



Energy Trust of Oregon Gas Hearth Market Transformation Study

Final Report

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Prepared for: Energy Trust of Oregon



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Table of Contents

EXECUTIVE SUMMARY	1
INTRODUCTION	1
RESEARCH GOALS.....	1
DATA COLLECTION AND ANALYSIS METHODS	2
SUMMARY OF RESULTS.....	2
1 INTRODUCTION.....	5
1.1 RESEARCH OBJECTIVES.....	5
2 STUDY BACKGROUND.....	7
2.1 SUMMARY OF ENERGY TRUST FIREPLACE OFFERING	7
2.2 SUMMARY OF PROGRAM ACTIVITY.....	2
2.3 SUMMARY OF PREVIOUS STUDIES.....	2
2.4 PROGRAM LANDSCAPE.....	3
2.4.1 <i>Technical Issues Facing Gas Fireplace Measure</i>	5
3 RESEARCH METHODOLOGY	6
3.1 MARKET CHARACTERIZATION	6
3.2 MARKET ACTOR IN-DEPTH INTERVIEWS.....	7
3.2.1 <i>In-depth Interview Guide Development</i>	7
3.2.2 <i>In-depth Interview Sample Allocations and Completes</i>	7
3.3 MARKET TRANSFORMATION MODEL.....	8
4 MARKET CHARACTERIZATION	11
4.1 PRODUCT DESCRIPTION.....	11
4.2 NATIONAL HEARTH MARKET OVERVIEW	12
4.3 DISTRIBUTION CHANNELS.....	14
4.4 NORTHWEST AND OREGON MARKET OVERVIEW	16
4.5 ESTIMATED MARKET SIZE	18
5 IN-DEPTH INTERVIEW FINDINGS.....	20
5.1 GAS HEARTH MANUFACTURERS.....	20
5.1.1 <i>Manufacturers' Business Scope</i>	20
5.1.2 <i>Manufacturers' Gas Fireplace Sales</i>	23
5.1.3 <i>Manufacturers' Distribution Channels</i>	24
5.1.4 <i>Manufacturers' Products and Product Development</i>	25
5.1.5 <i>Manufacturers' Prevalence of IPI and Fireplace Efficiency Levels</i>	27
5.2 GAS HEARTH DISTRIBUTORS	33
5.2.1 <i>Distributors' Business Scope</i>	33
5.2.2 <i>Distributors' Gas Fireplace Sales</i>	36
5.2.3 <i>Distributors' Stocking Decisions</i>	39
5.2.4 <i>Distributors' Prevalence of IPI and Fireplace Efficiency Levels</i>	40
5.3 GAS HEARTH VENDORS	46

5.3.1	<i>Vendors' Business Scope</i>	46
5.3.2	<i>Vendors' Gas Fireplace Sales</i>	49
5.3.3	<i>Vendors' Stocking and Customer Purchase Decisions</i>	52
5.3.4	<i>Vendors' Prevalence of IPI and Fireplace Efficiency Levels</i>	54
6	MARKET TRANSFORMATION MODEL	58
6.1	EXCLUSION OF VENDORS FROM FORECASTS.....	58
6.2	ODOE TAX CREDITS.....	58
6.3	MARKET TRANSFORMATION MODEL FINDINGS	59
6.3.1	<i>Intermittent Pilot Ignition Prevalence Forecast</i>	59
6.3.1.1	Baseline IPI Prevalence.....	59
6.3.1.2	Energy Trust Territory IPI Prevalence	60
6.3.1.3	Energy Trust Accomplishments (IPI).....	61
6.3.2	<i>Fireplace Efficiency Levels Forecast</i>	64
6.3.2.1	Baseline FE Distribution.....	64
6.3.2.2	Energy Trust Territory FE Distribution	65
6.3.2.3	Energy Trust Accomplishments (FE)	66
	CONCLUSIONS	69
7	RECOMMENDATIONS	73
8	APPENDIX – INTERVIEW GUIDES	75

List of Tables

Table 1: High-efficiency, direct-vent gas fireplace incentives, 2014	1
Table 2: High-efficiency, direct-vent gas fireplace incentives, January-April 2015	1
Table 3: Current high-efficiency, direct-vent gas fireplace incentives*	1
Table 4: Incentive Volumes, 2010-2014	2
Table 5: Number of Incented Gas Fireplaces, by FE Tier and Year.....	2
Table 6: Disposition of Market Actor Sample.....	8
Table 7: Market Transformation Model Data Sources and Number of Interviews	9
Table 8: Prevalence and Fireplace Efficiency of Gas Hearth Products with Different Ignition Systems in the Northwest*	12
Table 9: Fireplaces in New Single Family Homes (National, Western Region) 2013*	13
Table 10: Gas Fireplace Distribution Channels	15
Table 11: Gas Hearth Brands by Manufacturer and Number of Models Made*	17
Table 13: Oregon Vendors by Geographic Location	18
Table 14: Estimated Market Size Based on 2008 and 2013 Vendor Studies.....	19
Table 15: Manufacturer Firmographics	22
Table 16: Manufacturer Reported Gas Fireplace Sales, by Northwest Region and Year (n=5).....	23
Table 17: Manufacturer Distribution Channels.....	25
Table 18: Manufacturers' Key Product Development Considerations.....	26
Table 19: Manufacturer Reported Factors that Influence Gas Fireplace Price*	27
Table 20: Manufacturers' Reasons for Differences in Prevalence of IPI Across the Northwest.....	29
Table 21: Fireplace Efficiency Tiers.....	30
Table 22: Manufacturers' Reasons for Differences in FE Distribution Across the Northwest.....	32
Table 23: Distributor Firmographics	35
Table 24: Distributor Reported Gas Fireplace Sales, by Northwest Region and Year.....	36
Table 25: Distributor Reported Gas Fireplace Customers (Sales Channels)	37
Table 26: Vendor Sample Size and Completes, by City and State.....	46
Table 27: Select Vendor Firmographics	48
Table 28: Vendors' 2013 Fireplace Sales Statistics.....	49
Table 29: Vendors' 2014 Fireplace Sales Statistics.....	50
Table 31: Vendor Reported Factors that Influence Gas Fireplace Price.....	51
Table 32: Factors Vendors Consider When Promoting Gas Fireplace Products	52
Table 33: Vendor Reported Factors that Influence Customers' Purchasing Decisions	52
Table 33: Vendor Reported Prevalence of IPI Outside OR and Western WA, Current and Forecast.....	54
Table 34: Reasons for Differences in Prevalence of IPI Across the Northwest.....	63
Table 35: Reasons for Differences in Prevalence of FE Across the Northwest	68

List of Figures

Figure 1: Energy Trust of Oregon Gas Fireplace Market Transformation Logic Model	1
Figure 2: Gas Hearth Product Sales vs. New Home Starts (2007 – 2014*).....	14
Figure 3: Comparison of Manufacturer Reported IPI Prevalence – Oregon vs. Comparison Region	28
Figure 4: Comparison of Manufacturer-Reported FE – Oregon vs. Comparison Region*	31
Figure 5: Comparison of Distributor-Reported IPI Prevalence – Oregon vs. Comparison Region	41
Figure 6: Comparison of Distributor-Reported FE – Oregon vs. Comparison Region*.....	43
Figure 7: Vendor Reported Importance of IPI and FE	53
Figure 8: Proportion of Direct-Vent Gas Fireplace Sales with IPI – Vendor.....	55
Figure 9: Vendor Sales-Weighted Average FE Distribution – 2013 - 2020	56
Figure 10: Forecast of Baseline IPI Prevalence (Comparison Region).....	60
Figure 11: Forecast of IPI Prevalence in Oregon	61
Figure 12: Comparison of IPI Prevalence – Oregon Versus Comparison Region.....	62
Figure 13: Comparison of IPI Prevalence – Oregon Versus Comparison Region – Adjusted Baseline	64
Figure 14: Forecast of Baseline FE Tier Distribution (Comparison Region)	65
Figure 15: Forecast of Energy Trust Territory FE Tier Distribution	66
Figure 16: Comparison of FE Tier Distribution – Oregon Versus Comparison Region*	67

Executive Summary

Introduction

Energy Trust of Oregon (Energy Trust) contracted with Evergreen Economics, Inc. (Evergreen) in January 2015 to conduct market research and develop a market transformation study for direct-vent gas fireplaces in Energy Trust's service territory.

Since 2009, Energy Trust has offered incentives for the installation of high-efficiency, direct-vent gas fireplaces in existing homes in Energy Trust's service territory. Recently, Energy Trust conducted several studies of the direct-vent gas fireplace market. These studies indicated that the baseline efficiency of direct-vent gas fireplaces in Energy Trust territory had increased from a fireplace efficiency (FE) of 60% to 68% and that sales of fireplaces with standing pilot lights declined significantly.¹ Energy Trust redesigned its gas fireplace offering for 2015, increasing the FE thresholds for the program incentive tiers. Going forward, Energy Trust aims to develop a market transformation case for the direct-vent gas fireplace market in terms of advancing the baseline FE and prevalence of intermittent pilot ignition (IPI) systems in products offered in the market.²

Research Goals

The purpose of this study is to provide Energy Trust with current information and data to develop a market transformation case for the gas hearth market, building upon data and information that has already been gathered. Specifically, the goals of this study are to:

- Characterize the gas fireplace market in Oregon and the Northwest.
- Develop a market transformation model for the gas fireplace market to inform Energy Trust's measurement of their influence on the market in terms of advancing the baseline average FE and prevalence of IPI.

Development of the market transformation model required collecting current and forecasted estimates of the distribution of FE levels and prevalence of IPI within Energy Trust's service territory and for a comparison region (the Northwest outside of Oregon and Western Washington).

¹ Fireplace efficiency, FE, is a measure of a fireplace's energy efficiency performance over an entire heating season and is expressed as a percentage. The higher the rating, the more efficient the fireplace. For more information see <http://www.enerchoice.org/fireplace-efficiency/csa-p4>.

² There several types of electronic ignition systems, including intermittent pilot ignition (IPI) and on-demand. While each system is different, they all electronically ignite the pilot light, which then lights the main fireplace burner. On-demand is a proprietary technology used by a single manufacturer. In this report, we use IPI and electronic ignition interchangeably, and when we refer to IPI, we are including on-demand in this definition.

Data Collection and Analysis Methods

To inform the research goals, Evergreen conducted secondary research to inform the market characterization, as well as significant primary research with market actors (manufacturers, distributors, and vendors) to inform the market structure component of the characterization, and to develop the market transformation model (and to address numerous additional research questions identified during the course of the study). We also conducted a thorough review of program materials to develop a program logic model. We relied on significant input from experts at Energy Trust to refine the logic model for publication.

Summary of Results

This research led to the following key findings:

- **IPI systems were installed in the majority of fireplaces sold in 2013 and 2014, and are expected to increase in prevalence over the next five years.** Across interviewed manufacturers and distributors, on average, between 2013 and 2014:
 - Approximately 84 percent (2013) and 86 percent (2014) of fireplaces sold in Oregon had IPI systems
 - Approximately 74 percent (2013) and 76 percent (2014) of fireplaces sold in the comparison region had IPI systems

However, in both regions, IPI prevalence is predicted to increase to more than 90 percent, with the difference between the two regions decreasing over time by 2020. Across market actor groups there is a perception that the gas hearth industry is naturally moving toward IPI systems and by 2020 the majority of models available will have IPI.

- **Distributors and manufacturers differ in their expectations of IPI prevalence in the comparison region.** Both groups report very high prevalence of IPI in Oregon. However, while manufacturers also report high prevalence of IPI in the comparison region, distributors report a significantly lower prevalence of IPI, with approximately half their sales in the comparison region having IPI currently. As noted above, both groups expect IPI prevalence to increase to nearly 100 percent between now and 2020 in Oregon, due in part to naturally occurring market trends. While manufacturers expect IPI prevalence to reach close to 100 percent in the comparison region by 2020, distributors expect IPI prevalence to reach 80 percent by 2020.
- **Manufacturers and distributors report that increased prevalence of IPI is driven by a general market trend toward IPI; however, there is more resistance to IPI in the comparison region.** The primary reasons for differences in IPI prevalence between Oregon and the comparison region are incremental cost differences between standing pilot lights and IPI, the existence of rebate programs in Oregon (and the absence of similar offerings in the comparison region), and the perception that IPI has performance and reliability problems that do not exist in standing pilot light systems.

