

Incentives for Gas Furnaces in Oregon:

Interaction between Energy Trust and the Residential Energy Tax Credit

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Executive Summary

There is a significant overlap in incentives given for energy efficient gas furnaces between two incentive programs in Oregon. Energy Trust of Oregon (ETO) gives an incentive to consumers who purchase an energy efficient gas furnace. In addition, the Oregon Department of Energy provides a tax credit to consumers of efficient furnaces. Consumers in the NW Natural (NWN) service territory are eligible to receive both incentives. The number of consumers who received incentives for gas furnaces with an efficiency rating of at least 90% cannot simply be determined by aggregating the number of participants in each program. This paper presents the findings of the overlap, and supplemental findings ascertained from the available data.

- The two programs provided incentives to a total 24,733 gas furnace consumers between October 2003 and December 31, 2005. There are 6,266 cases where both incentives were given to the same furnace consumer. The actual number of furnace consumers receiving incentives is therefore 18,467.
- The number of RETC incentives rose substantially in 2004. This increase coincided with the beginning of Energy Trust's incentive program in late 2003. The number of Energy Trust incentives dropped off substantially in 2005. The number of RETC participants also receiving Energy Trust incentives was 79% in 2004, and 52% in 2005. The number of Energy Trust incentive participants who were eligible, and received a RETC was 74% in 2004, and 76% in 2005.
- RETC incentive participants in the NW Natural territory account for ninety percent of total RETC incentives. This area accounts for 79% of households that consume natural gas. RETC incentive participants that reside within an Energy Trust gas or electric service territory account for 98% of RETC incentives. Energy Trust territory accounts for eighty 2% of gas using households in Oregon.
- Program participants that received Energy Trust's incentive only report significantly lower total costs of furnace purchase and installation. Participants who received both incentives are more likely to choose high volume installers, who are trade allies of Energy Trust. RETC only, incentive participants that reside within the NW Natural territory report lower furnace purchase and installation costs. RETC only, participants inside the NW Natural territory are more likely to choose high volume installers.
- There is not enough data to make strong conclusions about the characteristics of consumers who choose both incentives, or one of the incentives.
- There are two reasons why it would seem to be necessary to continue to offer Energy Trust's incentive. On the one hand, well more than half of the RETC participants accepted Energy Trust's incentive. It seems likely that many of the RETC participants that took advantage of Energy Trust incentive might not have

acted as they did, or purchased the equipment they did, were it not for Energy Trust's incentive. On the other hand, half of Energy Trust participants took advantage of RETC. The two incentives interact together and separately, to transform the market for energy efficient gas furnaces in Oregon.

I. Introduction

The main purpose of this study is to identify the combined and isolated effects of two incentive programs for energy efficient gas furnaces in Oregon. Energy Trust and the Oregon Department of Energy each provide incentives which contribute to the incremental cost of an energy efficient gas furnace. A single energy efficient gas furnace is eligible for both incentives. Energy Trust sponsored this study to identify the number of furnaces whose purchase can be attributed to one or both of the incentives. In analyzing this data, estimates are provided of the overlap in participation between the two programs, as well as of the central tendencies of the individual programs.

Since 2002, the Oregon Department of Energy through the RETC program, offers a \$350 per unit incentive to residents of Oregon who purchase an energy efficient natural gas furnace. For residents within the NW Natural service territory, beginning in 2003 an additional incentive of \$200 per unit is available from Energy Trust. By design, anyone who qualifies for the RETC incentive and is in the NW Natural territory automatically qualifies for Energy Trust's incentive. A qualifying gas furnace must have an efficiency rating of 90% (AFUE) for both programs, and RETC additionally requires that the furnace have an electronically commutated motor (ECM). The combined incentive of \$550 is a significant cost reduction from an average net cost to the consumer of \$2,581 for a qualifying furnace.

As only a limited amount of secondary data is available for this study, the findings themselves are limited. Nevertheless, this is the first Energy Trust study of its kind, and it provides a valuable blueprint for further investigations of how Energy Trust programs interact with Oregon's energy efficiency tax credits, as well as other programs. This study demonstrates that such an approach may be used to gain insight into how multiple programs affect the overall market in Oregon for consumer products such as furnaces. In addition, it may be used to assess whether or not Energy Trust's outreach efforts, by boosting complimentary energy efficiency programs, helps increase the sales or market share of target products.

