Geographically Targeted Energy Efficiency (GeoTEE) Phase Three Process Evaluation

Final Report

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Executive Summary

This report presents findings from a process evaluation of the third phase of the Geographically Targeted Energy Efficiency (GeoTEE) pilot that Energy Trust ran in partnership with NW Natural to test strategies to achieve greater peak demand reduction for natural gas usage in the cities of Cottage Grove and Creswell, Oregon.

In the third phase of the pilot (August 2021 to July 2022), Energy Trust increased incentives in the pilot area above statewide maximums, based on local avoided costs that take the area's potential for supply constraints into account. These increased incentives built on pilot efforts in the previous two phases, in which Energy Trust first increased marketing of targeted gas measures (Phase One, September 2019 – July 2020) and then increased incentives for targeted measures to the statewide maximums (Phase Two, August 2020 – July 2021).

Energy Trust defined three key research objectives for this evaluation:

- Document program staff and stakeholders' goals for GeoTEE
- Assess the extent to which enhanced energy efficiency offerings drove measure uptake in targeted areas
- Identify lessons GeoTEE can offer for future efforts.

Apex Analytics (Apex) carried out four key research activities to address these objectives, as described in Table 1.

Table 1: Research Activities

Activity	Details
Pilot Document Review	Review of documents related to pilot design and outcomes to build a baseline understanding of pilot structure, motivations, and experience.
Pilot Staff and Stakeholder Interviews	11 interviews conducted with staff members of Energy Trust, NW Natural, and Program Management Contractors (PMCs) involved in pilot design and delivery.
Trade Ally Interviews	8 interviews with trade ally contractors installing measures eligible for residential incentives in Cottage Grove and Creswell. Respondents included HVAC, insulation, and gas fireplace installers.
Pilot Data Analysis	Analysis of Energy Trust tracking data to characterize pilot measure uptake both relative to historical uptake in Cottage Grove and Creswell and relative to uptake in the rest of Energy Trust's service area during the pilot period.

Key Findings

Deemed savings estimates suggest the pilot achieved peak therm savings in Cottage Grove and Creswell, particularly during Phase 2 and Phase 3. Residential retrofits drove the bulk of these savings, showing clear increases with each pilot phase. Estimated residential peak therm savings increased by nearly half (46%) in Phase 1 relative to the average of the prior three years in pilot area. The increases became more pronounced as enhanced incentives became available in Phase 2 and Phase 3, with residential peak therms increasing to four times the three-year average baseline in Phase 2 and more than six times the average baseline in Phase 3.[1] Commercial savings were more sporadic, both during the baseline and pilot periods. As a result, while the pilot reported notable commercial peak therm savings in Phase 2 (8.5 peak therms) and Phase 3 (2.9 peak therms), it is more difficult to compare those savings to a historical baseline. At the time of this evaluation, NW Natural was in the process of conducting a more detailed analysis to verify these results.

Energy Trust and NW Natural staff approached the pilot from differing perspectives, but increased uptake of gas efficiency measures in the pilot area served both organizations' goals. NW Natural saw the primary objective of the pilot as gathering data necessary to develop a peak hour energy efficiency supply curve that would allow for an apples-to-apples comparison of the cost of energy efficiency as a way to address supply constraints relative to other, primarily infrastructure-based, solutions. Energy Trust staff described the pilot as an opportunity to develop the systems and processes necessary to provide the coordination between programs and with utility partners needed to deliver and track the outcomes of geographically targeted efforts. Ultimately, increased uptake of efficiency measures in the targeted areas served both goals, and these differing perspectives had little impact on day-to-day pilot implementation.

Enhanced energy efficiency offerings drove measure uptake when there was an engaged trade ally with the capacity and desire to market those offerings. The pilot saw the greatest increase in uptake among residential gas furnace installations in residential homes. The bulk of those installations were driven by a single trade ally who actively marketed the offer and took advantage of the increased Business Development Funds (BDF) the pilot offered to support cooperative marketing. Other trade allies used the incentives to encourage customers to select more efficient equipment but did not market the offering to draw in new customers. Many of the trade allies that did not actively market the increased incentives came from small companies that lacked the capacity to develop and implement marketing efforts or to complete the additional projects those efforts would generate. Non-residential efforts saw limited uptake. The small businesses that made up the bulk of non-

[1] Reported peak residential therm savings in Cottage Grove and Creswell were 1.1 in 2017, 1.3 in 2018, and 0.9 in 2019, for a three-year average of 1.1. During the pilot, reported therm savings were 1.6 in Phase 1, 4.5 in Phase 2, and 6.9 in Phase 3.

residential customers in the pilot area were strongly impacted by the Covid-19 pandemic, and statewide bonus incentives in the market reduced the motivation for contractors to target the pilot area in the first two phases of the pilot.

Conclusions and Recommendations

Conclusion 1: The pilot's outcomes ultimately met the needs of both Energy Trust and NW Natural. The pilot generated the data needed to accomplish what NW Natural's 2018 IRP update describes as its primary objective, developing a peak hour energy efficiency supply curve to compare the cost-effectiveness of targeted energy efficiency against other system capacity options for any geography. The pilot provided additional benefits to Energy Trust, which was able to develop systems and processes to coordinate special offerings and track the resulting uptake within targeted geographic areas. Ultimately, the experience of this pilot helped to prepare both organizations for future geographically targeted efforts.

Conclusion 2: Energy efficiency program delivery requires a distinct set of considerations from traditional utility infrastructure improvements. Efficiency programs need to understand the needs of the targeted community and develop relationships within that community. Efficiency program efforts also build over time as these relationships develop; the work completed to build a program presence during Phases One and Two likely helped to facilitate the growth in uptake the program saw in Phase Three.

- **Recommendation: Energy Trust and its utility partners should factor in the amount of work needed to build relationships and understand community needs into their estimates of the cost and time required for future GeoTEE efforts.**

Conclusion 3: Geographically targeted program efforts can serve a wide range of objectives, if they are designed with those efforts in mind. The GeoTEE pilot in Cottage Grove and Creswell had a relatively broad scope in order to provide data that NW Natural could use to develop a peak hour supply curve for energy efficiency that would be widely applicable. Pilot staff pointed out that future efforts may be able to operate more efficiently if they were designed to target more specific objectives. For example, an effort focused solely on maximizing peak energy usage reductions might take a different approach than an effort that also prioritizes reaching underserved customers. The customer makeup and building stock of the targeted area also impacts the feasibility of each of these strategies.

- **Recommendation: While this effort took a broad approach to gather data about the potential of a GeoTEE strategy, future efforts may have more targeted objectives. Energy Trust and its utility partners should define and agree upon specific objectives for future geographically targeted efforts and design the efforts' strategies with those objectives in mind.** For example, a pilot seeking only to maximize peak demand reduction might utilize different strategies from a pilot seeking to reach a broad group of customers.

Conclusion 4: There is potential for conflicting priorities in resource allocation between targeted and statewide efforts. The potential to offset infrastructure improvements in areas with energy supply constraints could justify a significant, targeted focus on those areas for efficiency programs. However, from the perspective of statewide programs seeking to maximize energy savings, the quantities of savings those targeted areas generate could be small. To the extent that targeted efforts draw resources away from standard, statewide program efforts, this dynamic has the potential to create conflict as program staff seek to manage incompatible goals with limited resources.

- **Recommendation: As efficiency programs increasingly focus on targeted efforts, Energy Trust, utilities, and the OPUC should carefully consider the balance of demands that those efforts, as well as state-wide goals, place on program resources.**

1. Introduction

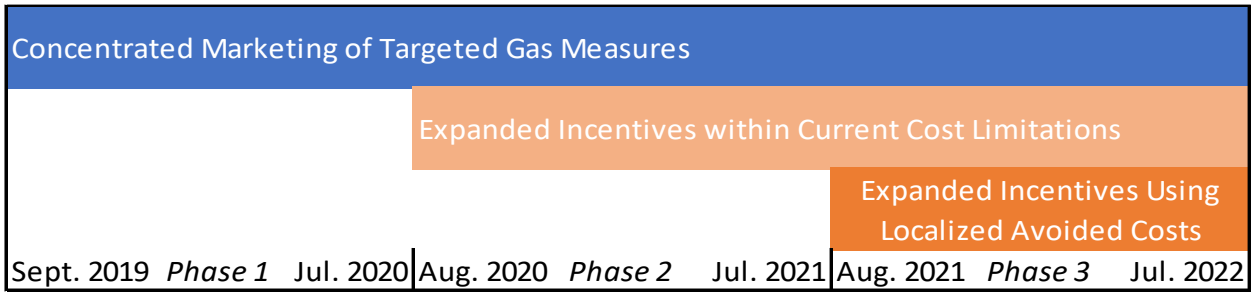
This report presents findings from a process evaluation of the third phase of the Geographically Targeted Energy Efficiency (GeoTEE) pilot that Energy Trust of Oregon (Energy Trust) operated in conjunction with NW Natural in Cottage Grove and Creswell, Oregon. Energy Trust contracted with Apex Analytics to complete this evaluation.

1.1 Pilot Description

Energy Trust and NW Natural designed the GeoTEE pilot to test the potential for targeted, enhanced energy efficiency efforts to provide a reliable, equitable, least cost, and least risk alternative to installing natural gas distribution infrastructure to meet winter peak capacity needs. The pilot targeted the communities of Cottage Grove and Creswell, Oregon.[2]

As summarized in Figure 1, the pilot occurred over three phases, with offerings in each phase building on the prior phases. The first phase, from September 2019 to July 2020, consisted of concentrated marketing efforts focused on increasing uptake of Energy Trust's existing gas efficiency measures. In Phase Two, the pilot added bonus incentives, increasing incentives to the maximum supported under the Utility Cost Test using statewide avoided costs.[3] Energy Trust also determined that, based on average area incomes, all customers in the targeted areas would qualify for the gas furnace incentives and other offerings available through the Savings Within Reach program, which targets moderate income customers. In Phase Three, beginning in August 2021, the pilot further increased incentives based on local avoided costs that considered potential supply constraints in the target area.

Figure 1: GeoTEE Implementation Timeline



[2] Energy Trust and NW Natural originally selected the town of Silverton, Oregon, for the pilot, but shifted to Cottage Grove and Creswell prior to launching the pilot when pilot staff learned that, due to a piece of faulty metering equipment, baseline metered data would not be available for Silverton.

[3] In response to the COVID-19 pandemic, Energy Trust offered bonus incentives statewide that were equivalent to the enhanced incentives available under the GeoTEE pilot. These bonuses became available in July 2020.

1.2 Evaluation Objectives

Energy Trust identified three broad research objectives for this process evaluation, with a series of more specific research questions related to each. Table 2 summarizes these objectives and associated research questions.