- **The distribution of FE levels across fireplace sales in 2013 and 2014 is similar between Oregon and the comparison region, but over time market actors expect a greater shift toward higher efficiency products in Oregon.** The proportion of gas hearth products in the top three FE tiers (65%+ FE) is approximately five percentage points higher in Oregon in 2013 than in the comparison region. The difference between the two regions is predicted to grow steadily over the next five years, driven primarily by proportional increases in the 65%-69.9% and 70%-74.9% FE tiers over the next five years. The highest efficiency tier is predicted to remain approximately equal between the two regions.
- **The primary reasons for differences in the distribution of FE levels between Oregon and the comparison region were cost (in the comparison region) or rebates (in Oregon).** Of eight market actors who noted a difference between the two regions, seven stated that the primary reason for the difference was either high cost in the comparison region or the existence of rebate programs in Oregon that reduce the cost of more efficient units. These reasons are directly related and essentially uncover the same perceived difference: first cost is a barrier but incentives help, and account for some of the differences between regions.
- **Interviews confirmed that IPI systems can be disabled and made to function as a standing pilot light.** Three large manufacturers stated that all IPI systems on their products could be disabled and switched to standing pilot mode, and one stated that for about 20 percent of their products the user could disable the IPI. Three manufacturers stated that the IPI in their products could not be disabled. This finding raises some key questions including: How often are IPI systems disabled by end-users? Why do end-users choose to disable IPI systems? How will the potential DOE rulemaking address this (if at all)?
- **IPI systems that can be disabled may use more gas than traditional standing pilot ignitions.** One interviewee claimed that within the industry it is known that IPI systems, including those that can be disabled, have larger gas valves and hence consume more gas when lit than a traditional pilot light. We attempted to confirm this with online research but were unable to find enough information to do a valid comparison of products.
- **The biggest trade-off for increasing the efficiency of gas fireplaces is the impact on the aesthetic of the product.** All seven manufacturers noted that the trade-off for higher efficiency is a less appealing flame aesthetic. As fireplaces become more efficient, the flame color moves away from a “natural” flame color and size that consumers desire toward a blue flame that is less desirable.
- **Market actors report a correlation between energy efficiency and product price.** Interviews with market actors suggest that there is a correlation between high price and high efficiency, with four of seven manufacturers mentioning that efficiency is a

factor in higher pricing, however, the strength of this correlation is unclear (there are many factors that contribute to the prices of gas fireplaces, many related to aesthetic material choices).

- **Across the seven interviewed manufacturers, three distribution approaches emerged.** These approaches include the following:
 - **Direct to Dealer:** The manufacturer sells products directly to fireplace vendors (retailers) with no involvement from a third-party distributor. This approach is typically used for distribution to the replacement or retrofit market.
 - **One-Step (Installing Distributor):** The manufacturer sells products to a distributor who then sells directly to builders or contractors primarily serving the new construction market.
 - **Two-Step Distribution:** The manufacturer sells hearth products to a distributor, who then sells products to vendors (retailers) who retail the products to end-users. This approach is typically used for distribution to the replacement or retrofit market.

- **At least two distinct market segments exist in the overall gas hearth product market – the existing homes market and the new construction market.** The new construction market can be further divided into the production build (“spec”) market and the custom homes market, which are significantly different in many ways. Manufacturers and distributors noted that the production build market is highly price driven, with builders searching for the least cost product that meets their minimum aesthetic and size requirements. This segment is least concerned with energy efficiency in their purchasing decisions. The custom home market is less price sensitive because the future homeowner often has a choice in selecting the type of gas hearth appliance installed in the home. While this market is still highly price sensitive, the involvement of the owner means they may be willing to pay a higher price for aesthetic features or efficiency. The existing home market is the least price sensitive of the three markets with homeowners most likely to be focused on aesthetics and other features including fireplace efficiency and IPI.

MEMO



Date: November 10, 2015
To: Energy Trust Board of Directors
From: Mark Wyman, Residential Program Manager
Marshall Johnson, Residential Program Manager
Erika Kociolek, Evaluation Project Manager
Adam Shick, Planning Project Manager
Subject: Staff Response to Gas Fireplace Market Transformation Study

Energy Trust has offered incentives for direct-vent gas fireplaces since 2009. Through surveys with fireplace vendors in 2009 and 2013, Energy Trust observed an increase in the share of direct-vent gas fireplaces with intermittent pilot ignition, or electronic ignition (as opposed to standing pilot lights) and an increase in the average fireplace efficiency of units. A market transformation study was undertaken to gather information from a more comprehensive set of market actors (including fireplace manufacturers and distributors) about Energy Trust's impact on the market and to obtain forecasts about fireplace efficiencies and prevalence of electronic ignition in the gas fireplace market over the next five years, which Energy Trust could then use to potentially claim savings.

The market transformation study results revealed that systems with electronic ignition are more prevalent in Energy Trust's service territory relative to a comparison region, and are expected to increase to nearly 100 percent market prevalence in Oregon by 2020. The study estimated that two-thirds of the difference in electronic ignition prevalence between the two regions was attributable to the availability of incentives in Oregon.

The average fireplace efficiency found through the market transformation study was lower than was found in a prior 2013 survey of vendors. This is likely due to differences in study design. The 2013 survey only interviewed vendors, and we believe that fireplaces sold by vendors are primarily going into existing homes. The market transformation study interviewed manufacturers and distributors, and we believe that fireplaces shipped and sold by these market actors are going into both new and existing homes. Additionally, while the market share of higher efficiency fireplaces is greater in Oregon relative to a comparison region, the average fireplace efficiency is not significantly different between regions and is not projected to increase over time. The study estimated that all of the difference in the distribution in fireplace efficiency between Oregon and the comparison region is attributable to the availability of incentives in Oregon.

The results of this study are being used in several ways. First, Planning staff have updated measure assumptions related to market fireplace efficiency and the prevalence of electronic ignition using the information obtained through this study.

Second, the New Homes and Existing Homes programs are moving upstream to work with distributors to incentivize electronic ignition, while maintaining a downstream, customer-facing incentive for fireplace efficiency. Because the study shows that the prevalence of electronic ignition is already quite high in Oregon, the program believes that an upstream incentive for distributors can help move the remaining portion of the market (including less efficient direct-vent gas fireplaces as well as other hearth products such as log sets) to electronic ignition. This strategy will allow the program to impact not just the existing homes market, but the new homes market as well, since distributors sell to a variety of customer types.

Finally, the Northwest Energy Efficiency Alliance (NEEA) has recently started work on five gas technologies, one of these is gas fireplaces. This study provided important information for NEEA. Staff at NEEA are currently planning to conduct several follow-up studies to investigate questions raised by the study and those left unanswered, which will inform their activities in the gas fireplace market in the future.

1 Introduction

Energy Trust of Oregon (Energy Trust) contracted with Evergreen Economics, Inc. (Evergreen) in January 2015 to conduct market research and develop a market transformation study for direct-vent gas fireplaces in Energy Trust's service territory.

Since 2009, Energy Trust has offered incentives for the installation of high-efficiency, direct-vent gas fireplaces in existing homes in Energy Trust's service territory. Energy Trust conducted several studies of the direct-vent gas fireplace market that included two surveys of Oregon hearth product vendors (one in 2009 and one in 2013) and interviews with direct-vent gas fireplace market actors. These studies indicated that the baseline efficiency of direct-vent gas fireplaces in Energy Trust territory had increased from an average fireplace efficiency (FE) of 60% 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 said fireplaces with standing pilot lights constituted 15% or less of their direct-vent gas fireplace sales. These significant market changes led Energy Trust to interview several market actors about the influence of Energy Trust's program on the Oregon fireplace market. Market actor responses regarding the influence of Energy Trust's gas fireplace offering on fireplace efficiency characteristics ranged from "no influence" to "a huge driver". The current market transformation study is designed, in part, to provide a clearer view of Energy Trust's influence on the hearth market.

Based on the results of these studies, Energy Trust redesigned the gas fireplace offering for 2015, increasing the FE thresholds for the program incentive tiers. Going forward, Energy Trust intends to develop a market transformation framework for assessing whether Energy Trust caused changes in the direct-vent gas fireplace market in terms of advancing the baseline FE and prevalence of intermittent pilot ignition (IPI) systems in products offered in the market.³ Energy Trust also hopes to use this study to retrospectively assess whether Energy Trust influenced efficiency improvements in the fireplace market in the last several years.

1.1 Research Objectives

The purpose of this study is to provide Energy Trust with current information and data to develop a market transformation case for the gas hearth market, building upon data and information that has already been gathered. Specifically, the goals of this study are to:

³ There several types of electronic ignition systems, including intermittent pilot ignition (IPI) and on-demand. While each system is different, they all electronically ignite the pilot light, which then lights the main fireplace burner. On-demand is a proprietary technology used by a single manufacturer. In this report, we use IPI and electronic ignition interchangeably, and when we refer to IPI, we are including on-demand in this definition.

- Characterize the gas fireplace market in Oregon and the Northwest, including estimates of gas fireplace sales, efficiency levels, prevalence of IPI, and characterization of interactions among market actors through in-depth interviews with manufacturers, distributors, and vendors of gas fireplace products.
- Collect information on current market FE and prevalence of IPI in and outside of Energy Trust's service territory.
- Forecast market baseline efficiency and program achievements, inclusive of the impact of Oregon Department of Energy (ODOE) tax credits in Energy Trust's service territory.
- Develop a market transformation model for the gas fireplace market to inform Energy Trust's measurement of their influence on the market in terms of advancing the baseline average FE and prevalence of IPI.⁴

This study focuses primarily on the existing homes market, however, information and data on the new homes fireplace market was collected and any observable differences between the two markets are reported.

⁴ The market transformation model presented in this study assumes the absence of federal standards for gas fireplaces, or other substantive changes in the marketplace such as new incentive programs. If significant changes occur in the marketplace, the baseline model may need to be adjusted.

2 Study Background

In this section we provide additional background regarding Energy Trust's gas fireplace program and associated research.

2.1 Summary of Energy Trust Fireplace Offering

Energy Trust currently offers financial incentives for high-efficiency, direct-vent gas fireplaces through the Existing Homes program. The program has provided incentives for fireplaces since 2009 with the intention to influence customers to purchase high-efficiency hearths over market baseline efficiency hearths.

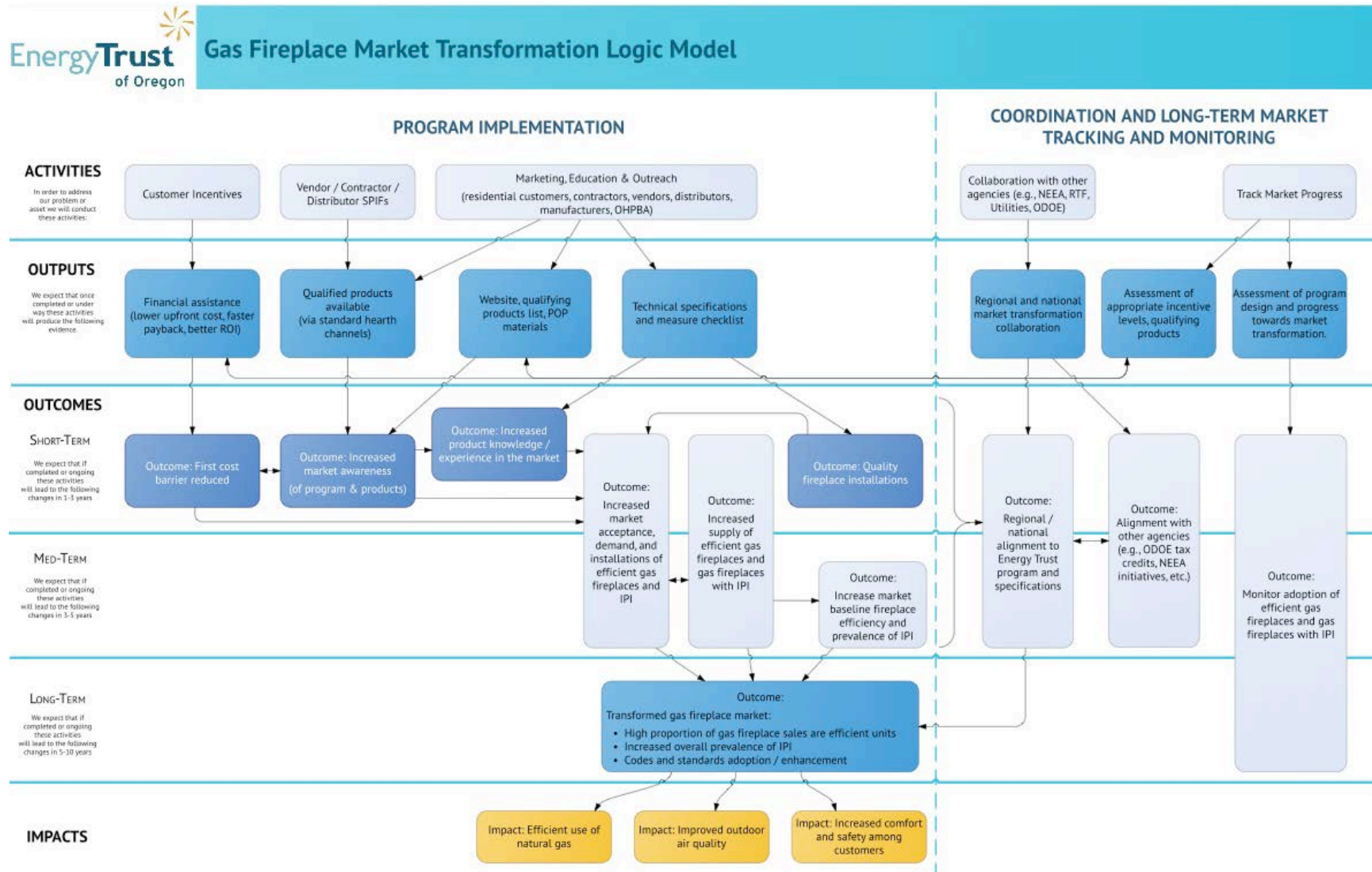
The Existing Homes program's market transformation logic model for high-efficiency, direct-vent gas fireplace incentives is shown below, in Figure 1. As shown, the primary activities conducted by Energy Trust as part of this market transformation program include identifying efficiency tiers for fireplaces, providing incentives to end users based on those tiers, offering sales performance incentive funds (SPIFs) to market actors, significant marketing education & outreach, as well as collaboration with other Northwest and national agencies, and tracking market progress through evaluation research such as this study.