2. Market For Gas Furnaces

Energy Trust has been delivering energy efficiency services to NW Natural customers since October 1, 2003. NW Natural is the largest of three natural gas utilities that serve customers in Oregon. Beginning in 1995 and until Energy Trust's incentive for gas furnaces began, NW Natural provided a \$200 per unit incentive that was funded by ratepayer revenues. Table I shows the market shares of the three Oregon gas utilities and the respective estimates of total furnace sales and high efficiency furnace sales in 2005, assuming the sales are distributed proportionally. According to a recent study (the

Natural Gas Furnace Market Assessment of August 2005, funded by Energy Trust and prepared by Jack Habart & Associates in association with GDA Hewitt and Hewitt Consulting) the market for all new gas furnaces in Oregon is 46,000 to 50,000 per year, of which 36,000 to 40,000 are installed in NW Natural's territory. Of these, it is estimated that the market share of high efficiency furnaces, meaning those with an AFUE rating of 90 % or more, rose from 25 % in 2001 to 48 % in 2005.

Table I: Natural Gas Utility Customers and Estimated Furnace Sales in 2005

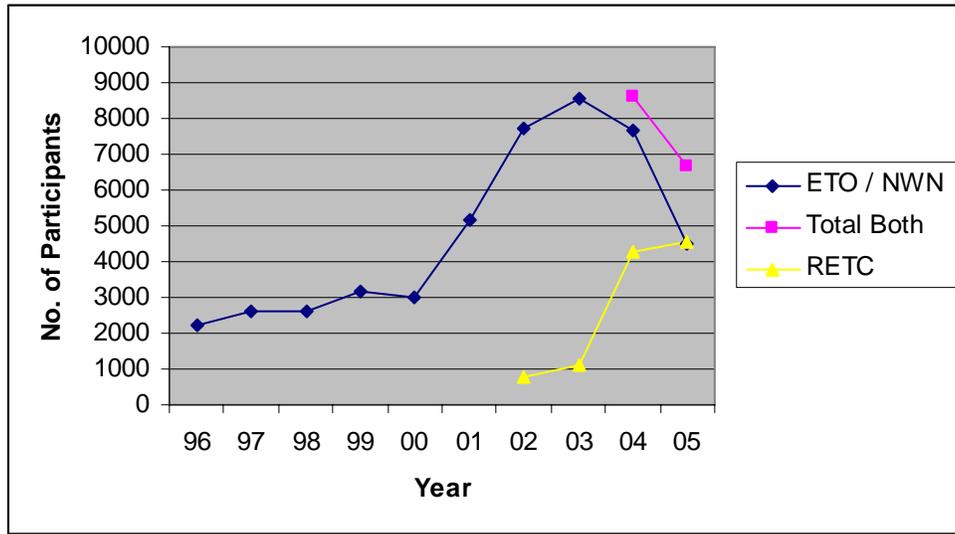
Utility	2005 Residential Households	Estimated Annual Furnace Sales	Estimated Annual High Efficiency Furnace Sales
NW Natural	532,305	38,000	16,700
(%)	79%		
Cascade Natural Gas	51,066	4,000	1,800
(%)	8%		
Avista	87,484	6,000	2,600
(%)	13.0%		
TOTAL	670,855	48,000	21,100

3. Market Share

A main goal of the incentive programs is to spur the market for efficient gas furnaces in Oregon. Graph I illustrates the trends in program participation for households in Energy Trust and RETC programs. Energy Trust /NW Natural indicate Energy Trust and NW Natural incentives, RETC indicates the tax credit, and TOTAL indicates the total of both incentives minus the overlap between them. A major purpose of this analysis is to find out the true number of incentives paid by identifying the overlapping cases between the RETC and Energy Trust incentives so that their true affect on the market for gas furnaces is understood. NW Natural provided Energy Trust with data on the amount of incentives prior to the program transfer to Energy Trust.

