

MEMO

Date: March 1, 2015
From: Phil Degens, Elaine Prause, Adam Shick, and Erika Kociolek
Subject: Summary of Gas Fireplace Research

Energy Trust currently offers incentives for qualifying high-efficiency, direct-vent gas fireplaces, and has offered these incentives since 2009. The incentive is intended to influence customers to purchase high efficiency hearths over market baseline efficiency hearths. Over the past several years, Energy Trust has undertaken a number of studies intended to provide insight into several key assumptions for this measure, as well as the state of the hearth market in and outside of Oregon. This includes:

1. Market surveys of hearth vendors (in 2009 and 2013)
2. Metering study

Market surveys of hearth vendors. Many of the key assumptions for the gas fireplace measure, including market baseline efficiency level and incremental cost, came from a market survey of hearth vendors conducted by Dethman and Associates in 2009. In Fall 2013, an update to this 2009 market survey was conducted by Cadmus, with a goal of identifying any changes to the fireplace market. This study found that the average market efficiency had increased from 61% Fireplace Efficiency (FE) to 68% and that sales of fireplaces with standing pilot lights declined significantly: in 2009 the majority of vendors said more than half of the direct-vent gas fireplaces sold had standing pilot lights whereas in 2013, almost two-thirds of vendors said fireplaces with standing pilot lights constituted 15% or less of their direct-vent gas fireplace sales.

Metering study. In Fall 2014, Energy Trust staff worked with Ecotope to meter 49 (35 efficient and 14 baseline) gas fireplaces to determine average hours of use, whether or not customers are using their fireplaces for heating, and what type of system (if anything) the fireplace is replacing. Hours of use is a particularly important driver of energy savings. The study found that during the heating season, customers use their fireplace an average of 17 hours per week. Since the study screened out customers that used their fireplaces less than 5 hours a week (15% of customers that were asked about hours of use), the average hours of use in the population is likely lower. Additionally, the distribution of hours of use is skewed; most customers use the fireplace less than 20 hours, while a relatively small proportion (a fifth of customers with efficient hearths and a third of customers with baseline hearths) use the fireplace more than 20 hours.

The study also found that 41% of study participants replaced a wood burning fireplace or stove, and 49% replaced an old gas fireplace. Most (84%) reported that they did not use their fireplace as the main heating system for their home – the vast majority of these

customers reported that they sometimes use it for heating, but also use other systems (primarily gas furnaces) to heat their home.



**MARKET ASSESSMENT: EFFICIENT DIRECT VENT GAS FIREPLACES IN
OREGON**

Submitted to:

**Brien Sipe
Project Manager**

Energy Trust of Oregon, Inc.
851 SW 6th Avenue, Suite 1200
Portland, Oregon 97204

Submitted by:

Linda Dethman

Dethman & Associates 
3600 38th Avenue S
Seattle, Washington 98144

Final Report

July 2009

MARKET ASSESSMENT: EFFICIENT DIRECT VENT GAS FIREPLACES IN OREGON

Any questions about this report may be addressed to:

Linda Dethman, **Dethman & Associates**

3600 38th Avenue S

Seattle, WA 98144

(206) 760-1974

ldethman@speakeasy.net

≈ ACKNOWLEDGEMENTS ≈

We would like to thank a number of people who helped make this research a success. We send many thanks to our intrepid project manager, Brien Sipe, at Energy Trust of Oregon, for his ongoing direction and insights on this project.

Thanks also to John Frankel, President of OHPBA, who provided key insights on the market and hearth vendors and helped us interpret the results, including steering us to the Canadian EnerGuide database so we could extract efficiency data and providing us with a copy of the P4 testing standards. We also greatly appreciated the help of G. Harvey Gail, Executive Director, OHPBA, who provided his signature and endorsement for our letter informing vendors about the study. The letter made a big difference in opening doors and also preparing respondents for the questions we asked.

Finally, we want to thank Pam Bethman our persistent and excellent interviewer and all the hearth vendors who provided us with such helpful responses.

≈ ACKNOWLEDGEMENTS ≈

≈ TABLE OF CONTENTS ≈

≈ EXECUTIVE SUMMARY≈5
 INTRODUCTION AND PURPOSES 5
 KEY FINDINGS 5

≈ SECTION ONE: INTRODUCTION AND METHODS ≈8
 PROJECT BACKGROUND AND GOALS..... 8
 METHODS AND SAMPLE OF VENDORS..... 8

≈ SECTION TWO: FINDINGS ≈ 11
 VENDOR VIEWS ABOUT ENERGY EFFICIENCY 11
 Customer Preferences and Interest..... 11
 Promoting Energy Efficiency 12
 Defining Energy Efficiency 12
 CHARACTERISTICS AND USE OF DIRECT VENT GAS FIREPLACES..... 13
 Standing Pilot Lights 13
 Use of Direct Vent Gas Fireplaces as Major Heat Sources..... 14
 SALES OF DIRECT VENT GAS FIREPLACES..... 14
 Proportion of Fireplace Sales from Direct Vent Gas Fireplaces..... 14
 2008-2009 Heating Season Sales..... 15
 Top Selling Brands 16
 Efficiency and Price of Top Selling Brands..... 17
 PRICE OF INSTALLING AND VENTING DIRECT VENT FIREPLACES 18
 PELLET STOVES SALES 19

APPENDIX A: ENERGY TRUST OF OREGON HEARTH VENDOR SURVEY.....20

APPENDIX B: DEFINITIONS OF HIGH EFFICIENCY23

Table of Figures

Table 1 Distribution of Vendors Based on Number of Employees 9

Table 2 Membership in Oregon HPBA and Location of Vendors 10

Table 3 Number of Store Locations..... 10

Table 4 Most Important Factors in Customer Purchases of Direct Vent Gas Fireplaces . 11

≈ TABLE OF CONTENTS ≈

Table 5	Q1 – Vendor Ratings of Customer Concern about Fireplace Efficiency.....	12
Table 6	Q3 – How Actively Vendors Promote High Efficiency Fireplaces.....	12
Table 7	Q7 – Percent of Direct Vent Gas Fireplaces Sold with Standing Pilot Lights	13
Table 8	FE Ratings for Standing and IPI.....	14
Table 9	Q8 – Proportion of Buyers Planning to Use Fireplace as Major Heat Source.....	14
Table 10	Q10 – Percent of Fireplace Sales from Direct Vent Gas Fireplaces.....	15
Table 11	Q9 – Number of Direct Vent Gas Fireplaces Sold – 2008-2009 Heating Season	15
Table 12	Brands of Top Five Selling Direct Vent Gas Fireplaces.....	16
Table 13	Proportion of Sales that Top 5 Brands Represent	17
Table 14	Mean Price for Models at Various Efficiency Levels	18
Table 15	Price of Installing and Venting Direct Vent Fireplace Styles.....	18
Table 16	Number of Pellet Stoves Sold	19

≈ EXECUTIVE SUMMARY≈

INTRODUCTION AND PURPOSES

While these products can vary widely in efficiency, little is currently known about the market for and use of direct vent gas fireplaces in Oregon. To gauge whether this market deserves more attention, Energy Trust of Oregon (Energy Trust) undertook a telephone survey with 23 (out of a population of 50) Oregon hearth vendors during late May and June of 2009. This study sought to better understand vendor views of consumer purchases, gauge vendor understanding and promotion of high efficiency models, and collect characteristics of the market place. While the sample is small, its characteristics represent the full population of vendors.

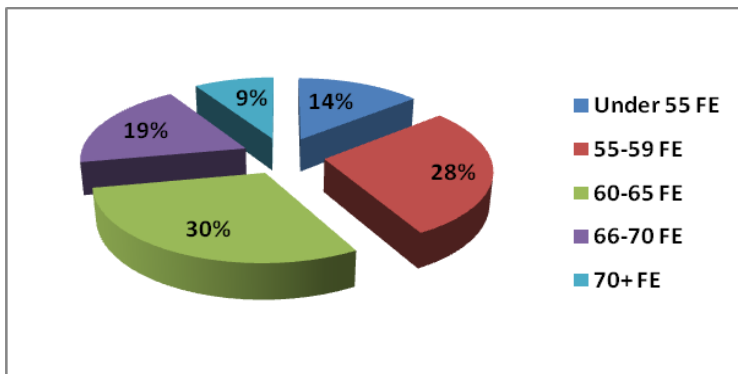
KEY FINDINGS

- ❖ Vendors said that “looks” or aesthetics were the number one factor (70%) in consumer decisions about direct vent gas fireplaces. Price and energy efficiency were distant seconds (both 56%), but notably efficiency was among the top three factors. A number of other survey responses support the notion that a strong majority of consumers do think about energy efficiency, particularly because they hope these fireplaces can reduce their heating bills, but that efficiency is not likely to take precedence over the aesthetics of their fireplace purchases.
- ❖ In selling direct vent gas fireplaces, and in response to customer demand, 69% of vendors say they are quite active in promoting high efficiency fireplace models, in part because they say customers want them, in part because they believe they provide customers the best deal, and in part because their values align with selling greener products. The remaining 31% of vendors say they do not especially promote high efficiency models.
- ❖ While 30% of vendors were able to correctly define or specify ratings for high efficiency fireplaces, others said they relied on manufacturer information to determine which models qualified as high efficiency, and still others said they were uncertain how to define it.
- ❖ The majority of vendors (61%) said that more than half of the direct vent gas fireplaces they sell have standing pilot lights, with the remaining 39% saying that 50% or less has standing pilot lights. Several companies mentioned that new models are more likely to have intermittent pilot ignition capabilities (IPI).

≈ EXECUTIVE SUMMARY ≈

- ❖ For 57 top selling fireplace models, those with standing pilot lights had, on average, higher Fireplace Efficiency (FE) ratings¹ than those with IPIs, even though fireplaces with IPIs were created with efficiency in mind. The reason for this result is not clear. It may reflect standing pilot lights' ability to get to temperature more quickly or a need to revisit test assumptions. The average price of IPI units is higher than standing pilot lights units: \$2,597 to \$2,078.
- ❖ Almost three-quarters of vendors say that one-half or more of their customers rely on their fireplaces as a major heat source; data suggest this proportion is even higher outside of the Portland metropolitan area.
- ❖ The estimated annual market for the 2008-2009 heating season is **8,200 to 13,750** direct vent gas fireplaces.
- ❖ When asked about top selling models (by brand, model number, and price), Heat N Glo (20%) and Quadra-Fire (18%) were by far the most often mentioned brands, although sixteen other brands were mentioned. Vendors, on average, said that their top five models represented 72% of direct vent gas fireplace sales.
- ❖ For top selling fireplaces where FE ratings were available, the average rating was 61%. Figure 1 shows proportions of these models at various efficiency levels.

Figure 1 Proportion of Direct Vent Gas Fireplaces at Various Fireplace Efficiency Levels (N = 57 top sellers)



¹The Canadian EnerGuide rating system has standard testing, so consumers can compare different fireplaces makes and models. It provides a "Fireplace Efficiency (FE) rating based on products tested and certified to the Canadian Standards Association (CSA) test standard P.4.1-02." See http://oee.nrcan.gc.ca/publications/infosource/pub/home/all_about_gas_fireplaces_chapter3.cfm?attr=4 for more information.

≈ EXECUTIVE SUMMARY≈

- ❖ The prices across all 102 top models ranged from \$1,200 to \$4,300, with the average price being \$2,118.
- ❖ The price for 56 top models with an FE rating of 65% or less averaged \$2,184, while the those with an FE ratings of 66% or more were higher, averaging \$2,525.
- ❖ The average cost of installing three types of direct vent gas fireplaces varied little, ranging from \$894 to \$954.
- ❖ The estimated annual market for pellet stoves, based on the 2008-2009 heating season, is between **1,440 and 3,500** units per year.

≈ SECTION ONE: INTRODUCTION AND METHODS ≈

≈ SECTION ONE: INTRODUCTION AND METHODS ≈

PROJECT BACKGROUND AND GOALS

While greater support for consumer purchases of high efficiency direct vent gas fireplaces may offer an opportunity for cost-effective energy savings, little is currently known about the market for and use of these products in Oregon. To improve its understanding of this market, Energy Trust of Oregon (Energy Trust) undertook this survey with Oregon hearth dealers to better understand:

1. The importance of energy efficiency in consumer thinking when they buy direct vent gas fireplaces
2. The importance and understanding of energy efficiency among hearth dealers when they sell these products
3. Characteristics of the direct vent gas fireplace market in Oregon, including the number sold, how much they are used, their price, and their efficiency levels. Several of these characteristics will be used to describe the current market for efficient direct vent gas fireplace models.

METHODS AND SAMPLE OF VENDORS

Energy Trust staff worked with an expert representative from the industry's professional organization, the Oregon Hearth, Patio & Barbecue Association (Oregon HPBA), and with Dethman & Associates, a research and evaluation firm in Seattle, Washington, to develop an interview guide (see Appendix A) for hearth vendors that addressed the project goals listed above. Energy Trust and Oregon HPBA assembled and provided a contact list for the population of 50 hearth vendors throughout Oregon.

Prior to the survey, Energy Trust and Oregon HPBA jointly sent a letter (see Appendix A) to fireplace vendors asking them to cooperate in a telephone survey in May and June of 2009 to help Energy Trust gauge the need to provide greater incentives for consumers to buy high efficiency direct vent gas fireplaces. Our goal was to interview 20 of the 50 vendors, concentrating on reaching the largest ones

≈ SECTION ONE: INTRODUCTION AND METHODS ≈

according to employment figures included the list.² This sampling approach allowed all sizes of vendors and a large proportion of sales to be represented.

In all, we interviewed 23 or 46% of Oregon hearth vendors. Tables 1-3 below provide further information about the sample of vendors represented in this study. Taken together, they show the sample provides a robust and representative source of information about the views of hearth vendors and the direct vent gas fireplace market.

Table 1 shows vendor size based on the number of employees; data were taken either from state employment data or from vendor reports at the time of the survey. Based on state figures, the sample, as intended, somewhat overrepresents the larger vendors and includes a good range of vendor sizes. As shown in the far right columns of the table, and consistent with a number of vendor comments, state employment figures are likely inflated due to the slow time of year and a weak economy. According to vendor reports, 13 of the 23 vendors (57%) had 9 or fewer employees, while 7 (31%) had 10-19 employees, 1 (4%) had 20 or more employees, and 2 (8%) had 50 or more employees.

Table 1 Distribution of Vendors Based on Number of Employees

	Population - State Employment Data		Sample - State Employment Data		Sample - Vendor Reported Data	
	N	Percent	N	Percent	N	Percent
Very small (1-4)	14	28%	4	17%	6	26%
Small (5-9)	12	24%	6	26%	7	31%
Medium (10-19)	10	20%	8	35%	7	31%
Large (20-49)	7	14%	4	17%	1	4%
Very Large (50+)	1	2%	1	4%	2	8%
Don't Know	6	12%	-	-	-	-
Totals	50	100%	23	100%	23	100%

Table 2 on the next page compares the population and sample on membership in the Oregon HPBA and the location of the vendors. Members in professional organization are somewhat better represented in the survey sample, likely because we focused on larger vendors. The geographic spread of vendors in the sample corresponds quite well to the geographic distribution in the population.

² Results of the survey showed the correspondence between the list's employment figures and vendor-reported figures did not always coincide.

≈ SECTION ONE: INTRODUCTION AND METHODS ≈

Table 2 Membership in Oregon HPBA and Location of Vendors

	Population		Sample	
Members	35	70%	19	83%
Non-Members	15	30%	4	17%
	50			
Location				
Northern Oregon	20	40%	7	30%
Willamette Valley	14	28%	6	26%
Southern Oregon	6	12%	4	17%
Coastal Oregon	6	12%	4	17%
Eastern Oregon	4	8%	2	9%
	50		23	

As shown in **Table 3**, most of the 23 vendors (65%) had only one location, while 6 of them (26%) had 2 locations, 1 (4%) had 4 locations, and 1 (4%) had 9 locations.