The ultimate, long-term goal of the Existing Homes program is to transform the gas fireplace market in Oregon. Energy Trust's targets relative to market transformation include the following:

- High proportion of gas fireplace sales are efficient units
- Increased overall prevalence of IPI
- Codes and standards adoption and enhancements

Transforming the natural gas fireplace market will lead to efficient natural gas usage, improved outdoor air quality, and increased customer comfort and safety.

Figure 1: Energy Trust of Oregon Gas Fireplace Market Transformation Logic Model



As mentioned previously, Energy Trust has offered incentives for natural gas fireplaces since 2009. Table 1 below lists the incentive levels for the 2014 program year.

Table 1: High-efficiency, direct-vent gas fireplace incentives, 2014

Tier	Fireplace Efficiency (FE)	Incentive
Tier 1	65.0%-69.9% with IPI or pilot on-demand ignition	\$200
Tier 2	70.0%+ with IPI or pilot on-demand ignition	\$250

At the start of 2015, the tiers and incentive levels were adjusted. These adjustments are reflected in Table 2, below.

Table 2: High-efficiency, direct-vent gas fireplace incentives, January-April 2015

Tier	Fireplace Efficiency (FE)	Incentive
Tier 1	70.0%-74.9% with IPI	\$250
Tier 2	75.0%+ with IPI	\$350

Current incentive levels are shown below, in Table 3. Incentives for pilot on-demand ignition fireplaces with 70.0%+ FE were added to the program in May 2015.⁵

Table 3: Current high-efficiency, direct-vent gas fireplace incentives*

Fireplace Efficiency (FE)	Incentive
70.0%+ with pilot on-demand ignition	\$250
70.0%-74.9% with IPI	\$250
75.0%+ with IPI	\$350

*Effective as of May 1, 2015

To qualify for the incentive, customers' direct-vent gas fireplaces must:

- Be listed on Energy Trust's list of qualifying models
- Be equipped with an IPI or pilot on-demand ignition
- Be vented to the outside with sealed combustion
- Meet Energy Trust's FE standards

⁵ Energy Trust now defines the incentive by both the efficiency level and ignition system type.

The incentives are available to Oregon customers of NW Natural or Cascade Natural Gas and Washington customers of NW Natural.⁶

2.2 Summary of Program Activity

The volume of incented gas fireplaces grew substantially from 2010 to 2013 and has remained steady over the past two years, as shown in Table 4, below.

Table 4: Incentive Volumes, 2010-2014

Year	Incentivized Units	% Increase
2010	535	-
2011	1,017	90%
2012	1,278	26%
2013	1,538	20%
2014	1,533	0%
Total	5,901	

*Source: Energy Trust Fast Track Data Summary, 2015

While the number of incented fireplaces remained steady between 2013 and 2014 the proportion of incented fireplaces in the two highest efficiency tiers increased, as shown in Table 5, below.

Table 5: Number of Incented Gas Fireplaces, by FE Tier and Year

FE Tier	2010	2011	2012	2013	2014
80+	2%	1%	1%	0%	1%
75-79.9	2%	2%	2%	1%	5%
70-74.9	55%	58%	55%	71%	66%
65-69.9	40%	17%	13%	20%	22%
Missing	1%	24%	29%	8%	7%
Total	100%	100%	100%	100%	100%

*Source: Energy Trust Fast Track Data Summary, 2015

2.3 Summary of Previous Studies

Energy Trust undertook two studies focused on the gas hearth market, including:

⁶ Energy Trust does not pay incentives for energy-efficiency improvements that are required for building code compliance, such as remodeling, renovation or new additions to a home.

- A survey of Oregon hearth vendors (in 2009, and an update in 2013)
- Interviews with market actors (manufacturers and distributors)

The first study involved interviews with Oregon hearth vendors to estimate the market baseline FE and prevalence of IPI, and collect information on incremental costs. This study, which was originally undertaken in 2009 and then updated in 2013, also helped Energy Trust characterize trends in the prevalence of fireplaces with standing pilot lights.

The second study involved interviews with three market actors to assess the program's influence on the market, specifically, the availability of high-efficiency hearths with IPI systems.

The results of these studies were used to redesign the Existing Homes hearth offering for 2015. The main change was to increase the market baseline efficiency assumption to FE 66.8%. This change drove Energy Trust to move from a \$200 incentive for FE 65.0%-69.9% and \$250 incentive for FE 70%+ to a \$250 incentive for FE 70.0%-74.9% and a \$350 incentive for FE 75%+, effective January 1, 2015 (further refinements to the incentive structure are discussed above in Section 2.1).

Building upon the prior research, this study intends to measure the program's influence on the market in terms of increasing the market share of higher FE units and the prevalence of IPI.

2.4 Program Landscape

In addition to the Energy Trust gas fireplace offering, several other programs currently exist or are being planned for the near future in the Northwest. Programs that currently exist are:

- **Oregon Department of Energy (ODOE) Tax Credit.**⁷ ODOE began offering tax credits for direct-vent gas fireplaces through the Residential Energy Tax Credit Program on January 1, 2015. To be eligible for the tax credit, gas fireplaces must have IPI or pilot on-demand systems and have an FE of 70%+. The program provides a tax credit of \$350 for fireplaces installed with an FE of 70% to 74% and a tax credit of \$500 for fireplaces installed with an FE of 75%+.
- **Northwest Energy Efficiency Alliance (NEEA) Gas Market Transformation Initiative.**⁸ In 2014, NEEA developed a five-year gas market transformation plan in collaboration with Northwest natural gas stakeholders, including Energy Trust, with the goal of increasing market adoption of efficient natural gas products, practices and

⁷ Oregon Department of Energy. 2015 Residential Energy Tax Credit Rates. <http://www.oregon.gov/energy/CONS/docs/2015RETCRates.pdf>

⁸ Northwest Energy Efficiency Alliance. Natural Gas Market Transformation Plan 2015-2019. 2015. <http://neea.org/docs/default-source/default-document-library/neea-2015-2019-natural-gas-market-transformation-business-plan.pdf?sfvrsn=13>

services. The initiative will invest \$18.3 million in funding toward this goal from 2015-2019, with approximately 10 percent of this funding dedicated to gas hearth products. NEEA's gas funding started in January 2015, and activities, including hiring staff and initiative design, have begun. NEEA's initial ideas were to focus on working with distributors to influence stocking practices. This study will be available to NEEA as they begin planning for their gas fireplace initiative.

- **Cascade Natural Gas Incentive Program.**⁹ Cascade Natural Gas offers incentives to Washington customers that use natural gas as their primary heating source for the purchase of high-efficiency gas hearth products (Cascade Natural Gas's Oregon customers are only eligible for Energy Trust incentives). The program offers \$150 for gas hearth products with 70%+ FE with IPI ignition and \$250 for gas hearth products with 80+ AFUE.¹⁰ The program is available for both existing and new homes.
- **Puget Sound Energy (PSE) Fireplace Rebate.**¹¹ PSE offers a \$200 rebate to its natural gas customers for the installation of high-efficiency gas fireplaces that have an FE of 70%+ and operate with an electronic ignition system (all qualifying systems require either IPI or pilot on-demand) The rebate is only applicable to fireplaces installed in the main living area of a home.
- **Fortis BC Enerchoice Fireplace Program.**¹² The Canadian utility Fortis BC offers a \$300 rebate to customers who install zero-clearance gas fireplaces with 62.4%+ FE, fireplace inserts with 61%+ FE, or free-standing fireplaces with 66%+ FE. Fortis BC does not have an ignition system requirement.

Furthermore, in January 2015, the United States Department of Energy (DOE) issued a notice of rulemaking for energy conservation standards for gas hearth products.¹³ Under the proposed rule, all products defined as a hearth product would be required to have an ignition system that has zero gas consumption when the main burners are off, effectively disallowing standing pilot lights. This rule is still under consideration but should it be approved, it will likely eliminate all standing pilot ignitions in the market in the relatively near future, with the standard taking effect five years after the rule is published (estimated to be 2021).

⁹ Cascade Natural Gas. Cascade Natural Gas Conservation Incentive Program Existing and New Homes Incentives. <http://www.cngconserve.com/wp-content/uploads/CNG-IncentiveProgram-IncentiveList.pdf>

¹⁰ Cascade Energy's gas offering uses both the FE rating and AFUE to determine incentive levels.

¹¹ Puget Sound Energy. Fireplace Rebate.

<http://pse.com/savingsandenergycenter/Rebates/Heating/Pages/Fireplace-rebate.aspx>

¹² Fortis BC.

<http://www.fortisbc.com/NaturalGas/Homes/Offers/EnerchoiceFireplaceProgram/Pages/EnerchoiceEligibleFireplaceLists.aspx>

¹³ Department of Energy. Notice of Proposed Rulemaking. 2015.

http://energy.gov/sites/prod/files/2015/01/f19/Hearth%20Products_NOPR.pdf

2.4.1 Technical Issues Facing Gas Fireplace Measure

A number of technical issues face the Energy Trust gas fireplace measure going forward that could impact program effectiveness or design. These include:

- **High-Efficiency Tier Cost-Effectiveness.** An unpublished analysis of the cost to purchase and install high-efficiency gas fireplaces conducted by Energy Trust staff indicated that fireplaces with 80%+ FE had higher installed costs than lower FE ranges. Cost-effectiveness analysis suggests that the high cost of these models is resulting in the highest incentive tier (75%+ FE) being not cost-effective.
- **Disabling IPI:** IPI systems on many models can be disabled to allow the unit to run in a standing pilot mode. In interviews conducted with manufacturers, three large manufacturers (3, 5, and 6) stated that all IPI systems on their products could be disabled and switched to standing pilot mode. Manufacturer 7 stated that for about 20 percent of their products the user could disable the IPI, and that these products were available primarily to meet demand for this function in cold climates. Three manufacturers (1, 2, and 4) stated that their IPI systems could not be disabled. This ability could result in lost savings from the IPI system and should be further investigated. Additionally, one interviewee suggested that within the industry it is known that IPI systems, including those that can be disabled, have larger gas valves and hence consume more gas when lit than a traditional pilot light. We attempted to confirm this with online research but were unable to find enough information to do a valid comparison of products.

3 Research Methodology

The market transformation study consisted of multiple research tasks, summarized here.

3.1 Market Characterization

The objectives of this research task include:

- Identification of the major gas fireplace manufacturers, distributors, and vendors in the Northwest region in general and Oregon in particular.
- Estimate the number and types of hearth products sold in Oregon (including percentage of models with IPI), and their market share.

To identify gas fireplace manufacturers, we developed a comprehensive list of manufacturers and brands from the list of qualified products on the Energy Trust website. We supplemented this list with any manufacturers mentioned in previous studies conducted on behalf of Energy Trust.¹⁴ We compared this list with a publicly available list of hearth products available in Canada, published by Canadian ENERGY STAR¹⁵, and the US Department of Energy (DOE)'s Technical Standards Document (which lists manufacturers active in the United States), adding any manufacturers that were missing from our list (ensuring that the manufacturers produce hearths available on the U.S. market). Lastly, we conducted Internet searches of manufacturer and dealer websites to ensure that the manufacturer's brands were sold in Oregon.

For the distributor population, we leveraged the Oregon Hearth, Patio and Barbecue Association (HPBA) for distributors in Oregon and the Northwest HPBA for distributors in other Northwest states. We also leveraged the in-depth interviews (described below) to inform the number and types of hearth product distributors as well as the products sold by each distributor, supplemented with Internet research. We report on regional distributor statistics (e.g., the number serving Oregon versus other Northwest regions) gathered from these sources.