Graph I indicates there was a significant increase in incentive program participants in 2001. In 2001, NW Natural started working more closely with furnace vendors and installers, referred to as trade allies. The NW Natural program continued to grow steadily in 2002 and 2003. In October of 2003, the incentive program was transferred to Energy Trust. It was in 2003, which saw the greatest number of NW Natural and Energy Trust incentive participants. Two things happened in 2004 that stand out in Graph I; the amount of Energy Trust incentive participants started to decline, and the number of RETC participants started to increase substantially. Possible causes for these trends are discussed later in the report.

Program Participation Trends



Habart & Associates (2005) suggests that approximately 36,000 to 40,000 high efficiency gas furnaces are sold in the NW Natural territory every year. Using the mean value of 38,000 units per year, and assuming that each participant represents a single unit, Table 2 contains estimates of the market shares of high efficiency furnaces attributed to Energy Trust and RETC programs based on observations for which there are program installation dates. The market shares are percentages of furnaces installed in the NW Natural territory, with the Oregon market shares in parentheses. Table 2 also includes estimates of Energy Trust and RETC market share of the high efficiency gas furnace market in Oregon. Energy Trust only, and RETC only, mean participants that received those incentives without receiving the other. Energy Trust/RETC are participants that received both incentives. Energy Trust and RETC all categories shows the gross number of incentives without accounting for the overlap. The Habart study estimates that 46% and 48% was the high efficiency share of the Oregon gas furnace market for 2004 and 2005. The number of participants that received both incentives in 2003 could not be determined because individual data on NW Natural incentive participants is not available for this study.

The two incentives programs combined contributed to the purchase of one sixth to one quarter of all the gas furnaces sold in the NW Natural service territory in 2004 and 2005. Energy Trust provided incentives for substantially more furnaces than did the RETC in 2005. In 2004, the two programs were roughly even in gross number of incentives. Energy Trust provided incentives for 43% of the high efficiency furnaces sold in 2004, while the two programs together provided incentives for half of the high efficiency furnaces sold that year. In 2005, Energy Trust incentives represented only one quarter of the high efficiency furnaces sold, and the two programs together provided incentives to only 37% of the high efficiency furnaces sold in the NW Natural service territory. Of course, since the total units sold is a gross approximation, it is quite

possible that in fact there has been little change in the total market share statistics from one year to the next.

The overlap between the incentive programs decreased in absolute terms from 2004 to 2005. The relative percentage of the overlap to the particular programs decreased for the RETC, but slightly increased for Energy Trust participants in 2005. The percentage of RETC participants who also received Energy Trust’s incentive was 79% in 2004, and 52% in 2005. The large percentage in 2004 lends support to the belief that Energy Trust provided a boost to the RETC program. The percentage of Energy Trust recipients who received the RETC was 47% in 2004, and 53% in 2005. These estimates indicate that only half of the eligible consumers of high efficiency gas furnaces are claiming either of the incentives. The estimates also indicate that in 2005, half of the participants in each incentive program failed to claim the other program incentive available to them.

Table 2: Estimated Annual Market Share of Furnaces Attributed to Energy Trust and RETC Incentives

Year and Program	Participants	Estimated Market Share of All Furnaces In NWN Territory (OR share in parentheses)	Estimated Market Share of H.E. Furnaces in NWN Territory, (OR share in parentheses)
2003			
ETO, only	1,713	5% (4%)	12% (8%)
RETC, only	610	2% (1%)	4.0% (3%)
ETO/RETC	298	8% (6%)	2% (14%)
ETO, All	2,011	5% (4%)	14% (9%)
RETC, All	908	2% (2%)	6% (4%)
NWN, All incentives	6538	17% (14%)	45% (30%)
2004			
ETO, only	4,101	11% (9%)	23% (19%)
RETC, only	948	3% (2%)	5% (4%)
ETO/RETC	3,583	10% (8%)	20% (16%)
ETO, All	7,684	20% (16%)	43% (35%)
RETC, All	4,531	12% (9%)	25% (21%)
All 2004 Programs	8,632	23% (18%)	50% (40%)
2005			
ETO, only	2,100	6% (4%)	12% (9%)
RETC, only	2,200	6% (5%)	12% (10%)
ETO/RETC	2,385	6% (5%)	13% (10%)
ETO, All	4,485	12% (9%)	25% (20%)
RETC, All	4,585	12% (10%)	25% (20%)
All 2005 Programs	6,685	17.6% (14%)	37% (29%)

