	Exterior LPD Reduction		X	X	X	X	X	X	X	X	X
	Bi-level Control			X	X	X	X		X	X	X
DHW	Aerators	X	X	X	X	X	X	X	X	X	X
	Condensing DHW		X	X	X	X					
	HPWH						X	X	X	X	X
Percent Savings		7%	14%	14%	15%	19%	26%	28%	38%	41%	42%
TRC		1.6	0.5	0.6	0.6	1.0	3.0	1.1	0.7	0.7	0.4

Example of School Costing Exercise

B20 Exterior Enclosure				-	-
				-	-
B2010 Exterior Walls	210,900	SF	13.98	2,947,933	
Exterior cladding				-	-
Exterior 2x framing	68,724	SF	18.80	1,292,002	1,705,443
Stucco system	46,045	SF	18.00	828,806	1,094,023
Wall detailing 10%	6,872	SF	26.00	178,681	235,859
Sill, precast	1,005	LF	38.00	38,179	50,397
Insulation- R-10	68,724	SF	3.56	244,656	322,946
Air/vapor barrier	68,724	SF	4.88	335,371	442,689
Caulking and sealants	68,724	SF	0.44	30,238	39,915
B2020 Exterior Windows	210,900	SF	7.13	1,	
Windows - glazed w/openers	22,679	SF	66.00		
Louver	105	SF	72.00		

Insulation Options- Wall						
Wall insulation	68,724	SF				
R-7.5 Insulation					W/MU	
Materials	-	$	1.96	Rigid		
Labor	-	$	0.97			
		$	2.93	$		3.87
R-10 Insulation	-					
Materials	-	$	2.68			
Labor	-	$	0.88			
		$	3.56	$		4.70
R-13 Insulation						
Materials	-	$	2.71			
Labor	-	$	0.92			
		$	3.63	$		4.79
R-15 Insulation						

	Prescriptive Code Baseline 1 - Climat		
	Input values:	Total Measure Cost	
Envelope			
overhang	N		2 feet from window sill
foundation insulation	Climate 4C: R-15 for 24 in Climate 5B: R-15 for 24 in	$ 23,244	
air leakage	0.4 cfm/sf @0.3 in. H2O	611,420	
roof type	Built-up Roof		
roof_Cont Insul	4C: R-30 c.i. 5B: R-30 c.i.	$ 4,554,906	
massing/wall construction	Steel-Framed 2x4, 16" OC		
wall_cavity insul	R-13	$ 2,357,686	
wall_cont insul	4C: R-7.5 5B: R-10		
window u-value	4C: U-0.38 5B: U-0.38	$ 3,356,053	
window-to-wall ratio	0.33		
window SHGC	4C: SHGC-0.36 5B: SHGC-0.38		
Lighting			
lighting power density	0.81 W/sf	$ 2,392,397	
exterior lighting	17,927 W		
	Off @ daylight, 50% from 12:00 am - 6:00 am		

Cost Effectiveness – Secondary School

1. HVAC driving the negative cost
   - Similar system in progressively more efficient cases are still negative due to capacity reductions
   - VRF has a substantial cost differential
2. Lighting then contributes further to the reduction
3. Envelope costs are relatively constant across all scenarios shown

Secondary School							
Measure Category	**Strategy**	**5-15c**	**16-25b**	**26-35b**	**26-35c**	**36-45a**	**46plusa**
HVAC	High Eff VAV System		x	x			
	High Eff Pkg VAV System						
	VRF				x	x	x
	DOAS/Heat Recovery		x	x	x	x	x
Envelope	Infiltration/Air Leakage		x	x	x	x	x
	Roof Insulation	x	x		x	x	x
	Wall Insulation	x	x	x	x	x	x
	High Performance Windows	x	x	x		x	x
Lighting	Interior LPD Reduction	x	x	x	x	x	x
	Exterior LPD Reduction	x	x	x		x	x
	Daylight - Cont Dimming			x		x	
DHW	High Eff Gas Storage	x			x	x	
	Heat Pump Water Heater			x			x
	Low Flow Fixtures	x	x	x			x
Misc Loads	ENERGY STAR Equipment	x		x	x	x	x
	High Eff Kitchen Equipment		x		x		
Percent Savings		15%	18%	29%	20%	28%	43%
TRC		-0.1	-0.1	-0.1	0.0	-0.1	-0.1

Cost Effectiveness – Primary School

1. HVAC costs for all systems have a negative incremental cost
   - Most significant reductions are for the VRF system type
   - Small decrease in cost due to capacity reductions for the other options
2. Envelope is more important and can drive the incremental cost to be more positive for the lower cost HVAC options
3. Lighting increases incremental cost when going with most efficient option

Primary School									
Measure Category	**Strategy**	**5-15a**	**5-15b**	**15-25a**	**15-25b**	**26-35a**	**26-35b**	**35plusa**	**35plusb**
HVAC	High Eff Pkg VAV		x		x				
	VRF					x	x	x	x
	DOAS/Heat Recovery		x		x	x	x	x	x
Envelope	Infiltration/Air Leakage	x	x	x	x	x	x	x	x
	Roof Insulation		x	x	x	x	x	x	
	Wall Insulation		x	x	x	x	x	x	
	High Performance Windows		x	x	x				x
Lighting	Interior LPD Reduction	x	x	x	x	x	x	x	x
	Exterior LPD Reduction					x			
	Daylight - Cont Dimming	x		x	x	x		x	x
DHW	High Eff Gas Storage	x	x		x				
	Heat Pump Water Heater			x				x	x
	Low Flow Fixtures	x	x	x	x	x	x	x	x
Misc Loads	ENERGY STAR Equipment			x					x
Percent Savings		9%	13%	16%	21%	27%	31%	36%	37%
TRC		-0.5	0.2	0.4	0.4	-0.1	-0.1	-0.3	-0.3