Table 2: Research Objectives

Research Objectives	Research Questions
What were program staff and stakeholders' goals for GeoTEE?	What do program staff, trade allies, and other stakeholders understand as key elements of the pilot?
	What specific outcomes (e.g., number of participants, therms saved, peak therms reduced) did stakeholders hope the pilot would achieve? To what extent did it meet those objectives?
	What broader goals (e.g., concept testing, developing partnerships) did stakeholders have for the pilot? To what extent did it meet those objectives?
To what extent did enhanced energy efficiency offerings drive measure uptake in targeted areas?	What elements of the targeted offerings (e.g., concentrated marketing, expanded eligibility, increased incentives) have been most impactful in driving uptake?
	What prevents targeted offerings from driving greater uptake?
	To what extent has the pilot resulted in therm and peak therm savings?
What lessons can GeoTEE offer for future efforts?	What aspects of pilot implementation were most effective?
	What aspects of pilot implementation were most challenging?
	What challenges did the pilot overcome over the course of its implementation?
	What learnings will staff and stakeholders take into future targeted efforts?

2. Research Approach

This report draws on four key sources of data to address the research objectives, described below.

2.1 Program Document Review

Energy Trust and NW Natural staff provided Apex with a variety of documents related to the pilot. Apex staff reviewed these documents to build a foundational

understanding of the pilot, its motivations, and its experience. The documents reviewed described the pilot's design and goals (e.g., NW Natural's 2018 IRP update) and provided interim summaries of the pilot's activities and uptake (summary and evaluation reports by phase, produced by Energy Trust and Pivot Advising). A complete list of documents reviewed is in Appendix 1.

2.2 Program Staff and Stakeholder Interviews

Apex completed a total of 11 in-depth interviews with staff and stakeholders involved in the design and delivery of the GeoTEE pilot. As summarized in Table 3, the interviews were distributed between staff of Energy Trust, NW Natural, and Energy Trust's Program Management Contractors (PMCs) involved in implementing the pilot. In some cases, interviews included multiple respondents. Interviews were conducted in late October and early November 2022, and typically lasted approximately one hour. The staff and stakeholder interview guide is included in Appendix 1.

Table 3: Staff and Stakeholder Interview Respondents

Organization	Number of Interviews	Number of Respondents
Energy Trust	5	6
NW Natural	2	2
CLEAResult (Existing Homes PMC)	1	1
TRC (Existing Buildings PMC)	3	5
Total	11	14

2.3 Trade Ally Interviews

Apex conducted interviews with 8 of the 15 trade ally contractors that received Energy Trust's orientation to offer enhanced incentives through the pilot. Table 4 summarizes the distribution of respondents by trade ally type. Consistent with the large share of pilot savings attributable to residential furnace replacements, HVAC contractors made up the largest group of interview respondents. Trade ally interviews took place in August and September of 2022, with each interview lasting approximately 30 minutes.

Table 4: Trade Ally Interview Respondents by Type

Trade Ally Type	Number of Active Contractors	Interview Respondents
HVAC	5	4
Insulation	2	1

HVAC + Insulation	2	2
Windows	4	0
Fireplaces	2	1
Total	15	8

2.4 Pilot Data Analysis

Energy Trust provided Apex with two datasets to support a characterization of measure uptake in the pilot area, both drawn from Energy Trust's program tracking data:

- A dataset listing individual measure installations in the pilot area from January 2014 through August 2022.
- A dataset listing total measure installations by program and county throughout Energy Trust's service area, excluding the pilot area, during each of the three phases of the pilot period.

These datasets allowed Apex to compare uptake during the pilot period with historical uptake in the same areas as well as with measure uptake outside of the pilot areas during the pilot period.

3. Findings: Pilot Goals

Program documents describe the purpose of the GeoTEE pilot as "to help develop cost and timing estimates for gas peak-hour demand reductions and identify whether equity issues arise and how best to manage them by testing a variety of geographically targeted energy efficiency strategies." Energy Trust staff described a further goal for the pilot to develop systems and processes that will allow them to deliver geographically targeted promotions more efficiently and effectively in a range of locations and for a variety of goals.

3.1 Cost and Savings Data

NW Natural's central goal for the pilot was to gather the data necessary to develop a peak hour energy efficiency supply curve that would allow for an apples-to-apples comparison of the cost of energy efficiency relative to other, primarily infrastructure-based, solutions to address supply constraints. In its 2018 Integrated Resource Plan update, NW Natural noted that the costs and time requirements to increase supply by a set amount are relatively well known for infrastructure solutions. As one NW Natural staff member explained, "NW Natural has been putting pipes in the ground for 150 years. We are pretty certain about how much it is going to cost, how much pipe is going to be needed, how that is going to be able to flow." Through the pilot, NW Natural sought additional detail on the costs, time

requirements and potential of targeted efficiency efforts in order to incorporate those efforts into their resource planning on an equal footing to infrastructure projects.

At the time of this evaluation, Energy Trust and NW Natural had not yet completed the analysis to develop this peak hour supply curve but interviewed staff members were confident that the pilot would provide the data necessary to do so. NW Natural staff noted that, while there may be some challenges in allocating program marketing and administrative costs on a measure-by-measure basis, the necessary data on costs and quantities of measures installed were available. NW Natural will continue to gather gas usage data through the winter of 2022-23 to fully assess gas savings from measures installed during the pilot. NW Natural staff noted that the utility can estimate savings both at the site level, from analysis of household billing data, and at the community level by tracking gas flowing into Cottage Grove and Creswell. By analyzing these variables along with the shares of residential and commercial customers and other building stock data, NW Natural staff reported they would be able to develop a supply curve that they could use to estimate cost and savings potential for any region facing supply constraints.

3.2 Equity

The potential "equity issues" mentioned in documents describing the pilot's goals refer broadly to customer concerns arising from making offerings available to some customers but not others. For example, customers from outside the targeted area could learn about and request the targeted offerings. NW Natural's 2018 IRP update described this as "the potentially sensitive matter of incentives that are available only to a specific subset of customers residing within an affected area of the gas distribution system. GeoTEE programs could give rise to particularly visible cases of unequal treatment between – and perhaps even within – neighborhoods." In response to these concerns, Energy Trust and its PMCs developed talking points for call center staff and "exception protocols" defining how the pilot might respond to requests for pilot incentives from customers outside the targeted areas.

Energy Trust and PMC staff reported that the pilot did not hear from any customers outside the pilot area inquiring about pilot incentives. Staff contacts suggested that the way the pilot area was defined, as two full zip codes with the borders of each largely in rural areas, helped prevent these types of equity concerns. Staff noted that a previous targeted load management effort Energy Trust conducted with an electric utility had less intuitive boundaries defined by the electrical distribution infrastructure, and more issues had arisen around customers outside the targeted area requesting the increased incentives.

Efficiency programs often use the term "equity" in a slightly different context, to refer to the extent to which program offerings reach communities that have historically been underserved, including low and moderate income customers, renters, and non-English speakers. Interviewed stakeholders also discussed the implications of geographically targeted efforts with regard to equity in this sense. A

large share of the residents in Cottage Grove and Creswell qualified for the moderate income, Savings Within Reach program. Energy Trust staff members suggested that targeted offerings could provide an opportunity to focus efforts on areas that have historically been underserved. A NW Natural staff member noted, however, that supply constraints could also arise in areas where customers in larger homes have high gas usage. There may be different considerations around focusing program resources on those, likely wealthier, customers.

3.3 System and Process Development

In addition to a more targeted geographic focus, the GeoTEE pilot required greater coordination both between Energy Trust programs and between Energy Trust and NW Natural than is typical for Energy Trust's standard program offerings. According to one Energy Trust staff member, "Coordination was one of the biggest things we had to get good at to make sure this was successful, that is between programs as well as within Energy Trust."

Energy Trust staff described the pilot as an opportunity to develop the systems and processes necessary to provide this level of coordination and to track the outcomes of geographically focused efforts. As one Energy Trust staff member explained, "Energy Trust was trying to build a framework where we could deliver targeted energy efficiency to the benefit of utility customers in a shorter time and with a greater impact than if we were trying to peanut butter spread across the state." Energy Trust staff anticipated that these types of geographically focused efforts would play an increasing role in the organization's work, and the organization is developing a dedicated business unit to manage these efforts.

Energy Trust staff reported that the pilot had largely succeeded in developing systems and processes to deliver coordinated promotions to a targeted area. Staff noted that the pilot had updated tracking systems to identify sites in a targeted area and track savings in that area, and that, through the pilot, Energy Trust and NW Natural had successfully co-branded marketing efforts and coordinated marketing schedules to avoid redundant or contradictory efforts. Energy Trust and PMC staff were largely confident they would be able to apply their learnings from this pilot to other parts of the state. Some staff members noted that, during the pilot, PMC staff had maintained close contact with trade allies in the pilot area, and it may be more difficult to provide a similar level of support in an area served by a larger number of trade allies, but PMC staff believed they could overcome that challenge.

While Energy Trust staff reported the pilot succeeded in coordinating offerings, staff members also noted that doing so had required significant staff resources. One staff member noted that, "We are so constrained internally that…it caused a lot of strife putting so much time and effort into targeted load management efforts when other parts of the program are under resourced." This staff member suggested that it would be beneficial if utility funding could support additional staff resources to manage future GeoTEE efforts.

Energy Trust staff also noted that there were opportunities to make internal coordination more efficient. For example, one staff member suggested that giving the pilot's overall project manager more authority to communicate directly with the PMCs, rather than routing communications through staff from each program, could increase efficiency. Another Energy Trust staff member suggested that more narrowly targeting offerings to the market sectors likely to provide the greatest peak demand reduction or meet other pilot goals could increase the efficiency of future geographically targeted efforts.

3.4 Alignment of Goals

Energy Trust and NW Natural approached the pilot from differing perspectives. NW Natural viewed the pilot through an economic lens, as an experiment to understand the cost and timing of addressing supply constraints through energy efficiency relative to infrastructure projects. Energy Trust viewed the pilot through a more tactical lens, as an opportunity to develop systems for cross-sector coordination and geographically targeted offerings.

For the most part, common outcomes – increased uptake of energy efficiency measures in the pilot area – served both goals, and the differing perspectives did not hinder day-to-day pilot implementation. Nonetheless, the differences in goals between Energy Trust and NW Natural could lead to contrasting program strategies. Energy Trust and PMC staff saw opportunities to improve program success through increased pre-implementation work to understand the needs of the target area and build relationships within the target area. These types of local considerations may play a larger role in efforts to address supply constraints through efficiency than they would in infrastructure projects.