Table 3 Number of Store Locations

# of Locations	N	Percent
One	15	66%
Two	6	26%
Four	1	4%
Nine	1	4%
Total	23	100%

≈ SECTION TWO: FINDINGS ≈

≈ SECTION TWO: FINDINGS ≈

VENDOR VIEWS ABOUT ENERGY EFFICIENCY

Customer Preferences and Interest

Hearth vendors were asked several questions to gather their perspectives on customer thinking when they purchase direct vent gas fireplaces. When asked “What are the most important factors in customer buying decisions?” they reported (see **Table 4**) that “looks” or aesthetics were the number one factor (70%), followed by price (56%), and energy efficiency (56%). Sizing (22%), features (22%), quality (9%), and safety (4%) all were considerably further down the list of what vendors reported as customer priorities.

Table 4 Most Important Factors in Customer Purchases of Direct Vent Gas Fireplaces

	N of Responses	Percent of 23 Respondents
Looks (including flames)	16	70%
Price	13	56%
Efficiency	13	56%
Sizing/ability to heat space	5	22%
Features	5	22%
Quality	2	9%
Safety	1	4%

Vendors were then asked to specifically rate how concerned customers were about the energy efficiency of the direct vent fireplaces they buy. As shown in **Table 5**, three-quarters of vendors rated their customers as being very (4%) or somewhat concerned (70%) about fireplace energy efficiency, 22% gave a neutral rating, and only one company (4%) said their customers were not at all concerned.

When asked why they rated the importance of efficiency as they did, those that rated it as important said that customers often ask about efficiency because they hope a fireplace will help them save money on their heating bills. They also said that many customers have a general understanding that gas fireplaces can be more or less efficient. Those that gave a neutral or less important rating for efficiency tended to reiterate that looks were more important than efficiency for their customers.

≈ SECTION TWO: FINDINGS ≈

Table 5 Q1 – Vendor Ratings of Customer Concern about Fireplace Efficiency

	Number	Percent
Very Concerned (9-10)	1	4%
Somewhat Concerned (7-8)	16	70%
Neutral (5-6)	5	22%
Not Too Concerned (3-4)	0	0%
Not At All Concerned (1-2)	1	4%
Total	23	100%

Promoting Energy Efficiency

As shown in **Table 6**, 43% of vendors reported they very actively promote high efficiency direct vent gas fireplaces during the sales process and another 26% rated themselves as somewhat active advocates. The remaining 31% of vendors said they did not actively promote energy efficiency. Those who rated themselves as active gave varying reasons for doing so. Some simply said that efficient models are “all we sell,” while others said being green was consistent with their business values, and still others said it was in their customers best interests to get “more heat for less money” and to qualify for rebates and tax credits. Those who did not actively push efficiency said that “people don’t ask for it” and they tend to promote the brands that are most in demand, whether high efficiency or not.

Table 6 Q3 – How Actively Vendors Promote High Efficiency Fireplaces

	Number	Percent
Very Active (9-10)	10	43%
Somewhat Active (7-8)	6	26%
Neutral (5-6)	3	13%
Not Too Active (3-4)	2	9%
Not At All Active (1-2)	2	9%
Total	23	100%

Defining Energy Efficiency

When vendors were asked how they define “high efficiency” direct vent gas fireplaces for customers, they gave a variety of responses, with some being quite brief and specific and others being more descriptive. [Note: Please see Appendix B for verbatim responses.] The most specific answers had to do with burn rates as indicating efficiency, with 7 of the 23 vendors (30%) saying that burn rates around 80% were efficient, and another 3 vendors citing lower or less specific definitions of burn rates. One vendor said he relied on government ratings of efficiency and 7

≈ SECTION TWO: FINDINGS ≈

vendors (30%) said they relied on manufacturer’s ratings which said they “all the models had.” Three vendors talked about the amount the space a customer is able to heat with a gallon of fuel, and two vendors gave fairly vague answers, with one saying all the fireplaces “were about the same.”

CHARACTERISTICS AND USE OF DIRECT VENT GAS FIREPLACES

Standing Pilot Lights

As **Table 7** shows, the majority of vendors (61%) said that more than half of the direct vent gas fireplaces they sell have standing pilot lights. Eleven vendors (48%) said 75% or more of their direct vent gas fireplaces have them and another 3 vendors (13%) said 51-75% have them. Nine vendors (39%) said that 50% or less of the fireplaces they sell have standing pilot lights, with one saying all the direct vent gas fireplaces they sell have intermittent pilot ignitions (IPIs). More than one company mentioned that as the new models come in, fewer will have a standing pilot light and more will have IPI capabilities.

Table 7 Q7 – Percent of Direct Vent Gas Fireplaces Sold with Standing Pilot Lights

	Number	Percent of Vendors
¼ of sales or less	7	30%
¼ to ½ of sales	2	9%
½ to ¾ of sales	3	13%
	11	48%
Total	23	100%

As shown in **Table 8**, for 57 top selling fireplace models that could be identified as having standing or intermittent pilot lights, the standing pilot light models had, on average, higher Fireplace Efficiency (FE) ratings than those with IPIs, even though fireplaces with IPIs are the newest technology and are intended to enhance efficiency.³ The reason for this finding is not entirely clear. It may reflect the

³The Canadian EnerGuide rating system has standard testing, so consumers can compare different fireplaces makes and models. It provides a “Fireplace Efficiency (FE) rating based on products tested and certified to the Canadian Standards Association (CSA) test standard P.4.1-02.” See http://oee.nrcan.gc.ca/publications/infosource/pub/home/all_about_gas_fireplaces_chapter3.cfm?atir=4 for more information.

≈ SECTION TWO: FINDINGS ≈

ability of standing pilot lights to get up to temperature more quickly than those with IPIs. Or, the Canadian test may assume higher annual hours of use, counteracting the stand-by losses of a standing pilot light. Thus this test assumption may need to be revisited. The average price of IPI units was significantly higher than those with standing pilot lights: \$2,597 to \$2,078, likely reflecting the newer technology.

Table 8 FE Ratings for Standing and IPI

	Number	Mean FE Rating	Number	Average Price
Standing Pilot	35	62%	34	\$2,078
Intermittent Pilot	22	58%	22	\$2,597
Total	57		56	

Use of Direct Vent Gas Fireplaces as Major Heat Sources

Vendors were asked to estimate what proportion of their customers planned to use their fireplaces 20 or more hours a week – that is, as a major source of home heating. As shown in **Table 9**, the large majority of vendors (74%) thought that over half of their customers intended to use their fireplaces as major heat sources, while a minority thought most of their customers would use their fireplaces as back-up or supplemental heat or for more decorative reasons. The data suggest that consumers may rely more on these fireplaces as a major source of heat outside of the Portland metropolitan area.

Table 9 Q8 – Proportion of Buyers Planning to Use Fireplace as Major Heat Source

	Number	Percent
One-quarter or less	2	9%
One-quarter to one-half	4	17%
One-half to three-quarters	7	30%
Over three-quarters	10	44%
Total	23	100%

SALES OF DIRECT VENT GAS FIREPLACES

Proportion of Fireplace Sales from Direct Vent Gas Fireplaces

When asked what proportion of all their fireplace sales came from direct vent gas fireplaces, vendor response varied, suggesting that some vendors specialize in these fireplaces while some do not. As shown in **Table 10**, 70% of vendors said these

≈ SECTION TWO: FINDINGS ≈

fireplaces made up less than half of their sales, while the other 30% said that direct vent gas fireplaces accounted for over one-half of their sales – with 17% of this group saying the fireplaces accounted for over three-quarters of their sales..

Table 10 Q10 – Percent of Fireplace Sales from Direct Vent Gas Fireplaces

	Number	Percent
25% or less	9	39%
26 – 50%	7	31%
51 – 75%	3	13%
Over 75%	4	17%
Total	23	100%

2008-2009 Heating Season Sales

The number of direct vent gas fireplaces sold varied widely among vendors – from 7 units to 2,500 units. The median number of units sold was 100 (one-half of vendors sold more than 100 units, one-half sold less). About one-half of vendors (48%) report they sold 50 or fewer units during the last heating season, while 33% sold between 51-250 units, and 19% sold over 250 units (see **Table 11**).

Across the 21 vendors who were able to report their sales figures, 5,777 of these fireplaces were sold, yielding an average of 275 units per vendor. This average is likely on the high side due to our strategy of pursuing the largest vendors and because one vendor sold 2,500 units. If we exclude this vendor, the average falls to 164 units per vendor. Using these two averages and extrapolating the sales out to all 50 vendors, **the estimated range of total sales for the past heating season would be 8,200 to 13,750 direct vent gas fireplaces.**

Table 11 Q9 – Number of Direct Vent Gas Fireplaces Sold – 2008-2009 Heating Season

	Number	Percent
50 or less	10	48%
51-250	7	33%
Over 250	4	19%
<i>Average across all vendors = 275 units</i>	21	100%
<i>Average excluding largest vendor = 164 units</i>		
<i>Range of sales across population of 50 vendors: 8,200 to 13,750 units</i>		

≈ SECTION TWO: FINDINGS ≈

Top Selling Brands

When the introductory letter was sent to hearth vendors, they were asked to prepare for a survey question that would ask them for their top five selling direct vent gas fireplace models for the past heating season, along with their specific model numbers and prices. The specific model numbers were important to this study because Energy Trust could then derive the level of efficiency of the fireplaces sold. Only one vendor was not able to provide us with their top model information, although some small shops had fewer than five top models. **Table 12** shows the percent of top brands across all top models given. Two brands – Heat N Glow and Quadra-Fire clearly lead the list of brands sold, with a wide array of other brands constituting much smaller proportions.

Table 12 Brands of Top Five Selling Direct Vent Gas Fireplaces

Brand	Number	Percent of Models Given
Heat N Glo	20	20%
Quadra-Fire	18	18%
Valor	7	7%
Avalon	6	6%
Jotl	6	6%
Lopi	6	6%
Travis	6	6%
Enviro-Focus	5	5%
Kozy	5	5%
Lexington Forge	4	4%
Regency	4	4%
Majestic	3	3%
Winthrop	3	3%
Heatilator	1	1%
Napoleon	1	1%
Montego	1	1%
Mendota	1	1%
Town & Country	1	1%
Total # of Models =	102	100%

As **Table 13** on the next page shows, the top five brands tended to represent a large proportion of sales for the vendors – **on average 72% of direct gas vent fireplaces sold.**

≈ SECTION TWO: FINDINGS ≈

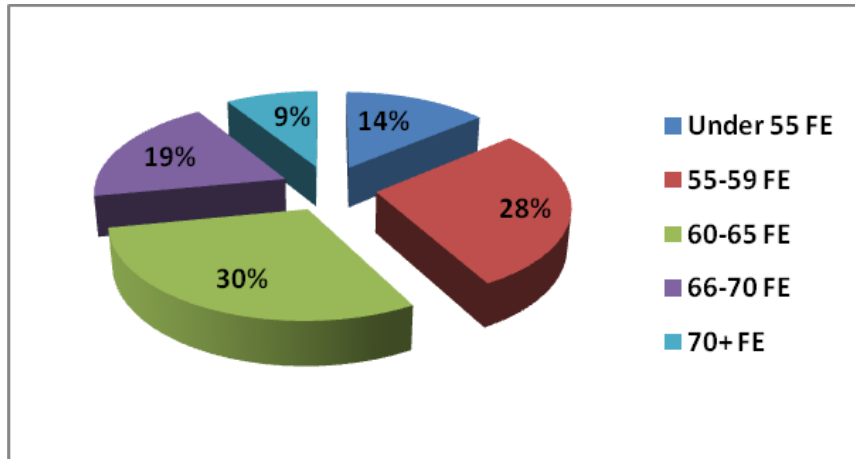
Table 13 Proportion of Sales that Top 5 Brands Represent

	Number	Percent
Less than ¼ of sales	1	5%
¼ to ½ of sales	4	18%
½ to ¾ of sales	4	18%
Over ¾ of sales	13	59%
Total	22	100%
Average percent of sales = 72%		
Median percent of sales = 80%		

Efficiency and Price of Top Selling Brands

When Energy Trust staff checked top selling model numbers for their fireplace efficiency ratings, they found only 57 of the 102 models listed (56%) could be verified.⁴ Since the models that could be rated represented most brands, we are using these 57 ratings to represent all top models sold, which in turn represent a large majority of direct vent gas fireplaces sold (as shown in **Table 14**). On average, the top selling fireplaces have a 61% energy efficiency rating. As shown in **Figure 2**, 14% of these top sellers were rated at less than 55%; 28% between 56-59%; 30% between 60%-65%; 19% between 66-70%; and 9% were rated above 70%.

Figure 2 Proportion of Direct Vent Gas Fireplaces at Various Fireplace Efficiency Levels (N = 57 top sellers)



⁴ These are the same 57 models where the type of pilot light was available. The primary reason for the low rate of matching was that many models are not sold in Canada where fireplace efficiency ratings are mandatory.

≈ SECTION TWO: FINDINGS ≈

Vendors were able to provide prices for most of their top selling models. The prices of across all top models varied from \$1,200 to \$4,300, with the average price being \$2,118. **Table 14** shows the average price, by efficiency category, for the efficiency rated models where price was available. The prices vary considerably and don't, as is often the case, rise with efficiency level. Based on input from an industry expert, one reason for the pattern or prices may be that as efficiency increases, the flame gets bluer, and thus less aesthetically desirable. With 70% of vendors indicating aesthetics as a key factor in fireplace purchases, the highest average prices may reflect those models that have the highest efficiency and which, at the same time, maintain the red flames (FEs of 66-70%). The lower prices for the highest efficiency level may reflect blue flames and thus lower aesthetic appeal.

Table 14 Mean Price for Models at Various Efficiency Levels

FE Rating	Number	Average Price
< 55%	8	\$2,334
55-59%	15	\$1,820
60-65%	16	\$2,434
66-70%	11	\$2,676
Over 70%	6	\$2,193
Total	56	

PRICE OF INSTALLING AND VENTING DIRECT VENT FIREPLACES

Vendors were asked the average cost of venting and installing three types of direct vent fireplaces: zero clearance, fireplace inserts, and free standing fireplaces. Their responses are shown in **Table 15**. Overall, the average cost of these options did not vary greatly (\$897, \$894, and \$954, respectively), but there is some difference in the distribution across the price categories. The average price of zero clearance fireplaces is \$897, with 41% of vendors placing the price between \$500-750, 36% giving a price between \$751-1,000, and 23% giving a price between \$1,001 and \$1,500. The average price of a fireplace insert was very similar to the zero clearance: \$894, with fairly similar proportions for the spread of prices. The free standing styles were a little pricier on average – \$954 – and this is reflected in a larger proportion being in two higher cost ranges (above \$750).

Table 15 Price of Installing and Venting Direct Vent Fireplace Styles

Zero Clearance Price	Number	Percent
\$500 - \$750	9	41%
\$751 - \$1000	8	36%
\$1001-\$1500	5	23%
Average cost = \$897		

≈ SECTION TWO: FINDINGS ≈

Zero Clearance Price	Number	Percent
Fireplace Insert Price		
\$500 - \$750	10	43%
\$751 - \$1000	6	26%
\$1001 - \$1500	7	30%
Average Cost = \$894		
Free Standing Fireplace Price		
\$500 - \$750	5	22%
\$751 - \$1000	12	52%
\$1001 - \$1500	6	26%
Average Cost = \$954		

PELLET STOVES SALES

Because of Energy Trust’s interest in renewable energy, a question about the pellet stove market was asked in this survey. As **Table 16** shows, 43% of vendors sold small numbers of pellet stoves (10 or less), while 31% sold between 11 and 40 stoves, 22% sold between 41-100 stoves, and one vendor reported selling 1,000 stoves. The average number of stoves sold was 70; once again, the median is much lower – 15 stoves. As with estimating the direct vent fireplace market, the average of 70 stoves is likely high due to the one very large source of sales.