Cost Effectiveness – Large Office

1. HVAC system driving cost effectiveness:
   - VRF system substantially lower leading to overall negative incremental cost
   - Pkg VAV with heat recovery lower cost than central system VAV – leads to cost effective packages
2. Lighting costs the second main driver (with most variability)
3. Variations in envelope significantly less than for HVAC

Large Office							
Measure Category	**Strategy**	**5-15a**	**16-25a**	**16-26b**	**26-35a**	**26-35b**	**35plus**
HVAC	High Eff VAV	x			x		
	VRF		x	x			
	DOAS/Heat Recovery		x	x		x	x
Envelope	Infiltration/Air Leakage	x	x	x	x	x	x
	Roof Insulation	x	x	x		x	x
	Wall Insulation	x	x				x
	High Performance Windows			x	x		x
Lighting	Interior LPD Reduction	x	x	x	x	x	x
	Daylight - Cont Dimming			x		x	
DHW	High Eff Gas Storage		x	x			
	Heat Pump Water Heater						x
	Low Flow Fixtures		x	x	x		x
Misc Loads	ENERGY STAR Equipment		x	x	x	x	x
Percent Savings		5%	18%	25%	28%	32%	35%
TRC		0.1	-0.1	-0.1	-0.3	1.1	1.8

Cost Effectiveness – Medium Office

1. HVAC systems have an incremental cost (both packaged VAV and VRF), accounting for 32-43% of the cost
2. Envelope improvements account for a range of 0 to 46% of incremental costs
3. Lighting is driving the remainder of the incremental costs.

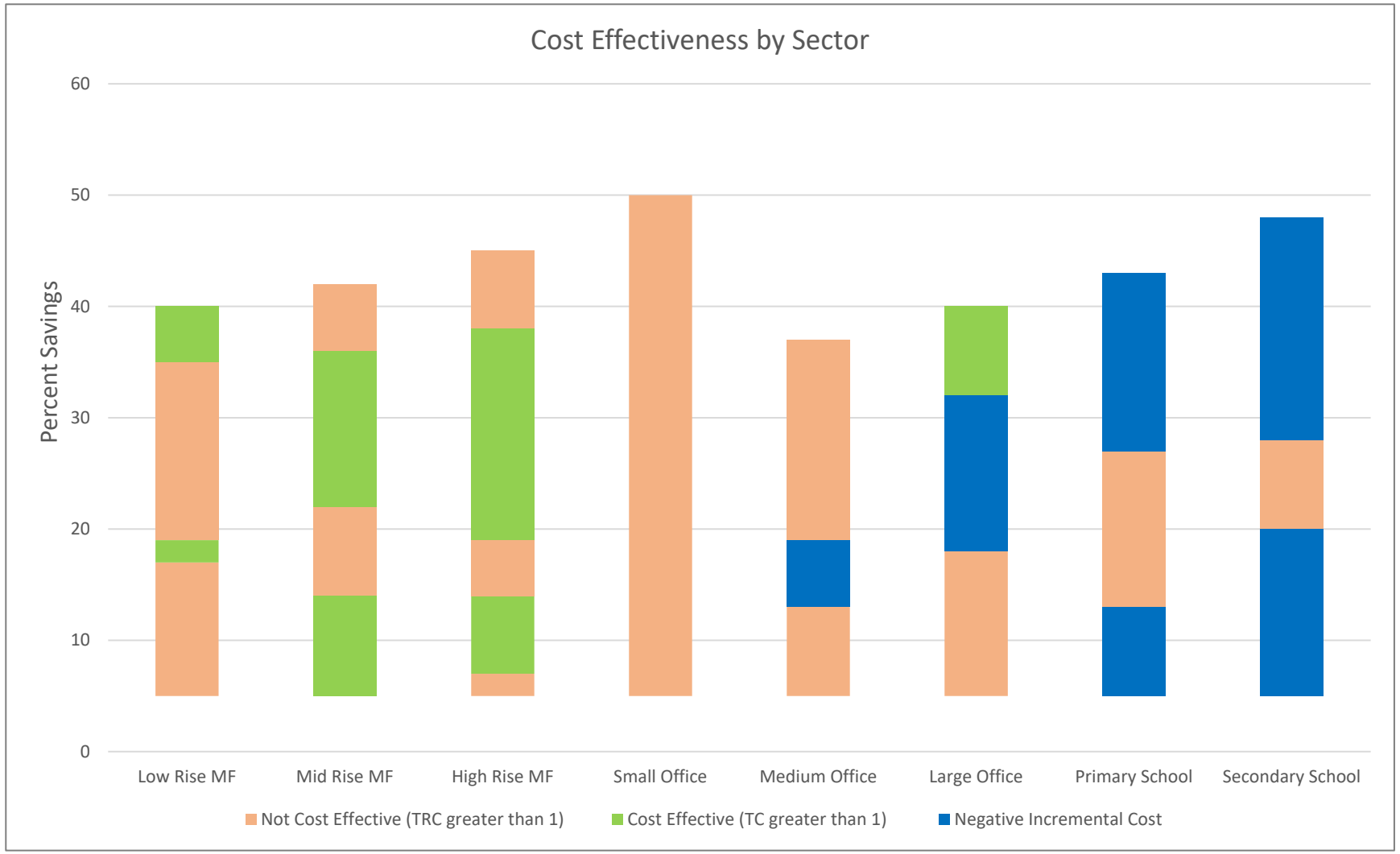
Medium Office								
Measure Category	**Strategy**	**5-15**	**5-15a**	**5-15b**	**15-25a**	**15-25b**	**25plus**	**25plus**
HVAC	High Eff VAV							
	VRF	x		x	x	x	x	x
	DOAS/Heat Recovery	x	x	x	x	x	x	x
Envelope	Infiltration/Air Leakage	x	x	x	x	x	x	x
	Roof Insulation	x	x		x		x	x
	Wall Insulation	x	x		x		x	x
	High Performance Windows	x	x	x	x		x	x
Lighting	Interior LPD Reduction	x	x		x		x	x
	Daylight - Cont Dimming							
DHW	High Eff Gas Storage				x	x		
	Heat Pump Water Heater			x			x	x
	Low Flow Fixtures			x	x	x	x	x
Misc Loads	ENERGY STAR Equipment			x	x	x	x	x
Percent Savings		8%	13%	19%	24%	26%	32%	33%
TRC		0.4	-0.5	0.1	0.1	0.1	0.1	0.7