For the vendor and installer population in the comparison region, we developed a robust dataset of vendors based on the Oregon HPBA, the Northwest HPBA, and the National Fireplace Institute (NFI) Certified Specialist list,¹⁶ supplemented by information received from market actor interviews conducted as part of this study.

¹⁴ Additional sources included the 2008 Vendor Study, 2013 Vendor Study, Metering Study, New Homes Data Summary, and 2015 Fast Track Data Summary.

¹⁵ Natural Resources Canada. Energy Efficiency Ratings Search. http://oee.nrcan.gc.ca/pml-lmp/index.cfm?action=app.search-recherche&appliance=FIREPLACE_G

¹⁶ National Fireplace Institute (NFI) Certified Specialist list. http://nficertified.org/pages_consumers/consumers-1.cfm

3.2 Market Actor In-depth Interviews

This section describes the market actor in-depth interview guide development, sample design, and research implementation.

Evergreen conducted in-depth interviews with three market actor groups:

- Manufacturers – gas fireplace manufacturers whose products are sold in Oregon.
- Distributors – gas fireplace distributors who distribute products in Oregon and/or the comparison region¹⁷.
- Vendors – gas fireplace vendors operating in the comparison region (the Northwest outside of Oregon and Western Washington).

The primary objective of this task was to collect the data to establish current baseline characteristics for high-efficiency gas fireplaces, and gather projections from market actors about how they expect the hearth market to change over the next five years. This information is used in the market transformation model (described subsequently).

Specifically, information from interviews with hearth product manufacturers and distributors will be used to understand the hearth market both within, and outside of, Energy Trust’s service territory and to establish baseline efficiency characteristics for direct-vent gas fireplaces to inform the market characterization and market transformation model. Information from interviews with hearth product vendors (operating outside Oregon and Western Washington) was intended to be used to understand the hearth market outside of Energy Trust’s service territory and establish baseline efficiency characteristics for direct-vent gas fireplaces to inform the market characterization and market transformation model. However, upon investigation, we uncovered internal inconsistencies in the vendor estimates and responses, reducing our confidence in the information provided. We determined that the best course of action was to exclude them from the FE and IPI baseline analysis component of the market transformation model (more information provided in Section 6.1).

3.2.1 In-depth Interview Guide Development

Evergreen developed in-depth interview guides with assistance and review from key staff at Energy Trust. The interview guides are presented in Appendix B: Interview Guides.

3.2.2 In-depth Interview Sample Allocations and Completes

With assistance from Energy Trust staff, and utilizing the lists compiled for the market characterization, Evergreen developed a list of 95 market actors (shown by market actor type in Table 6, below). We had an initial target of 31 completed in-depth interviews across the

¹⁷ Evergreen interviewed a total of seven distributors. Three operated in Oregon and the comparison region, three operated in Oregon only, and one operated in the comparison region only.

three market actor groups, as shown in the Target column, below. Ultimately, we were unable to complete the total number of targeted interviews for vendors, despite offering incentives for their participation (final completed survey counts are shown in the far right column). Evergreen conducted interviews with seven representatives from direct-vent gas hearth product manufacturers serving the Oregon market. Prior to the interviews Evergreen worked with Energy Trust staff members to develop a list of manufacturers from which to draw interview targets.

Table 6: Disposition of Market Actor Sample

Market Actor Group	Sample Population	Target	Completed Interviews
Manufacturers	12	8	7
Distributors	10	10	7
Vendors	74	20	7
Total	95	31	17

Additionally, Evergreen completed interviews with seven distributors. Not all distributors interviewed distributed hearth products in both Oregon and the comparison region; six distributors sold hearth products in Oregon while four distributors sold hearth products in the comparison region. One distributor only sold hearth products in the comparison region.

3.3 Market Transformation Model

Evergreen developed a market transformation model that compares five-year forecasts of the distribution of FE between Energy Trust’s territory and a comparison region, as well as forecasts of IPI prevalence. Evergreen collected data from the market actor interviews to develop these forecasts, but was unable to include the vendor-supplied data in the model due to internal inconsistencies and concerns over representativeness (see Section 6.1 for more information). Evergreen asked each market actor group (manufacturers, distributors, and vendors) to:

- 1) Estimate the proportion of fireplaces they sold in 2013 and 2014 that used an IPI ignition system.
- 2) Forecast the proportion of fireplaces sold with IPI ignition systems in 2015 and in 2020.
- 3) Estimate the proportion of fireplaces they sold in 2013 and 2014 that fell into one of five FE tiers (see Table 21 for a description of the tiers).
- 4) Forecast the proportion of fireplaces sold in each of the five FE tiers mentioned above in 2015 and 2020.

Evergreen required the interviewees to forecast IPI prevalence and FE distributions in 2015 and 2020 under the following assumptions:

- **Assumption 1:** There are no federal standards related to ignition system type or FE at any time in the future.
- **Assumption 2:** There are no incentive programs in Eastern Washington, Idaho and Montana.¹⁸

Interviewees from the manufacturer and distributor groups provided the information described above for Oregon and a comparison region (the Northwest outside of Oregon and Western Washington, i.e., Eastern Washington, Idaho, and Montana), whereas vendors provided information only for the regions they served (within Eastern Washington and Idaho). A summary of the collected data is shown below, in Table 7.

Table 7: Market Transformation Model Data Sources and Number of Interviews

Market Actor	Oregon		Comparison Region	
	IPI Prevalence Estimates and Forecasts	FE Estimates and Forecast, by Tier	IPI Prevalence Estimates and Forecasts	FE Estimates and Forecasts, by Tier
Manufacturers	X (7)	X (7)	X (7)	X (7)
Distributors	X (6)	X (6)	X (4)	X (4)
Vendors*			X (7)	X (7)

* Vendor responses were omitted from the final model. See Section 6.1 for more information.

Evergreen developed sales-weighted averages of the proportion of fireplaces with IPI and the proportion of fireplaces in each FE tier in each region for the distributor and manufacturer groups individually. We then developed sales-weighted forecasts for the distributor and manufacturer groups for 2015 and 2020 using the same method, and assumed linear changes in the interim years. We convert these distinct forecasts into one forecast by weighting the findings within the distributor and manufacturer group by the proportion of respondents represented by that group within each region (e.g., since we received data from seven manufacturers and six distributors in Oregon, the manufacturer group was assigned a weight of 7/13).

To develop the forecast of program accomplishments, we take the difference between Oregon and the comparison region for each metric of interest – IPI and FE. We then investigated the manufacturer and distributor reported differences across regions to assess the degree to which the differences are attributable to Energy Trust’s program and incentives versus other factors. As discussed in Section 6.3, the incentives account for the majority of the difference, but performance concerns related to IPI in colder climates were also mentioned. This suggests

¹⁸ Evergreen excluded Western Washington as a comparison region because there are active incentive programs for gas fireplaces offered by Puget Sound Energy and Cascade Natural Gas in Western Washington.

that cold climate performance is also an influential barrier within the comparison region, and thus we must account for the impact of this barrier.

To account for the impact of the competing factors (incentives and climate-dependent performance concerns), and therefore to attempt to reconcile the differences across regions, we assigned “most important” reasons for differences across the two regions a factor of three, and secondary reasons a factor of one. Through this, we determined that approximately 35 percent of the difference in the prevalence of IPI between the two regions is likely the result of either real or perceived performance issues with IPI, particularly with regard to cold climate considerations, and not Energy Trust’s program. This is discussed in greater detail in Section 6.3.

4 Market Characterization

This section provides an overview of the gas hearth product market, and specifically, the market for gas hearth products nationally and in Oregon and the Northwest.

4.1 Product Description

Gas hearths are gas-fired products designed to simulate wood-burning hearths (fireplaces). They are intended to provide the aesthetic feel of a wood-burning fireplace as well as provide a supplemental heat source in a home. Gas hearth products come in three primary categories¹⁹:

- Freestanding Gas Stoves – stand-alone units that are installed within a room.
- Gas Inserts – designed to be installed in an existing fireplace cavity.
- Zero Clearance – designed to be installed where no fireplace exists, typically in a wall cavity. Zero clearance refers to the appliance’s ability to be installed with “zero” clearance between the unit and combustible construction materials such as wood studs or drywall.

Within these three categories, there are hundreds of models with a wide variety of designs, from traditional brick or metal designs to modern linear designs, as well as a variety of sizes and heating capacity. Consumers install gas hearth products for some combination of ambience, décor, and heating. According to the 2013 survey of Oregon vendors, the primary factors in customer purchase decisions of fireplaces are aesthetics (74%), price (44%), heating capacity (30%), and heating efficiency (22%).

Efficiency levels across gas hearth products vary significantly. The efficiency of these products is determined by two factors: 1) the overall efficiency of the gas hearth appliance in terms of heat produced as a function of gas input measured by the FE rating; and 2) the ignition system of the fireplace. There are three forms of ignition systems, including constant burning or “standing” pilot, IPI, and pilot on-demand. In all ignition systems, when a user turns the fireplace on, either manually, via a remote, or via a thermostat, it triggers the flow of gas past a pilot light to the main burner. In IPI or pilot on-demand systems, the pilot light is off when the fireplace is not in use, and is ignited only when the appliance is turned on. A standing pilot light remains on and consumes gas when the fireplace is not in use, and is therefore less efficient.

As shown in Table 8 below, 58 percent of fireplace models available for sale in the Northwest have IPI or pilot on-demand systems and the average FE of these products is approximately five percentage points higher than products with standing pilot lights. The proportion of

¹⁹ In addition to these products, manufacturers also make gas log sets, which are a primarily decorative open flame appliance that consist of a metal frame that support logs that sit in an existing fireplace.

products available with IPI or pilot on-demand is similar to the national proportion of products with IPI versus standing pilot lights found by the DOE.²⁰

Table 8: Prevalence and Fireplace Efficiency of Gas Hearth Products with Different Ignition Systems in the Northwest*

Ignition Systems	# Models	% Of			
		Models	Min FE%	Mean FE%	Max FE%
IPI	939	56%	8.1	63.7	86.7
Pilot On-Demand	29	2%	58.8	67.8	71.91
Standing Pilot	708	42%	2.6	59.0	84.2
Total	1,691	100%	2.6	61.8	86.7

* Source: NRCAN Gas Fireplace Product List.²¹

According to the DOE Technical Support Document for Gas Fireplace Rulemaking, the incremental manufacturing cost increase of adding an IPI system instead of a standing pilot system is \$26.70, which equates to a cost increase to the consumer after distribution markups of \$81.68.

4.2 National Hearth Market Overview

The hearth market is complex, encompassing a broad range of indoor gas appliances including fireplaces, freestanding stoves, fireplace inserts, as well as other products including wood and pellet stoves, and outdoor heating equipment. The gas fireplace (including fireplaces, free standing stoves and inserts) market is highly competitive with at least 22 manufacturers marketing around 40 brands with approximately 1,700 models of direct-vent gas fireplaces and inserts.²² While the gas fireplace market is dominated by a handful of large manufacturers – including Empire Comfort Systems, Hearth & Home Technologies, Innovative Hearth Products, Napoleon, Regency, and Travis Industries – that produce a range of fireplace products, many smaller manufacturers compete in the market by focusing on specific markets or developing niche products including high-efficiency fireplaces.

The market for gas fireplaces began in the 1980s and has steadily matured over the past three decades, generating approximately \$3.5 billion dollars in revenue in 2010, according to the

²⁰ The DOE's Technical Support Document for Gas Fireplaces found 58% of products with IPI and 42% with standing pilot ignition systems. <http://www.regulations.gov/#!documentDetail;D=EERE-2014-BT-STD-0036-0002>

²¹ NRCAN Gas Fireplace Product List: http://oe.e.nrcan.gc.ca/pml-lmp/index.cfm?action=app.search-recherche&appliance=FIREPLACE_G

²² *Ibid.*

HPBA 2011 State of the Hearth Industry report.²³ Today, gas hearth products are popular additions to new and existing homes with 52 percent of homes having at least one gas fireplace or freestanding stove.²⁴ As shown in Table 9, below, among new homes constructed in 2013 (nationally and in the West Region), 51 percent had at least one fireplace installed. Evergreen Economics recently conducted interviews with homebuilders, and builders in Oregon stated that 93 percent of new homes with gas service have at least one gas fireplace installed.²⁵

Table 9: Fireplaces in New Single Family Homes (National, Western Region) 2013*

Home Type	National		West Region***	
	# Homes (thousands)	% with 1 or more fireplaces**	# Homes (thousands)	% with 1 or more fireplaces**
Production Built Homes	414	54%	109	51%
Custom Homes (Contractor Built)	81	57%	12	58%
Custom Homes (Owner Built)	42	39%	6	49%
Total	569	51%	129	51%

* Source: United States Census: Survey of Construction 2013 <http://www.census.gov/construction/chars/>

** The Survey of Construction does not distinguish between gas and other fuel fireplaces, however, less than 1% of new homes used a heating source other than gas or electricity.