If we exclude the company selling 1,000 stoves, a low-end average would be 28 stoves per vendor, while a high-end average would be 70. Extrapolating these averages to all 50 vendors, **the estimated annual market, based on the 2008-2009 heating season, for pellet stoves is between 1,440 and 3,500 units per year.**

Table 16 Number of Pellet Stoves Sold

	Number	Percent
10 or less	10	43%
11-40	7	31%
41-100	5	22%
101+ (= 1000 sold)	1	4%
<i>Average sold across all vendors = 70</i>	23	
<i>Average excluding largest vendor = 28</i>		
<i>Range of sales times population of 50 vendors:</i>		
1440 to 3,500 units		

APPENDIX A: ENERGY TRUST OF OREGON HEARTH VENDOR SURVEY

Hello, my name is _____ and I'm calling on behalf of the Energy Trust of Oregon. I hope you recently received a letter from **the Energy Trust about this research to better understand the market for direct vent gas fireplaces**, including zero clearance fireplaces, fireplace inserts, and free standing fireplaces. [If needed, add: The Energy Trust of Oregon is an independent non-profit organization dedicated to helping Oregonians use less energy and invest in renewable energy so they save money and protect the environment.] We are talking with a select group of fireplace vendors throughout Oregon. Energy Trust will use the results of this research to see if they need to expand their direct vent gas fireplace rebate program. My questions will take about 10 minutes and your responses are completely confidential.

1. When your customers buy direct vent gas fireplaces, what are the most important factors in their buying decision?
2. On a scale of 1-10, with 1 being not at all concerned and 10 being very concerned, how concerned are customers about the energy efficiency of the direct vent gas fireplaces they buy?

1 2 3 4 5 6 7 8 9 10

3. Please tell me why you gave that a(n) (fill in number)?
4. Again using a 1-10 scale, with 1 being not at all active and 10 being very active, how actively do you promote high efficiency direct vent gas fireplace models?

1 2 3 4 5 6 7 8 9 10

5. Please tell me why you gave that a(n) (fill in number)?
6. If customers ask for a high efficiency direct vent gas fireplace, how do you define "high efficiency" for them? (PROBE: Anything else you tell them about high efficiency?)
7. What % of the direct vent fireplaces you sell have standing pilot lights? (on all the time)
%

APPENDIX A: ENERGY TRUST OF OREGON HEARTH VENDOR SURVEY

8. About what percent of your direct vent gas fireplace customers plan to use these fireplaces to heat their homes 20 hours a week or more during the heating season? (If needed: This is our definition of a “major” heat source) %
9. And about how many direct vent gas fireplaces did you sell during the 2008-2009 heating season?
10. What % of all your fireplace sales came from direct vent gas fireplaces? %
11. (If it helps: As mentioned in the letter. . .) Now I'd like to know your 5 best selling direct vent gas fireplace models for the 2008-2009 heating season. Please tell me the brand, specific model number, and price for each of these top five models.
 1. Empire
 2. FMI
 3. Heat 'N' Glow
 4. Insbruck
 5. Kingsman
 6. Lexington Forge
 7. Mendota
 8. Monesson
 9. Napoleon
 10. Starfire
 11. Tempo
 12. Town and Country
 13. White Mountain Hearth
 14. Other – **Write in name**

	Brand	Model Number	LIST Price
1			
2			
3			
4			
5			

12. What % of total direct vent gas fireplace sales do these top 5 models account for? %
13. Please tell me the average cost to **vent and install a direct vent ZERO CLEARANCE FIREPLACE?**
 - a. Average cost

APPENDIX A: ENERGY TRUST OF OREGON HEARTH VENDOR SURVEY

14. What about the average cost to **vent and install a direct vent FIREPLACE INSERT**?

a. Average cost

15. And the average cost to **vent and install a direct vent FREE STANDING FIREPLACE**?

a. Average cost

16. Energy Trust, as part of its interest in renewable energy, would like to know more about the pellet stove market. Could you please tell me how many pellet stoves you sold during this last (2008-09) heating season?

17. Now just a few final questions. How many store locations you have?

18. And, finally, how many full time employees does your business have?

Thank you. Energy Trust really appreciates your help!

Person to Call with Questions: Brien Sipe at ETO 503 459 4069

APPENDIX B: DEFINITIONS OF HIGH EFFICIENCY

APPENDIX B: DEFINITIONS OF HIGH EFFICIENCY

Question 5: If customers ask for a high efficiency direct vent gas fireplace, how do you define “high efficiency” for them? (PROBE: Anything else you tell them about high efficiency?)

1. 75-85% - AFUE – Canadian P4 efficiencies that is a much better rating
2. Rated 80-85 IPI range
3. Heater rated run at 80% efficiency
4. Recommend Quadra-Fire product most are rated at 75-80% burn efficiency
5. Careful on how we define it – usable room heat or lost in combustion most have 80% - small differences not very meaningful 72 – 80% but last couple of years make the units more efficient – IPI ignition system – customer saves \$6/mo
6. Burn rate of 83%
7. Usually 80% steady state – AFUE and steady state – try to compare efficiency that way
8. Looking for something that has a P4 rating of AFUE rating at least in the 70%
9. Multiple layers of efficiency ratings – confusing and mis-leading – BTU thermal efficiency (most accurate) Canadian efficiency standard – flue temperature and btu Majestic/Manessen brand comes new units up to 72% P4 – Regency trust worthy efficiency rating- Turn the fireplace on so I could feel the difference
10. % of the burn – small 5% are more efficient – 9/10 are direct vent
11. Based on the emission standards by the government
12. We would define by published efficiency by manufacturer – talk about to them about how a direct vent air works – after that, primary heat or supplemental heat – helps me size the product and to what they’re looking for. Start narrowing down

APPENDIX B: DEFINITIONS OF HIGH EFFICIENCY

13. All have efficiency ratings – amount of square footage they heat – price points – look brochure
14. Depends on the unit – clearly labeled with energy efficiency – smaller units are less efficient to run in the space - steer me to a vent less/vent free models – 99% efficient because no flue
15. Mfg put ratings on the pamphlets – when asking about a specific model or look at the different pamphlets and look at the efficiency rating.
16. Point to Travis industries – efficiency ratings – get same efficiency a much better made product
17. Go to highest efficiency unit and go down
18. Something that has a low emission – high efficiency burn to it – maximum BTU for price – higher rated efficiency standard – good clean direct vent
19. To the consumer figure out what they expect out of the appliance – heat the room or floor – not interested in the ASE rating – how much space will this fireplace heat.
20. Gas fireplace is not efficient as a furnace – heating the *area* only not a whole house getting more efficiency out of your \$\$ instead of your whole house
21. Do a lot more propane – discuss what kind of heat getting per gallon of propane – 30 hours of burn on a 30K BTU gas stove – followed by cost – how well insulated is your home – goes out the window
22. Give me a stove with more energy efficiency
23. They are all about the same



Efficient Direct Vent Gas Fireplaces in Oregon

December 5, 2013

Energy Trust of Oregon, Inc
851 SW 6th Avenue, Suite 1200
Portland, Oregon 97204

The Cadmus Group, Inc.

An Employee-Owned Company • www.cadmusgroup.com

This page left blank.

Prepared by:
Linda Dethman
David Thomley

Cadmus: Energy Services Division



This page left blank.

Table of Contents

Executive Summary.....	i
Introduction and Purposes.....	i
Key Findings.....	i
SECTION ONE- INTRODUCTION AND METHODS.....	1
Project Background and Goals	1
Methods and Sample of Vendors.....	1
SECTION TWO: FINDINGS.....	4
VENDOR VIEWS ABOUT ENERGY EFFICIENCY.....	4
Customer Preferences and Interest	4
Promoting Energy Efficiency.....	5
Defining Energy Efficiency	5
CHARACTERISTICS AND USE OF DIRECT VENT GAS FIREPLACES.....	7
Standing Pilot Lights	7
Use of Direct Vent Gas Fireplaces as Major Heat Sources.....	8
SALES OF DIRECT VENT GAS FIREPLACES.....	9
Proportion of Fireplace Sales from Direct Vent Gas Fireplaces	9
Estimated Number of Direct Vent Gas Fireplaces Sold- 2012-2013 Heating Season.....	9
Top Selling Brands	9
Efficiency and Price of Top Selling Brands.....	11
PRICE OF INSTALLING AND VENTING DIRECT VENT FIREPLACES.....	13
PELLET STOVE SALES	14
Appendix A: Introductory Letter.....	15
Appendix A: Interview Guide	16
Appendix B: Definitions of High Efficiency.....	19



This page left blank.

Executive Summary

Introduction and Purposes

Energy Trust of Oregon (Energy Trust) currently offers incentives to consumers purchasing select high-efficiency direct-vent gas fireplaces. To assess the appropriateness of the incentives currently being offered, Energy Trust undertook this survey of Oregon hearth dealers to better understand the market for direct-vent gas fireplaces. Cadmus interviewed 23 hearth vendors in Oregon (out of a population of 48) by telephone during August 2013. While the sample is small, its characteristics represent the full population of Oregon hearth vendors.

This study sought to better understand vendor views of consumer purchases, gauge their understanding and promotion of high efficiency models, and collect characteristics of the market place. This study also serves as an update to a similar study conducted in 2009.

Key Findings

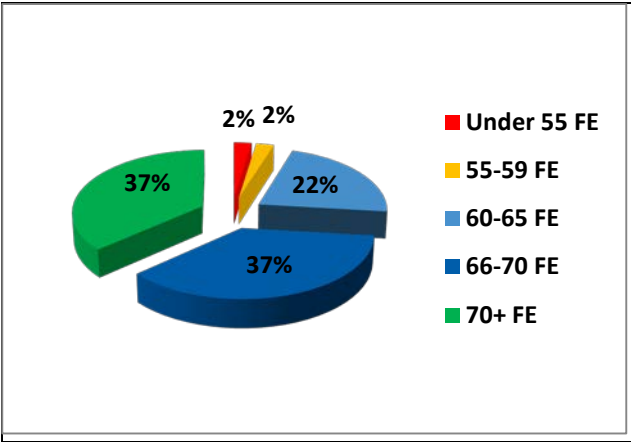
- As in 2009, vendors most often mentioned ‘looks’ or aesthetics (74%) when asked about the most important factors in customer buying decisions. In addition, a notable proportion of vendors mentioned price (44%) and heating capacity (30%) as important factors, and 22% of vendors specifically mentioned heating efficiency¹. While it is clear that aesthetics retain their edge as the most important fireplace attribute for consumers, responses across a variety of questions suggest vendors believe customer concern about heating efficiency is increasing.
- A large proportion (83%) of vendors said they actively sell high efficiency direct vent gas fireplaces, compared to 69% of vendors in 2009. Several vendors said they only sold these types of fireplaces. The consensus among vendors is that direct vent gas fireplaces present a solid value proposition to the customer and are where the market is headed in the future.
- Most vendors seemed aware of and conversant about the various efficiency ratings for fireplace products. Two-thirds (65%) of vendors referred to the energy efficiency rating numbers they like their products to meet, or simply said all their fireplaces were efficient models. This contrasts with only 30% of vendors who defined or specified efficiency ratings in the 2009 study.
- Standing pilot lights have become a much smaller part of the direct vent gas fireplace market. On average, vendors in 2013 said 32% of their sales consisted of fireplaces with standing pilot lights (this figure does not take into account differences in sales volumes between vendors). Almost two thirds (65%) of vendors in 2013 said standing pilot lights were 15% or less of their direct vent gas fireplace sales. This is a big change since 2009, when 61% of vendors said over 50% of their fireplace sales had standing pilot lights.

¹ Percentages add to more than 100% due to multiple responses from respondents.



- For 41 top selling fireplace models where efficiency ratings were available, the 31 models with either intermittent pilot ignition (IPI) or pilot on demand lights had average fireplace efficiency (FE) ratings of 69.6 and 68.9, respectively. This is higher than the ratings given IPI models in 2009 (58 FE).
- As in 2009, the same proportion of vendors, 74%, said that one-half or more of their customers rely on their fireplaces as a major heat source during the heating season. Once again, fireplaces are much more likely to be a major heat source outside of the Portland metro area.
- Compared to 2009, a larger proportion of fireplace sales came from direct vent gas fireplaces. Forty-four percent of vendors in 2013 said that over 75% of the fireplaces they sold were direct vent, compared to 17% in the same category in 2009.
- Based on vendor reports for the 2012-2013 heating season, estimated sales were about 7,600 direct vent gas fireplaces. Overall, sales were lower than in 2009, consistent with vendor reports that economic conditions suppressed sales. A number of vendors, however, also said that sales are starting to rebound. Notably, while direct vent fireplace sales overall are lower, vendors report a larger proportion of customers are buying high efficiency models.
- When asked about their top 5 best-selling brands, vendors most frequently mentioned Travis(16%), HeatnGlo (15%), and Valor(14%). Twelve other brands were also mentioned. Based on mentions, the market appears to have shrunk somewhat (fewer brands cited) and become more competitive (top brands mentioned less often), compared to 2009. At the same time, vendors on average said their top brands represented 72% of direct vent gas fireplace sales, exactly the same as 2009.
- For top selling fireplaces where FE ratings were available, the average rating was 68, compared to an average rating of 61 in 2009. It also is clear that the proportion of high efficiency direct vent gas fireplaces has risen since the 2009 study. As shown below, 37% of fireplaces in 2013 were rated between 66 and 70 fireplace efficiency (FE) and another 37% were rated as 70+ FE. In 2009, only 19% received between 60 and 70 FE ratings and only 9% were rated as 70+ FE.

Figure 1 Proportion of Direct Vent Gas Fireplaces at Various Efficiency Levels (N=41 Top Sellers)



- Based upon vendor reports, the prices across all 74 top models ranged from \$1,076 to \$4,500, with an average price of \$2,653. More efficient models have higher average prices.
- The average cost to install and vent three types of direct vent gas fireplaces ranged from \$838 for fireplace inserts, to \$947 for free-standing fireplaces/stoves, and to \$975 for zero clearance fireplaces.
- The estimated annual market for pellet stoves, based on the 2012-2013 heating season, is approximately **1,520** units per year.

SECTION ONE- INTRODUCTION AND METHODS

Project Background and Goals

Energy Trust of Oregon (Energy Trust) currently offers incentives to consumers purchasing select high-efficiency direct-vent gas fireplaces. To assess the appropriateness of the incentives currently being offered, Energy Trust undertook this survey with Oregon Hearth dealers to better understand the overall market for direct-vent gas fireplaces. Energy Trust wanted to improve their understanding in four main areas:

1. The importance of energy efficiency in consumer thinking when they buy direct vent gas fireplaces.
2. The importance and understanding of energy efficiency among hearth dealers when they sell these products.
3. Characteristics of the direct vent gas fireplace market in Oregon, including the number sold, how much they are used, their price, and their efficiency levels. Several of these characteristics will be used to describe the current market for efficient direct vent gas fireplace models.
4. How results from this study compare to results obtained from a similar fireplace market study performed for Energy Trust in 2009, in terms of how the market may have changed or remained the same over that time period.

Methods and Sample of Vendors

Energy Trust staff worked with an expert representative from the industry's professional organization, the Oregon Hearth, Patio & Barbecue Association (Oregon HPBA), and with Cadmus, an energy efficiency consulting firm in Portland, Oregon, to develop an interview guide (see Appendix A) for hearth vendors that addressed the goals above. Energy Trust and Oregon HPBA assembled and provided a contact list for the population of 48 hearth vendors throughout Oregon.

Prior to the survey, Energy Trust and Oregon HPBA jointly sent a letter (see Appendix A) to fireplace vendors asking them to cooperate in an August 2013 telephone survey. Vendors were asked to help Energy Trust assess the effectiveness of the incentives currently being offered for direct vent gas fireplaces. Our goal was to interview at least 20 of the 48 vendors.