Energy Trust’s incentive participants, who did not purchase an efficient furnace with an ECM motor, were not eligible to receive a RETC. Energy Trust data shows that 58% or 8,224 of Energy Trust’s incentives were given to purchasers of a furnace with an ECM,

throughout all of the program years. Slightly less people than that (47% and 53%) claimed the RETC. This means that 75% of the consumers that received an Energy Trust incentive who also purchased a furnace with an ECM, claimed the RETC they were eligible to receive.

There are a number of possible reasons that Energy Trust incentives decreased in 2005, and RETC incentives did not continue to grow. There was a significant spike in wholesale gas prices that led to a significant increase in consumer rates in 2004. This may have led to an abnormally high number of incentives for efficient gas furnaces in the fall and winter of 2004. In the longer term, households may have decided not to convert to gas heat, from electric or oil in 2005 due to sustained high gas rates. Increasing gas rates also may have encouraged households to convert to efficient electric heat pumps instead of gas furnaces. According to Energy Trust, a major trade ally decided not to participate in encouraging high efficiency furnace sales which affected the amount of incentives paid in 2005. Lastly, the market for high efficiency gas furnaces may have peaked in 2004 indicating a transformed market. More research in this area is needed to identify the specific cause.

An important part of this analysis is to isolate the effect of Energy Trust on the statewide market for high efficiency gas furnaces. Table 3 displays the population of RETC program participants that are inside or outside Energy Trust’s service territory, compared to the distribution of the Oregon household population. Based on the distributions, it may be expected that growth in the market for high efficiency gas furnaces will be greater in areas where Energy Trust’s incentive is available. Following this approach, it may be possible to identify trends in the small population of households outside of both Energy Trust’s electric and gas territory. These households make up a program control group.

Table 3: RETC Allocated to Service Territory

Year	2002		2003		2004		2005		OR
	N	%	N	%	N	%	N	%	Households
NWN Territory	735	93%	817	90%	3942	87%	4218	92%	79%
Non NWN / ETO	56	7%	91	10%	589	13%	367	8%	21%
All ETO Territory	783	99%	896	99%	4485	99%	4287	98%	82%
Non-ETO Territory	8	1%	14	1%	46	1%	92	2%	18%
TOTAL RETC	791		908		4531		4585		

Table 3 reveals the growth of the RETC program since 2002. The large increase in RETC incentives from 2003 to 2004 coincided with Energy Trust’s takeover of the NW Natural incentive program. The increase in the amount of RETC incentives may be due to Energy Trust’s outreach, which has made consumers more aware of the available tax credit. Table 3 shows that disproportionate shares of RETC participants are located inside the NW Natural service territory as compared to the household population distribution. About 90% of the RETC participants are located within the NW Natural

service territory, whereas they account for only 80% of the household population. As expected, if households that are in Energy Trust's electric territory are included into the NW Natural group, this accounts for 98% to 99% of all the RETC participants in each year.

On the other hand, households not in Energy Trust's territory account for 1% of all RETC participants in 2002, and 2% in 2005, while this group accounts for 18% of the households in Oregon. This provides strong evidence that households in Energy Trust's service territory are considerably more likely to participate in the RETC than households outside of Energy Trust's territory. Note that the percentage of Energy Trust households of all Oregon households was calculated by taking the number of Portland General Electric (PGE) and Pacific Power households that overlap much of the NW Natural territory, and adding households in cities served by NW Natural but not PGE or Pacific Power, and then adding public utility districts within the PGE and Pacific Power territories. Data for these approximations were taken from Energy Trust's 2005 Resource Assessment and the Energy Information Administration.

4. The Residential Energy Tax Credit and Energy Trust Incentive Interaction

Oregon residents that are the subject of this study fall into 6 mutually-exclusive groups:

1. those who received a RETC incentive in 2003 and were located within the NW Natural service territory;
2. those who received a RETC incentive in 2003 and were outside the NW Natural service territory;
3. those who received a RETC incentive in either 2004 or 2005 and were located within the NW Natural service territory;
4. those who received a RETC incentive in either 2004 or 2005 and were outside the NW Natural service territory;
5. those who received an Energy Trust incentive in either 2004 and 2005 and did not receive a RETC incentive; and
6. those who received both Energy Trust and RETC incentives in either 2004 and 2005.