*** Western Region includes: AK, AR, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY

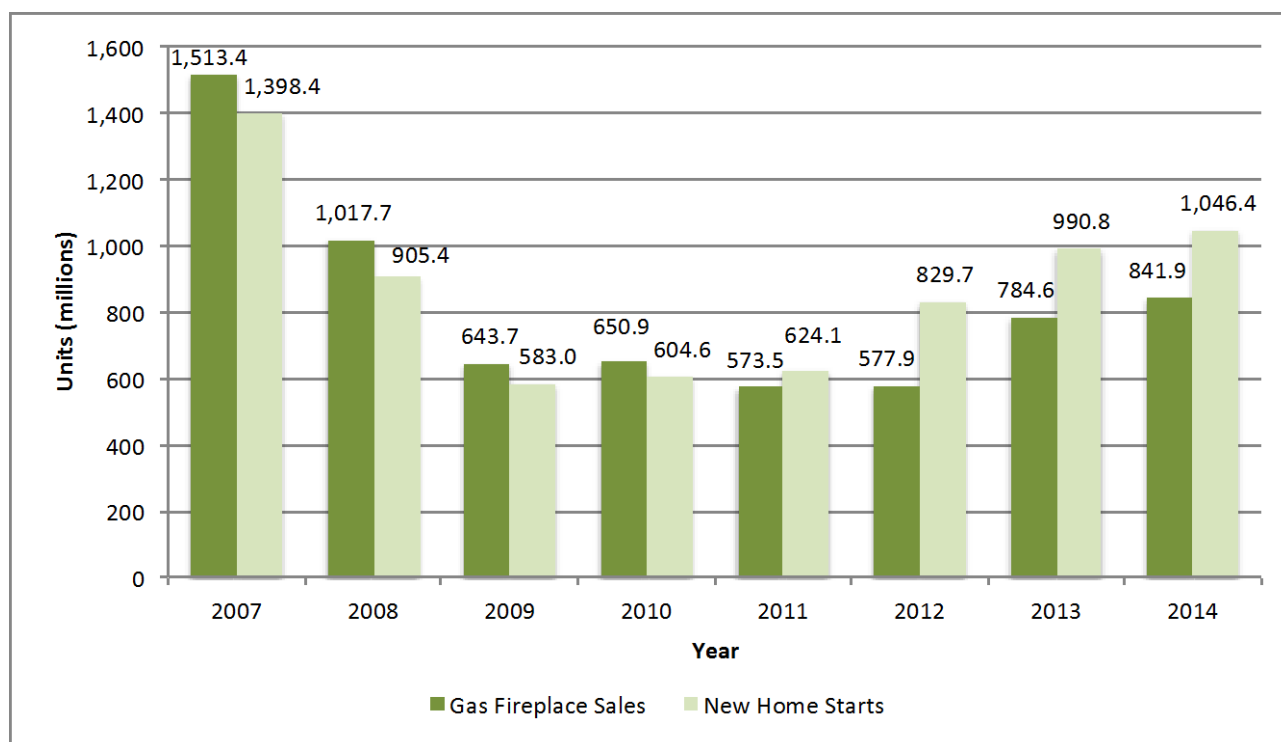
Similar to the economy as a whole, the gas fireplace market experienced a significant downturn in 2008 because of the recession, which depressed consumer spending and decreased new home construction, upon which sales in the gas fireplace market are highly dependent. Figure 2 below presents 2007 through 2014 national home building permits compared with national shipments of gas hearth products as reported by the Hearth, Patio and Barbecue Association. As the figure illustrates, both new home starts and gas hearth product shipments slowed from 2007 to 2012. Since 2012, hearth product shipments have increased in conjunction with new home starts as well as general improvement in the overall economy. This data was corroborated through interviews with manufacturers who saw increases of gas fireplace sales of on average 6.3 percent in the Northwest. Across market actors, this increase was largely attributed to general improvement in the economy and increases in new home construction.

²³ HPBA. 2011 State of the Hearth Industry Report. <http://www.hpba.org/media/hearth-industry-prs/2011-state-of-the-hearth-industry-report>

²⁴ *Ibid.*

²⁵ Evergreen Economics. 2015. *Energy Trust of Oregon New Homes Gas Fireplace Builder Interviews Memorandum.*

Figure 2: Gas Hearth Product Sales vs. New Home Starts (2007 – 2014*)



* Sources: United States Census Building Permits Survey; HPBA Hearth Unit Shipments, 2013. 2014 shipments are estimated by increasing national sales of 2013 by the percent increase in sales between 2013 and 2014 identified in the market actor interviews


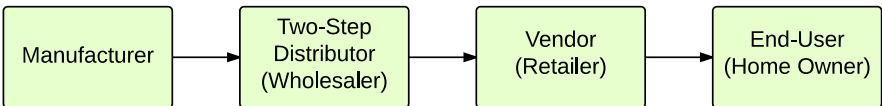
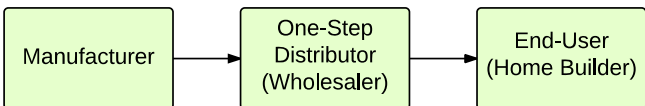
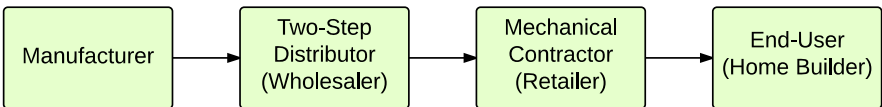
As noted above, there are two primary market segments for gas hearth products: the existing homes market, in which gas hearth products are installed in either retrofit or remodeling applications, and the new construction market. The new construction market can be further divided into the production build (“spec”) market and the custom homes market, which are significantly different in many ways. According to interviews with market actors conducted as part of this study, the production build market is highly price driven, with builders searching for the least cost product that meets their minimum aesthetic and size requirements. This segment is least concerned with energy efficiency in their purchasing decisions. The custom home market is less price sensitive because the future homeowner often has a choice in selecting the type of gas hearth appliance installed in the home. While this market is still highly price sensitive, the involvement of the owner means they may be willing to pay a higher price for aesthetic features or FE. The existing homes market is the least price sensitive of the three markets with homeowners more likely to be focused on aesthetics and other features including IPI and FE.

4.3 Distribution Channels

The distribution of gas hearth products varies depending on the manufacturer and the market segment. The market actor interviews conducted as part of this study revealed that whether a product is to be installed in an existing home or a new home dictates, in part, the distribution

pathway of a gas fireplace. Furthermore, within these two general markets, a fireplace can either be sold “direct to dealer” or via one- or two-step distribution. The primary distribution pathways in the gas hearth market are explained in more detail below, in Table 10.

Table 10: Gas Fireplace Distribution Channels

Existing Homes	Direct to Dealer
	<p>Manufacturer distributes products directly to fireplace vendors with whom they have contractual arrangements.</p>  <pre> graph LR M[Manufacturer] --> V[Vendor (Retailer)] V --> E[End-User (Home Owner)] </pre>
New Construction	Two-Step
	<p>Manufacturer sells hearth products to a distributor, the distributor then sells products to vendors who retail the products to end-users.</p>  <pre> graph LR M[Manufacturer] --> D[Two-Step Distributor (Wholesaler)] D --> V[Vendor (Retailer)] V --> E[End-User (Home Owner)] </pre>
Existing Homes	One-Step (Installing Distributor)
	<p>Manufacturer sells products to a distributor who then sells directly to wholesale end-users such as builders and contractors serving the new construction market. This is a common approach in custom home applications.</p>  <pre> graph LR M[Manufacturer] --> D[One-Step Distributor (Wholesaler)] D --> E[End-User (Home Builder)] </pre>
New Construction	Two-Step
	<p>Manufacturer sells hearth products to a distributor, the distributor then sells products on to mechanical contractors (HVAC Contractors) who retail the products to builders.</p>  <pre> graph LR M[Manufacturer] --> D[Two-Step Distributor (Wholesaler)] D --> MC[Mechanical Contractor (Retailer)] MC --> E[End-User (Home Builder)] </pre>

4.4 Northwest and Oregon Market Overview

The gas fireplace market in the Northwest, including Oregon, is similar to the national market in that a few large manufacturers dominate the market with several smaller manufacturers targeting specific markets or developing niche products (including high-efficiency gas fireplaces). Table 11 below provides a summary of brands sold in the Northwest, by parent company. While specific market share and sales volumes are not available for each manufacturer, the number of models produced by each manufacturer provides an indication of the size of the manufacturer, which may possibly be indicative of market share. As shown in this table, Hearth & Home Technologies, Empire Comfort Systems, and Innovative Hearth Products are the dominant manufacturers in the Northwest.

Table 11: Gas Hearth Brands by Manufacturer and Number of Models Made*

Parent Company / Manufacturer	Brand(s)	# Models Made	% Models Made
Innovative Hearth Products	Innovative Hearth Products, Lennox, Comfort Flame, Superior, Iron Strike, Vantage Hearth	328	19%
Empire Comfort Systems	Empire Comfort Systems, American Hearth	291	17%
Hearth & Home (Vermont Castings)**	Majestic (Vermont Castings), Monessen (Vermont Castings, Vermont Castings	213	13%
Hearth & Home	Heat-N-Glo, Heatilator, Quadra-Fire	170	10%
Ortal	Ortal	120	7%
Kingsman	Kingsman, Marquis Collection	89	5%
Montigo	Montigo	81	5%
Regency (FPI)	Regency, Hampton, Excalibur	66	4%
Napoleon	Napoleon	54	3%
Hussong Manufacturing	Kozy Heat	53	3%
Continental	Continental	36	2%
Miles Industries	Valor	31	2%
Pacific Energy	Pacific Energy, Town and Country	29	2%
Sherwood Industries	Envirofire, Westgate	23	1%
Travis Industries	Travis Industries, Lopi	22	1%
Mendota	Mendota	20	1%
Archgard	Archgard	17	1%
Jotul	Jotul	17	1%
Hearthstone	HearthStone	15	1%
Blaze King	Blaze King	9	1%
Ambiance Fireplaces	Ambiance	4	0%
Scan	Scan	3	0%
Total Models		1,691	100%

*Source: NRCan. Internet Research of Manufacturer Sites

** Hearth & Home acquired Vermont Castings in late 2014.

The Northwest market follows the same general distribution pathways as the national market, with distributors playing a significant role in the sale of gas hearth products where

manufacturers do not have direct to dealer distribution. We identified 10 primary gas hearth product distributors in the Northwest, who distribute a wide range of brands and serve a variety of customer types (retailers, builders, homeowners).²⁶ Five serve only Oregon and/or Southwest Washington, and the other five serve Oregon and/or other Northwest states, and in some cases, states beyond the Northwest. Six of the ten distributors can be categorized as one-step (or installing) distributors, and four can be categorized as two-step distributors.

The number of vendors active in Oregon increased by about 30% since the 2013 vendor study; in eastern Oregon, the number of vendors doubled, and the number of vendors nearly doubled in southern Oregon. Table 13 below presents the number of vendors in each geographical region in Oregon compared with findings from Energy Trust's 2013 survey of Oregon vendors.

Table 12: Oregon Vendors by Geographic Location

Region	Survey Of Oregon Hearth Vendors (2013)		Market Transformation Study (2014)	
	Count	% of Total	Count	% of Total
Northern Oregon	23	48%	24	39%
Willamette Valley	9	19%	13	21%
Southern Oregon	6	13%	10	16%
Coastal Oregon	5	10%	5	8%
Eastern Oregon	5	10%	10	16%
Total	48	100%	62	100%

*Source: Oregon HPBA, Online research

4.5 Estimated Market Size

To estimate the size of the gas fireplace market in Oregon and the Northwest, Evergreen asked manufacturers and distributors to provide their total sales in Oregon and the Northwest, as well as an estimate of their market share. While several interviewees provided detailed sales figures, only one manufacturer gave an indication of their market share (with others either stating that there is insufficient information for them to be able to determine their market share in the Northwest and Oregon, or that they were not comfortable providing this information). The manufacturer who provided an estimate stated that they sold approximately 2,000 units in Oregon in 2013 and 2014 and their market share was 20

²⁶ We are confident that we identified all distributors in the Northwest, however, it is possible there are smaller regional distributors that we did not identify.

percent. Based on these two estimates, the market size in Oregon is approximately 10,000 units.

To determine if this estimate is reasonable, we compared it with the 2009 and 2013 vendor study estimates, adjusted by the national gas fireplace growth rates derived from the information in Figure 2 (national gas hearth product sales from 2007 to 2014). The 2008-2009 adjustment factor is calculated as the percent difference between the total national 2007 sales and total national 2014 sales. The 2012-2013 adjustment factor is calculated as the percent difference between national 2012 sales and national 2014 sales. Table 14 shows the original estimates, adjustment factors, and adjusted estimates output from this analysis.