NW Natural staff also emphasized the importance that the pilot focus on peak therm savings. NW Natural staff noted that this was a shift from Energy Trust's typical focus on annual savings. While this pilot did not articulate goals related to greenhouse gas emissions, one NW natural staff member noted that some stakeholders saw emissions reductions as a potential outcome and suggested that the pilot's design was not necessarily compatible with a focus on reducing emissions. According to this staff member, "If you start thinking about this pilot as trying to reduce emissions, you get away from our primary purpose of focusing on peak savings…While there is something to be learned from the potential for additional spends to achieve additional annual savings, I would have recommended that to be a whole separate pilot because it is focused on a different thing."

Energy Trust staff reported that more focused offerings might benefit future geographically targeted efforts but noted that developing those offerings would require more closely defining the partner utility's goals for each effort. According to one staff member, "Is [the goal] peak demand [savings] by any means? Is it reaching each market segment? Because those are different things that take different amounts of time to develop." This staff member further noted that a

program could meet equity goals and obtain savings and peak impacts by targeting low-income customers with no-cost replacements but doing so would be costly.

3.5 Communication of Goals

Interviewed PMC staff reported that they had been careful in their framing of the pilot's purpose to trade allies in order to avoid raising alarm among trade allies or customers about capacity constraints. As one PMC staff member explained, "The underlying assumption was that, if there happens to be this hypothetical constraint on the system, what are the strategies that we could deploy that would help…relieve some stress on the system? Which is not something a customer wants to hear – that they might someday lose power because their power is being gobbled up by somebody else coming into the community." Reflecting these concerns, trade ally orientation materials describe the purposes of the pilot as Energy Trust and NW Natural seeking to "improve our support for customers in small Oregon communities" and "keep energy costs as low as possible," with only a brief mention of the potential to delay costly infrastructure projects.

Consistent with this framing, none of the interviewed trade allies cited the potential to address gas supply constraints as a motivation for the pilot. Instead, they most often described the pilot's motivation as increasing uptake of efficient equipment for environmental (five respondents) or cost (four respondents) benefits. Three of the seven trade allies who discussed the program's purpose mentioned uncertainty about the reason for the pilot's choice of Cottage Grove and Creswell as a target area. Trade allies did not indicate, however, that this uncertainty had limited their ability to complete projects under the pilot.

4. Findings: Pilot Delivery

The key differences in program delivery efforts between the pilot area and Energy Trust's broader programs focused on marketing efforts and the selection of measures receiving increased incentives.

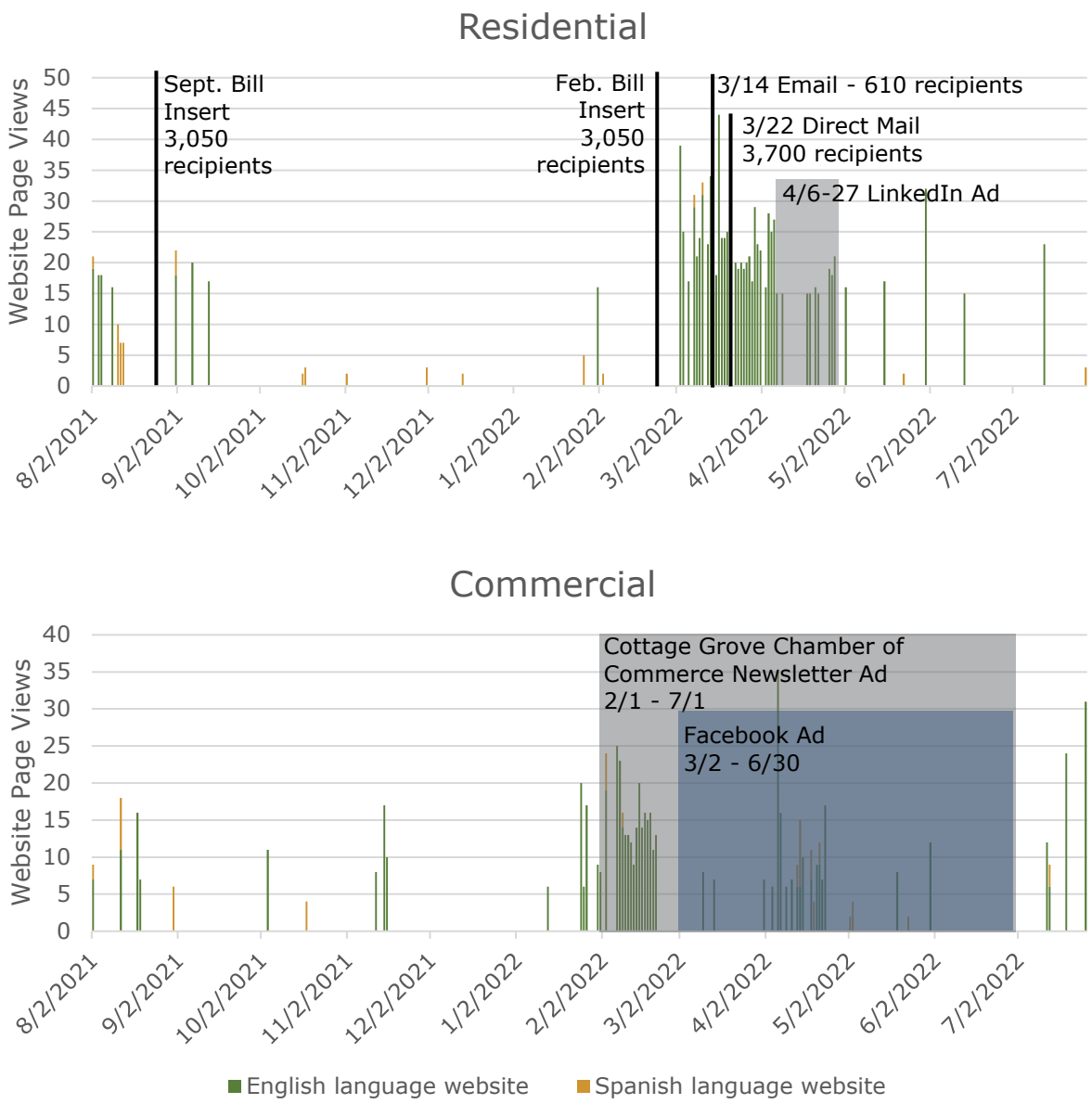
4.1 Marketing

Increased marketing efforts were an important part of the pilot's efforts to drive measure uptake in Cottage Grove and Creswell. The pilot's marketing efforts included program-led efforts that NW Natural and Energy Trust and its PMCs carried out, as well as program support for trade ally-led marketing efforts.

4.1.1 Program-Led Marketing

Energy Trust and NW Natural used a variety of approaches to market efficiency improvements to residents of Cottage Grove and Creswell, including both digital, direct marketing and advertising approaches as well as outreach efforts like directly contacting businesses and attending community events. Energy Trust staff monitored traffic to the pilot's dedicated website as a way to assess the results of marketing efforts. Based on these metrics, multiple staff members reported that bill inserts and mailers drove website traffic to a greater degree than email or other digital efforts like social media posts and advertisements. As one Energy Trust staff member explained, "We'd see bottom line performance, nobody going to the website, you'd send a bill insert and see a spike." Figure 2 illustrates the timing of key program marketing efforts to residential customers as well as traffic to the program's website.

Figure 2: Phase 3 Marketing Efforts and Pilot Website Traffic



A PMC staff member speculated that the nature of efficiency upgrade projects limited the potential of email and online outreach, saying, "[an efficiency upgrade] is a big project, not something someone would do on a whim; you will not say 'oh, I'll buy a new gas furnace today,' unless you were already in the process and that email came in at the right time." This staff member suggested that efforts like email outreach likely played a larger role in building awareness of Energy Trust than in directly motivating upgrade projects.

For commercial customers, staff reported that the pilot's partnership with the Cottage Grove Chamber of Commerce, which advertised the pilot in its newsletter, had been particularly productive. As one Energy Trust staff member described, "The

most successful thing we did was that marketing coordinated with the chamber to get the word out." This staff member reported the pilot's partnership with the Chamber of Commerce led to the largest commercial project completed during Phase Three.

Pilot staff reported that, in addition to these broader marketing efforts, attending events in the Creswell and Cottage Grove areas was an important outreach activity, particularly for commercial customers. As one PMC staff member explained, "We are finding that in some of these smaller communities, if you are not a known entity, or [customers] do not see you as much, they will not engage as much. Getting in early and going to the business events so they get to know you and have those conversations is important." The Covid-19 pandemic limited the pilot's ability to conduct outreach at community events, particularly in phases one and two.

Direct, one-on-one contact, either in-person or by phone, was also an important part of the pilot's outreach efforts for commercial customers. PMC staff reported that this type of direct outreach was particularly important since customers in the pilot area had relatively low awareness of Energy Trust. According to one PMC staff member, "Really getting on the ground in this area was really crucial. These are areas that are historically not utilizing incentives and Energy Trust programs, so having people out there was really critical." An Energy Trust staff member further noted that increasing direct outreach was the primary lever the program had to drive commercial participation, stating that there were few viable channels for more general advertising. Energy Trust and PMC staff reported that the pilot reached out to all of the commercial customers in the targeted areas.

Pilot staff reported that marketing efforts built on each other over the course of the pilot's three phases. In Phase One, the pilot used the same marketing messages and approaches that Energy Trust uses statewide to market programs, but with an increased intensity in the pilot area to capture more impressions. The increased incentives in Phase Two provided an opportunity for more targeted messaging in the pilot area promoting those incentives. Messaging could further shift in Phase Three to emphasize the limited time aspect of the offering. Pilot staff further noted that trade ally involvement in offering the increased incentives in Phase Two smoothed the transition to Phase Three, when incentives were further increased.

To some extent, the pilot's success in increasing uptake during Phase Three may reflect the cumulative effect of program efforts over Phases One and Two, which raised customer awareness of Energy Trust offerings and increased trade ally efforts in the targeted areas. As one PMC staff member noted, "I think the early-on marketing got customers thinking about it, when you start to layer in the incentives and more marketing, it helps people move forward."

4.1.2 Cooperative Marketing

In Phase Three, Energy Trust offered an additional $4,000 in Business Development Funds (BDF) to trade allies working in the pilot area to support cooperative marketing efforts focused on Cottage Grove and Creswell. Combining this bonus

with the $3,000 - $4,000 in BDF that are available to all of Energy Trust's residential trade allies, trade allies in the pilot area could access up to $8,000 in BDF funding. Four trade allies took advantage of the additional BDF support.

Pilot staff attributed differing levels of success to these contractors' cooperative marketing efforts. Staff described one contractor's video advertisement that played on streaming video services for customers within the targeted zip codes as highly successful, noting that this contractor completed the largest number of projects within the pilot area. In an interview, this contractor confirmed pilot staff members' assessment of the success of their marketing campaign, saying "We had people calling in every day, 'I saw your TV ad, can you tell me about that?' Every day when we were running those ads, it was huge."