Cost Effectiveness – Small Office

1. All HVAC systems have an incremental cost (two system types included: RTU and VRF) that accounts for anywhere from 66% to 122% of the total incremental package cost
2. Lighting increases the incremental cost in these packages.
3. With the smaller building, the envelope variation can significantly decrease the overall incremental cost

Small Office										
Measure Category	**Strategy**	**5-15a**	**5-15b**	**15-25a**	**15-25b**	**25-35a**	**25-35b**	**35-45a**	**35-45b**	**45 plus**
HVAC	High Eff RTU	x	x	x		x				
	VRF						x	x	x	x
	DOAS/Heat Recovery	x	x	x	x	x	x	x	x	x
Envelope	Infiltration/Air Leakage	x	x	x	x	x	x	x	x	x
	Roof Insulation		x	x	x	x	x			x
	Wall Insulation		x	x	x	x	x			x
	High Performance Windows		x	x				x		x
Lighting	Interior LPD Reduction	x	x	x	x	x	x			x
	Daylight - Cont Dimming									x
DHW	High Eff Gas Storage		x	x			x			
	Heat Pump Water Heater				x	x		x	x	x
	Low Flow Fixtures		x	x	x	x	x	x	x	x
Misc Loads	ENERGY STAR Equipment				x				x	x
Percent Savings		7%	12%	17%	22%	28%	33%	37%	42%	50%
TRC		0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2

Take-aways and Trends



Energy Trust Manufactured Home Replacement

Pilot to Program Transition

May 14, 2021

Energy Trust of Oregon

Purpose of Today's Presentation

- The Oregon Public Utility Commission directs Energy Trust to provide periodic updates to interested stakeholders on the Manufactured Home Replacement Pilot (within Order #20-158, from May 2020)
- Staff are concluding the pilot and transitioning to a successor manufactured home replacement offer
- Today's presentation discusses transitioning from a pilot to a standard program offer
- We are seeking feedback on the proposed updates and providing a venue for stakeholders to present questions to staff leading the transition work

Agenda

- Current Status of Pilot Program
  - Production metrics
  - Milestones achieved
- Sunsetting of Pilot Measure
  - July 1 deadline for new projects
- Development of New Offer
  - Customer and Project Eligibility
  - Budget Management
  - Program Delivery
  - Impact Evaluation
  - Measure Development
- Next Steps

Background

Manufactured Home Replacement Pilot

- Replace aging, energy inefficient manufactured homes in investor-owned utility service territories
- Partnership between housing, energy and community development organizations
- Goal is to better understand energy impact, quality of life improvements, project costs, barriers to participation and key elements of a successful program design
- Create a scalable financial model for leased land communities

OPUC Order 20-158 (May 7, 2020)

- Authorized cost-effectiveness exception for the continuation of the pilot
- Allows up to $500,000 in expenditures for non-cost effective projects
- Enables additional co-funding with Pendleton flood recovery funding, provided additional funding sufficiently reduces project costs
- Prioritizes the funding of “owner-occupied” sites, which had not yet been served during the first phase of the pilot

Summary of Pilot Research Questions

Savings, Cost & Cost Effectiveness

- What are the energy savings?
- What are the costs?
- What are the existing conditions of the homes being retired?
- What are the non-energy benefits?
- What is the appropriate baseline?

Establishing a Replicable Program Model

- How can ratepayer efficiency programs effectively partner with other organizations?
- What are the characteristics of effective financing models?
- What are the financial and non-financial barriers to uptake?