Table 13: Estimated Market Size Based on 2008 and 2013 Vendor Studies

	Original Estimate	Adjustment Factor	Adjusted Estimate
2008-2009 Cooling Season	8,200 – 13,750	-17.2%	6,790 – 11,385
2012-2013 Cooling Season	7,584	45.7%	11,049

The estimate of 10,000 units falls within the range of both the original and adjusted estimates from the 2009 vendor study and is 10 percent less than the adjusted estimate from the 2013 vendor study, so we believe that an estimate of approximately 10,000 units sold in 2014 for the Oregon gas fireplace market is reasonable for the purposes of this study.

5 In-depth Interview Findings

In this section we present findings from in-depth interviews with gas hearth manufacturers, distributors, and vendors active in the Northwest. Although the interview guides had questions tailored for each group of actors, there were a common set of questions asked of the three groups that fall into the following four categories:

- Business scope
- Gas fireplace sales
- Distribution channels

5.1 Gas Hearth Manufacturers

The following section presents a summary of seven interviews Evergreen conducted with direct-vent gas fireplace manufacturers. Interviews ranged in length from 30 minutes to 1 hour and 20 minutes. All of the manufacturers sell hearth products in Energy Trust's service territory as well as other regions of the Northwest. The primary goals of these interviews include:

- Develop an understanding of the gas hearth market both within and outside of Energy Trust's service territory.
- Collect information about the prevalence of IPI and distribution of FE levels in hearth products being sold within Energy Trust's service territory and outside of Energy Trust's service territory where incentives have not been provided.
- Collect information to establish current and future baseline characteristics for fireplaces.

Lastly, if the markets in Oregon and the comparison region were found to be different, we sought to develop an understanding of the factors contributing to differences between these two regions.

5.1.1 Manufacturers' Business Scope

Evergreen conducted interviews with seven representatives from direct-vent gas hearth product manufacturers serving the Oregon market. Prior to the interviews Evergreen worked with Energy Trust staff members to develop a list of manufacturers from which to draw interview targets. The final interview target list contained 12 hearth product manufacturers, including six large manufacturers, four smaller manufacturers of standard hearth products, and two manufacturers of high-efficiency hearth products. Evergreen's goal was to interview eight of these manufacturers, and seven interviews were completed. The remaining interview targets either declined to be interviewed or were unable to be reached after several attempts by phone and email. Table 15 below presents some select firmographic details about the

interviewed manufacturers (findings in subsequent sections related to one or a small number of manufacturers will refer to the manufacturer by the number in the left column).

Table 14: Manufacturer Firmographics

Manufacturer #	Manufacturer Type	Provided Information About Oregon?	Provided Information About Comparison Region?
Manufacturer 1	Specialty – High-Efficiency	X	X
Manufacturer 2	Specialty – High-Efficiency	X	X
Manufacturer 3	Large	X	X
Manufacturer 4	Large	X	X
Manufacturer 5	Large	X	X
Manufacturer 6	Medium	X	X
Manufacturer 7	Large	X	X

Respondents held the following positions: CEO (n=1), Vice President of Sales and Marketing (n=3), Northwest Regional Sales Representative (n=3). All respondents had held their current positions for between 10 and 33 years. As noted in the table above, all hearth product manufacturers sell their products nationwide as well as internationally.

As described in Section 4.5, we estimate total direct-vent gas fireplace sales in 2014 in Oregon at approximately 10,000 units. Based on this estimate, the interviewed manufacturers reported covering at least 50 percent of the total market share of hearth products in Oregon.

5.1.2 Manufacturers' Gas Fireplace Sales

Evergreen asked manufacturers to provide specific information about their sales of direct-vent gas fireplaces in Oregon and other parts of the Northwest. Five manufacturers provided specific sales estimates. Two manufacturers (2 and 7) did not provide any sales information or market share information. To ensure that specific manufacturer sales figures cannot be distinguished, we present the information provided in aggregate across the five manufacturers who provided sales figures. Table 16 below presents the total sales volumes reported by the five manufacturers in Oregon, Western Washington, and the remaining regions of the Northwest (Eastern Washington, Idaho and Montana).

Table 15: Manufacturer Reported Gas Fireplace Sales, by Northwest Region and Year (n=5)

Region	2013	% of Total 2013	2014	% of Total 2014	% Change
Oregon	4,310	37%	4,590	37%	6.5%
Western Washington	4,970	42%	5,310	42%	6.8%
Eastern Washington, Idaho, Montana	2,500	21%	2,620	21%	4.9%
Overall (Northwest)	11,780		12,520		6.3%

Five manufacturers who provided sales information reported that Oregon sales accounted for between 23 percent and 40 percent of overall Northwest sales, while Western Washington sales accounted for between 35 percent and 55 percent of overall Northwest sales.

Overall sales of hearth products increased between 2013 and 2014, according to the interviewed manufacturers. Six manufacturers mentioned that sales increased between these two years in the Northwest, while one manufacturer (5) claimed that there was no discernable growth between the two years. Growth estimates varied across the six manufacturers in the Northwest. Manufacturers 1 and 2, both manufacturers of higher end, high-efficiency products, saw the highest growth, quoting 12 percent and 57 percent increases, respectively, across the region. Both of these manufacturers noted that growth was

highest in Oregon, with Manufacturer 2 noting that they saw a 110 percent increase in Oregon sales between 2013 and 2014. Both of these manufacturers stated that the primary driver behind the growth in Oregon sales was Energy Trust's program. Manufacturers 3, 4, and 6 all reported more modest increases regionally ranging from seven to 11 percent. Manufacturer 7 would not provide specific data for their sales but stated that in general their sales increased between the two years. These manufacturers all stated that growth was similar across the region with no discernable difference between areas within the Northwest.

We asked the six manufacturers that saw increases between 2013 and 2014 what they believed were the driving forces behind the growth. Manufacturers provided the following responses:

- General improvement in the economy (mentioned by all six).
- Growth in residential new construction (mentioned by four).
- Rebate programs in Oregon and Western Washington (mentioned by two).
- Increased marketing efforts (mentioned by one).

As mentioned above, only one manufacturer (5) could provide an accurate assessment of their market share in the Northwest, estimating that their sales account for 20 percent of gas fireplaces in both Oregon and the entire Northwest. Other manufacturers stated that there is no industry wide information available to them to determine their overall market share in the Northwest, and therefore could not provide estimates.

Manufacturers had difficulty providing estimates of their sales that went to new homes versus existing homes. Manufacturers 1 and 2 stated that over 90 percent of their sales are to the existing homes market, reportedly because their products are higher end and very efficient, thus the associated higher prices of their products turn builders away. Manufacturer 3 claimed that 40 percent of their product is sold to the new construction market with the remaining 60 percent sold to the existing homes market. Manufacturer 4 stated that they manufacture a range of products including lower end products that are aimed at the builder market and higher end products aimed at the retrofit market (they could not provide estimates of the proportions sold to each market, however). The remaining three manufacturers were also unable to provide estimates.

5.1.3 Manufacturers' Distribution Channels

The interviewed manufacturers provided a detailed picture of the distribution networks in the hearth product marketplace. Across the seven manufacturers, three distribution approaches emerged. These approaches include the following:

- **Direct to Dealer:** The manufacturer sells products directly to fireplace vendors (retailers) with no involvement by third party distributor. This approach is typically used for distribution to the replacement or retrofit market.
- **1-Step (Installing Distributor):** The manufacturer sells products to a distributor who then sells directly to builders or contractors serving the new construction market.

- **2-Step:** The manufacturer sells hearth products to a distributor, who then sells products to vendors (retailers), who retail the products to end-users. This approach is typically used for distribution to the replacement or retrofit market.

Table 17 below presents the details of distribution channels for each manufacturer in the Northwest. All manufacturers claim that there is no significant difference in distribution channel sales between the four states in the Northwest.

Table 16: Manufacturer Distribution Channels

Manufacturer #	% Sales via Direct To Dealer	% Sales via 1-Step	% Sales via 2-Step
Manufacturer 1	100%	0%	0%
Manufacturer 2	100%	0%	0%
Manufacturer 3	0%	0%	100%
Manufacturer 4	100%	0%	0%
Manufacturer 5	0%	20%	80%
Manufacturer 6	0%	0%	100%
Manufacturer 7	70%	30%	0%

Three manufacturers (1, 2, and 4) reported having a direct to dealer distribution approach. Two manufacturers (3 and 6) reported having a two-step distribution approach. One manufacturer (5) described their process as a combined one-step and two-step distribution process where their products are distributed to retailers through the two-step approach and to builders through the one-step approach. Lastly, Manufacturer 7 stated that they use a combination direct-to-dealer and one-step approach. The two manufacturers that use multiple distribution channels (5 and 7), both reported their one-step distribution served primarily the new construction market with the other distribution channel serving primarily the existing home (replacement or retrofit) market. Both manufacturers stated that the new homes market was primarily driven by cost and tended to purchase basic models with fewer features. Manufacturer 5 mentioned that the new homes market tended to purchase stand-alone fireplaces more frequently than other fireplace types such as fireplace inserts or zero-clearance fireplaces.

5.1.4 Manufacturers' Products and Product Development

The seven manufacturing companies represent 17 brands of gas fireplace that cater to a range of customers. The larger manufacturers as well as Manufacturer 6 produce a broad product range, from low price economy hearth products to high-end products with a range of features. Manufacturers 1 and 2 are specialty manufacturers that produce higher-end, high-efficiency products. We asked manufacturers how they decide which products to develop, and all stated

that they are very connected to the market actors in their distribution networks, including distributors and vendors, via a variety of formal channels, including regular meetings with dealers or dealer advisory councils, and informal channels such as conversations between dealers and sales representatives. Manufacturer 7 also conducts their own detailed market research to understand market trends. Key factors that guide product development for each of the manufacturers are shown in Table 18 below.

Table 17: Manufacturers’ Key Product Development Considerations

Manufacturer	Primary Considerations	Secondary Considerations
Manufacturer 1	<ul style="list-style-type: none"> • Efficiency • No reliance on electricity (blowers/fans) 	<ul style="list-style-type: none"> • Aesthetics • Design
Manufacturer 2	<ul style="list-style-type: none"> • Efficiency • High quality (lifespan = 20 yrs+) 	(None mentioned)
Manufacturer 3	<ul style="list-style-type: none"> • Aesthetics • Application (size and style) 	<ul style="list-style-type: none"> • Efficiency
Manufacturer 4	<ul style="list-style-type: none"> • Aesthetics • Serviceability • High quality 	<ul style="list-style-type: none"> • Efficiency (gaining importance)
Manufacturer 5	<ul style="list-style-type: none"> • Aesthetics • Design • Application 	<ul style="list-style-type: none"> • Efficiency (low priority)
Manufacturer 6	<ul style="list-style-type: none"> • Aesthetics 	<ul style="list-style-type: none"> • Efficiency (low priority)
Manufacturer 7	<ul style="list-style-type: none"> • Aesthetics 	<ul style="list-style-type: none"> • Efficiency (low priority)

We asked manufacturers to explain the key determinants of the price of direct-vent hearth products. Table 19 below shows that across manufacturers, the most frequently mentioned determinants of price were aesthetic features of the hearth products including exterior finish, log sets, and style (linear, rectangular, etc.), followed by fireplace size. Three manufacturers mentioned BTU output (heat) as a factor in price. Four manufacturers mentioned efficiency as a factor in the price of gas hearth products, however, one noted what they considered an important distinction which is that while energy efficiency is a component of the cost of production of gas fireplaces, it is not a consideration in their pricing strategy. Three manufacturers (3, 5, and 7) stated that efficiency of fireplaces has no impact on the price.