We made multiple attempts to contact all vendors on the Oregon HPBA list by telephone. We successfully completed interviews with 23, or 48%, of these vendors. Tables 1-3 below provide further information about the sample of vendors represented in this study. We used Cvent, an online survey research and analysis tool, to input data during the phone calls. Results were analyzed using SPSS, a statistical analysis package.

Table 1 below shows vendor size based on number of employees; data were taken either from Oregon state employment data or from vendor reports at the time of the survey. Given the small sample size, sample data tracks well with state-reported distributions.



Table 1 Distribution of Vendors Based on Number of Employees

	Population- State Employment Data		Sample- State Employment Data		Sample- Vendor Reported Data	
	N	Percent	N	Percent	N	Percent
Very small (1-4)	11	23%	6	26%	8	35%
Small (5-9)	16	33%	6	26%	7	30%
Medium (10-19)	10	19%	5	22%	5	22%
Large(20-49)	6	13%	2	9%	3	13%
Largest(50-99)	1	2%	1	4%	0	0%
Don't know	4	8%	3	13%		
Total	48	100%	23	100%	23	100%

Table 2 compares the Active and Lapsed members categories, along with locations of members overall and those interviewed. Active and lapsed member proportions for the sample are similar to the population. Geographical dispersion is also similar, especially given the number of categories and small sample size, with Coastal Oregon stores being a bit underrepresented and Willamette Valley stores being a bit overrepresented.

Table 2 Membership in Oregon HPBA and Location of Vendors

	Population		Sample	
Active Members	40	83%	20	87%
Lapsed Members	8	17%	3	13%
Total	48	100%	23	100%
Location				
Northern Oregon	23	48%	11	48%
Willamette Valley	9	19%	6	26%
Southern Oregon	6	13%	2	9%
Coastal Oregon	5	10%	1	4%
Eastern Oregon	5	10%	3	13%
Total	48	100%	23	100%

Table 3 shows that in addition to 18 members identified as retailers, we also spoke to 5 members who fell into one of four other member categories- Distributor, Informational, Manufacturer’s Rep, and Service membership. These members also provided insightful and useful information to the study. We combined the four categories into one for this table in order to preserve confidentiality of responses.

Table 3 Oregon HPBA Member Categories

Member categories	Population		Sample	
Distributor/Informational/ Mfr’s Rep/Service membership	7	15%	5	22%
Retailer /New member	40	83%	18	78%
Other	1	2%	0	0%
Total	48	100%	23	100%

As shown in Table 4, the majority of respondents, 57%, sold fireplaces from one physical location, while three vendors (13%) had two locations, one vendor (4%) had three locations, and one vendor (4%) had five locations. Five of our respondents did not have retail locations, because they variously worked as a manufacturers rep, distributor, or as an independent fireplace salesperson and consultant.

Table 4 Number of Store Locations

# of Locations	N	Percent
Zero*	5	22%
One	13	57%
Two	3	13%
Three	1	4%
Five	1	4%
Total	23	100%

*Respondents without retail stores. Includes distributors, manufacturer’s reps, and independents.



SECTION TWO: FINDINGS

VENDOR VIEWS ABOUT ENERGY EFFICIENCY

Customer Preferences and Interest

We asked hearth vendors several questions to get their perspective on the features customers want most when they purchase direct vent gas fireplaces. When asked to describe the most important factors to customers when they buy fireplaces, 74% of vendors said looks or aesthetics (see Table 5), similar to the 2009 study, where 70% also named looks/aesthetics. Respondents in 2013 said looks are not only one of the most important factors, but also the number one factor for most customers.

Vendors also frequently mentioned price as a key factor for customers (44%), fireplace heating capacity (30%, also characterized as size or square footage of the heating area), heating efficiency (22%), and warranty (9%). Individual comments included overall fireplace quality, turndown capability, and electronic ignition capability.

Two respondents who also sold to the builder market distinguished builder preferences from retail customer preferences. They said that for builders, price was the most important factor.

Table 5 Most Important Factors in Customer Purchases of Fireplaces

	N of Responses	Percent of 23 Respondents ²
Looks/Aesthetics	17	74%
Price	10	44%
Heating Capacity/sq footage/size	7	30%
Heating Efficiency	5	22%
Warranty	2	9%
Other (overall quality, etc)	3	13%

Vendors were then asked to rate how concerned customers were about the energy efficiency of the direct vent gas fireplaces they buy. Overall, vendors in 2013 rated customers as more concerned about energy efficiency than they did in 2009; the vast majority of vendors (83%) said their customers were very or somewhat concerned about energy efficiency compared to 74% who gave these ratings in 2009. In particular, the proportion of very concerned ratings rose steeply from 4% to 26% (see Table 6).

² Percentages add to more than 100% due to multiple responses from respondents.

Table 6 Vendor Ratings of Customer Concern about Direct Vent Fireplace Efficiency

	2009 Survey Percent (n = 23)	2013 Survey Percent (n = 23)
Very Concerned	4%	26%
Somewhat Concerned	70%	57%
Neutral ³ /Not Too Concerned	22%	13%
Not at All Concerned	4%	4%
Total	100%	100%

Promoting Energy Efficiency

As shown in Table 7, over half of vendors (57%) said they very actively promote high efficiency direct vent gas fireplaces to their customers, with 26% reporting they somewhat actively promoted them. The proportion of vendors saying they actively promote these high efficiency fireplaces has increased considerably since 2009 (from 69% to 83%).

Several active promoters commented that efficient gas fireplaces were the only fireplaces they sold. One respondent said, “We bring it up at every sale, and we keep bringing it up unless the customer says ‘we don’t want that.’” Another mentioned that they ran a heating/air conditioning business in addition to fireplace sales and partly because of that are always talking about efficiency with their customers. Other active promoters also said that high efficiency was the direction the market was going in.

Only 17% of vendors in 2013 (compared to 31% in 2009) said they did not actively promote high efficiency direct vent gas fireplaces. This group gave a variety of reasons for their ratings, including the greater importance of aesthetics to customers, and customer confusion about efficiency given the different standards. One vendor said that customers tended to be more familiar with furnace efficiency ratings – that they would recall furnace ratings in the 90% range and then would assume a P4 70% rating was not that efficient or would be confused by the rating.

Table 7 How Actively Vendors Promote High Efficiency Direct Vent Fireplaces

	2009 Survey Percent (n = 23)	2013 Survey Percent (n = 23)
Very Active	43%	57%
Somewhat Active	26%	26%
Neutral/Not Too Active	22%	13%
Not At All Active	9%	4%
Total	100%	100%

Defining Energy Efficiency

When vendors were asked how they define a high efficiency direct vent gas fireplace for customers, responses ranged from brief and specific to wide ranging [Please see Appendix B for verbatim responses]. Many vendors mentioned they referred to the manuals supplied with the fireplaces. Overall, though, comments seemed to be

³ Throughout the report, neutral ratings from the 2009 survey are combined with the not too concerned rating.



more specific and detailed than they were in the 2009 study, with fewer vendors saying that all fireplaces were about the same and with more promoting specific benefits of high efficiency direct vent gas fireplaces.

Vendors referred to ratings targets that they felt certain types of fireplaces should meet – such as “a standard zero clearance should be 75% or better,” or “we’re trying to get to 80% or above, that’s the general rule,” without being specific about the rating scale being discussed. One vendor said he would tell customers why direct vent was better and more efficient than the older B vent style. A few mentioned the complexities with at least three distinct rating systems out there, which could make things confusing for customers. Two vendors said high efficiency was easy to define since that was all they sold: “If you buy from us it will be high efficiency gas.” One vendor said he used a comprehensive overall approach, where the efficiencies per million BTUs of all heating options are discussed, including direct vent gas options along with hardwood, pellet stoves, propane, and electric heating alternatives.

CHARACTERISTICS AND USE OF DIRECT VENT GAS FIREPLACES

Standing Pilot Lights

As Table 8 shows, almost two thirds of vendors (65%) said that fireplaces with standing pilot lights constituted 15% or less of their direct vent gas fireplace sales. Several vendors made a point of saying that the trend in general was away from standing pilot lights and toward intermittent pilot ignitions (IPIs). One respondent said that while all of her fireplaces had a standing pilot option, they also had pilot on demand, which allowed customers to use the option that they preferred.

Table 8 Percent of Direct Vent Gas Fireplaces Sold with Standing Pilot Lights

	Response Total	Response Percent
15% of Sales or Less	15	65%
16% to 70% of Sales	4	17%
> 70% of Sales	4	17%
Total	23	100%

The trend away from standing pilot lights may be the biggest difference between this study and the 2009 study, when almost half of the vendors (48%) said direct vent fireplaces with standing pilot lights were 75% or more of their sales. Two respondents in 2013, however, said standing pilot lights were better in their area because IPIs allowed moisture to build up, which eventually caused problems with the unit. These respondents were on the low end of direct vent gas fireplace sales, each selling below 30 units in the previous year.

Table 9 below shows FE ratings, both averages and ranges, along with average reported prices, for three types of pilot lighting systems: standing pilot lights, pilot lights on demand, and intermittent pilot lights. Ratings results are shown only for those reported models that Energy Trust was able to identify in the Canadian EnerGuide rating system⁴.

Table 9 FE Ratings for IPI, Pilot on Demand, and Standing Pilot options

Pilot Light Type	Number	Mean FE Rating (%)	FE Ratings-Range	Average Price
Standing Pilot	10	61.6	50.6 to 66.1	\$2,245
Pilot on Demand	8	68.9	66.4 to 71.9	\$2,807
Intermittent Pilot	23	69.6	62.8 to 77.2	\$2,633
Total	41			

Table 9 results show the standing pilot lights received lower fireplace efficiency ratings than fireplaces with the pilot on demand and intermittent pilot light options. It also shows that more efficient models, on average, cost

⁴ The Canadian EnerGuide rating system has standard testing, so consumers can compare different fireplace makes and models. It provides a “Fireplace Efficiency (FE) rating based on products tested and certified to the Canadian Standards Association (CSA) test standard P.4.1-02.” See http://oee.nrcan.gc.ca/publications/infosource/pub/home/all_about_gas_fireplaces_chapter3.cfm?attr=4 for more information.



\$400 to \$600 more than fireplaces with standing pilot lights. Consistent with anecdotal vendor input, higher-efficiency fireplaces tend to be more expensive in general.

Use of Direct Vent Gas Fireplaces as Major Heat Sources

We asked vendors to estimate what proportion of their customers planned to use their fireplaces to heat their homes 20 hours or more during the heating season. As shown in Table 10, results were similar to the 2009 study, with 74% of vendors in each year estimating at least half their customers would heat their homes 20 hours a week or more during the heating season with their gas fireplaces. As in 2009, intensive use of fireplaces for home heating was more prevalent outside of the Portland metro area. All vendors in the Willamette Valley, Southern Oregon, and Eastern Oregon areas said at least one-half of their customers would heat their homes 20 hours a week or more.

Table 10 Vendor Estimate of Proportion of Buyers Planning to Use Fireplace as Major Heat Source

	2009 Survey Percent (n=23)	2013 Survey Percent (n = 21)
One-quarter or less	9%	17%
One-quarter to one-half	17%	0%
One-half to three quarters	30%	39%
Over three-quarters	44%	35%
Total	100%	100%

SALES OF DIRECT VENT GAS FIREPLACES

Proportion of Fireplace Sales from Direct Vent Gas Fireplaces

We asked vendors what proportion of all fireplace sales came from direct vent gas fireplaces. As show in Table 11, the proportion of all sales from direct vent gas fireplaces has increased considerably since 2009. In 2013, 44% of respondents reported that over 75% of the fireplaces they sell are direct vent, compared with only 17% in this category in the 2009 study. This year, four vendors made comments such as, “they are virtually all we sell,” “they’re almost 100% of our fireplaces,” and “I think I’ve sold one B-vent fireplace in the last five years.”

Table 11 Percent of Fireplace Sales from Direct Vent Gas Fireplaces

	2009 Survey Percent (n = 23)	2013 Survey Percent (n=23)
25% or less	39%	13%
26-50%	31%	22%
51-75%	13%	22%
Over 75%	17%	44%
Total	100%	100%

Estimated Number of Direct Vent Gas Fireplaces Sold- 2012-2013 Heating Season

Based upon numbers from the respondents, the median number of units they sold in the 2012-2013 heating season was 80 (one-half of vendors interviewed sold more, one-half sold less). The average across respondents was 158, due to a small number of higher-selling vendors. About one third of vendors reported they sold 50 or fewer units during the last heating season, while half (50%) sold between 51-250 units, and 17% sold over 250 units.

If we extrapolate the respondent-reported average number sold to all 48 members listed in the Oregon HPBA member list, **the estimated total sales for the past heating season would be 7,584 direct vent gas fireplaces.** This **estimate** is a bit lower than the low end of the estimated sales range in 2009. A lower sales estimate is consistent with a number of respondents reporting sales had been slow in the past few years due to the economy. However, several respondents also said that sales are now beginning to come back.

Table 12 Number of Direct Vent Gas Fireplaces Sold- 2012-2013 Heating Season

	Number	Percent
50 or less	6	33%
51-250	9	50%
Over 250	3	17%
Estimated sales across population of 48 vendors= 7,584 units	18	100%

*5 respondents did not provide sales estimates

Top Selling Brands

When the introductory letter was sent to hearth vendors, they were asked to prepare for a survey question that would ask them for their top five selling direct vent gas fireplace models for the past heating season, along



with their specific model numbers and prices. The specific model numbers were important to this study because Energy Trust could then derive the level of efficiency of the fireplaces sold.

Nineteen (83%) of the 23 vendors supplied complete brand and model information, although some smaller shops did not have five top models. Among the others interviewed, one vendor was not able to provide product details, one provided brands only, and two others provided brands and model type (insert, zero clearance, free-standing), but not model number. Table 13 shows the percent of top brands across all top models given. This year, the dominant three brands mentioned were Travis (18%), HeatnGlo (17%), and Valor(14%). Twelve other brands were also mentioned, all at 9% or less of the total brands mentioned.

Table 13 Brands of Top Five Selling Direct Vent Gas Fireplaces

Brand	Number of Top 5 Mentions	Percent of Models
Travis	16	18%
HeatnGlo	15	17%
Valor	12	14%
Regency	8	9%
Monnesen	7	8%
Quadra Fire	6	7%
Enviro	5	6%
Empire	4	5%
Mendota	4	5%
Napoleon	4	5%
Avalon	2	2%
Lennox	2	2%
HHT	1	1%
Kozy	1	1%
Vermont Casting	1	1%
Total	88	100%

As **Table 14** shows, the top five brands were a large proportion of sales for vendors. On average, the top five brands constituted 72% of direct vent gas fireplaces sold. While the grouped proportions listed in the table are not precisely the same as they were in 2009, the overall average of 72% is exactly the same for both years.

Table 14 Proportion of Sales that Top 5 Brands Represent

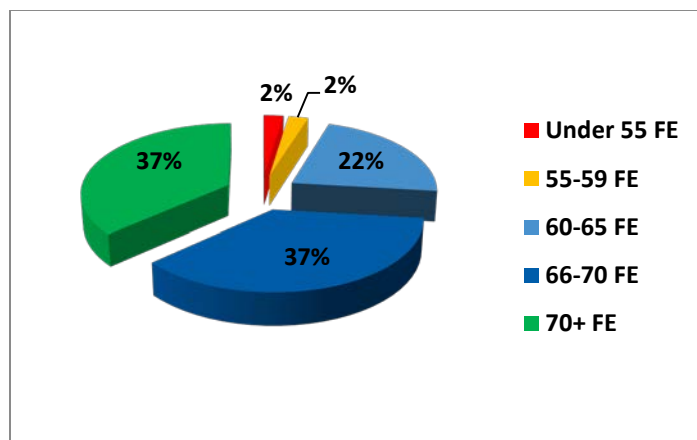
	2009 Survey Percent (n=22)	2013 Survey Percent (n=20)
Less than ¼ of sales	5%	10%
¼ to ½ of sales	18%	10%
½ to ¾ of sales	18%	25%
Over ¾ of sales	59%	55%
Total	100%	100%

Efficiency and Price of Top Selling Brands

When Energy Trust staff checked top selling model numbers for their fireplace efficiency ratings, they only were able to verify 45 of the 84 models listed (54%)⁵. This was further reduced to 41 models due to the same models being reported differently. Since the models that could be rated represent most brands, we used these 41 ratings to represent efficiency levels for all top models sold.