Staff reported that another contractor's embedded online advertisements on various websites had been less successful. One PMC staff member contrasted this trade ally's efforts to the one running TV ads, as "Two ends of the spectrum: a well-constructed, targeted ad that was on TV run by a trade ally that knew marketing a lot better, and then one that spent the same amount on something not as well designed or thought out."

Trade allies that did not take advantage of the BDF support were most often small companies that completed few projects through the pilot. Three interviewed trade allies reported their businesses had little capacity to take on additional work and were therefore not interested in marketing. As one trade ally explained, "I didn't see any reason to go out and get more business when I couldn't even keep up with what I had."

Pilot staff reported limited uptake of BDF support from commercial trade allies for similar reasons, noting that equipment availability constraints, in addition to staff capacity, limited contractor interest in marketing. According to one PMC staff member, "the more savvy people were like, 'even if I blast this out and get a bunch of calls back and get a bunch of projects, I'm not going to be able to get the equipment in time.'"

One PMC staff member suggested that it might be beneficial for Energy Trust to provide more design and other support to enable a wider range of trade allies to take advantage of BDF support. This staff member noted that many small trade ally firms lack the staff capacity and expertise to develop marketing campaigns, saying "A lot of these shops…are really small, and there is not a marketing team. It is not like there are five people that can help us. They don't have the wherewithal to participate in cooperative marketing even if they wanted to."

4.2 Measure Selection and Eligibility

Both Energy Trust and NW Natural staff noted that the pilot's focus on peak demand reduction differed from Energy Trust's typical efforts to achieve overall energy savings. Nonetheless, both residential and commercial PMC staff reported that the pilot's measure offerings included many of the most common gas savings

measures their programs promote. Because peak demand for natural gas in the pilot area is largely driven by space heating, residential measures focused on reducing heating energy consumption. Reducing consumption from water heating was a lower priority since water heater use was less likely to coincide with times of peak demand.

Residential measures eligible for enhanced incentives included gas furnaces, gas fireplaces, windows, and insulation. Pilot staff reported they also included Energy Trust's standard electric incentive (not funded by NW Natural) for central air conditioner installations in residential marketing materials because they had observed that most furnace installations were paired with an air conditioner installation.

Energy Trust determined that more than two-thirds of the households in Cottage Grove and Creswell were eligible for income-qualified, Savings Within Reach incentives, and decided to extend those incentives to all participants in the pilot area.[4] This expanded eligibility played an important role in allowing for uptake of gas furnace replacements since Energy Trust does not have a standard gas furnace incentive for participants who are not income-qualified. Interviewed trade allies noted that removing the income qualification allowed them to offer furnace incentives to a wider range of customers.

Energy Trust staff members noted that there may be opportunities in future GeoTEE efforts to adjust other measure eligibility requirements. For example, noting that uptake of insulation measures had been lower than expected during the pilot, one Energy Trust staff member suggested that future efforts might consider increasing the maximum amount of pre-retrofit insulation homes are allowed to have to be eligible for insulation incentives.

PMC and staff members at Energy Trust provided a mixed assessment of the pilot's commercial measure offerings. One staff member reported that the pilot's commercial offerings largely included all of the gas efficiency measures that would be relevant for commercial buildings in Cottage Grove and Creswell. Another reported, however, that the pilot's initial focus on commercial custom projects had been challenging since most of the commercial facilities in the pilot area were not good candidates for custom projects.

4.3 Program Support

Due to staffing changes at the residential PMC, a single staff member was responsible for all aspects of trade ally management for the pilot, including training, processing applications, and answering questions. This staff member reported that consolidating these roles had helped smooth the participation process for trade allies. All eight interviewed trade allies confirmed this assessment, noting that

[4] Savings Within Reach incentives are available to customers earning up to 120% of the statewide median income.

working with a single point of contact had simplified participation for them. Trade allies noted that the PMC staff member would proactively help them identify increased incentives for their customers and would help them through the application process. As one trade ally described, "the rep that was helping me was remarkable to work with…If it had to go to a different department or something, it wouldn't be as smooth, but [PMC staff member] is great. He made my job a lot easier."

5. Findings: Pilot Uptake

Overall, the pilot exceeded Energy Trust's baseline savings goal in Phase Three. As described below, the bulk of savings came from residential customers.

5.1 Residential Uptake

As noted above, gas furnace replacements were a key focus of the pilot, and Energy Trust extended eligibility for gas furnace rebates, which had previously been available only to income qualified customers, to all customers in the pilot area. Trade allies and pilot staff reported that this expanded eligibility and the large incentives available drove uptake of furnace installations. Referring to the standard Savings Within Reach incentive, one trade ally explained, "when you only give somebody $500, it's not enough for them to make a purchasing decision. When you throw $2,000, $2,500 at somebody, that's huge."

Trade allies explained that, by making the cost of an efficient furnace comparable to, or even lower than, that of a baseline furnace, pilot incentives also motivated customers to choose efficient equipment who otherwise would not have. In particular, trade allies noted that the incentives could motivate rental property owners and homeowners with limited budgets to opt for efficient equipment. One trade ally described the incentives as "motivation for people to go in the direction of gas if they were thinking about it, but more than that, people that can't afford it or rentals that don't care, were able to get something better, more efficient for the same price, so it's a no brainer for a homeowner or a landlord." Ultimately, trade allies reported that all of their eligible customers in the pilot area opted for qualified furnaces.

Trade allies also reported that the enhanced incentives motivated customers who otherwise would have waited to replace their furnace to move forward with upgrades. According to one trade ally, the furnaces receiving pilot rebates "would probably eventually get installed, but the customers maybe would have waited another year or so."

Uptake of other residential measures lagged that of gas furnaces. Energy Trust staff noted that the pilot's insulation incentives had the potential to cover a significant share of the cost of an insulation upgrade, but the pilot resulted in relatively few insulation upgrades. A PMC staff member reported that insulation trade allies had generally not been as responsive to program outreach as some other trade allies,

noting that many insulation trade allies were smaller firms that may have limited capacity to track Energy Trust incentives. Both Energy Trust and PMC staff also speculated that weatherization contractors serving Cottage Grove and Creswell might primarily work with the public utilities in the area.

Trade allies cited two related reasons for this limited uptake. First, they noted that they have fewer customers in the Cottage Grove and Creswell areas than they do in the Eugene and Springfield areas, where populations are denser. As one weatherization contractor explained, "The Creswell and Cottage Grove area is more rural…there are just not as many customers as there are in the city." Contractors also perceived that there were fewer gas heated households in the Creswell and Cottage Grove areas than in other areas where they worked.[5] A fireplace contractor noted that many of the homes in Cottage Grove and Creswell eligible for gas service had equipment designed for wood burning and would need costly upgrades to venting material to switch to gas.

5.2 Commercial Uptake

The pilot experienced relatively low commercial uptake, although commercial participation and savings had historically been sporadic in the pilot area. Interviewed program staff cited a variety of reasons for limited commercial participation, with barriers falling into three general categories: a limited pool of eligible customers, general commercial customer barriers, and limitations of the pilot offerings.

5.2.1 Eligible Customer Population

Interviewed Energy Trust and PMC staff reported that there were relatively few eligible customers in the pilot area that needed the measures the pilot offered. Pilot staff reported that, based on overall program data, they had anticipated that large, custom projects could provide significant energy savings. However, the commercial building stock in the pilot area was largely made up of smaller buildings for which prescriptive measures were a better fit. According to one staff member, "If there was a project, [the enhanced custom incentive] would have covered a lot of the cost. It would have enabled a project to happen that otherwise [a customer] could not have afforded. But that is not what [commercial customers in the pilot area] needed." Pilot staff also noted that, while they were able to offer the enhanced single-family gas furnace incentive to duplexes, triplexes, and fourplexes, there were 20 or fewer eligible properties in the pilot area.

A lack of eligible customers was also the primary barrier that program staff cited for a lack of industrial customer uptake in the pilot area. Staff noted that there were a

[5] U.S. Census Bureau data suggest that, with 24% of households heating with utility gas, the pilot area has a comparable share of gas-heated households to the cities of Eugene (22%) and Springfield (13%) (based on 2019 5-year American Community Survey estimates for zip codes 97424 and 97426 and the cities of Eugene and Springfield, Oregon).

small number of industrial sites in the pilot area, and the need for sites to be sales, rather than transport, customers of NW Natural further limited the number of eligible sites.[6] Ultimately, staff reported there were only two viable candidates, and neither was interested in completing a project during the pilot period.

5.2.2 Commercial Customer Barriers

Commercial customers, and particularly small businesses, face a variety of barriers to uptake of energy efficiency measures. These barriers are not unique to the pilot area. For example, pilot staff noted that decision-making can be more complex for commercial customers than it is for single-family homeowners. Commercial property owners may be concerned with the disruption an efficiency upgrade will cause for their tenants, and owners of portfolios of properties may face competing demand for their capital improvement budgets. These considerations, as well as commercial organizations' more complex organizational decision-making structures, can increase the timelines required to approve and complete projects. Commercial and multifamily property owners may also face split incentive barriers, limiting the value they see in investing in efficiency improvements if the resulting reduction in energy costs will benefit the tenants rather than the building owner.

Interviewed Energy Trust and PMC staff also reported that the Covid-19 pandemic created significant barriers to reaching commercial customers in the pilot area. As described above, direct outreach through visits or phone calls was an important strategy for the pilot, and pandemic-related business closures limited the pilot's ability to carry out those activities. In addition, pilot staff noted that businesses in the pilot area were struggling due to pandemic-related closures and uncertainty and were unwilling to invest in efficiency improvements.

5.2.3 Program Offering Limitations

Multiple staff involved in the pilot's commercial offerings reported that it likely would have been necessary for incentives to cover the full cost of efficiency upgrades to drive significant uptake among small commercial customers. As one staff member explained, "when you are not incentivizing at 100%, and you are a small business and you are struggling, any dollar out of pocket is a challenge." Similarly, another staff member said, "The pandemic was real…We were still asking them to tap into savings or loans they can't afford to take."