Table 18: Manufacturer Reported Factors that Influence Gas Fireplace Price*

Factor	# Manufacturers
Aesthetics	7
Size	5
Efficiency	4
BTU Output	3
Ignition System	2
Remote Features	1

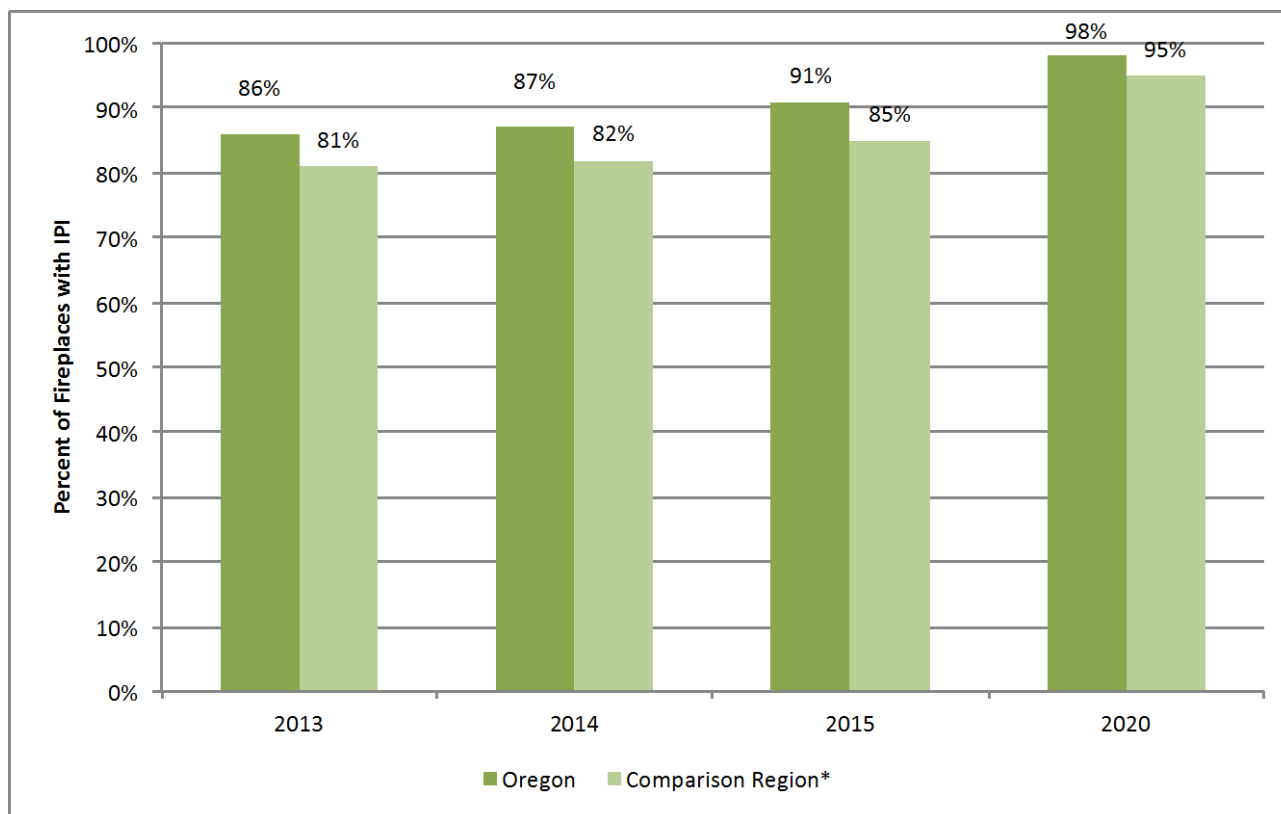
* Multiple responses accepted from each manufacturer

5.1.5 Manufacturers' Prevalence of IPI and Fireplace Efficiency Levels

Evergreen asked manufacturers a series of questions aimed at determining the prevalence of different ignition systems and FE ratings among products they sold. This section summarizes the results of these questions.

We first asked interviewees to estimate the proportion of fireplace sales in 2013 and 2014 that were of products with either IPI or pilot on-demand systems. We then asked interviewees to provide estimates of the proportion of sales that will have IPI or pilot on-demand systems in 2015 and in 2020, under the assumption that no DOE rule would be in effect. Figure 3, below, provides a graphical representation of the actual and predicted trend, in IPI prevalence reported by manufacturers, based on sales-weighted average responses across the interviewees.

Figure 3: Comparison of Manufacturer Reported IPI Prevalence – Oregon vs. Comparison Region



*The comparison region includes Northwest regions outside of Oregon and Western Washington.

Individual manufacturer reports of IPI prevalence ranged from 40 percent to 100 percent in both Oregon and the comparison region in 2014. All seven manufacturers expect to see this proportion increase in both regions over the next five years. In aggregate, the seven manufacturers predicted that the prevalence of IPI will approach 100 percent penetration in Oregon, with the average predicted penetration in Oregon at 98 percent by 2020. In the comparison region, these manufacturers expect that the prevalence of IPI will also increase to approximately 95 percent by 2020. Manufacturers expect to see IPI prevalence grow in Oregon at a more rapid pace in the next year than in the comparison region, but by 2020, the prevalence of IPI in both regions will converge to near 100 percent.

We asked the interviewees why IPI system prevalence has increased between 2013 and 2014 and why they predict increases in the future. Across all manufacturers the consensus was the industry is generally moving toward IPI systems, in response to consumer demand and energy savings. One manufacturer (1) only makes products with IPI or pilot on-demand ignition systems, and two manufacturers (4 and 7) stated that all their new products have IPI (standing pilot lights are only available in their older models). Another manufacturer (2) noted that they have one product with a standing pilot light, which is sold in Eastern Washington and Idaho but does not sell in Oregon because the Energy Trust incentive brings

the price of the IPI model below the standing pilot light model. A third, large manufacturer (7), stated:

“In the next year or two we will be 100% out of standing pilot lights ... what is driving the move toward IPI is: 1) energy savings – most customers only use their fireplaces a few hours a year so having the IPI saves energy; and 2) customer demand for IPI because of the ease of use”.

The estimates of IPI prevalence between Oregon and the comparison region did not differ for four manufacturers. Among the three manufacturers that did identify a difference between these two regions, three reasons for the difference were identified, with each manufacturer ranking the importance of these reasons slightly differently (presented in Table 20, below). The reasons stated were the incremental cost difference between standing pilot lights and IPI, the existence of rebate programs in Oregon and the absence of similar offerings in the comparison region, and the perception that IPI has performance and reliability problems that do not exist in standing pilot light systems. The technical issues manufacturers raised were:

- Increased condensation build-up in IPI models in colder temperatures. This is a concern for customers because it detracts from the aesthetic of the fireplace, is perceived as an indication of a problem with the fireplace, and can mean that there is mineral deposit build up on the glass, requiring more frequent cleaning and servicing of the unit.
- Unreliability of IPI during power outages. Customers in rural areas are concerned that IPI will not operate during power outages when no electricity is being supplied to the unit.
- Slow start times for IPI units in cold temperatures and areas with high humidity. Manufacturers reported that cold or humid climates can be problematic. In these climates IPI systems can take longer to create a spark while the gas is on, leading to a longer start time and the buildup of excess gas in the firebox.
- Elimination of draft with standing pilot light. One manufacturer (7), claimed that IPI systems, when off, can result in a cold air draft entering the home via the flue, which is eliminated with a standing pilot light.

Table 19: Manufacturers’ Reasons for Differences in Prevalence of IPI Across the Northwest

Manufacturer	Reasons for Differences
	1) Cost
Manufacturer 2	2) Rebate programs / availability of rebates 3) Concerns about performance
Manufacturer 4	1) Rebate programs / availability of rebates 2) Concerns about performance

	1) Concerns about performance
Manufacturer 6	2) Cost
	3) Rebate programs / availability of rebates

Discussion with various stakeholders prior to this study revealed that some IPI systems might have a feature that allows the user to disable the intermittent pilot ignition, effectively transforming the ignition to a standing pilot light. Interviews with manufacturers revealed that this functionality is widely available. Three large manufacturers (3, 5, and 6) stated that all IPI systems on their products could be disabled and switched to standing pilot mode. Manufacturer 7 stated that for about 20 percent of their products the user could disable the IPI. Three manufacturers (1, 2, and 4) stated that the IPI systems of their products could not be disabled.

We also asked manufacturers if there was a relationship between the ignition system of a fireplace and the efficiency of the fireplace. Specifically, we asked whether higher efficiency units tended to have IPI versus standing pilot ignition. Five manufacturers (1, 2, 4, 6, and 7) noted a relationship between higher efficiency units and IPI prevalence. All five noted that their newer models tend to have IPI and also tend to be more efficient. One manufacturer (7) noted that the existence of IPI is included in the FE calculations therefore by definition those with IPI will be more efficient when measured by FE. The remaining two manufacturers (3 and 5) stated that there was no direct relationship between FE and IPI in their models that they could identify.

Next we asked interviewees to estimate the proportion of fireplace sales in 2013 and 2014 by efficiency tier. The tiers are shown below, in Table 21.

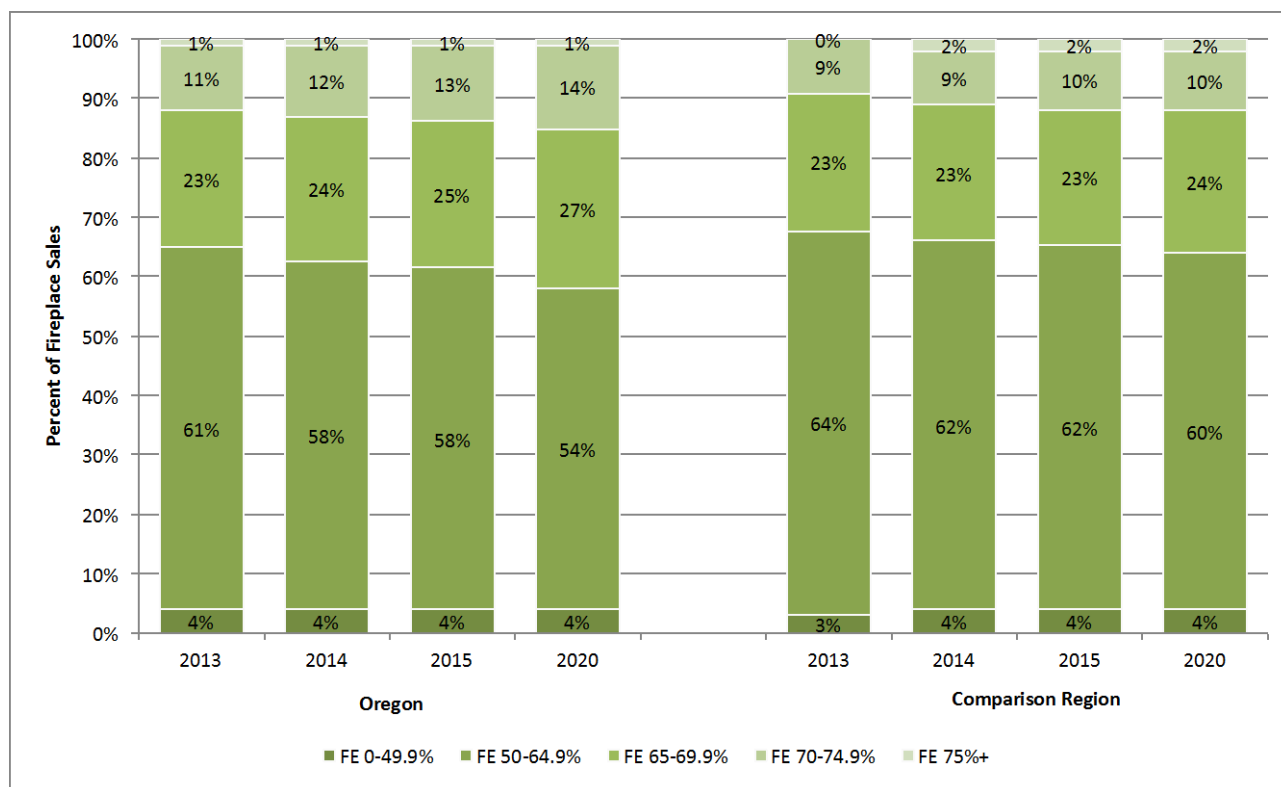
Table 20: Fireplace Efficiency Tiers

Tier Name	Fireplace Efficiency (FE) Range
Decorative	0-49.9%
Standard Efficiency	50.0-64.9%
High Efficiency	65.0-69.9%
Innovative – Pre Condensing	70.0-74.9%
Innovative – Condensing	75.0%+

We asked interviewees to provide estimates of the proportion of sales that will fall into each efficiency tier in 2015 and in 2020. As above, we asked interviewees to provide these estimates for sales in Oregon alone, and sales in a comparison region.

Figure 4, below, presents the proportion of gas fireplace sales and forecasts from manufacturers across the five FE tiers in Oregon and the comparison region, based on sales-weighted average responses across the interviewees.

Figure 4: Comparison of Manufacturer-Reported FE – Oregon vs. Comparison Region*



*The comparison region includes Northwest regions outside of Oregon and Western Washington.

In Oregon, manufacturers cited the highest proportion of sales in the 50%-64.9% FE tier (61%), with approximately 35 percent of sales falling in tiers above 65% FE in 2013. In 2014, sales in the top three tiers increased to 37 percent. Manufacturers predict that the mix of products will change toward more efficient products in Oregon, with 42 percent of products predicted to be in the top three efficiency tiers by 2020. In the comparison region, manufacturers also cited the highest proportion of sales in the 50%-64.9% FE tier (64%), with approximately 32 percent and 34 percent of sales falling in tiers above 65% FE in 2013 and 2014, respectively. Manufacturers predict that the mix of products is unlikely to change significantly in the absence of DOE regulations or incentive programs in the comparison region with the proportion of sales in the upper three tiers predicted to reach 36 percent by 2020.