Production Update

- Project Type 1 = Owner Occupied Home In A Manufactured Housing Park
- Project Type 2= Manufactured Home Park Operator Owned Homes
- Project Type 3= Owner Occupied Home on Fee Simple Land
- Project Type 4= Wildfire Impacted Sites

Manufactured Home Replacement 5.3.21					
Stage	**Project Type 1**	**Project Type 2**	**Project Type 3**	**Project Type 4**	**totals**
Completed	1	44	7	0	**52**
In Progress	5	0	8	4	**17**
Engaged	2	0	3	2	**7**
Totals	**8**	**44**	**18**	**6**	**76**

Development of the Funding and Partnership Model

- Oregon Housing and Community Services' (OHCS) Home Replacement Program (HB 2896)
- Low-income public purpose charge funding
- Craft 3 home replacement loan
- USDA Rural Development
- Disaster Recovery Funding
  - Includes public or private funds such as insurance settlements, FEMA payments, state funding
- Partner network
  - CASA of Oregon
  - NOAH
  - Dev NW
  - OHCS Manufactured Housing Advisory Committee
  - Neighborworks of Umpqua

Sunsetting the Pilot Offer

- Enrollment ends July 1, 2021
- New projects received prior to July 1 will receive funding commitments subject to budget availability
- Projects received after July 1 will be waitlisted for the successor offer

Program Updates and Changes

Proposed Changes: Customer and Project Eligibility

- Income-based customer qualifications
  - Align with Energy Trust Savings Within Reach threshold (moderate-income incentives)
  - Assumption is that low- and moderate-income households face higher barriers to home replacement
- Include state declared natural disaster impacted sites
  - Wasn’t included in the pilot design, have been allowed through an exception to the program rules
  - New program will qualify homes destroyed by state-declared disaster events on the basis of the home as it existed prior to disaster event
- Dissolve age of home tiers, future incentive will be based on size of home and climate zone location

Proposed Changes: Budget Management

- Establish discrete, limited budgets for Manufactured Home Replacement
- Fixed annual budget for disaster recovery replacements, and a separate fixed annual budget for traditional home replacements
- Utilize reservation system to assess budget availability over time, with periodic reforecasting and allotments

Proposed Changes: Program Delivery

- OHCS Manufactured Housing Advisory Group recommends the creation of a “program navigator” role to manage clients’ engagement and project management
- Proposal is to coordinate with OHCS to support a third party “program navigator” to delivery the home replacement offer to owner-occupant customers
  - Similar to how Energy Trust, including the Residential program, uses Program Delivery Contractors
- Develop broader suite of marketing materials for different market channels and engagement points
- Streamline pre- and post-field inspections

Evaluation and Measure Development

Measure-level Cost-effectiveness Calculation

Measure Inputs		Avoided Costs		Calculation Results
• Annual savings • Load profiles • Measure life • Annual non-energy benefits • Incremental costs	×	• Costs of generation or purchase of energy (time based) • Deferral of T&D updates • 10% efficiency credit • Discount rate	=	• Utility Cost ratio (UCT) at max incentive • Total Resource Cost ratio (TRC) • Maximum incentives • Gas and electric allocations

Developing A New Offer: Overview of work products and milestones

Impact Evaluation

- Evaluates savings for a subset of sites to inform the current measure analysis

Measure Development

- Updating measure inputs: savings, baselines, project costs
- Screening for cost effectiveness and determining benefit-cost ratios (TRC, UCT)
  - Developing co-funding scenario

Cost-effectiveness Exception Considerations

- Possible TRC exception
- PUC staff agrees that there are significant non-quantifiable non-energy benefits for participants (established through 2020 exception on the pilot)
- Non energy benefits also documented by a published process evaluation

Baseline Determination and Definitions

Baselines are what would have happened in absence of the offering.

- We need baselines to calculate energy savings.

Early Retirement Baseline is a hybrid of an *Existing Condition Baseline* and a *Market Baseline* with two periods of savings

- Period 1 savings are based on energy use comparted to the existing home
- Period 2 savings are based on energy use compared to a new code-compliant home

Differential Baseline is an Energy Trust practice to establish unique baselines for discreet populations or market segments

The updated measure is being developed with an ***Early Retirement – Differential Baseline***. The manufactured home replacement offer is for homeowners with barriers to home replacement.

How long would a participating home remain in service, without the program?

Research so far:

- Energy Trust estimated a 1.7% annual rate of retirement for manufactured homes built before 1995 – 30 years
- Regional Technical Forum estimated a 3.5% annual rate of retirement for manufactured homes built before 1980 – 14 years
- Tax records indicate homes are retired at 33 years old on average – 7 years

The State of Oregon Regional Housing Needs Assessment documents an undersupply of housing relative to population, undersupply is more severe for low- to moderate-income households.

Energy Trust's program is designed to assist homeowners who are not likely to replace their home without assistance and are likely to qualify for other forms of assistance that could prolong the building's use.

Next Steps and Discussion

- Receive feedback on proposed changes
- Solicit input from affordable housing subject matter experts on
  - “Expected remaining useful life” of older manufactured homes
  - Characteristics of high-barrier households
- Complete evaluation and measure development work
- Anticipate requesting an OPUC cost-effectiveness exception
- July 1 sunset of the pilot
- Target launch of new offer in Q4 2021

Discussion Items

- Do you support the proposed changes to customer eligibility?
  - Do you agree that the population constituting the “natural rate of retirement” is different than the population who are not able to replace older homes without additional program support?
  - If yes, is household income the best way to characterize the “high barrier” populations needing program support?
- How long will an older manufactured home providing housing to “high barrier” populations will remain in service?
- Do you have questions or concerns on any other aspect of the “pilot to program” transition?