One program staff member noted that there had been significant turnover among pilot staff focused on the commercial sector, both within Energy Trust and in the transition to a new commercial sector PMC as the pilot was in progress. Interviewed

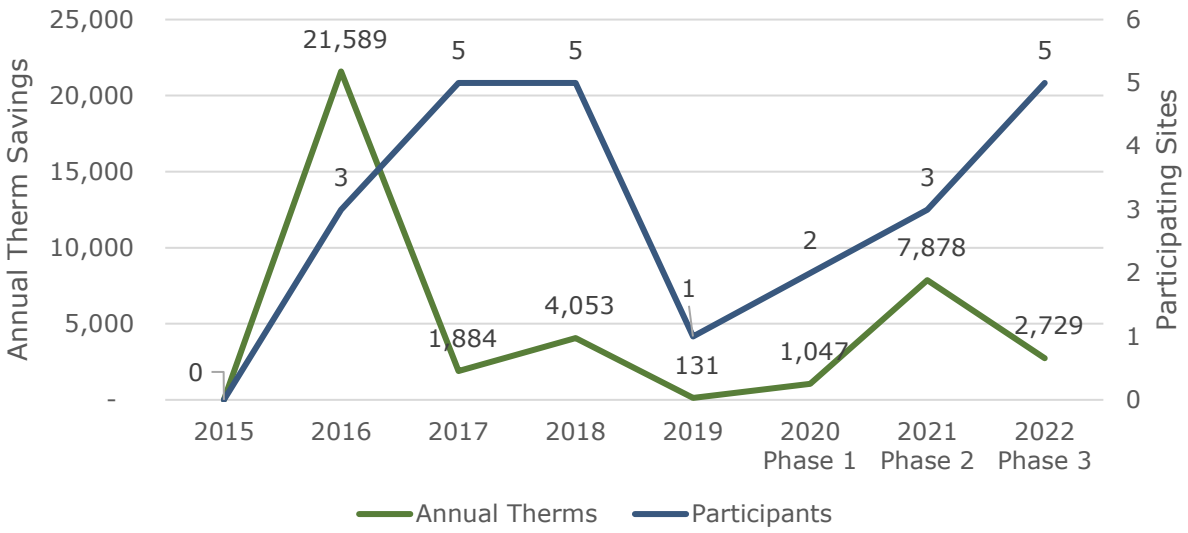
[6] Some large industrial sites are "transport" customers of NW Natural, meaning they purchase natural gas for their own use independently on the open market and rely on NW Natural only to deliver the gas. They do not pay an energy efficiency surcharge and are not currently eligible for Energy Trust incentives.

commercial sector staff at Energy Trust and the PMC, however, did not describe major challenges in transitioning into their roles part-way through the pilot.

6. Pilot Savings Analysis

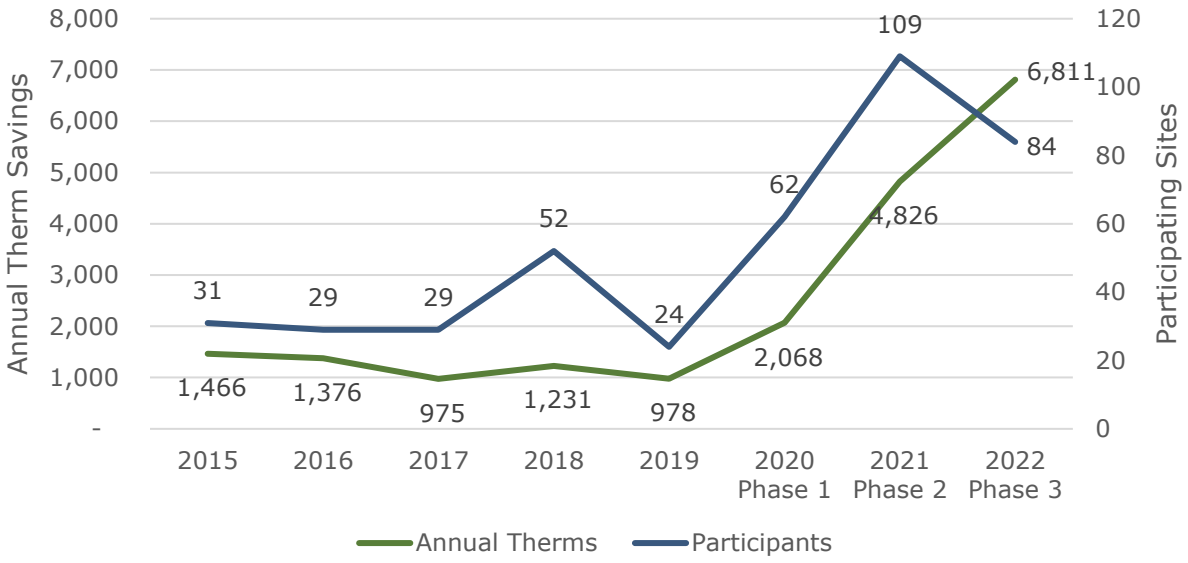
There has been a great deal of variability over time in commercial therm savings within the pilot area, with a small number of large projects generating high savings in some years with little or no activity in other years (Figure 3). For example, in 2016, a boiler replacement and building controls installation at a single site saved more than 19,000 annual therms, accounting for nearly 90% of the commercial savings reported in the pilot area that year and more commercial savings than would be reported over the next six years, combined. During the pilot period, commercial savings spiked during Phase Two, although only three sites participated during that time. Again, a single site accounted for the bulk (77%) of the savings, in this case, with a roof insulation project. A larger number of commercial sites (five) participated during Phase Three, but each completed smaller projects and total savings were lower.

Figure 3: Pilot Area Commercial Annual Therm Savings and Participation 2015-2022



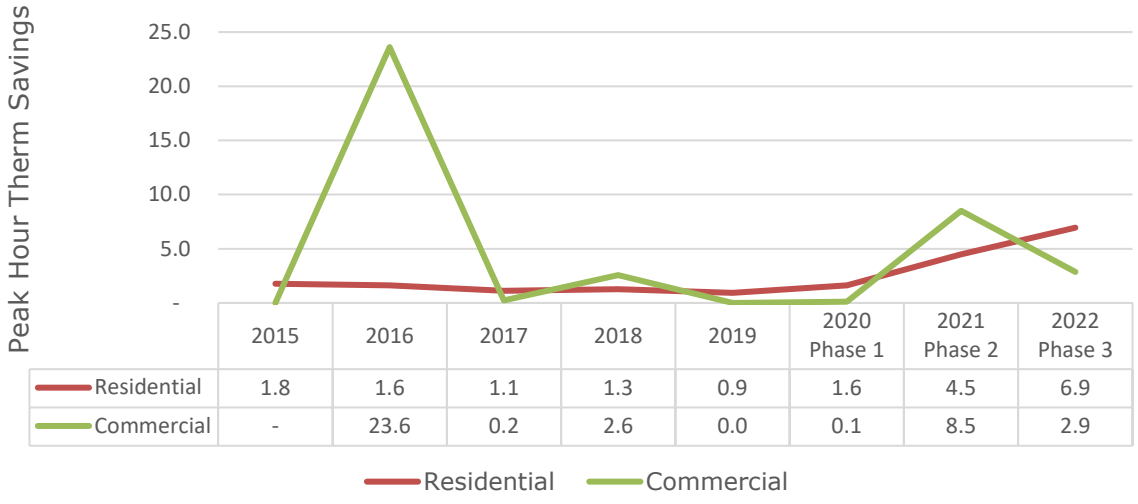
Therm savings in the residential sector show a more distinct effect from the pilot. While residential savings in the pilot area had been relatively stable, from 2015 to 2019, they grew steadily through all three pilot phases (Figure 4).

Figure 4: Pilot Area Residential Annual Therm Savings and Participation 2015-2022



Commercial and residential peak hour therm savings largely paralleled annual therm savings both before and during the pilot period (Figure 5). As with annual therm savings, commercial peak hour therm savings showed greater variability, driven by a small number of large projects, while the effects of the pilot were more distinct for residential them savings.

Figure 5: Pilot Area Residential and Commercial Peak Hour Therm Savings 2015-2022



	2015	2016	2017	2018	2019	2020 Phase 1	2021 Phase 2	2022 Phase 3
Residential	1.8	1.6	1.1	1.3	0.9	1.6	4.5	6.9
Commercial	-	23.6	0.2	2.6	0.0	0.1	8.5	2.9

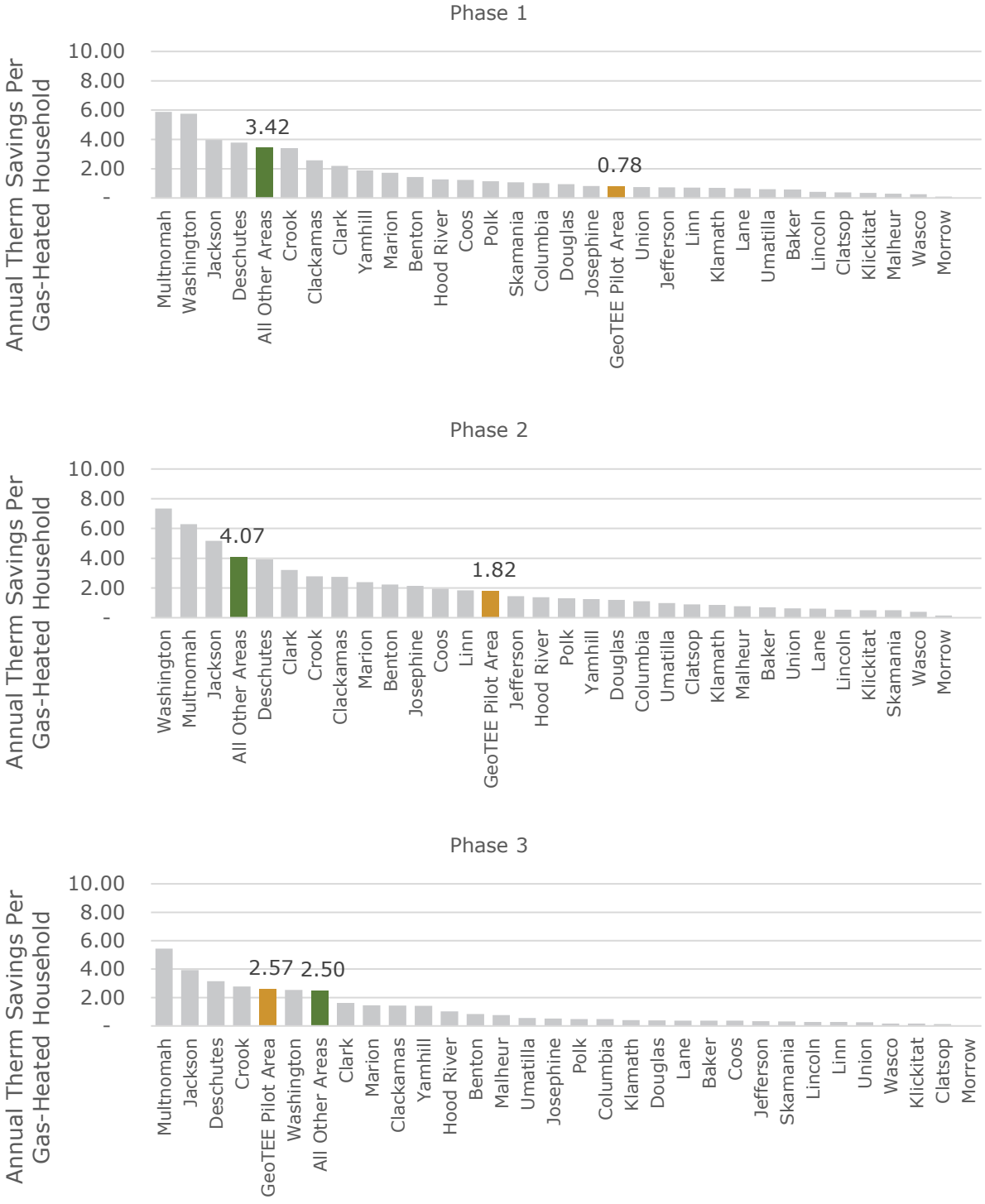
In order to compare participation in the pilot area with other parts of Energy Trust's service area, Apex used the estimated number of homes using utility gas as a heating fuel to normalize reported energy savings in both the pilot area and in each

of the Oregon and Southwest Washington counties Energy Trust serves.[7] There was considerable variation in savings per gas-heated household from county to county, with more populous counties in the Portland (Multnomah, Washington, Clark Clackamas Counties), Bend (Deschutes, Crook Counties), and Medford (Jackson County) areas tending to have the greatest savings per home.