Three additional groups of Oregon residents complete the population of natural gas furnace purchasers for 2004 and 2005. There is a seventh group of residents made up of those who were not eligible for Energy Trust but were eligible for RETC and purchased gas furnaces without taking advantage of RETC. There is an eighth group made up of those who were eligible for both Energy Trust and RETC, and took advantage of neither. And finally, there is a ninth group of residents who purchased non-qualifying gas furnaces. For the present research project, no data are available for these Oregon residents.

For this study, two databases are analyzed. One contains information for all households that received RETC incentives and the other contains a different set of information for

households that received Energy Trust incentives. Both databases contain site addresses, thus enabling the two to be merged. A detailed individual matching of two samples indicate that 68% of the RETC participants in 2004 and 2005 had also received an Energy Trust incentive. Less than half (46%) of Energy Trust’s participants had also received the RETC incentive. By using automated matching methods comparable results were obtained for the whole population of households receiving either tax credits or Energy Trust incentives.

To overcome data entry errors, such as inadvertent substitution of “RD” for “DR,” matching of site addresses between the two datasets was done on the basis of the first ten digits of the site addresses. Ten digits were chosen after diagnostic tests indicated that fewer digits produced more false matches, and more digits ignored too many true matches. For additional quality control, the match rate of two manually-cleaned samples of 859 observations, were compared to the automated matches. This revealed that while some matching error persists, the automated procedure works best when matching is done on a field that is something less than the full site addresses.

Table 4 shows the match rates between the samples and the population and demonstrates the improvement in match rate by doing the 10-digit matching. The comparison indicates that the overlap between RETC and Energy Trust remains slightly underestimated. Note that the statistics indicate that a greater percentage of the RETC population participated in Energy Trust’s incentive than did Energy Trust’s population participate in RETC.

Table 4: Site Address Matching

Program	Population Size	No. of Matches	Match Rate
RETC Sample	859	587	68%
ETO Sample	859	397	46%
Full Address Matching			
RETC Population	10,553	4,555	43%
Energy Trust Population	14,180	4,555	32%
Ten Digit Address Matching			
RETC Population	10,553	6,266	59%
Energy Trust Population	14,180	6,266	44%

5. Data Analysis

To initiate the analyses, descriptive statistics are generated for all groups of program participants. The statistics are reported for all participants combined as well as for the separate years. To designate program participation years that were consistent across Energy Trust and RETC datasets, the recorded installation dates were used for both groups. If there was a conflict in dates for those households that participated in both programs, Energy Trust’s database installation date was used. Table 5 displays the results of the study data screens presented along with the number of observations that are used in the current data analysis.

Table 5: Program Populations (2003-2005)

Program	Population Size	Percent of Total
Energy Trust	14,614	58%
RETC	10,579	42%
Total	25,193	100%
Total After Removing Problem Cases	24,733	98%

A small amount of cases were removed from the population for bad addresses, and installation dates which are not considered in this study. Cases with missing addresses and addresses in an unclear format were removed. These addresses appeared to be for new houses which did not yet have an actual address at the time of the incentive application. Cases that have an install date in 2006 were removed from the population because it was decided that this analysis would encompass only full calendar years. There were a small number of duplicate cases which were removed from the population. Finally, cases which have a total cost of \$20,000 and above were removed from the population as outliers. These cases likely involved substantial remodeling or construction costs that were included in the cost cited by the participants, but not related to replacing or installing a new gas furnace. Before cleaning the data, there were 14,614 Energy Trust incentives in 2004 and 2005, and 10,579 RETC incentives. The total population after removing problem cases is 24,733 Energy Trust and RETC incentives.

Table 6 presents the amount of the overlap between the programs, and the amount of participants who participated only in one of the incentive programs. The three year program total when the overlap between programs is accounted for decreases from 24,733 to 18,467. There are 6,266 overlapping cases between the incentive programs in 2003 - 2005.