On average, the top-selling fireplaces have a 68% energy efficiency rating, higher than the 61% average efficiency rating found in the 2009 study. It also is clear that the proportion of high efficiency of direct vent gas fireplaces has risen since the 2009 study. In Figure 2 below, 37% were rated between 66 FE and 70 FE and another 37% were rated as 70+ FE. In 2009, only 19% received between 60 and 70 FE ratings and only 9% were rated as 70+ FE.

Figure 2 Proportion of Direct Vent Gas Fireplaces at Various Fireplace Efficiency Levels (N=41 Top Sellers)



Vendors provided prices for most of their top selling models. **Table 15** shows average and median prices by efficiency category where price was available. For those models we could match to efficiency ratings, average prices ranged from \$1,799 to \$2,666 and the prices rise with each level of efficiency. This progression is missing from the median prices, suggesting a few slightly higher priced models are drawing the averages up. The overall average price for the top selling models was \$2,581.

Table 15 Frequencies and Mean Price of Models at Select Efficiency levels

FE Rating	Number	Average Price	Median Price
<55	1	\$1,799	\$1,799
55-59	1	\$1,800	\$1,800
60-65	9	\$2,531	\$2,517
66-70	15	\$2,621	\$2,500
Over 70	15	\$2,666	\$2,542
Total & Overall Average	41	\$2,581	\$2,500

⁵ These are the same 41 models where the type of pilot light was available. One reason for the low rate of matching was that many models are not sold in Canada where fireplace efficiency ratings are mandatory. Lack of specificity in respondent model descriptions may have also contributed to the inability to match some models.



The table also shows a much higher proportion of models fell in the higher efficiency categories compared to 2009. For instance, 37% of top sellers in 2013 were rated in the highest FE category (70+) compared to 11% in 2009 in the highest FE category. Not surprisingly, prices are also higher in 2013 than in 2009. In 2009 the average price for 70+ FE models was \$2,193 compared to \$2,666 in 2013.

PRICE OF INSTALLING AND VENTING DIRECT VENT FIREPLACES

We asked vendors what the average costs were of venting and installing three different types of direct vent fireplaces: zero clearance, fireplace inserts, and free-standing fireplaces or stoves . Their responses are summarized in Table 16 below. Average prices did not vary greatly (\$975, \$838, and \$947, respectively), but price estimates did range widely within each category.

Based on vendor comments and the pricing estimates, costs to install and vent fireplace inserts were slightly less compared to the costs for zero clearance and free-standing fireplaces, for any given vendor. Several vendors made it clear that a number of factors could add to the cost of venting and installing and that the final number was highly variable. One vendor commented “It’s like asking how much is a car.” For example, if a consumer had to vent through an exceptionally high roof that would add to both piping and labor costs. Most vendors estimated labor costs plus kit prices, and some also made side comments on common extras such as gas lines, permits, and electrical work. Labor costs, when mentioned separately, ranged from \$100 to \$650 for basic installs without extras.

The average installation and venting price for a zero clearance fireplace was \$975. Just over one-quarter (26%) of vendors priced it between \$500 and \$750, 42% gave a range between \$751 and \$1000, and another 32% said the price would be between \$1,001 and \$1,500. Fireplace inserts on average came in lower at \$838, with 42% of vendors between \$500 and \$750, 42% between \$751 and \$1,000, and only 16% between \$1,001 and \$1,500.

Free-standing fireplaces and stoves on average were at \$947. Only 2 (11%) vendors cited costs between \$500 and \$700. Nearly two thirds of vendors (62%) came in at a price point between \$751 and \$1000. Another 26% said venting and installing costs for free-standing stoves would be between \$1,001 and \$1,500.

Table 16 Price of Installing and Venting Direct Vent Fireplace Styles

Zero Clearance Price	Response Total	Response Percent
\$500-\$750	5	26%
\$751-\$1000	8	42%
\$1001- \$1500	6	32%
Average Cost = \$975		
Fireplace Inserts Price	Response Total	Response Percent
\$500-\$750	8	42%
\$751-\$1000	8	42%
\$1001- \$1500	3	16%
Average Cost= \$838		
Free-Standing Stoves Price	Response Total	Response Percent
\$500-\$750	2	11%
\$751-\$1000	12	63%
\$1001- \$1500	5	26%
Average Cost= \$947		



PELLET STOVE SALES

Because of Energy Trust’s interest in renewable energy, we asked a question about the pellet stove market in this survey. As Table 17 shows, 43% of those interviewed sold small numbers of pellet stoves (10 or less), while 22% sold between 11 and 40 stoves, and 31% sold between 41 and 100 stoves. Three vendors mentioned that demand for pellet stoves had dropped in the last couple of years, resulting in lower sales for them. One vendor who sold none said they required extensive maintenance and were not popular with other vendors he knew for that reason. Another who sold two said they were not popular in an urban environment.

On average, 30 stoves were sold per vendor. If we extrapolate this average to all 48 vendors from the OHPBA list, **the estimated annual market for pellet stoves is 1,520 units per year.** This contrasts with the estimated direct vent fireplace sales of 7,584 per year.

Table 17 Number of Pellet Stoves Sold

	N	Percent
10 or less	10	43%
11-40	5	22%
41-100	8	35%
	23	100%
<i>Average sold across all vendors- 30</i>		
<i>Range of sales times population of 48 vendors: 1520 units</i>		

Appendix A: Introductory Letter



July 31, 2013

851 SW Sixth Ave. #1200
 Portland, OR 97204
 1.866.368.7878
 503.546.6862 fax
 energytrust.org

Name
 Business Name
 Street Address
 City, State, Zip

Dear Mr/Ms. _____,

Energy Trust of Oregon is asking for your help in an important study to help assess the market for direct vent gas fireplaces in Oregon. Oregon Hearth, Patio and Barbeque Association and Energy Trust are conducting this study with a select group of fireplace companies to find out what more we should do to encourage consumers to buy high efficiency models.

Energy Trust, a nonprofit agency dedicated to helping Oregonians be more energy efficient, currently offers up to a \$250 cash incentive to consumers when they buy certain high efficiency direct vent gas fireplace models. This study will help us decide if our current incentives are continuing to help encourage consumers to choose more efficient models, and also if more models should be covered.

While the interview is under 10 minutes and most questions need no preparation, we are asking each company to tell us their top five best-selling direct vent gas fireplace models for the 2012-2013 heating season. We would like the brand name, the model number and the price of these best sellers. These prices would be for the fireplace only; we'll ask for average installation costs separately. We need this information to help us calculate the current market for high efficiency models.

Within the next two weeks, The Cadmus Group, a research and consulting firm, will be contacting you on our behalf to gather your viewpoints. Your input is essential to the project's success and the results will benefit all Oregonians and your business. Please be assured all information you give us is confidential.

Many thanks and please do not hesitate to call Elaine Prause with any questions or concerns.

Sincerely,

G. Harvey Gail Executive Director
 OHPBA
 503.371.7457

Elaine Prause
 Senior Manager of Planning
 Energy Trust of Oregon
 503.459.4076



Appendix A: Interview Guide

Hello, my name is _____ and I'm calling on behalf of the Energy Trust of Oregon. You should have recently received a letter from the Energy Trust about research they are doing to better understand the market for direct vent gas fireplaces, including zero clearance fireplaces, fireplace inserts, and free standing fireplaces. [If needed, add: The Energy Trust of Oregon is an independent non-profit organization dedicated to helping Oregonians use less energy and invest in renewable energy so they save money and protect the environment.]

We are talking with a select group of fireplace vendors throughout Oregon. Energy Trust will use the results of this research to see if they need to expand their direct vent gas fireplace rebate program. My questions will take about 10 minutes and your responses are completely confidential.

1. When your customers buy direct vent gas fireplaces, what are the most important factors in their buying decision?
2. How concerned are customers about the energy efficiency of the direct vent gas fireplaces they buy? Would you say they are Very concerned, Somewhat concerned, Not too concerned, or Not at all concerned?
3. Please tell me why you gave that rating?
4. How actively do you promote high efficiency direct vent gas fireplace models? Would you say Very actively, Somewhat actively, Not too actively, or Not at all actively?
5. Please tell me why you gave that rating?
6. If customers ask for a high efficiency direct vent gas fireplace, how do you define "high efficiency" for them? (PROBE: Anything else you tell them about high efficiency?)
7. Of the direct vent fireplaces that you sell, what percentage has standing pilot lights? (on all the time)
%
8. About what percent of your direct vent gas fireplace customers plan to use these fireplaces to heat their homes 20 hours a week or more during the heating season? (If needed: This is our definition of a "major" heat source) %
9. What % of all your fireplace sales came from direct vent gas fireplaces? %
10. (If it helps: As mentioned in the letter. . .) Now I'd like to know your 5 best-selling direct vent gas fireplace models for the 2012-2013 heating season. Please tell me the brand, specific model

number, and price, not including vent and install costs, for each of these top five models. Note: Interviewer will have the following list available for reference as he talks to the fireplace vendors.)

	Brands from ETO website list	1=Tier 1 models only 2= Tier 2 models only 3=Tier 2 and 1 models
1	Ambiance Fireplaces	2
2	American Hearth	1
3	Archgard	2
4	Atra	1
5	Blaze King	3
6	Continental	1
7	Curve	1
8	Empire	3
9	Enviro	3
10	Fyrestarter	2
11	HearthStone	3
12	Heatilator	3
13	Heat-N-Glo	1
14	Jotul	3
15	Jotul/Scan	2
16	Kingsman	1
17	Kozy Heat	3
18	Lennox Hearth Products	3
19	Lexington Forge	1
20	Majestic	3
21	Majestic/Vermont Castings	3
22	Marquis Collection	1
23	Martin Hearth & Heating	3
24	Mendota	1
25	MHSC	2
26	Monnesen	1
27	Monnesen Hearth Systems	1
28	Montigo	1
29	Napoleon	1
30	Ortal	2
31	Quadra-Fire	3
32	Regency	3
33	RH Peterson CO.	2



34	Scan	2
35	Tasman	1
36	Travis Industries	3
37	Valor	3

	Brand	Model Number	LIST Price
1			
2			
3			
4			
5			

11. What % of total direct vent gas fireplace sales do these top 5 models account for? %
12. Please tell me the average cost to **vent and install a direct vent ZERO CLEARANCE FIREPLACE?**
 - a. Average cost
13. What about the average cost to **vent and install a direct vent FIREPLACE INSERT?**
 - a. Average cost
14. And the average cost to **vent and install a direct vent FREE STANDING FIREPLACE?**
 - a. Average cost
15. Energy Trust, as part of its interest in renewable energy, would like to know more about the pellet stove market. Could you please tell me how many pellet stoves you sold during this last (2012-2013) heating season?
16. Now just a few final questions. How many store locations you have?
17. And, finally, how many full time employees does your business have?

Thank you. Energy Trust really appreciates your help!

Person to Call with Questions: Elaine Prause at ETO 503 459 4076

Appendix B: Definitions of High Efficiency

Question 6- If customers ask for a high efficiency direct vent gas fireplace, how do you define 'high efficiency' for them? (PROBE: Anything else you tell them about high efficiency?)

1. Cascade Gas has published things listing the priority, so I have resources to refer to, depends on flame burn and igniter, if it doesn't produce heat you are burning gas and getting nothing from it .
2. We compare efficiency from manuals. It can mean different things to different people.
3. Good question- I look at manufacturers suggestions.
4. A lot of it is on the brochures now. I go off on whether it's a pan burner or two burner or if it's heat-rated, some aren't .
5. I talk about the direct vent technology and how it's more efficient not using the room air heat- because its simple and they immediately get it. You can get into a discussion about the heat reclaimer system and the baffle but for most people its 'deer caught in the headlights time' at that point.
6. I know they have changed the standard on whether it's a p4 or thermal efficiency, - depends on what it's been tested to, we say these are our most efficient units. Some are p4 rated, others are under 70%, the thermal efficiency percentage.
7. We're trying to get to 80% and above. That's the general rule. For direct vent that has been hard but most are meeting that now. We usually keep it to fed regulations ware.
8. That's pretty simple. Any fireplace we sell that is heater rated- we give them that rating. We make it clear if it is not heater rated high efficiency, that they know that so it's not a surprise.
9. I would say for a standard 0 clearance it needs to be 75% or better. For condensing units they can be pushing 90% efficiency or greater.
10. We tell them to compare the p4 ratings now. In the manuals or brochures. It sometimes happens they ask about ETO incentives for the fireplaces. A lot of people are familiar with it.
11. We go off the fireplace owners guides and provide the ratings listed there.
12. Just going to the energy ratings, if they are shopping around, the energy rating on the manuals or brochures - lets them know there are three different ways mfrs can list efficiency- AFUE, p4 Canadian, and steady state. Make sure they are comparing apples to apples. Once you get over 70% efficiency, unless you go to 90+ , like with the Mantis, they are basically condensing units, you are looking at roughly comparable units, they usually don't go above 75% and there's a quantum jump in price too. Huge price increase to go to 90+ . I pushed Mantis hard four years ago, was not able to sell them. If incentives substantially increased for them could help but they are almost double the cost of others.
13. I usually go to manuals and the efficiency is rated on there. Most customers don't go into it- they want a fireplace that looks good , is efficient, and puts out heat . If you have IPI, if you don't have the pilot on, you get fogging on the window. Moisture in the air will corrode the



<p>system. IPI is not that good here on the coast.</p>
<p>14. We talk about the efficiencies in the 75% to 85% realm, talk about the energy guide ratings vs the AFUE ratings, but we say that our brands are high in that area.</p>
<p>15. We just group all direct vent gas fireplaces into high efficiency, then go by the numbers provided by the manufacturer. Around 70% is the minimum but there are nuances. Gaining popularity is linear ultra modern fireplaces, but they have heat management issues. The tradeoff is looks, they might be 70% and a more traditional model with fan and louvers might be 80%. Looks are always a factor; it's in the family room, master bedroom, other media, all kinds of surroundings. If they were focused on efficiency they would look at 90+ percent which are boring as can be looks wise. Not always but that is part of the marketing battleground.</p>
<p>16. It's complicated with all the different regulatory options. We have direct vent fireplaces from all over the world. One from England originally, now (the manufacturer is based) in Canada. Gas always works, it's always efficient, but they have 4 or 5 different ratings in their brochures. Plus, there is not one thing that makes something efficient, its the whole unit. Canada Energuide rating, in their literature they also have the AFUE rating. Travis puts in their brochures 80% efficiency so we go beyond the ratings in some ways. I have a living experience with each of these models. Valor has the highest customer satisfaction, 20-30 years of useful life. Another one might have super high efficiency but only last 7-10 years. That's important.</p>
<p>17. We make sure the customer knows how imprecise the efficiency ratings are, none of them for instance measure radiant heat output, the Valor will output the most radiant heat and make you warmer even if the efficiency ratings are not as high as some other models. Also efficiency ratings do not tell the whole story, we know that as a company even though one of our senior people is on the Canadian P4 rating board and has been on there for years.</p>
<p>18. It's everything we sell. We don't dabble in cheap fireplace market - if you buy from us it will be high efficiency gas. The builder market is very small right now .</p>
<p>19. We talk about overall performance of the unit, the emissions, and do a comparison to wood or pellet (also efficient) we use the efficiency chart, look at cost per million BTUs, from one of the manufacturers, fuel comparison chart, wood, natural gas, pellets and propane. Hardwood provides 64% efficiency,. Pellets are at 85, Natural gas 80, Propane 80, Electric is at a 100%. A pilot light will burn 100 BTUSs an hour, we try to provide all this information.</p>
<p>20. For a fireplace, almost everything we sell is direct vent and high efficiency. We discuss the efficiency rating which is on the brochure as well as on the unit itself. (Also commented on Q7 that standing pilot lights have been and still are more reliable than electronic ignition, which has a high failure rate going back to the 80s- related to the amount of moisture that gets into the box where the electronics are located due to the on-again-off-again nature of the control. But the more it's on the lower the failure rate)</p>
<p>21. We go to the efficiency rating on the brochure, and talk about the higher efficiency ones, that's an area - most manufacturers are providing steady state numbers. Not p4 and we'd like to see ETO use those as well. Those are the numbers we go to, and it will be more efficient with an IPI valve, with no standing pilot light - but we do have certain customers who have heard about IPI valves and the problems that have gone along with them.</p>

22. That's a loaded question, there are too many options, AFUE , Canadian p4 , steady state, want to compare apples to apples, many of ours are 80% or higher on an AFUE efficiency rating. Standardized test that has been around a long time. Not all companies show the Canadian rating, because it doesn't meet the Energy Trust rating.