The analysis confirmed interviewed stakeholders' reports that the pilot areas had historically been less engaged with Energy Trust programs. In Phase One, per-household savings in the pilot area were lower than per-household savings in 17 of the 30 counties Energy Trust serves. Per-household savings grew quickly relative to other areas as incentive offerings increased however, with only four counties achieving higher per-household savings than the pilot area during Phase Three (Figure 6).

[7] County-level estimates draw on American Community Survey (ACS) 5-year estimates for 2018; pilot area estimates draw on ACS 5-year estimates for 2020.

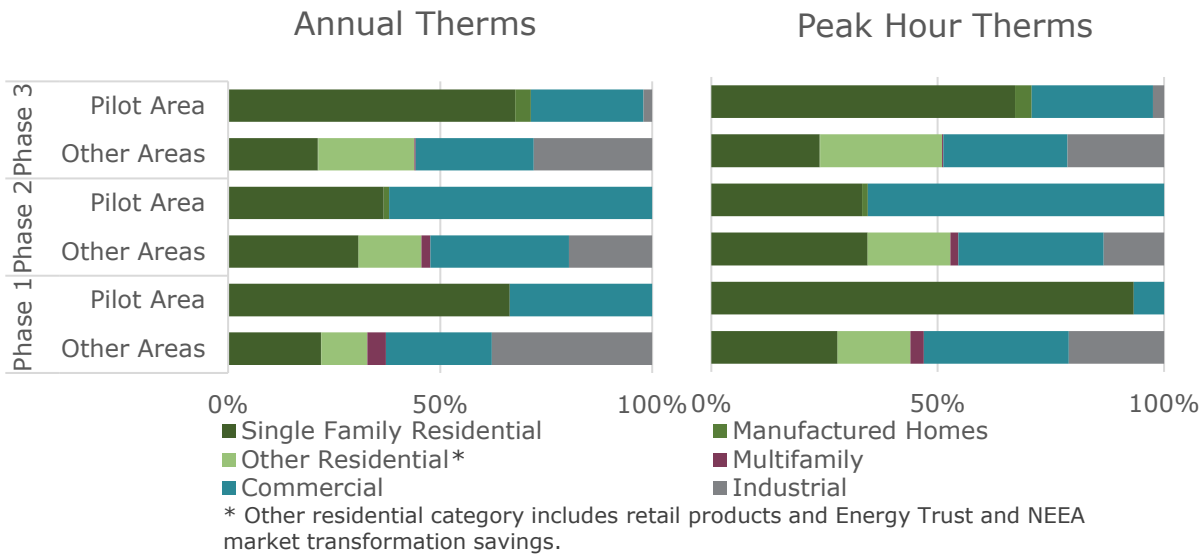
Figure 6: Pilot Area Residential Annual Therm Savings Relative to Other Energy Trust Counties



With the exception of Phase Two, when two large commercial projects occurred, the residential sector accounted for a greater proportion of savings in the pilot area than in the rest of Energy Trust's service area (Figure 7). More specifically, the

savings in the pilot area largely came from existing homes; no new homes in the Cottage Grove and Creswell areas received Energy Trust incentives during the pilot period.

Figure 7: Share of Savings by Market Sector in Pilot Areas and Other Areas by Phase

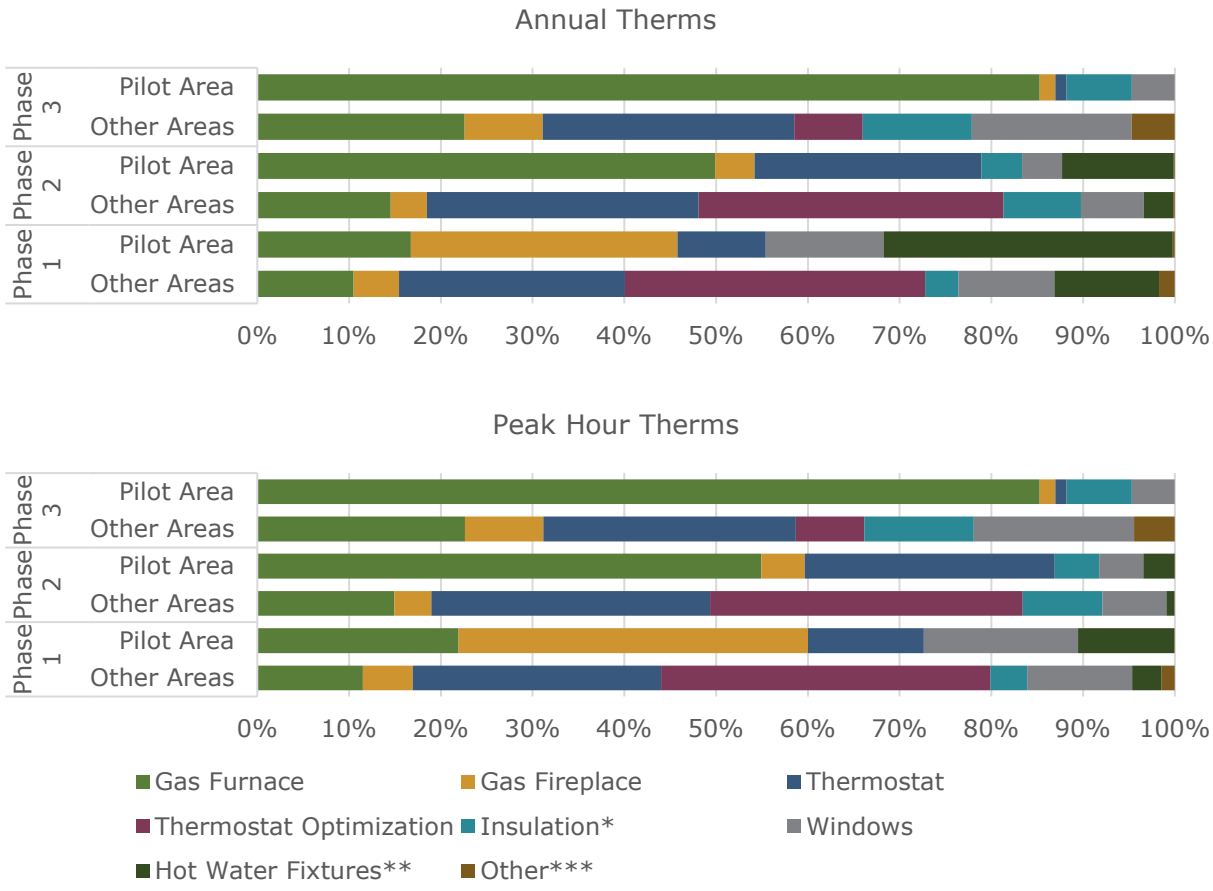


* Other residential category includes retail products and Energy Trust and NEEA market transformation savings.

The GeoTEE pilot had the greatest impact on gas furnace installations. As noted above, during the pilot, Energy Trust extended eligibility for gas furnace rebates for all customers in the pilot area, rather than moderate income customers only. Energy Trust provided incentives for a total of seven gas furnace installations in the pilot area in the five years leading up to the pilot, with no more than four completed in a single year. Gas furnace installations accelerated quickly through the pilot period, with four completed in Phase One, 30 completed in Phase Two, and 77 completed in Phase Three.

A comparison of measures installed through Energy Trust's Existing Single Family homes program illustrates the importance of increased gas furnace installations in generating therm savings in the pilot area. In Phases Two and Three, gas furnaces accounted for the largest share of residential savings in the pilot area and were notably larger than the share of savings from residential gas furnaces elsewhere (Figure 8). A detailed summary of savings by measure in the pilot area during each phase is provided in Appendix 3.

Figure 8: Existing Single Family Savings Distribution by Measure Type in Pilot Area and Other Areas



*Insulation measures include ceiling insulation, floor insulation, wall insulation, and knee wall insulation.

**Hot water fixtures include showerheads and faucet aerators.

***Other measures include tankless water heaters, clothes washers, residential pay-for-performance, and items classified as "Other measure."

7. Conclusions and Recommendations

Apex draws the following conclusions and recommendations from this research:

Conclusion 1: The pilot's outcomes ultimately met the needs of both Energy Trust and NW Natural. The pilot generated the data needed to accomplish what NW Natural's 2018 IRP update describes as its primary objective, developing a peak hour energy efficiency supply curve to compare the cost-effectiveness of targeted energy efficiency against other system capacity options for any geography. The pilot provided additional benefits to Energy Trust, which was able to develop systems and processes to coordinate special offerings and track the resulting

uptake within targeted geographic areas. Ultimately, this pilot helped to prepare both organizations for future geographically targeted efforts.

Conclusion 2: Energy efficiency program delivery requires a distinct set of considerations from traditional utility infrastructure improvements. Efficiency programs need to understand the needs of the targeted community and develop relationships within that community. It is also important to recognize that the benefits of efficiency program efforts are likely to build over time as these relationships develop. While the increased incentives were the primary motivator of the growth in uptake the program saw in Phase Three, the work completed to build a program presence during Phases One and Two facilitated that uptake.

- **Recommendation: Energy Trust and its utility partners should factor in the amount of work needed to build relationships and understand community needs into their estimates of the cost and time required for future GeoTEE efforts.**

Conclusion 3: Geographically targeted program efforts can serve a wide range of objectives, if they are designed with those objectives in mind. The GeoTEE pilot in Cottage Grove and Creswell had a relatively broad scope in order to provide data that NW Natural could use to develop a peak hour supply curve for energy efficiency that would be widely applicable. Pilot staff pointed out, however, that future efforts may be able to operate more efficiently if they were designed to target more specific objectives. For example, an effort seeking solely to reduce peak energy use might focus on large commercial and industrial customers in order to achieve significant reductions from a small number of users. An effort focused on equity, with less budgetary constraints, might provide direct installation measures to income qualified households. The customer makeup and building stock of the targeted area also impacts the feasibility of each of these strategies.