Thank You

Mark Wyman
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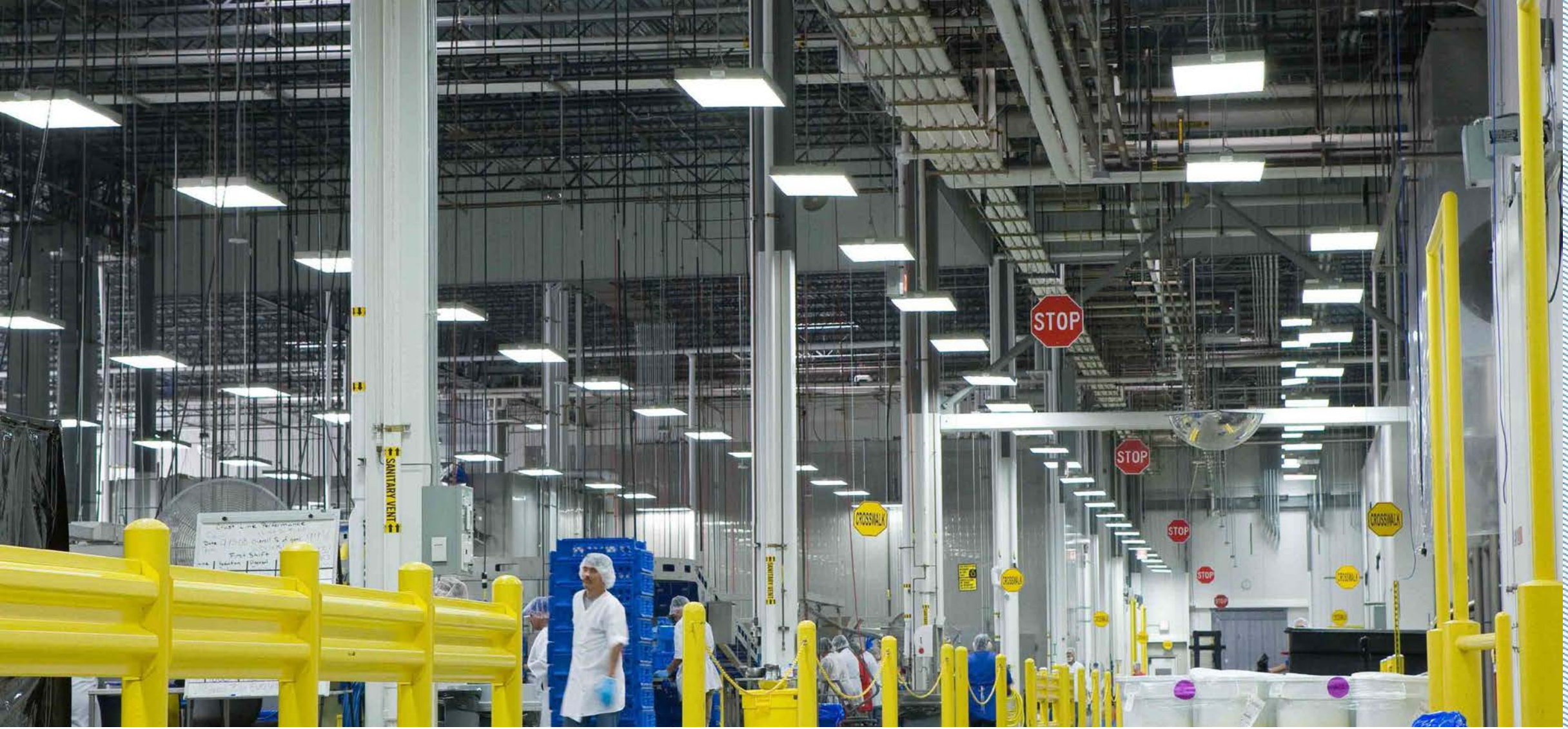
EnergyTrust of Oregon

Resources and Links

- Energy Trust Process Evaluation https://energytrust.org/wp-content/uploads/2021/05/Manufactured-Home-Replacement-Pilot-Evaluation_Final-.pdf
- Regional Housing Needs Assessment https://www.oregon.gov/ohcs/about-us/Documents/RHNA/02-21-2021-ECONW-OHCS.pdf
- House Bill 2896 https://olis.leg.state.or.us/liz/2019r1/Measures/Overview/HB2896



Energy Trust Commercial & Industrial Programs

2021 Program Changes Updates

May 14, 2021

EnergyTrust of Oregon

Agenda

- 2020 Background and 2021 Budget
- 2021 Programs Changes Implemented, Market Reaction and 2021 Outlook
  - Industrial / Agriculture
  - Commercial
  - Business Lighting