23. We have the facts- we rely heavily on what ETO puts out there as the baseline- we use that as our reference to how efficient an appliance is. We refer back to ETO standards, either Energuide or P4 baseline.

Gas Fireplace Metering Study

Prepared by:

Erika Kociolek, Evaluation Project Manager
Energy Trust of Oregon

February 24, 2015

Executive Summary

Energy Trust worked with Ecotope to implement a metering study to measure hours of use of gas fireplaces, which included both efficient hearths that were incented through Energy Trust's Existing Homes program, and baseline hearths that were not. Beyond hours of use, this metering study sought to learn what customers' gas fireplaces replaced and how customers are using their new fireplace; in particular, how they are using it in conjunction with other heating systems.

A phone survey conducted as part of the study recruitment process showed that about 56% of customers reported replacing a wood burning stove or fireplace, or installing a fireplace where none existed previously.

Metering results from 43 homes (31 efficient and 12 baseline hearths) showed that on average, customers used their fireplace about 16 hours per week during the heating season. Customers with efficient hearths tended to use their fireplaces slightly less than customers with baseline hearths (15 hours per week compared to 21), although this difference is not statistically significant due to small sample sizes. Since the study screened out customers that used their fireplaces less than five hours a week (15% of customers that were asked about hours of use), the average hours of use in the population is likely lower. Additionally, the distribution of hours of use is skewed; most customers use the fireplace less than 20 hours, while a relatively small proportion of customers (a fifth of customers with efficient hearths and a third of customers with baseline hearths) use the fireplace more than 20 hours per week.

Table of Contents

Executive Summary	2
Background.....	3
Methods	3
Results – Recruitment Survey and Site Visits	6
Results – Metering	10
Conclusions	17
Appendix A – 2013-2014 Fast Feedback Results for Gas Fireplaces.....	18

Background

An unpublished billing analysis was performed by Energy Trust Evaluation staff in August 2013 on just over 100 sites that installed gas fireplaces in 2010. This analysis showed that participants slightly increased their consumption between 2009 and 2011 (by about 6 therms) while non-participants and future participants decreased their consumption by between 47 and 58 therms. This result led to four potential explanations for why savings do not appear to be present:

1. Fuel-switching,
2. Gas hearths are not replacing old gas hearths in the sample,
3. Use of gas hearths is lower than expected, or,
4. Customers may be heating the home more with an efficient hearth, and heating the home less with an even more efficient furnace.

If customers were switching fuels, i.e., moving from using electricity to heat their home to using gas, this might lead to increases in gas consumption. The billing analysis did look at sites that also had electric consumption; both participants and non-participants decreased their electric consumption by similar amounts, indicating that the fuel-switching hypothesis is unlikely.

If gas hearths are not replacing old hearths in the sample, this would result in load building and swamp out any savings. However, we lack information about what the gas fireplace is replacing.

If use of gas hearths is lower than expected, this could reduce savings. Energy Trust assumes that customers use fireplaces about 20 hours per week during the heating season. This information comes from a 2009 survey of Oregon hearth vendors conducted by Dethman and Associates.

If customers are heating the home more with an efficient hearth, and heating the home less with an even more efficient furnace (furnaces commonly have high annual fuel use efficiencies, between 90 and 95) this could result in load building. However, we lack information about the other heating systems that are in homes with hearths and how customers are using their hearths in conjunction with other heating systems.

To further investigate the latter three possibilities, Ecotope completed this gas fireplace metering study on behalf of Energy Trust, with a goal of metering both efficient and baseline hearths.

Methods

Energy Trust provided Ecotope with a list of 570 unique contacts who installed efficient gas fireplaces and received an incentive check from Energy Trust in 2013. Fireplaces with standing pilots (30) were removed from the list because the metering equipment was not thought to work for standing pilot lights. Ecotope called 170 contacts from this list to yield a final sample of 35 (Efficient group). Ecotope recruited customers into a Baseline group through gas fireplace stores and online. Table 2 summarizes the final study sample.

Table 2. Study sample

	Baseline	Efficient	Total
Total number of unique contacts	-	540	-
Total number of contacts called	-	170	-
Final sample	14	35	49

The final sample was comprised of 49 sites, 3 in Washington and 46 in Oregon.

Ecotope collected a variety of information when recruiting customers for the study, which enabled them to also ask questions of customers that did not qualify, or did not want to participate. Several screener questions were asked to ensure that metering equipment was installed in homes where customers still had their fireplace installed, that customers did not have immediate plans to move, and where the gas fireplace was used more than a minimal amount (five hours per week) during the heating season.

Table 3 summarizes reasons for not participating in the study. It is important to note that Ecotope did not systematically record responses to several screener questions for 13 customers at the start of this effort. For most of them (8 of 13), the reason for not participating is “Unknown.” For the five cases where we have some information about reasons for not participating, in two of these cases, the customers did not participate for “Other” reasons – one customer called back after the quotas for the study had been filled, and the other customer reported that the gas fireplace was in a unit that they were renting. The other customers (3 of 13) did not qualify for the study for known reasons. Two reported that they were not currently living in the home with the gas fireplace, and for the other, we were able to reconstruct their responses to one of the screener questions based a “Notes” field in the datafile (they reported using their fireplace less than five hours per week).

Table 3. Reasons for not participating

	Number	Percent
Did not call back	80	40%
Bad phone number	23	12%
Did not qualify	16	8%
Declined	10	5%
Unknown (not recorded)	9	5%
Other	6	3%
Technical issue	6	3%
Total	150	-

Of those that did not qualify for the study, over two-thirds (11 of 16) did not qualify because they used the fireplace less than 5 hours per week (Table 4).

Table 4. Reasons for not qualifying

	Number	Percent
Use fireplace less than five hours per week	11	69%
Away from, or not living in, home	4	27%
Conflict of interest	1	7%
Total	16	-

Of the 73 customers that were asked if they used their fireplace more than 5 hours per week (those that responded to the screener questions), 11 (15%) said “No.” Please keep in mind that because Ecotope did not record responses to screener questions for 13 respondents, we are missing responses to this question about hours of use for 12 respondents. For the other respondent, we were able to reconstruct their response to this question based on the “Notes” field in the datafile provided by Ecotope and this is included in the numbers reported in Table 4.

We first present results from the recruitment survey and site visits, then summarize results from the metering portion of the study, and conclude with key findings and next steps.

Results – Recruitment Survey and Site Visits

Recruitment Survey

As mentioned in the “Methods” section above, Ecotope recruited customers to participate in the metering study by phone. The recruitment process included asking customers several qualification questions, including whether the fireplace was still installed in their home, whether they had any plans to move in the next year, and whether they used their fireplace more than five hours per week. If customers did not qualify or did not want to participate, Ecotope asked customers if they would answer some additional questions about their gas fireplace. Nineteen customers (1 with a baseline hearth, and 18 with efficient hearths) that did not ultimately participate in the study agreed to answer some or all of the survey questions. The column “All” in the tables below represents study participants in the Baseline and Efficient groups, in addition to those 19 non-participants. Appendix A contains results from a series of similar questions asked of customers who received an incentive from Energy Trust for installing an efficient hearth in 2013 and 2014.

As shown in Table 5 below, nearly half of respondents (47%) said that their new gas fireplace replaced a wood burning fireplace or stove, or an old gas fireplace. In very few cases, respondents reported that their fireplace was new, i.e., did not replace anything. This suggests that the increase in use observed through billing analysis may be due to the fact that many of these fireplaces are replacing wood burning fireplaces or stoves.

Table 5. Did the gas fireplace you purchased replace...

	All	Baseline	Efficient
A wood burning fireplace or stove	32 (47%)	3 (21%)	17 (49%)
An old gas fireplace	29 (43%)	7 (50%)	17 (49%)
Nothing (new fireplace)	6 (9%)	4 (29%)	1 (3%)
Other	1 (1%)	-	-
Total	68	14	35

Note: The respondent that reported “Other” said their fireplace replaced a pellet stove.

Most respondents (84%) said that they did not use their fireplace as the main heating source for their home (Table 6).

Table 6. Are you using the gas fireplace as the main heating source for your home?

	All	Baseline	Efficient
No	57 (84%)	10 (71%)	31 (89%)
Yes	11 (16%)	4 (29%)	4 (11%)
Total	68	14	35

If respondents said they did not use the gas fireplace as the main heating source for their home, we asked these respondents to tell us the main heating source they use for their home (Table 7). Most (89%) reported using a gas furnace.

Table 7. What do you use as your main heating system?

	All	Baseline	Efficient
Gas furnace	51 (89%)	7 (70%)	30 (97%)
Electric resistance	3 (5%)	3 (30%)	-
Heat pump	2 (4%)	-	1 (3%)
Other	1 (2%)	-	-
Total	57	10	31

Note: The respondent that reported “Other” said their main heating system was a gas boiler.

For respondents that didn’t use the fireplace as the primary heating system for their home, most (89%) reported using the gas fireplace for heating in conjunction with other heating systems (see Table 7 for the main heating system types reported by customers).

Table 8. Thinking of the current heating season, how do you primarily use the gas fireplace?

	All	Baseline	Efficient
For heating, but I also use other systems to heat my home	51 (89%)	9 (90%)	31 (100%)
I use the fireplace, but for purposes other than heating	4 (7%)	1 (10%)	-
I do not use the fireplace	2 (4%)	-	-
Total	57	10	31

Two-thirds of respondents that didn’t use the fireplace as the primary heating system reported that when they use the gas fireplace, they tend to use other heating systems less. About a third said using the gas fireplace does not affect their use of other heating systems (Table 9).

Table 9. How do you use your other heating systems now that the gas fireplace is installed?

	All	Baseline	Efficient
For heating, but I also use my other heating systems less when I turn the gas fireplace on	38 (67%)	8 (80%)	24 (77%)
Using the gas fireplace does not affect my use of the other heating systems	18 (32%)	2 (20%)	7 (23%)
Don’t know	1 (2%)	-	-
Total	57	10	31

For those that reported having an old fireplace (wood, gas, or other), we asked how the old fireplace was used (Table 10). Most said it was used for heating, but other systems were used to heat their home as well (44%). About 30% said they used the fireplace for purposes other than heating and 26% said they did not use the old fireplace at all.

Table 10. How did you primarily use your old fireplace?

	All	Baseline	Efficient
For heating, but I also used other systems to heat my home	27 (44%)	5 (50%)	16 (46%)
I used the fireplace, but for purposes other than heating	18 (29%)	2 (20%)	10 (29%)
I did not use the old fireplace	16 (26%)	3 (30%)	8 (23%)
As the main heating system for my home	1 (2%)	-	-
Total	62	10	34

Note: We have removed responses to this question for the 6 respondents (1 non-participant, 4 Baseline, and 1 Efficient) that reported their new fireplace did not replace anything. This question was erroneously asked of these respondents.

Comparing responses in Tables 8 and 10, we see that just over half of customers in the Efficient and Baseline groups used their old fireplace for purposes other than heating or did not use the fireplace at all, whereas all (Efficient group) or most (Baseline group) customers now use the new fireplace primarily for heating or for heating in conjunction with other systems.

Site Visits

Between January 10 and February 8, 2014 Ecotope conducted 49 site visits to install a small metering device on study participants' fireplaces and a temperature sensor near their thermostat (if they had one), which were pulled out starting in May 2014. Ecotope collected information about home and hearth characteristics, and asked participants about their use of the fireplace. All of the information in this section comes from those site visits. Table 11 summarizes characteristics of sites in the study.

Average home square footage and age of home were slightly different between the two groups, but these differences were not statistically significant. Sites in both groups had two occupants, on average. Average hearth BTU, an estimate of the heating capacity of the unit, was slightly different for sites in the two groups. Nineteen of the 35 Efficient sites had a hearth BTU of 32,000 and no Efficient site had a hearth BTU of less than 28,000, while 4 of the 14 Baseline sites had hearth BTUs of less than 28,000.

The vast majority of hearths were in a living room: 60% of hearths in the Efficient group and all hearths in the Baseline group. The remaining hearths in the Efficient group were in a family room or den. For 96% of sites, the room with the hearth was served by the central heating system.

On average, the room with the hearth was 335 square feet, and there were significant differences in room size between the Baseline and Efficient groups. Likewise, the room with the hearth for the Baseline group accounted for a larger proportion of the total home square footage (26%) compared to the Efficient group (15%). This difference was also statistically significant.

Table 11. Home characteristics

	<i>Efficient</i>	<i>Baseline</i>
Average home square footage	2,226	1,937
Average age of home	39	28
Average number of occupants	2	2
Average hearth BTU	32,674	29,100
Percent of hearths in living room	60%	100%
Percent of sites where room with hearth served by central system	100%	86%
Average square footage of room with hearth (square footage)*	298	429
Average percent of home square footage represented by room with hearth*	15%	26%
Average reported weekly hours of use	24	31
Number of sites with more than 1 hearth	7	4
Number of non-single family homes	-	3
Number of sites in Washington	2	1

Note: Asterisk (*) indicates statistically significant difference.

Ecotope also asked participants to estimate the number of hours the fireplace is used per week. On average, participants reported using the fireplace 26 hours per week. The average number of hours used per week was slightly higher for the Baseline group, but the difference between the two groups was not statistically significant.

Twenty percent of sites in the Efficient group had more than one hearth, compared with 29% of sites in the Baseline group. Three sites in the Baseline group were non-single family homes (two apartments and one mother-in-law basement flat). Finally, three sites in the study are in Washington; 2 in the Efficient group and 1 in the Baseline group.

During site visits, Ecotope asked customers about the use of their hearth in more detail. This question is similar to what customers were asked during recruitment, which is shown in Tables 8 and 9 above. About a third of customers indicated that they use their fireplace intermittently; the central heating system does most of the work. About 40% said they use the fireplace as the primary system in the evening or in the morning and evening. Very few said they use the fireplace as the primary heating system all of the time.

Table 12. How do you use your fireplace?

	<i>Efficient</i>	<i>Baseline</i>
I use my fireplace intermittently; the central system does most of the work	37%	29%
I use my fireplace as the primary system during the evenings	23%	14%
I use my fireplace as the primary system when I wake up and during the evenings	17%	14%
Other	14%	14%
I use my fireplace as the primary system all of the time	3%	14%
I only use it when it's really cold	6%	-
Total	35	14

Results – Metering

Metering equipment was installed at all 49 sites recruited for the study. In a number of cases, the loggers collecting information from the metering equipment died partway through the study or stopped recording data accurately. Three sites experienced logger failure, two sites had loggers that died partway through the study, and another site experienced a broken fireplace during the course of the study. For these reasons, all six sites were dropped from analysis. Table 13 summarizes the final metering sample, which is 43 sites.