- **Recommendation: While this effort took a broad approach to gather data about the potential of a GeoTEE strategy, future efforts may have more targeted objectives. Energy Trust and its utility partners should define and agree upon specific objectives for future geographically targeted efforts and design the efforts' strategies with those objectives in mind.** For example, a pilot seeking only to maximize peak demand reduction might utilize different strategies from a pilot seeking to reach a broad group of customers.

Conclusion 4: There is potential for conflicting priorities in resource allocation between targeted and statewide efforts. The potential to offset infrastructure improvements in areas with energy supply constraints could justify a significant, targeted focus on those areas for efficiency programs. However, from the perspective of statewide programs seeking to maximize energy savings, the quantities of savings those targeted areas generate could be small. To the extent that targeted efforts draw resources away from standard, statewide program efforts, this dynamic has the potential to create conflict as program staff seek to manage incompatible goals with limited resources.

- Recommendation: As efficiency programs increasingly focus on targeted efforts, Energy Trust, utilities, and the OPUC should carefully consider the balance of demands that those efforts, as well as state-wide goals, place on program resources.

Appendix 1: Program Documents Reviewed

Table 5 lists the program documents Apex reviewed as part of this process evaluation.

Table 5: Program Documents Reviewed

Title	Date	Author	Description
NW Natural's 2018 IRP Update	4/17/2019	NW Natural	NW Natural Integrated Resource Plan update filed with the Oregon Public Utilities Commission describing objectives of and plans for the GeoTEE pilot.
Geographically Targeted Energy Efficiency (GEOTEE) Pilot Data, Analysis, and Timing	12/10/2020	NW Natural Strategic Planning Team	Memo describing information needs to develop peak hour energy efficiency supply curve
Energy Trust and NW Natural Targeted Load Management Geographically Targeted Energy Efficiency Pilot Phase I (Sept. 2019 – July 2020) Progress Report	December 2020	Energy Trust	Report describing pilot activities, uptake, and savings achieved during Phase 1
Energy Trust and NW Natural Targeted Load Management Geographically Targeted Energy Efficiency Pilot: Creswell and Cottage Grove: 2020 Evaluation Memo 2020	8/31/2020	Energy Trust & Pivot Advising	Report presenting findings from Energy Trust billing analysis of savings from measures installed during Phase 1 and Phase 1 process evaluation findings
Energy Trust and NW Natural Targeted Load Management Geographically Targeted Energy Efficiency Pilot Phase 2 (Aug. 2020-July 2021) Summary Report	March 2022	Energy Trust	Report describing pilot activities, uptake, and savings achieved during Phase 2

NW Natural GeoTEE End of Phase 2 Process Evaluation Report	2/28/2022	Pivot Advising	Report presenting findings from Phase 2 process evaluation
Energy Trust and NW Natural Targeted Load Management Geographically Targeted Energy Efficiency Pilot Phase 3 (Aug. 2021 – July 2022) Summary Report	September 2022	Energy Trust	Report describing pilot activities, uptake, and savings achieved during Phase 3
Limited-time Increased Incentives for NW Natural Customers in Cottage Grove and Creswell Trade Ally Orientation	July 2022	CLEAResult	Presentation given to trade allies describing the motivations for the pilot and detailing increased incentive offerings in the pilot area

Appendix 2: Data Collection Instruments

Pilot Staff and Stakeholder Interviews

This appendix presents an interview guide for the Phase 3 evaluation of the Geographically Targeted Energy Efficiency (GeoTEE) pilot. The interviews will document the experience and lessons learned of staff involved in designing and delivering the pilot. Table 6 summarizes this data collection effort.

Table 6: Data Collection Details

Aspect	Value
Data Collection Approach	In-depth interview (via phone or Zoom)
Target Population	Energy Trust, NW Natural, Program Management Contractor (PMC), and OPUC staff involved in design and delivery of Cottage Grove and Creswell GeoTEE pilot
Sample Target	Energy Trust staff – 5 NW Natural staff – 4 PMC staff – 3 OPUC staff – 1
Estimated Length	1 hour

Table 7 lists the research objectives and research questions these interviews will seek to address, as well as the specific interview questions designed to address each objective.

Table 7: Research Objectives Mapped to Interview Questions

Research Objectives	Research Questions	Associated Questions
What were program staff and stakeholders' goals for GeoTEE?	What do program staff, trade allies, and other stakeholders understand as key elements of the pilot?	Q4, Q5
	What specific outcomes (e.g. number of participants, therms saved, peak therms reduced) did stakeholders hope the pilot would achieve? To what extent did it meet those objectives?	Q7
	What broader goals (e.g. concept testing, developing partnerships) did stakeholders have for the pilot? To what extent did it meet those objectives?	Q11, Q12
To what extent did enhanced energy efficiency offerings drive measure uptake in targeted areas?	What elements of the targeted offerings (e.g. concentrated marketing, expanded eligibility, increased incentives) have been most impactful in driving uptake?	Q8, Q10,
	What prevents targeted offerings from driving greater uptake?	Q8
What lessons can GeoTEE offer for future efforts?	What aspects of pilot implementation were most effective?	Q3.b, Q9.b,
	What aspects of pilot implementation were most challenging?	Q14
	What challenges did the pilot overcome over the course of its implementation?	Q9.a, Q12.b, Q14.a
	What learnings will staff and stakeholders take into future targeted efforts?	Q7.b, Q9.c, Q10.c, Q11.b, Q12.d

Interview Guide

Introduction

Thank you for taking the time to speak with me today. As I mentioned in my email, we are working with Energy Trust to evaluate the Geographically Targeted Energy Efficiency pilot that recently ended in Cottage Grove and Creswell. We wanted to talk with the people who were involved in designing and delivering the pilot to document your experience and lessons

learned. Ultimately, our study aims to provide information that will help improve future geographically targeted efforts. Do you have any questions before we begin?

I'll be taking notes as we talk, but would you mind if I also record our conversation? The recording is just to help with my notetaking. We won't share the recording, or the notes, with anyone, and we will report our findings in a way that does not identify any individual respondents.

Background

Q1. What is your role in your organization?

Q2. What has been your role in the GeoTEE pilot in Cottage Grove and Creswell?

a. Have you been involved with the pilot since its inception?

b. [*If not:*] When did you become involved?

c. How, if at all, did your role in the pilot change over time? What led to those changes?

Coordination and Goals

Q3. Who have you worked with most closely on this project?

a. Overall, how effective were your working relationships with those people?

b. Why do you say that? [*If needed, probe:*] What went well? What was challenging in those relationships?

Q4. How would you describe the purpose and desired outcomes for this project?

Q5. Prior evaluation rounds found some differences in the ways different groups involved described their goals for the pilot. [*If needed:* For example, the OPUC mentioned carbon reduction goals while Energy Trust and NW Natural did not. NW Natural is focused on developing a supply curve and understanding costs, while Energy Trust is most interested in capturing energy savings.] Did the different groups ultimately align their goals?

a. How, if at all, have the differences in goals impacted your work with the pilot?

b. How, if at all, have they impacted the pilot's ability to achieve its outcomes more broadly?

Accomplishments

Q6. To what extent would you say the project has achieved the desired outcomes you just described?

a. What, if anything, prevented the project from more fully achieving its outcomes?

Q7. How did uptake of the program's various customer offerings (rebated measures) compare to your expectations?

[*Probe on uptake of specific measure types by sector as appropriate for each respondent:*

- *Residential*
    - *Gas furnace – [XX] projects*
    - *Gas fireplace - [YY] projects*
    - *ENERGY STAR windows – [ZZ] projects*
    - *Insulation upgrades – [AA] projects*
- *Commercial*
    - *Food service equipment – [XX] projects*
    - *HVAC systems – [YY] projects*
    - *Controls & O&M – [ZZ] projects*
    - *Insulation upgrades – [AA] projects]*

a. Why do you think uptake was [*higher/lower*] than expected?

b. Based on your experience with this project, what, if anything, would you do differently in selecting customer offerings for future geographically targeted load management efforts? [*Probe on both process of selecting offerings and offerings themselves*]

Q8. [*If respondent was involved in industrial customer outreach:*] I understand there was limited interest in gas savings opportunities among the industrial customers within the pilot area. What lessons, if any, does this pilot's experience with industrial customers offer for future efforts?

a. What questions remain for you about working with industrial customers in this type of a targeted effort?

Program Activities

Q9. I understand Energy Trust and NW Natural increased their own marketing efforts in Cottage Grove and Creswell as part of the project. How did Energy Trust and NW Natural promote gas efficiency improvements in Cottage Grove and Creswell? [*Probe for efforts targeting each market sector (residential/commercial/industrial) as relevant for each respondent*]

a. How did Energy Trust's and NW Natural's marketing efforts change over the course of the pilot? What drove that change?

b. What marketing efforts do you think were most effective? How do you assess their effectiveness? Why do you think those efforts were most effective?

c. How, if at all, will your experience with this pilot inform marketing efforts for future geographically targeted load management efforts?

Q10. I understand Energy Trust also increased its co-op marketing support for trade allies working with the project. How did trade ally interest in that co-op marketing support compare to your expectations?

a. Why do you think trade ally interest was [higher/lower] than expected?

b. How effective do you think those co-op marketing efforts were in driving measure uptake in the targeted areas? Why do you say that?

c. How, if at all, do you think co-op marketing could be used more effectively in future geographically targeted load management efforts?

Q11. Earlier evaluations noted that a key goal of the project for NW Natural was to develop a peak hour supply curve that it can use to compare the costs of energy efficiency against other distribution system options in an apples-to-apples way. What is the status of efforts to develop that type of curve?

a. [*NW Natural respondents:*] Did the pilot provide NW Natural with the data it needs to develop a supply curve?

b. [*If not:*] What gaps remain? How could a future pilot be designed to fill those gaps?

Q12. One potential concern with the pilot was that equity issues could arise if customers outside the targeted areas become aware of, and request, additional incentives. To what extent did that arise as an issue in this project?

a. Why do you think that [became/did not become] an issue?

b. What protocols or practices, if any, did the pilot establish to address those types of equity concerns? How effective were they?

c. How important of a concern do you think these types of equity considerations should be for future geographically targeted load management efforts? [*If needed, probe:*] Do you think they are likely to be more of a concern in other areas? Why or why not?

d. How would you address these concerns differently in future efforts?

Closing

Q13. Overall, what aspects of this pilot do you think were the most effective?

a. What made them particularly effective?

b. How easy or difficult do you think it will be to replicate those aspects in future geographically targeted efforts? [*If needed:*] To what extent did aspects unique to the Cottage Grove and Creswell area contribute to that success?