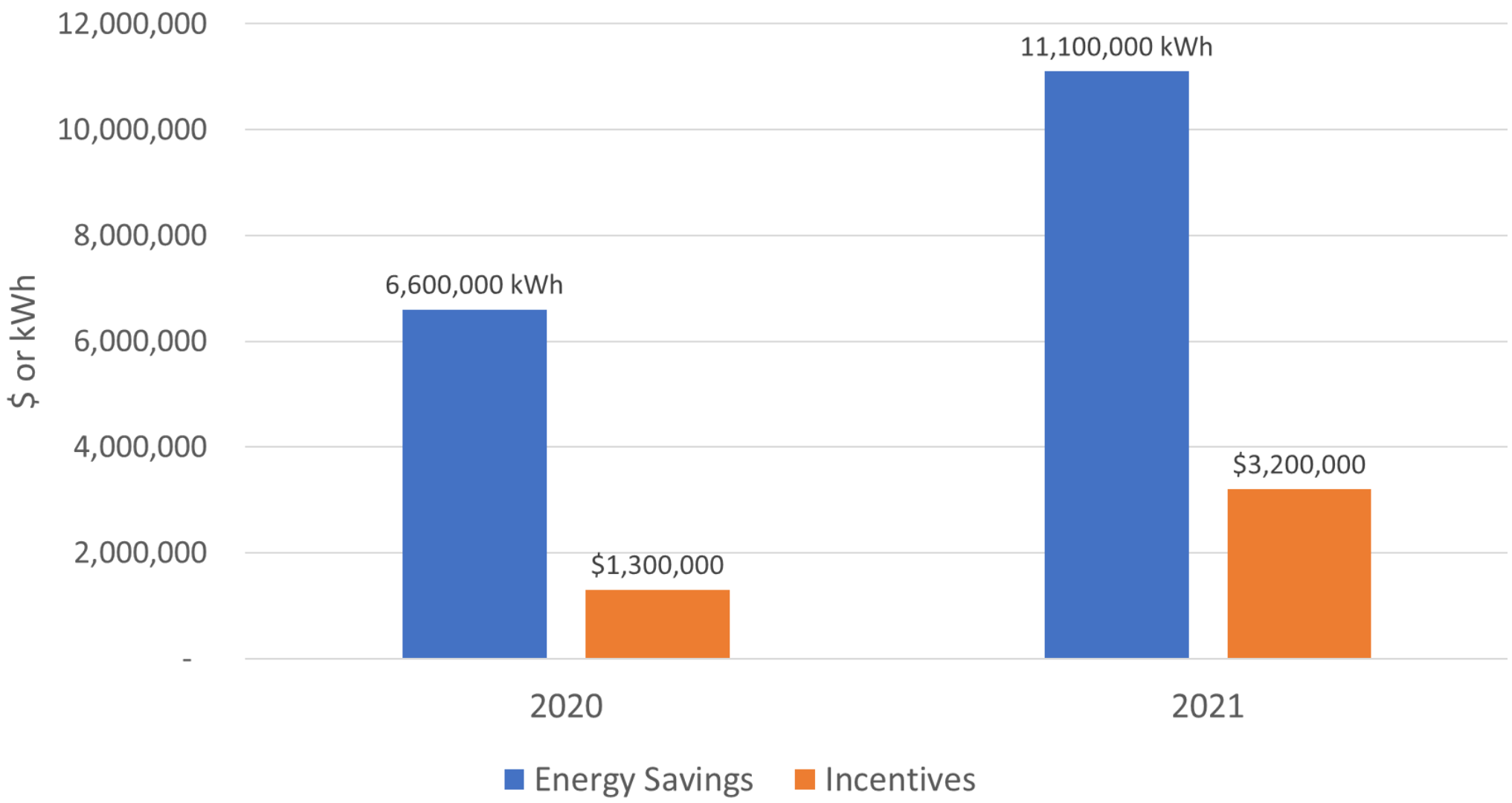
2020 Background and 2021 Budget

2020 in Review

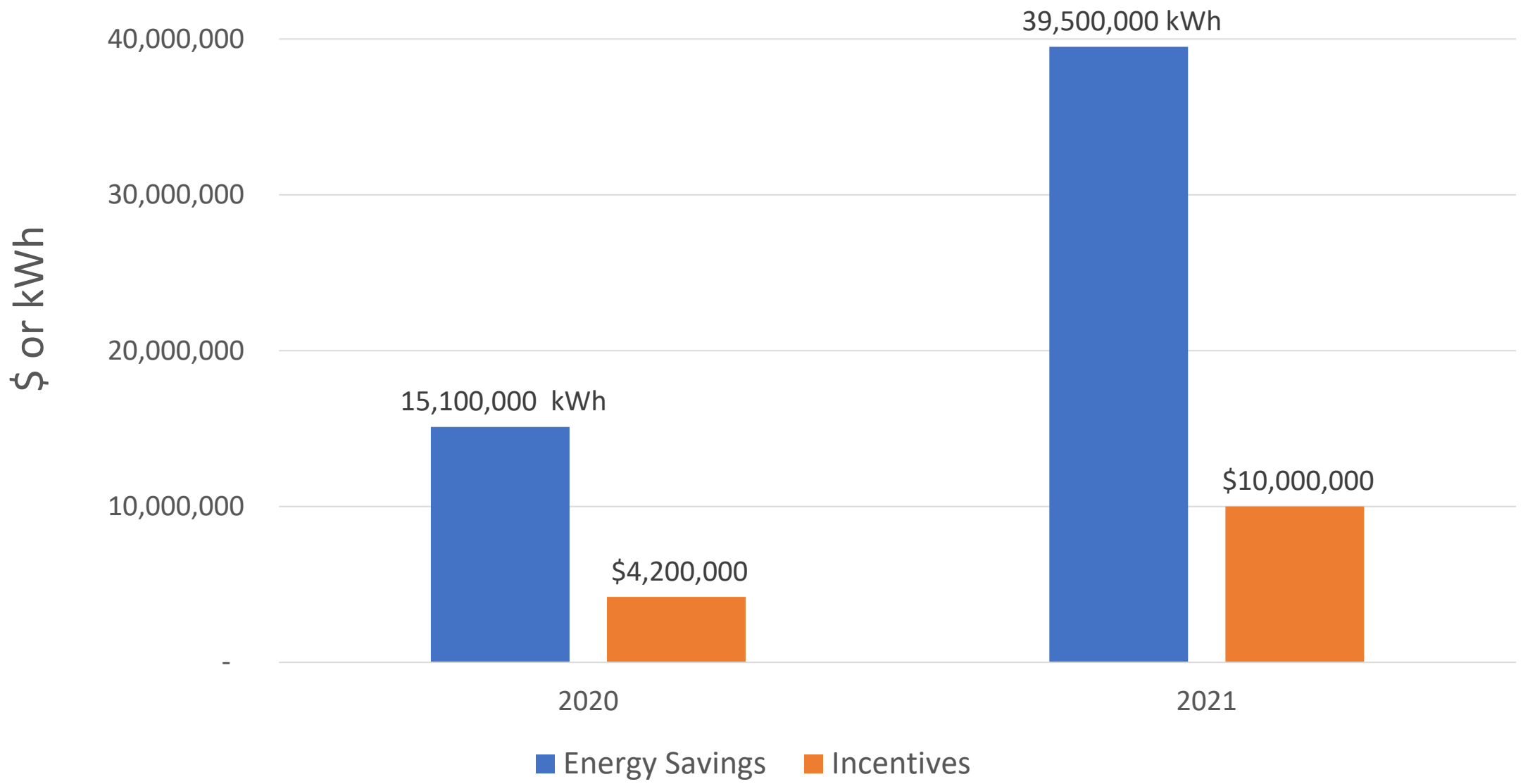
- 2020: COVID-19 disrupted the market and effected many businesses and forecasted projects
- Q2: Energy Trust used bonus offers to help businesses invest in energy efficiency
- Q4 2020: Steep increase in bonus participation, bonuses paused
- 2021: Adjusted incentives and program requirements to align with budget for new projects