Table 6: Program Population After Data Cleaning and Accounting for Overlap

Program	Population Size	Percent of Total
Energy Trust	7,914	42%
RETC	4,287	23%
Energy Trust/ RETC Overlap	6,266	33%
Total	18,467	100%

The following tables present descriptive statistics employing variables that could be compared between the two data sources and displayed sufficient variation. Table 7 presents *Average Total Cost*, the combined costs of the furnace equipment and the installation. After removing a small number of observations with total costs that were equal to or exceeded \$20,000, the mean total cost for RETC participants appears to have increased moderately from year to year with an average of \$5,390 for the RETC only participants, and remained flat for RETC and Energy Trust participants at \$4,030.

The net cost, which represents the cost of the efficient equipment only, remained moderately stable from year to year with an average of \$2,643. It is interesting to note there is a significant difference in the total cost of furnace and installation between RETC participants, and Energy Trust only participants. This is likely due to the fact that the RETC requires that a qualifying furnace have an electronically commutated motor (ECM), which is known to be about \$1000 more than an efficient furnace with a standard motor (Natural Gas Furnace Market Assessment, Habart & Associates). There is also a noticeable difference in *Average Total Cost* between RETC participants who reside inside the NW Natural service territory, and those who reside outside of it.

Table 7: Average Total Cost of Furnace and Installation

	RETC Furnaces Inside NWN Territory	RETC Furnaces Outside NWN Territory	Energy Trust Incentive Furnaces	RETC and Energy Trust Incentive Furnaces
2003	66%	2%	-	-
2004	61%	2%	66%	73%
2005	69%	4%	65%	72%
Average All Years	67%	3%	65%	73%

Table 8 presents the percentage of addresses within the tri-county Portland metro area for each incentive program. This variable is added to identify to what extent the major population center in Oregon accounts for the total amount of RETC's. There is little change in all three years in the proportion of participants located in the tri-county area. Table 8 shows that the tri-county area accounts for nearly three quarters of participants who participated in both incentive programs.

Table 8: Percentage of RETC Participants Residing in Multnomah, Washington, and Clackamas Counties

	RETC Furnaces Inside NWN Territory	RETC Furnaces Outside NWN Territory	Energy Trust Incentive Furnaces	RETC and Energy Trust Incentive Furnaces
2003	66%	2%	-	-
2004	61%	2%	66%	73%
2005	69%	4%	65%	72%
Average All Years	67%	3%	65%	73%

6. Furnace Installers

Energy Trust relies heavily on furnace vendors and installers to promote the benefits of efficient furnaces to consumers. It is thought that certain vendors and installers who are trade allies of Energy Trust, sell substantially more furnaces than the average vendor. It is also thought that trade allies are better at informing consumers of the available

incentives. This hypothesis is tested by creating categories of installers based upon how many furnaces they installed in 2004 and 2005. Installer information is available in the RETC data. Table 9 presents these proportions for RETC only, and Energy Trust/RETC incentive recipients. *Installer <50* represents contractors that are reported to install less than 50 efficient gas furnaces between 2003 and 2005. *Installer 51-150* represents contractors that are reported to install between 51 and 150 efficient gas furnaces; *Installer 151-250* represents contractors that are reported to install between 151 and 250 efficient gas furnaces; and, *Installer >250* represents contractors that are reported to install over 250 efficient furnaces in this time period. The proportions of installations within these four categories have remained very similar across the three years for RETC only, and Energy Trust/RETC participants. The table presents the average between 2003 and 2005.

Table 9: Choice of Furnace Installer by Number of Installations According to Geography

Installer Size	RETC Furnaces Inside NWN Territory	RETC Furnaces Outside NWN Territory	RETC and Energy Trust Incentive Furnaces
Installer < 50	37%	73%	30%
Installer 50-150	25%	5%	28%
Installer 151-249	24%	20%	23%
Installer > 250	14%	2%	19%
Total	100%	100%	100%

Furnace consumers who participated in both incentive programs are more likely to have chosen installers who are trade allies and large volume installers. According to Energy Trust, only 42% of the contractors who installed less than 50 furnaces are Energy Trust trade allies (145 out of 359 contractors). Yet, they make up a large fraction of the installers. On the other hand, all of the remaining 51 contractors in the three largest installer categories are Energy Trust trade allies. These proportions suggest that participants who may have received both Energy Trust and RETC incentives are more likely to have hired contractors who are trade allies, since trade allies who are aware of both incentives and may have used the combination of the two to persuade households to purchase the more expensive high efficiency gas furnaces.