Q14. Overall, what were the most challenging aspects of the pilot for you?

a. What solutions, if any, did you find to overcome those challenges?

Q15. What are the most important items you take away from this project that will inform future geographically targeted load management efforts?

Q16. What are the key areas of uncertainty that remain for you about geographically targeted load management efforts after this pilot?

Q17. Those are all the questions I had prepared. Is there anything we haven't discussed about your experience with the Geographically Targeted Energy Efficiency pilot in Cottage Grove and Creswell that you think we should consider as we document its experience and look for lessons learned?

Trade Ally Interview Guide

This appendix presents an interview guide for residential contractors that signed agreements and received training to provide measures through the Geographically Targeted Energy Efficiency (GeoTEE) pilot. These interviews will assess contractors' experience with the pilot and capture their perspectives on the impact of the pilot on uptake of measures in the targeted areas. Table 8 summarizes this interview effort.

Table 8: Data Collection Details

Aspect	Value
Data Collection Approach	In-depth interview (via phone or Zoom)
Target Population	Residential contractors participating in Creswell/Cottage Grove pilot
Sample Target	8
Estimated Length	30-45 minutes

Table 9 lists the research objectives these interviews will address and the interview questions associated with each objective.

Table 9: Research Objectives

Research Objectives	Research Questions	Associated Interview Questions
What were program staff and stakeholders' goals for GeoTEE?	What do trade allies understand as key elements of the pilot? (Offerings and motivations)	Q6, Q7
	What are trade allies' motivations for engaging with the pilot?	Q8

To what extent did enhanced energy efficiency offerings drive measure uptake in targeted areas?	What elements of the targeted offerings (e.g. concentrated marketing, expanded eligibility, increased incentives) have been most impactful in driving uptake?	Q9, Q10, Q13
	What prevents trade allies from completing a higher volume of projects through the pilot?	Q14
What lessons can GeoTEE offer for future efforts?	How satisfied are trade allies with the pilot, and what pilot elements are they most satisfied with?	Q15, Q16, Q17
	What aspects of the pilot process were most challenging?	Q15.b, Q16.c, Q17.a
	What changes to pilot offerings would trade allies like to see in future geographically targeted efforts?	Q18

Interview Guide

Introduction

Thank you for taking the time to speak with me today. We are working with Energy Trust of Oregon on a study related to the targeted marketing and rebates they have been providing for natural gas energy efficiency in Cottage Grove and Creswell. As part of the study, we're talking with contractors who were part of the effort to understand your experience and how the effort impacted your ability to complete energy efficiency upgrades. Our findings will help Energy Trust improve future efforts to target upgrades in specific areas. Do you have any questions about our research before we begin?

I'll be taking notes as we talk. Would it be OK if I also record our conversation? The recording is just to help with my notetaking. We won't share the notes or recording with anyone, and our reporting will not identify any individual respondents.

Pilot Understanding

Q1. As I mentioned, we are focused on the targeted marketing and rebates for natural gas savings Energy Trust has been providing in Creswell and Cottage Grove. Over the past year, about what proportion of your work has been in those areas?

   a. Has that changed since Energy Trust started providing targeted marketing and rebates in those areas?

   b. Historically (prior to targeted marketing and rebates), about what proportion of your work was in those areas?

Q2. About what proportion of the natural gas savings projects you do in Cottage Grove and Creswell qualify for rebates from Energy Trust?

a. How, if at all, has the share of projects you do in Cottage Grove and Creswell changed since Energy Trust started providing targeted marketing and rebates in those areas?

Q3. Since Energy Trust started providing targeted marketing and rebates, how has the share of natural gas projects that qualify for rebates in Cottage Grove and Creswell compared to other areas where you work?

a. How, did uptake of projects that qualify for rebates in Cottage Grove and Creswell compare to other areas where you work before Energy Trust started providing targeted marketing and rebates?

b. [*If differences in historic uptake*:] Why do you think that is?

Q4. [*If uptake in pilot areas has increased:*] To what extent is that increase in uptake a result of the targeted marketing and rebates Energy Trust has been providing in those areas?

a. What else, if anything, contributed to that increase in uptake?

b. What, specific, changes in rebate offerings and eligibility or marketing and outreach were most important in increasing project uptake?

c. [*If not addressed:*] How, if at all, was the process you go through to access the rebates different?

Q5. How has the Covid-19 pandemic, and the resulting supply-chain issues, impacted the number of projects you do that qualify for Energy Trust incentives?

a. Why do you think that is?

b. Has the impact of the pandemic been different in Cottage Grove and Creswell, relative to other areas where you work? [*If so:*] How?

Q6. What do you understand to be Energy Trust's motivation behind offering the increased marketing and rebates in Cottage Grove and Creswell?

Q7. How do you typically explain rebates and Energy Trust to your customers?

a. How do you explain the enhanced rebates in Cottage Grove and Creswell to customers?

b. How frequently do customers ask about differences between offerings in Cottage Grove and Creswell and Energy Trust's standard offerings?

c. What additional information or resources would help you explain Energy Trust and the enhanced rebates to customers?

Q8. When you learned about the opportunity to participate in the effort, what was most appealing about it?

a. What concerns, if any, did you have about participating?

Pilot Influence

Q9. I understand Energy Trust offered additional co-op marketing funds to trade allies in Cottage Grove and Creswell. Did you take advantage of that offer?

a. [*If not:*] Why not?

b. [*If so:*] How did you use that funding? What marketing efforts did it support?

c. [*If so:*] What role did that marketing play in increasing the number of projects you have been able to complete in Cottage Grove and Creswell?

Q10. In addition to co-op marketing, Energy Trust implemented additional marketing efforts of its own in Cottage Grove and Creswell, including mailers, e-mails, and digital ads. What impact, if any, did you see from those efforts?

a. [*If little or no impact:*] Why do you think those efforts were not more impactful?

b. [*If impact:*] About how many customers would you estimate contacted you because of Energy Trust's marketing efforts?

c. [*If impact:*] Did Energy Trust's marketing efforts help you reach any types of customers that are less responsive to your typical outreach efforts?

Q11. Did you make any [other] changes to your outreach approaches as a result of the targeted marketing and rebates in Cottage Grove and Creswell? If so, what changes did you make, and why?

Q12. When did you make those changes? [*Probe to understand whether change occurred in Phase 1, 2, or 3*]How, if at all, did the change in rebate levels in Cottage Grove and Creswell affect your sales approach?

a. [*If not addressed:*] How, if at all, did the change in rebate levels impact the types of equipment you would recommend in different situations?

b. At what point in the offer period did you make those changes? [*Probe to understand whether change occurred in Phase 1, 2, or 3*]

Q13. How did the increased marketing from Energy Trust, increased co-op marketing funds, increased rebates, and expanded eligibility impact the number of qualified projects you were able to complete?

a. I understand the effort ramped up over time, starting with targeted marketing and outreach efforts, then increasing rebates, then increasing rebates again. What impact did each of those stages have on the number of projects you were able to complete?

b. Did the effort have a greater impact on your ability to complete some types of projects rather than others? If so, which ones, and why? [*If not addressed,*

probe on impact on projects including multiple measures, e.g. furnace and AC, furnace and insulation, etc.]

c. Were you able to provide efficient equipment to different types of customers than typically receive Energy Trust rebates?

Q14. What were the challenges of completing more projects that qualified for rebates?

Pilot Processes

Q15. Overall, how satisfied were you with your experience participating in the pilot? [*If needed:*] If you had an opportunity to participate in a similar, geographically-targeted offering in the future, would you do so? Why do you say that?

a. From your perspective, what parts of the offering were most effective?

b. What parts of the pilot were most challenging for you or your customers?

Q16. [*If not addressed:*] How effective was your communication with your Energy Trust representative throughout the course of the targeted effort?

a. How did your experience communicating with your Energy Trust representative as part of the targeted effort compare to your experience communicating with Energy Trust on projects outside of the targeted areas?

b. Did you receive training at the beginning of the effort? How well did that training prepare you to participate? What, if anything, do you wish it had covered that it did not?

c. What were the most common questions that you had for your Energy Trust representative in the course of your participation?

d. How well was Energy Trust able to answer any questions you had through the course of your participation? [*Probe on responsiveness of staff and helpfulness of responses*]

e. I understand you had to use a different rebate application form for projects receiving targeted rebates. Was the rebate application process easier, harder, or the same for those projects relative to the standard rebate process?

Q17. [*If not addressed:*] How did the level of effort required for the rebate application process differ between the targeted offering and Energy Trust's standard program?

a. What were the most challenging aspects of the process?

b. What, if anything, could make the process easier?

Q18. What, if anything, do you think Energy Trust should do differently in future efforts to target specific geographic areas?

Q19. The targeted rebates in Cottage Grove and Creswell are set to end soon, although the income-qualified Savings Within Reach and rental property furnace rebates will remain available. How do you anticipate the way you offer efficient options to

customers in the targeted areas will change once the targeted rebates are not available?

a. Of the things you began doing to promote efficient options due to the targeted rebates, what, if anything, do you anticipate you will continue to do?

b. How could Energy Trust best support you in those efforts?

Q20. Those are all the questions that I have prepared. Is there anything we haven't discussed about the effort that you think I should know as we try to understand what it accomplished in Creswell and Cottage Grove and how Energy Trust should approach targeted efforts in other areas?

Appendix 3: Pilot Area Savings By Measure

Table 10 lists annual and peak them savings by measure type and pilot phase.

Table 10: Pilot Area Savings by Measure and Pilot Phase

Sector	Measure Type	Phase 1		Phase 2		Phase 3	
		Annual therms	Peak Therms	Annual therms	Peak Therms	Annual therms	Peak Therms
Commercial	Ceiling insulation	0	0.00	0	0.00	1914	2.35
	Custom insulation	0	0.00	6055	8.09	0	0.00
	Gas furnace	0	0.00	0	0.00	232	0.24
	Tanked water heater	0	0.00	1036	0.27	0	0.00
	Food equipment	1047	0.12	481	0.05	388	0.04
	Faucet aerator	0	0.00	306	0.08	0	0.00
	Custom Operations & Maintenance	0	0.00	0	0.00	194	0.24
Residential	Ceiling insulation	0	0.00	206	0.21	323	0.33
	Floor insulation	0	0.00	0	0.00	137	0.14
	Windows	265	0.27	203	0.21	309	0.32
	Gas furnace	346	0.35	2411	2.46	5854	5.97
	Gas fireplace	601	0.61	200	0.20	109	0.11
	Thermostat	199	0.20	1233	1.26	79	0.08
	Clothes washer	5	0.00	5	0.00	0	0.00
	Faucet aerator	114	0.03	124	0.03	0	0.00
	Showerhead	537	0.14	445	0.12	0	0.00