Table 13. Sample attrition

	<i>Efficient</i>	<i>Baseline</i>
Total	35	14
• Total logger failure	(1)	(2)
• Partial logger failure	(2)	(0)
• Broken fireplace	(1)	(0)
Final dataset	31	12

Ecotope began installing metering equipment at sites on January 11, 2014; the last meter was installed on February 9, 2014. All meters were pulled out after April 30, 2014. All sites were metered between February 9 and April 30, 2014 (inclusive, which is 81 days). For the analyses described below, we used data for all days metered, which varies by site. On average, sites in the Efficient group were metered for 102 days, and sites in the Baseline group were metered for 95 days. Results do not change significantly if we use all days versus only those days for which all sites were metered for the same duration.

Average metered use per week was estimated by taking an average of on-time hours for each day a site was metered, and multiplying by seven. As shown below in Table 14, the average metered hearth use per week was 15 hours for the Efficient group, 21 for the Baseline group, and 17 overall. The large standard deviation indicates high variability in use; some sites used the fireplace very little, and others used the fireplace quite a bit.

Table 14. Hearth use per week, by group

	<i>Efficient</i> <i>(N = 31)</i>	<i>Baseline</i> <i>(N = 12)</i>	<i>Combined</i> <i>(N = 43)</i>
Average metered hearth use per week (hours)	15 (s.d. = 16)	21 (s.d. = 20)	17 (s.d. = 17)

When looking at hours of use by the type of fireplace that was replaced (Table 15), we found that more of the higher users were customers that replaced old gas fireplaces.

Table 15. Hearth use per week, by type of fireplace replaced

	<i>Replaced Gas (N = 21)</i>	<i>Replaced Wood (N = 17)</i>
Average metered hearth use per week (hours)	23 (s.d. = 20)	7 (s.d. = 5)

Figure 1 below shows the number of sites with metered weekly use in various categories. Most sites had less than 20 hours of use per week; a few sites were heavy users of their fireplaces, using them more than 30 hours per week. Since the study screened out customers that used their fireplaces less than five hours a week (15% of all customers that were asked about hours of use), the average hours of use in the population is likely lower. Additionally, the distribution of hours of use is skewed; most customers use the fireplace less than 20 hours, while a relatively small proportion (a fifth of customers with efficient hearths and a third of customers with baseline hearths) use the fireplace more than 20 hours. See Figure 2 for a comparison of the distribution of average weekly hours of use between groups.

Figure 1. Average weekly hours of use

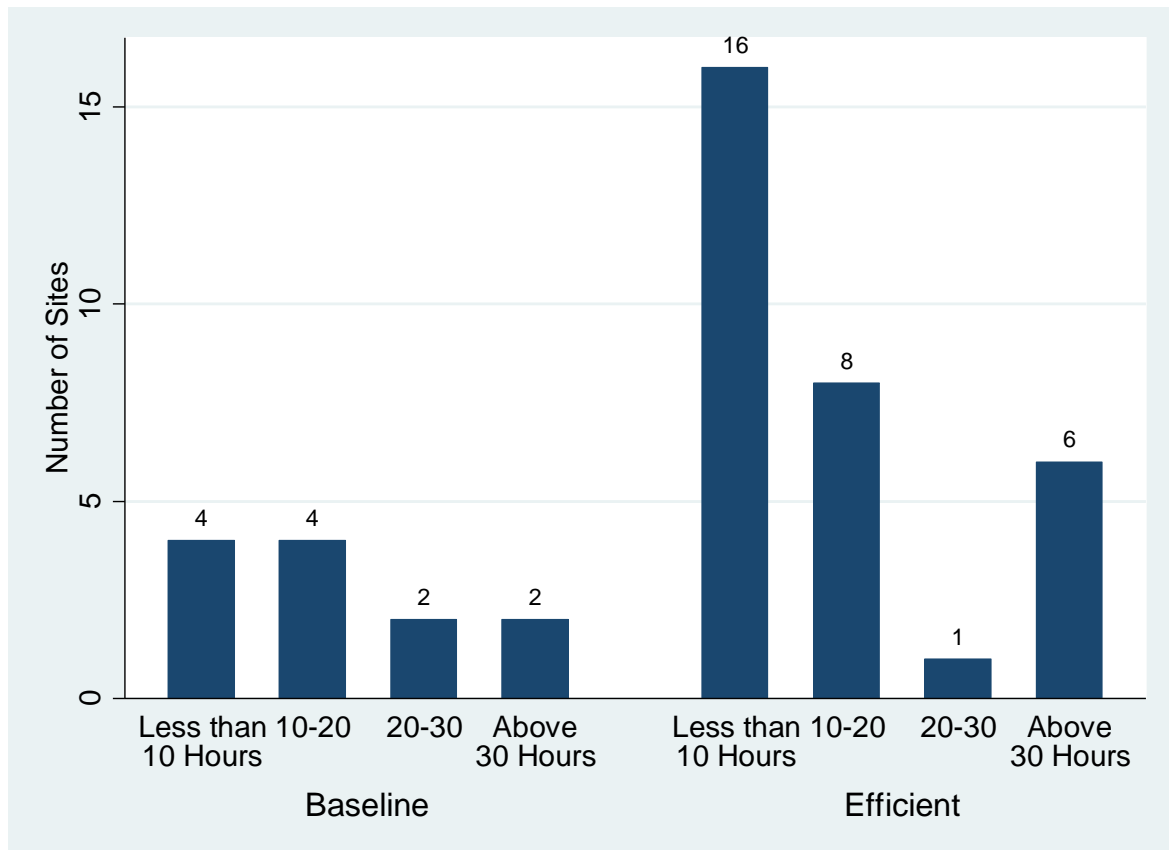
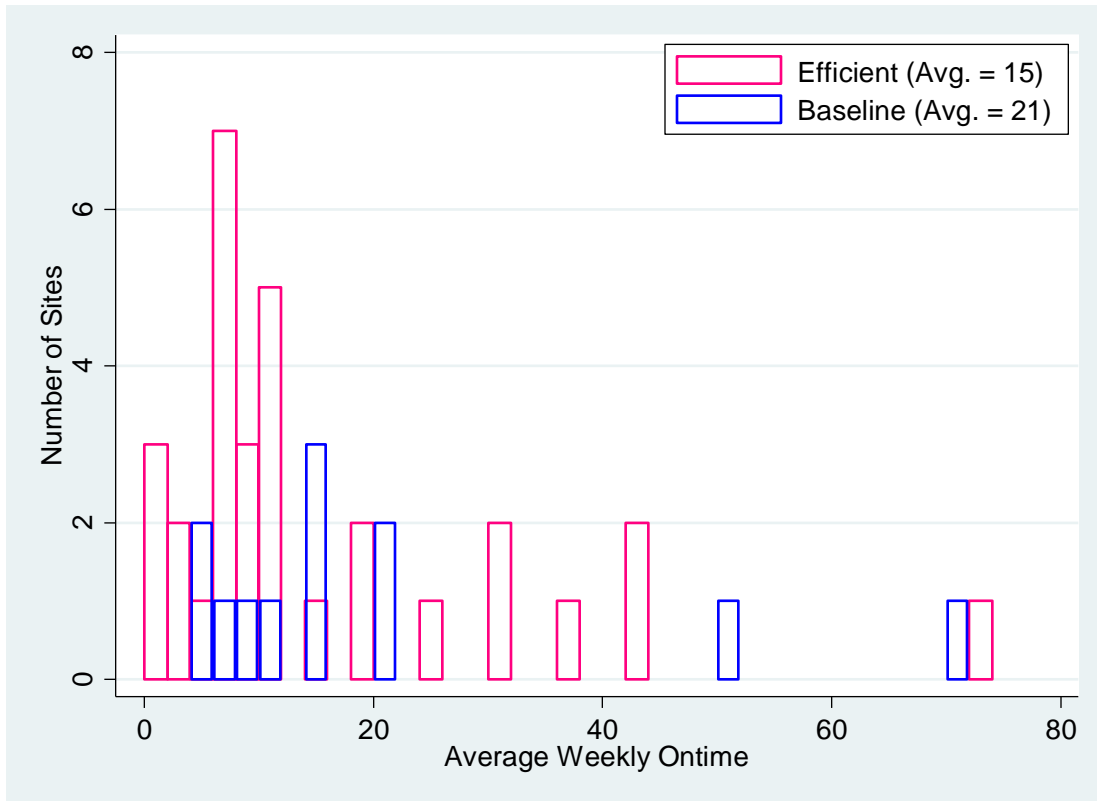


Figure 2. Distribution of average weekly hours of use



During site visits to install metering equipment, Ecotope asked customers how much they used their fireplace. Thus, we can compare reported to actual hours of use. As shown in Table 16, the average reported use per week was 24 hours for the Efficient group, 31 for the Baseline group, and 26 overall. When we compare this to average metered hearth use per week, also in Table 16, we see participants tended to over-report their use.

Table 16. Reported and metered hearth use per week, by group

	<i>Efficient</i>	<i>Baseline</i>	<i>Combined</i>
Average reported hearth use per week (hours)	24 (s.d. = 19)	31 (s.d. = 36)	26 (s.d. = 25)
Average metered hearth use per week (hours)	15 (s.d. = 16)	21 (s.d. = 20)	17 (s.d. = 17)

Only 9 of the 42 sites that estimated their weekly use under-reported. Figure 3 shows the distribution of the difference between reported and actual weekly hours of use. In this graph, negative numbers mean participants under-estimated their use, and positive numbers mean participants over-estimated their use. On average, participants were off, meaning they either over- or under-estimated, by about 12 hours per week. If we exclude two large outliers, both of which said they used their fireplace by 68 hours per week more than they actually did, the average is 10.

Figure 3. Distribution of the difference between reported and actual weekly hours of use

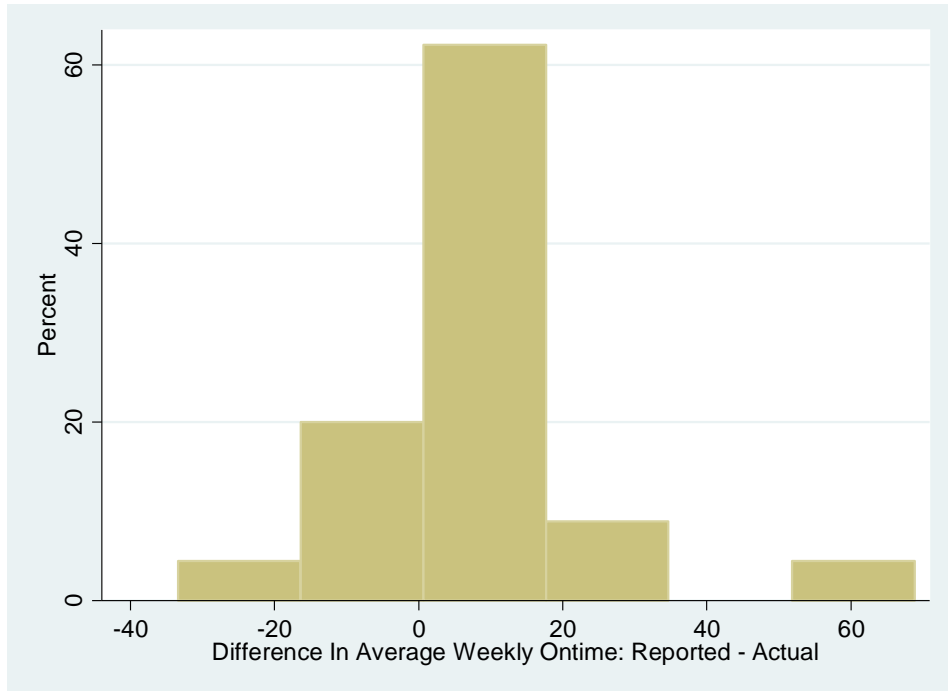


Figure 4 shows a comparison of the distribution of reported and actual weekly hours of use, which again shows that reported use is higher than actual use, although there is also a lot of overlap.

Figure 4. Distribution of the difference between reported and actual weekly hours of use

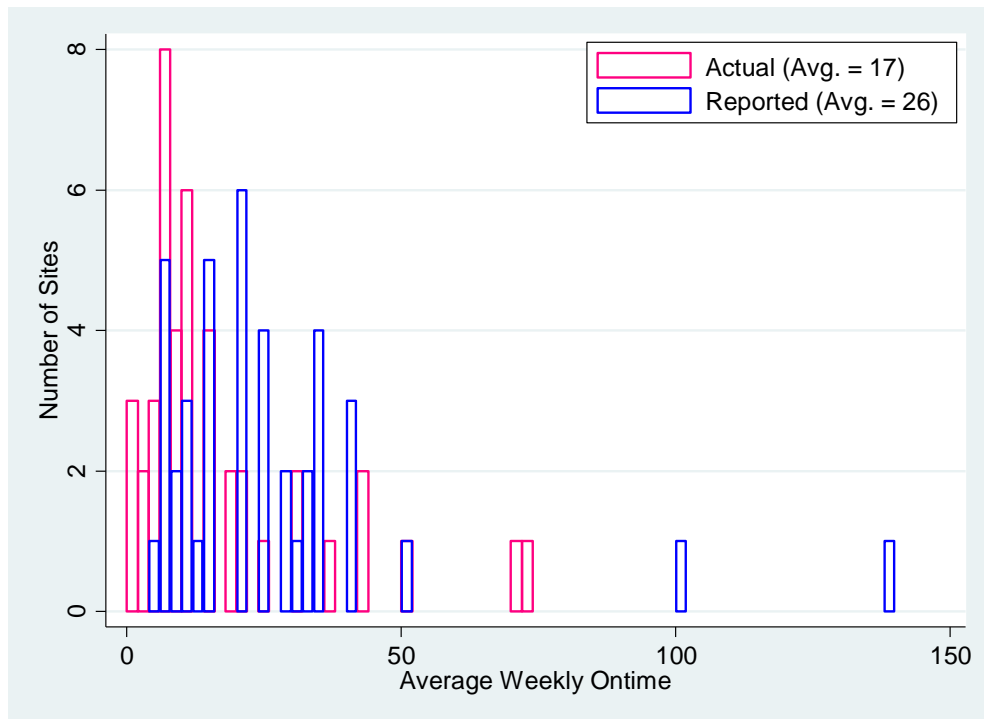


Figure 5 below shows average hours of use by day of the week. On average, sites are using the fireplace between 2 and 3 hours per day. Hours of use are slightly higher for sites in the Baseline group, but the sample size is quite small, so this difference is not meaningful.

Figure 5. Average daily hours of use

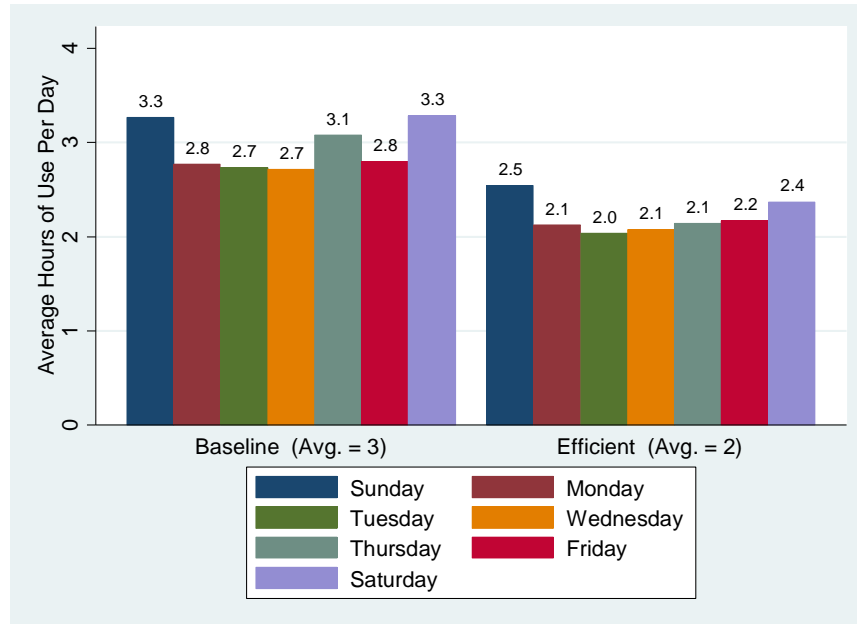


Figure 5 shows the average number of minutes of ontime per hour, which shows hearths are more heavily used in the evening hours.