This hypothesis receives support from the *Installer <50* proportions in Table 9 (RETC inside NW Natural territory), which indicates that 37 percent of RETC, only, installations were performed by the smallest contractors. Only 30 % of Energy Trust and RETC participants used contractors from this group. An average of 73% of RETC participants who reside outside the NW Natural territory chose installers who installed less than 50 efficient furnaces. Consumers who participated in both incentive programs

chose high volume installers who are trade allies. Further, in both years total installation costs were higher for the former group of participants, while net installation costs were similar. Combined, these statistics point to the possibility that trade allies influenced the acquisition of the more expensive high efficiency furnaces by using Energy Trust and RETC incentives to keep participant costs equivalent to those of the less expensive standard efficiency units. The influence of trade allies also may be a significant cause of the increase in RETC's in 2004.

7. Findings and Conclusion

Given the small number of variables, it is impossible to draw strong conclusions about group differences from Energy Trust and RETC incentive program data. Major findings are:

- First, from a total incentive participation of 24,733, there were 6,266 overlapping cases. The actual number of incentives given between the two programs in 2003, 2004, and 2005 is 18,467.
- Second, the amount of RETC incentives increased dramatically from 2003 to 2004, and was only slightly greater in 2005. The 2004 increase coincided with the beginning of Energy Trust's incentive program. The number of RETC participants also receiving Energy Trust incentives was 79% in 2004, and 52% in 2005. The number of Energy Trust incentive participants who were eligible, and received a RETC was 74% in 2004, and 76% in 2005. The large percentage of RETC participants in 2004 that also received Energy Trust's incentive lends support to the idea that Energy Trust provided a boost to the RETC in the first year of the Energy Trust program.
- Third, the amount of Energy Trust incentives significantly decreased from 2004 to 2005. Despite the decrease in absolute terms, the relative percentage of Energy Trust participants also receiving the RETC increased from 46% to 53%. Energy Trust should strive to increase this percentage, as the financial benefit to the consumer is significant.
- Fourth, the NW Natural territory accounts for 90% of the RETC's, but only represents 79% of the gas households in the state. RETC participants who reside within Energy Trust's electric and gas service territory account for 98% to 99% of all RETC's in 2004 and 2005, while only representing 82% of the households in the state. Energy Trust recently started offering incentives to gas customers of Cascade Natural Gas and Avista, outside of the NW Natural territory. The amount of RETC's in these service territories should increase in the coming years.
- Fifth, it appears that there are large differences in total costs and size of installers between RETC participants that resided inside the NW Natural territory, and those outside of the NW Natural territory. There appear to be differences in

total costs and size of installer between RETC participants and Energy Trust participants in 2004 and 2005. Taking Energy Trust's incentive appears to be correlated with lower furnace installation costs, and higher volume installers.

- Lastly, there is insufficient data to determine if Energy Trust, only, group differs from the others. It appears from the substantially lower average total costs that this group differs from the others. However, these costs differences may be an artifact of the collection process (e.g., self-reports versus exact quotes versus estimates, and thus cannot be used for comparative purposes with great confidence).

In light of these results, it may be useful to learn more about all these groups, with the goal of determining whether or not it is useful to continue with Energy Trust's incentive. On the surface, there are two reasons why it would seem to be necessary to continue to offer Energy Trust's incentive. On the one hand, well more than half of the RETC participants accepted Energy Trust's incentive. Since these groups appear to have similar net costs, it seems likely that many of the RETC participants that took advantage of Energy Trust's incentive might not have acted as they did, or purchased the equipment they did, were it not for Energy Trust's incentive. On the other hand, three quarters of Energy Trust participants who purchased a furnace with an ECM took advantage of the RETC. Both incentives are important to the energy efficient furnace market in Oregon.