Energy Trust of Oregon

Standard Industrial Savings and Incentives
(Pipeline on January 1, 2020 versus January 1, 2021)



Existing Buildings Savings and Incentives*
(Pipeline on March 31, 2020 versus March 31, 2021)



*Does not include lighting

Budget Management Strategies

- Reduced electric incentive offers for impacted programs
- Established incentive caps for impacted programs
- Implementing new controls for closer monitoring of project pipelines and budgets
- Identified cost savings in other areas of the organization
- In coordination with OPUC and electric utilities, developed proposed amended budget with increased funding for electric efficiency

Program Details

	Incentive Changes	Program Requirement Changes	Additional 2021 Savings	Additional 2021 Incentives
Commercial	Yes	No	3,849,674 kWh	$1,065,932
Industrial-Custom	Yes	Yes	9,405,000 kWh	$2,895,000
Industrial-Standard	Yes	Yes	2,383,000 kWh	$800,000
Business Lighting	Yes	Yes	5,181,725 kWh	$1,234,959
Total			**20,819,399 kWh**	**$5,995,891**
Total			**20,819,399 kWh**	**$5,995,891**

Industry and Agriculture

Custom Industrial: 2021 Summary

- No change to gas or Operations & Maintenance offers
- All 2021 projects with signed incentive offers will be paid per normal program rules
- Can initiate studies for custom projects scheduled to complete after 2021
- First-come, first-served queue for 2021 projects currently in study phase, $250,000 cap for these projects
- No new custom capital electric projects in 2021 except for emergency replacement projects, if budget allows

Standard Industrial: 2021 Calculated Incentives

Utility	Limit on Number of Projects per Site	Maximum Incentive Cap per-Site, Per-System Type
PGE	One incentive application per site in 2021 for **each** system type*	$40,000
Pacific Power	One incentive application per site in 2021 for **each** system type*	$10,000 if energy savings less than 100,000 kWh $15,000 if energy savings of 100,000 kWh or more

* Incentive application limit per site does not apply to irrigation projects

Standard Industrial: 2021 Rebate Caps

Utility	Limit on Number of Rebate Applications per Site	Incentive Cap per System Type
PGE	1 rebate application per site in 2021 for **each** system type*	$40,000
Pacific Power	1 rebate application per site in 2021 for **each** system type*	$10,000

* Incentive application limit per site does not apply to irrigation projects.

Standard Industrial: 2021 Rebate Changes

Equipment	Current Incentive	Previous Incentive
Battery Charger Replacement	$600 per charger	$1,000 per charger
Indoor Ag Dehumidifiers	$7 per ppd (retrofit) $5 per ppd (new construction)	New construction measure new in 2021
Irrigation Linear and Pivot Upgrades	$7 to $25 per drop depending on options	$15 to $35 per drop depending on options
Welder Replacement	$700 per welder	$1,200 per welder

Commercial

Existing Buildings / Multifamily Oregon Incentives

Annual site caps for customers served by PGE and Pacific Power

Pacific Power incentive reductions and removals

- Lodging
- Insulation
- Service shops and warehouses
- Grocery

Standard and Custom Incentive Caps

- Apply to Existing Buildings and Multifamily projects
- Apply to ***electric-only*** measures and dual-fuel commercial insulation
- PGE standard projects: **$12,000**
- Pacific Power standard projects**: $6,000**
- Caps are ***per site,*** per year

Pacific Power Only: Incentives Reduced or No Longer Available

- No longer available:
  - Anti-sweat heater controls
  - Evaporator fan motors
  - Refrigerator doors
  - New cooler cases with doors
  - Floating head pressure controls (FHPC)
  - Floating suction pressure controls (FSPC)
- Reduced Incentives
  - Packaged terminal heat pumps
  - Fork-lift battery charger
  - Inverter driven welder