Figure 6. Average minutes of ontime per hour

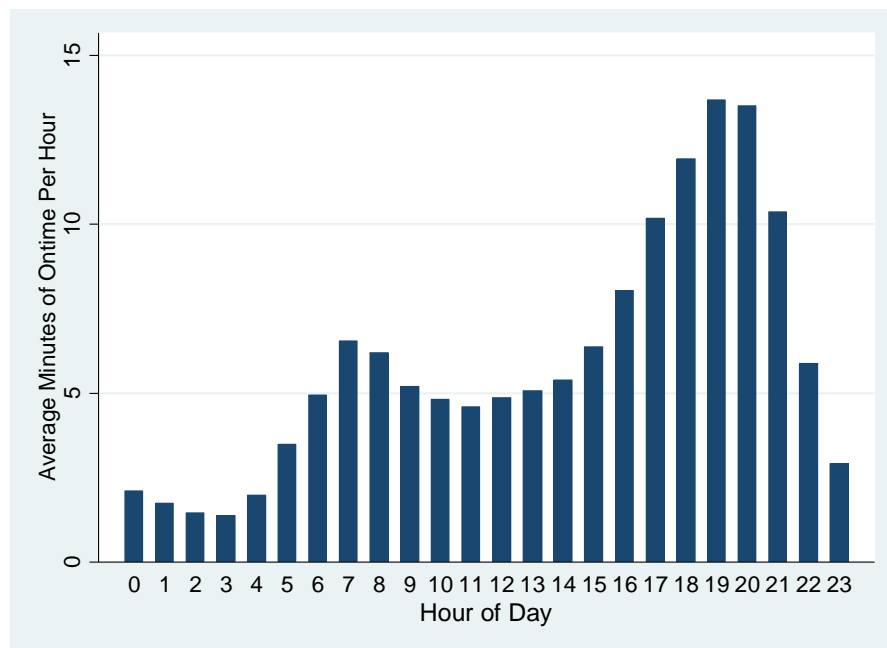


Figure 7 below shows average minutes of hearth on-time per hour, for each hour of the day, and includes the trends for individual sites. In general, use peaks in the evening hours, although select sites are using the hearth throughout the day. The thick yellow line in Figure 4 below shows the mean number of minutes used per hour across all sites.

Figure 7. Average minutes of use per hour

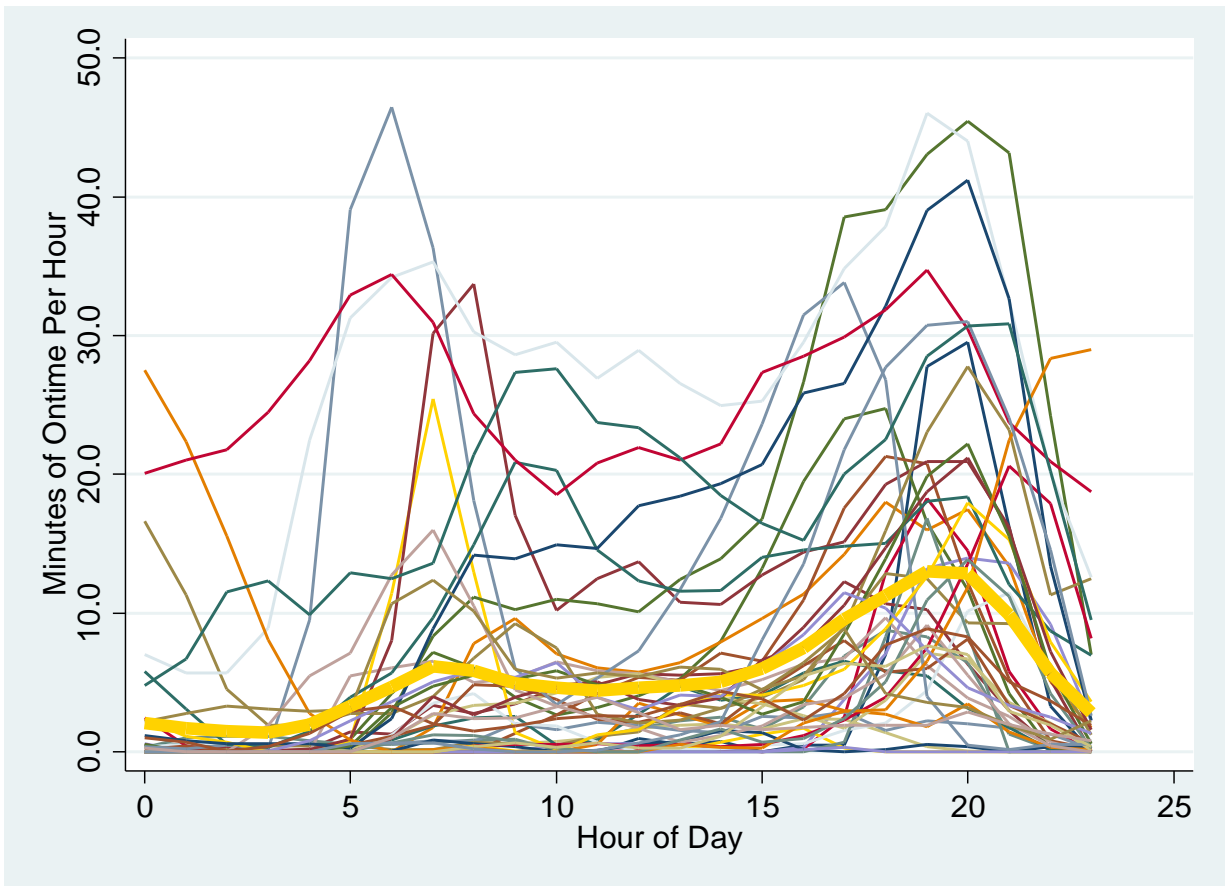
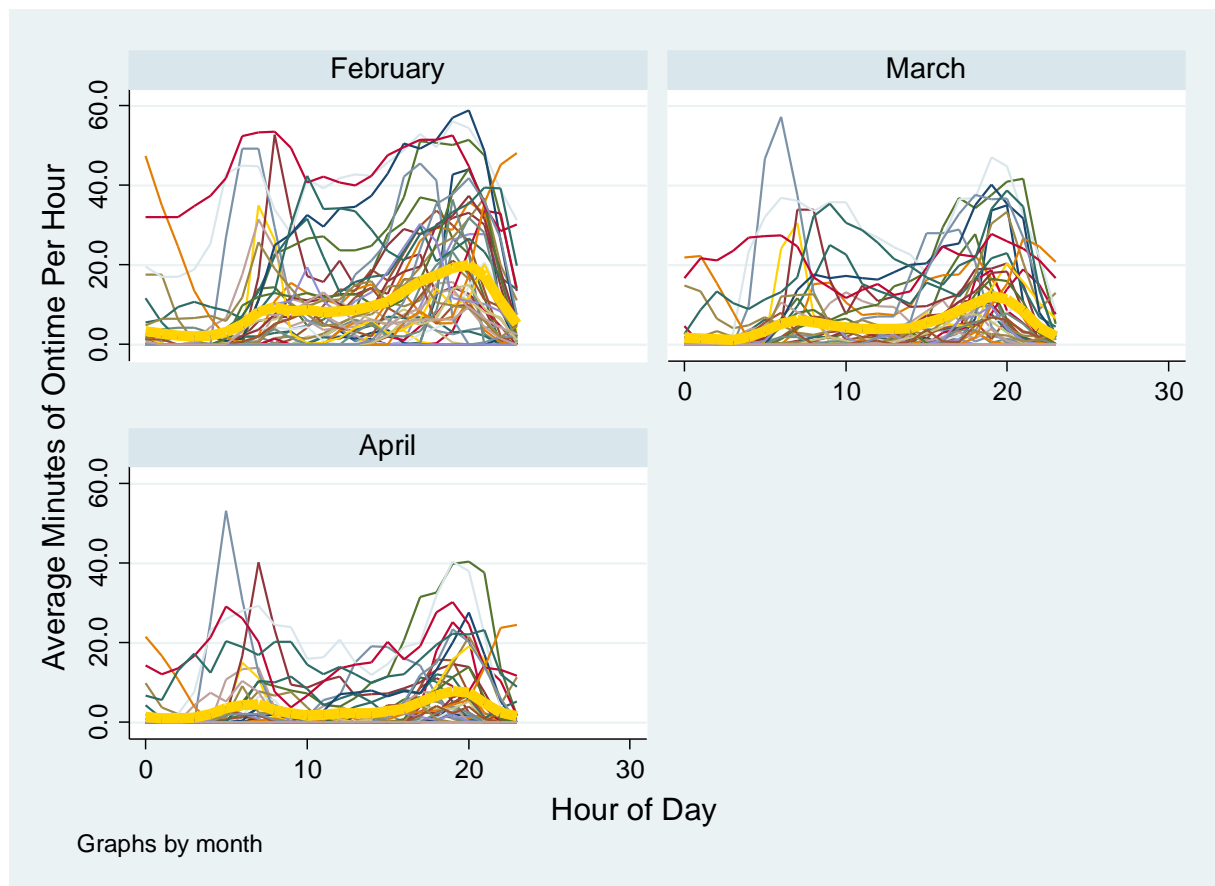


Figure 8 shows the average minutes of use per hour by month. We only have partial data for February; all sites were metered February 9-28, 2014.

Figure 8. Average minutes of use per hour, by month



Finally, we used outdoor temperature data to estimate the average daily heating degree-days (HDD) over the study time period (Table 16). A reference temperature of 60 was used. We used temperature data for the study time period, as well as typical meteorological year (TMY3) data, which allows for comparison of the weather in the current year to long-run trends in weather. The estimates of HDD using the two sources of data are quite similar, indicating that unusual weather should not impact the results of the study.

Table 16. Average daily HDD

	<i>Efficient</i>	<i>Baseline</i>
Study time period, using 2013 and 2014 weather data	12 (s.d. = 0.7)	11 (s.d. = 0.4)
Study time period, using TMY3 (long-run) weather data	12 (s.d. = 0.6)	11 (s.d. = 0.4)

Note: Used data from Portland Airport (weather station 24229) for all HDD numbers. Used data from Portland Airport (weather station 726980) for all long-run HDD numbers.

Conclusions

The study shows that about 56% of customers reported replacing a wood burning stove or fireplace, or installing a fireplace where none existed previously. Metering results from 43 homes (31 Efficient and 12 Baseline) showed that on average, customers used their fireplace about 17 hours per week during the heating season. Customers in the Efficient group tended to use their fireplaces slightly less than the Baseline group (15 hours per week compared to 21), although this difference is not statistically significant due to small sample sizes. Since the study screened out customers that used their fireplaces less than five hours a week (15% of customers that were asked about hours of use), the average hours of use in the population is likely lower. Additionally, the distribution of hours of use is skewed; most customers use the fireplace less than 20 hours, while a relatively small proportion of customers (a fifth of customers with efficient hearths and a third of customers with baseline hearths) use the fireplace more than 20 hours per week.

Appendix A – 2013-2014 Fast Feedback Results for Gas Fireplaces

Before this metering study began, we added questions to Fast Feedback, an ongoing survey of customers, to obtain key pieces of information about gas fireplaces and to test survey questions that were later used in the recruitment survey.

In Q1 and Q2 2013, we only asked two questions of customers that installed gas fireplaces and were surveyed through Fast Feedback:

Did the gas fireplace you purchased replace a wood-burning fireplace?

	Number	Percent
Yes	70	67%
No	34	33%
Total	104	-

[For those that said “No” above] Did the gas fireplace you purchased replace an old unit?

	Number	Percent
Yes	23	68%
No	10	29%
Not applicable	1	3%
Total	34	-

The majority of customers reported replacing wood-burning fireplaces. Of those that said they did not, 68% said the new gas fireplace replaced an old unit.

In Q3 2013, we revised the questions to be more robust and detailed. The tables below summarize responses from Q3 2013 – Q4 2014 Fast Feedback participants.

Q1. Did the gas fireplace you purchased replace...

	Number	Percent
A wood burning fireplace or stove	160	57%
An old gas fireplace unit	82	30%
The fireplace did not replace anything (new fireplace)	22	8%
An old electric fireplace unit	2	1%
Other*	17	6%
Total	283	-

*Other included: Pellet stove (4), wood fireplace (3), wood fireplace with a gas starter (3), gas log set (2), gas heater (1), electric space heater (1), and “wood stove electric heat” (1). One respondent said the gas fireplace supplemented an electric heat pump furnace. Another respondent said they bought two gas fireplaces and in one case, the fireplace went into a bathroom (no prior fireplace) and in the other, the fireplace replaced a wood-burning insert.

Q2. Now that the gas fireplace is installed, are you using/planning to use it as the main heating source for your home?

	Number	Percent
No	207	73%
Yes	70	25%
Don't know	6	2%
Total	283	-

Q3. What do you use/plan to use as your main heating system?

	Number	Percent
Gas furnace	180	85%
Other	14	7%
Electric furnace / fireplace / baseboard heater / plug-in	17	8%
Don't know	1	0.5%
Total	212	-

Note: For Fast Feedback, this question was only asked of those that said "No" or "Don't know" to Q2 above. For the metering study, it was asked of all respondents, including those that said they used their gas fireplace as the main heating system. In these cases, the heating system is interpreted as a central or secondary heating system.

Q4. Thinking of the current heating season, please tell me which of the following statements best describes how you primarily use/plan to use the gas fireplace.

	Number	Percent
For heating, but I also use/plan to use other systems to heat my home	176	83%
I use/plan to use the fireplace, but for purposes other than heating	31	15%
As the main heating system for my home	2	1%
I do not use/plan to use the fireplace	1	0.5%
Don't know / have not yet used the fireplace	1	0.5%
Refused	1	0.5%
Total	212	-

Note: For Fast Feedback, this question was only asked of those that said "No" or "Don't know" to Q2 above. For the metering study, it was asked of all respondents.

Q5. Please tell me which of the following statements best describes how you use/plan to use your other heating systems now that the gas fireplace is installed.

	Number	Percent
For heating, but I also use/plan to use my other heating systems less when I turn the gas fireplace on	124	68%
Using the gas fireplace does not/will not affect my use of the other heating systems	41	23%
I do not use/plan to use the other heating systems at all	12	7%
I do not use/plan to use the fireplace	1	2%
Don't know / have not yet used the fireplace	4	1%
Total	182	-

Note: For Fast Feedback, the skip logic was structured such that only participants that said "No" to Q2 above, and "Use as main heating system" to Q4 were asked the question. For the metering study, it was asked of all. In 2013, no one fell into this category, so it was not asked of any Q3 or Q4 participants. This was changed for 2014 surveys to be asked of all.

Q6. Please tell me which of the following statements best describes how you primarily used your old fireplace.

	Number	Percent
For heating, but I also used other systems to heat my home	30	36%
I did not use the old fireplace	28	33%
I used the fireplace, but for purposes other than heating	19	23%
As the main heating system for my home	6	7%
Total	84	-

Note: For Fast Feedback, this question was only asked of respondents that reported having old gas or electric fireplaces in Q1. For the metering study, this was asked of all respondents.

Q7. In the past week, about how many hours have you been using the fireplace? We would like an estimate of how many hours you used the fireplace in the previous seven days, whether it was typical or not.

	Number	Percent
0	1	3%
1	2	5%
2	2	5%
3	3	8%
4	5	13%
5	1	3%
6	2	5%
7	2	5%
8	3	8%
10	2	5%
15	1	3%
20	2	5%
21	2	5%
30	2	5%
40	4	10%
50	2	5%
70	2	5%
168	2	5%
Total	40	-

Note: This question was only asked of Q4 2014 respondents.

On average, respondents reported using their fireplace 25 hours per week. 33% of respondents reported using their fireplace less than five hours per week.