Recap of Existing Buildings/Multifamily changes

Change	PGE	Pacific Power
Custom and Standard Project incentive caps, electric-only	$12,000 per site per year	$6,000 per site per year
Removal of select grocery measures	No	Yes
Reduction of select measure incentives	No	Yes
Project incentive caps, dual-fuel *commercial* insulation measures*	$12,000 per site per year	$6,000 per site per year

*Caps are separate from the electric only caps

Business Lighting

Business Lighting Program Changes

Closed Trade Ally Network (in-network)

Changed custom and prescriptive incentives

Application and completion timeline changes

Application signed within 30 days from 120L Participation Agreement date

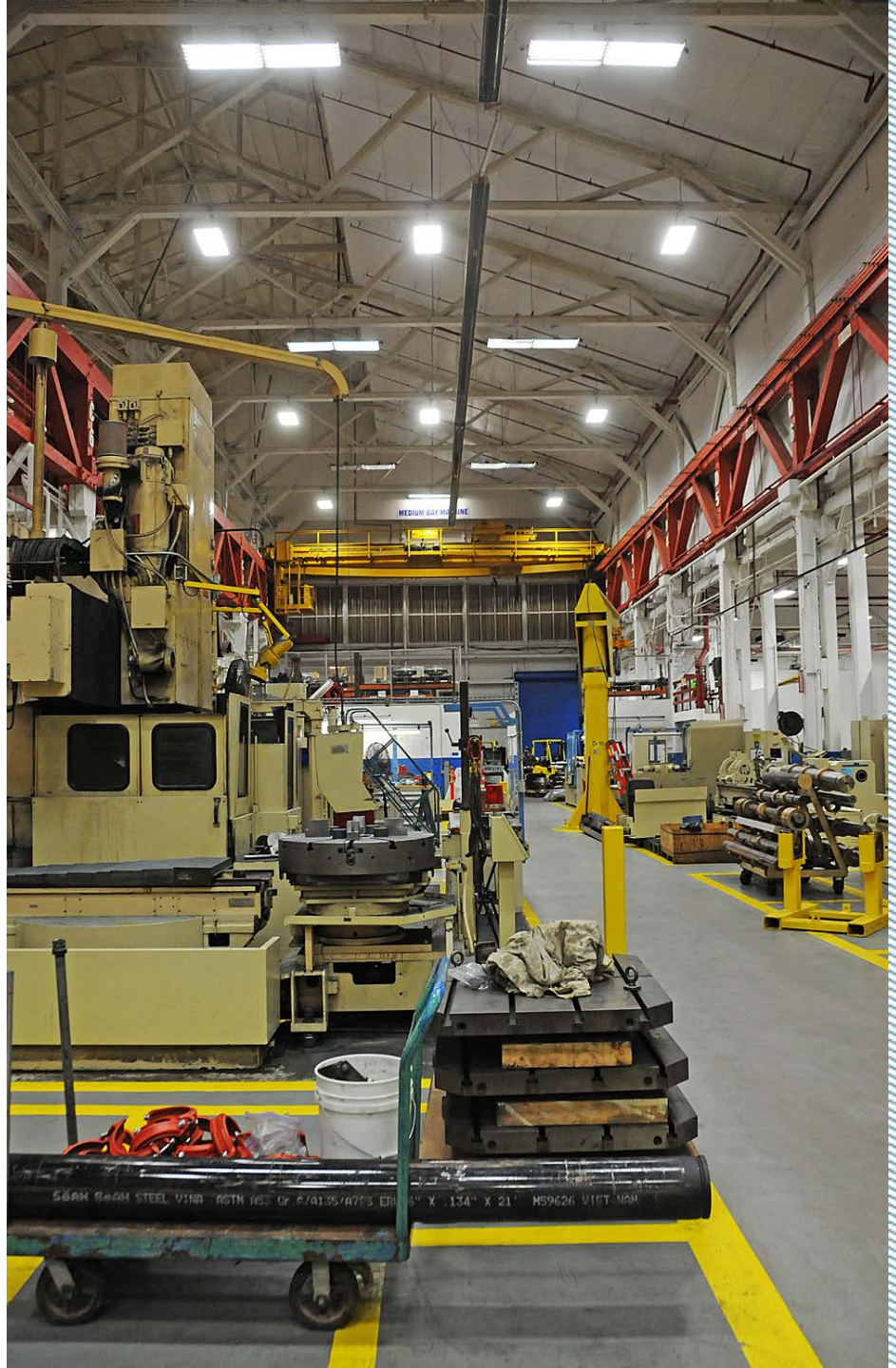
Completion timeline within 120 days from 120L Participation Agreement date

Business Lighting Program Caps

	PGE	Pacific Power
Participant project caps	$6,000	$6,000
Active project caps	10	5
Trade ally annual caps	$250,000	$75,000

Market Reaction to Changes

- Trade allies mixed response
- Project queue caps impacting some customers
- Volume of industrial projects at lower than normal levels due to incentive caps



2021 Outlook

- Continuing to engage trade allies
- Developing external budget dashboards and Trade Ally Gateway
- Launching Small Medium Business Direct Install Program in May
- Activity in preparation for 2022

Thank You

- Oliver Kesting, Commercial Lead
- Wendy Gibson, Commercial Sr. Program Manager
- Adam Bartini, Industrial Sr. Program Manager
- Jessica Kramer, Business Lighting Sr. Program Manager