The estimates of FE between Oregon and the comparison region did not differ for three manufacturers (1, 3, and 5). Among the four manufacturers that did identify a difference between these two regions, the top three reasons, ranked by importance, for each are shown below in Table 22.²⁷

Table 21: Manufacturers’ Reasons for Differences in FE Distribution Across the Northwest

Market Actor	Reasons for Differences
Manufacturer 2	1) Rebate programs / availability of rebates 2) Dealers more interested in high efficiency 3) Attitudes toward energy efficiency among customers
Manufacturer 4	1) Rebate programs / availability of rebates 2) Attitudes toward energy efficiency among customers 3) Concerns about IPI performance*
Manufacturer 6	1) Cost 2) Rebate programs / availability of rebates 3) Attitudes toward energy efficiency among customers
Manufacturer 7	1) Rebate programs / availability of rebates

*Manufacturer 4 responded that IPI and FE are correlated and concerns about IPI performance and reliability is a barrier to purchase of efficient fireplaces in the comparison region

We asked manufacturers to consider if higher efficiency in gas fireplaces compromised other aspects of the fireplace such as performance or the aesthetic of the appliance. All seven manufacturers noted that the trade-off is between efficiency and the aesthetic of the flame. As fireplaces become more efficient, the flame color moves away from a “natural” flame color and size that consumers desire toward a blue flame that is less desirable.

We also asked manufacturers if they anticipated any significant changes in ignition technology in the future. Only Manufacturer 3 anticipated any changes to ignition types, stating that in the future there will be a move toward linking ignition to “smart products,” such as using applications on phones or tablets to control fireplace ignition.

Awareness of other incentive programs in the Northwest was very high. All manufacturers were aware of Energy Trust’s program. All manufacturers also stated that they are aware of

²⁷ While manufacturers were asked to explain differences in IPI prevalence over time, manufacturers were not asked to explain FE differences over time.

incentive programs offered by Puget Sound Energy and Fortis BC. One interviewee also mentioned the Cascade Natural Gas program in central Washington.

5.2 Gas Hearth Distributors

The following section presents a summary of seven interviews Evergreen conducted with direct-vent gas fireplace distributors operating in the Northwest, including Oregon, Washington, and Idaho. Similar to the manufacturer interviews, the primary goals of these interviews include:

- Develop an understanding of the gas hearth market both within and outside of Energy Trust's service territory.
- Collect information about the prevalence of IPI and the distribution of FE levels in hearth products being sold within Energy Trust's service territory and outside Energy Trust's service territory where incentives have not been provided.
- Collect information to establish current and future baseline characteristics for fireplaces.

Lastly, if the markets were found to be different, we sought to develop an understanding of the factors contributing to differences between these two regions.

In order to develop a sample frame, Evergreen conducted online research to identify hearth product distributors in the Northwest. In addition, Evergreen asked interviewed hearth product manufacturers which distributors their company used in the Northwest. From these sources, Evergreen compiled a list of ten distributors that included one-step distributors (distributors that sell direct to end-users as well as vendors) and two-step distributors (distributors that sell only to vendors). Initially, after discussion with Energy Trust staff, Evergreen decided to conduct three distributor interviews, targeting two interviews with two-step distributors and one interview with a one-step distributor that also served the new home construction market. Evergreen was able to meet this target and conduct the interviews as planned during May 2015. In August 2015, after further discussion with Energy Trust staff, Evergreen conducted interviews with an additional four distributors. These additional interviews were completed in September 2015. The length of the interviews ranged from 40 minutes to 60 minutes.

5.2.1 Distributors' Business Scope

In total, Evergreen conducted interviews with seven hearth distributors. Six of these distributors sold direct-vent gas fireplaces in Oregon, and four sold direct-vent gas fireplaces in the Northwest outside of Oregon and Western Washington. One distributor sold direct-vent gas fireplaces in the comparison region only. Based on the distributors' estimates of sales in Oregon, we estimate that sales from the six distributors represent approximately 65 percent of sales in Oregon. We estimate that the four distributors operating in the comparison regions represent approximately 55 percent of sales in the region. Table 23 below presents select

characteristics for the interviewed distributors (findings in subsequent sections will refer to the distributor by the number in the left column).

Table 22: Distributor Firmographics

Distributor	Target Markets	Provided Information About Oregon?	Provided Information About Comparison Region?
Distributor 1	Retailers, Builders	X	X
Distributor 2	Retailers	X	X
Distributor 3	Builders, Contractors, End Users	X	
Distributor 4	Retailers, Builders	X	
Distributor 5	Retailers	X	X
Distributor 6	Builders, Contractors, End Users	X	
Distributor 7	Builders, Contractors, End Users		X

Of the seven interviewees from each distribution firm, five were sales managers, and two were company owners with a good understanding of company sales. Across the seven respondents, their personal experience in the industry ranged from three to 30 years. Three distributors operate in Oregon as well regions outside of Oregon, three operate in Oregon and Southwest Washington only, and one operates in Eastern Washington and Idaho only. Of the four distributor interviewees who operated both in and outside of Oregon, three interviewees (Distributors 2, 5 and 6) were responsible for oversight of sales in all regions in the Northwest, while the interviewee from Distributor 1 was responsible for Oregon and Washington only, but was able to provide general information regarding other markets.

The interviewed distributors sell fireplaces from the following manufacturers: Archgard, Continental, Empire, Envirofire, Hearth & Home, Innovative Hearth Products, Jotul, Kingsman, Kozy Heat, Montigo, Napoleon, Pacific Energy, Regency, Sherwood Industries, Travis Industries, Vermont Castings, and Wolf Steel. We found that distributors were not always the exclusive distributor of certain hearth products with several manufacturers' products represented across the distributors with whom we spoke.

All seven distributors noted that they offer log sets as part of their product line, but each mentioned that these are a very small proportion of their overall business and are not particularly popular in the Northwest. Distributor 5 noted that demand for their log sets are typically from high-end homes.

5.2.2 Distributors' Gas Fireplace Sales

Evergreen asked distributors to provide specific information about their sales of gas fireplaces in Oregon and other parts of the Northwest. All seven distributors were able to provide this information. To ensure that specific distributor sales figures cannot be distinguished, we present the information provided in aggregate across the seven distributors. Table 24 below presents the aggregate sales volumes quoted by the interviewees in the Northwest overall, Oregon, Western Washington, and the remaining regions of the Northwest (Eastern Washington, Idaho and Montana)

Table 23: Distributor Reported Gas Fireplace Sales, by Northwest Region and Year

Region	2013	2014	% Change
Oregon	6,400	7,100	11.2%
Western Washington	3,400	3,610	6.2%
Eastern Washington, Idaho, Montana	2,550	2,700	5.2%
Overall (Northwest)	12,350	13,410	8.6%

As seen in Table 24 above, distributors reported an increase in sales overall between 2013 and 2014. In Oregon distributors experienced sales increases from 2013 to 2014 of between 7.5 percent and 15 percent. In the comparison region, distributors saw sales increases from 0 percent to 10 percent. All seven distributors experienced sales increases between 2013 and 2014. The key factors mentioned that contributed to the increase in sales were growth in the new home construction market (mentioned by all seven distributors), overall economic improvement (mentioned by all seven distributors), increased marketing efforts on the part of the distributor (mentioned by Distributor 1), and energy efficiency programs offered in the Northwest, including Energy Trust (mentioned by Distributor 5). No distributors could provide us with an estimate of their market share, stating that they do not have the information to provide this figure.

Table 25 below shows who purchases gas fireplaces from the interviewed seven distributors. As shown, two-step distributors have a higher proportion of sales to retailers or wholesalers and builders than direct to end-users. Conversely, one-step distributors sell products to wholesalers and builders or direct to end-users, they do not sell to retailers.

Table 24: Distributor Reported Gas Fireplace Customers (Sales Channels)

Distributor	Distributor Type	Retailers	Wholesalers / Builders	End Users
Distributor 1	Two-Step Distributor	32%	68%	0%
Distributor 2	Two-Step Distributor	100%	0%	0%
Distributor 3	One-Step Distributor	0%	75%	25%
Distributor 4	One-Step Distributor	0%	65%	35%
Distributor 5	Two-Step Distributor	100%	0%	0%
Distributor 6	One-Step Distributor	0%	25%	75%
Distributor 7	One-Step Distributor	0%	40%	60%

Distributors 1 and 4 noted that they have experienced a shift in their sales toward the builder market, either to contractors dealing with new construction or to builders directly. Both distributors noted that in 2012 their unit sales were split 50/50 between the new construction market and the retailer, or existing homes, market in either retrofit or

remodeling applications, but that this mix has shifted over the past two years toward a greater proportion of their sales being sold to the new construction market. Distributor 4 noted that their sales are now about 60 percent to new construction and 40 percent to existing homes. Distributor 1 noted that while the unit sales have increased to the new construction market, the dollar value of sales between the new construction and retailer markets is approximately equal, showing that the average cost of units sold to the builder market is lower than the average cost of units to the retailers for retrofit and remodeling applications. As noted above, Distributor 3 stated that virtually all of their sales increase between 2013 and 2014 was attributable to the new construction market. Distributor 2 only sells to the retail market and stated that the vast majority of these units go to retrofit or remodel applications. Distributors 5, 6 and 7 noted no shift in sales between markets in their sales over the past two years. Distributor 5 noted that sales of freestanding models have decreased to almost zero and are being replaced by built in zero-clearance fireplaces. This distributor attributed this primarily to customer demand for a built-in look.

We asked the five distributors who sell to more than one group if there is any difference in the product mix that the different groups purchase. All five distributors stated that the builder market – specifically the production building market as opposed to the custom building market – is driven primarily by price with builders looking for low-cost models that have the basic aesthetic features they seek. These distributors also noted that the builder market typically purchases less efficient models with a lower prevalence of IPI. While production builders purchase less efficient, lower price units, distributors stated that custom builders will purchase more expensive units and efficiency is more of a consideration because homeowners have direct input in the decision. Distributor 3 responded that:

“Production home builders are very price driven, while custom home builders are less price driven because the home owner has a choice in the selection of the fireplace. The main difference is production builders simply want a fireplace that looks OK so they can offer a fireplace in their home, so price is the number one concern. It is different when the buyer is the person who is going to own the fireplace. They will be less concerned about price and more concerned about other factors such as aesthetics, BTU output, and even efficiency.”

Distributor 3 further noted that there used to be a large difference in the two markets (new construction versus existing homes), with regards to ignition systems. Builders tended to purchase models with standing pilot lights because they were generally cheaper. However, the interviewee noted that in the past five years the cost of IPI systems has decreased and become less prohibitive. The result is that there is now no significant difference between the two markets in the prevalence of IPI with about 90 percent of sales to builders having IPI in Oregon.

As noted previously, distributor 5 stated that log-sets are typically purchased by high-end homes. The distributor suggested that these homeowners prefer the look of a wood fireplace but do not want the difficulty or mess of a wood fireplace.

5.2.3 Distributors' Stocking Decisions

As noted previously, the interviewed distributors stock and sell products from several manufacturers, and offer a broad variety of brands and models from each manufacturer. We asked distributors how they decide which products to stock and sell. All seven distributors noted that they work closely with their downstream customers (vendors, builders, and end users) to understand what customers are looking for and what trends are developing in the market. The two-step distributors, Distributors 1, 2, and 5, noted that vendors are a key source of information and often are the driving force determining what distributors stock. These three distributors noted that vendors know what features customers are looking for and what fireplace models will sell well in the market, which is key information for distributors looking to limit the risk of stocking products that they cannot move off their shelves. As Distributor 1 noted:

“The fireplace market is like the fashion industry, customer wants change constantly and styles are always evolving, we have to be very careful to listen to the market so we don’t end up with stock we can’t sell.”

Distributors 2, and 5, who sell products in both Oregon and the comparison region, noted that there are key differences in the products they stock between Western Washington and Oregon compared to Eastern Washington, Idaho and Montana, particularly with regards to ignition systems. Distributor 1, who also sells products in both regions stated there were no differences in the stocking practices between the two regions.

Distributor 2 stated that in the eastern regions where the weather is colder and more people live in rural areas, there is greater demand for standing pilot lights over IPI. This demand is due to several reasons:

- In colder climates the standing pilot light keeps the flue and fireplace cavity warm, reduces condensation, and eliminates downdrafts that can make cold starting a fireplace more problematic.
- In rural areas people want more reliable systems and the perception among both vendors and end-users is that IPI systems are more prone to breakdowns and require more maintenance.
- Rural areas experience more power outages so end-users and vendors are concerned that IPIs will not work in these situations.

Distributor 2 also noted that in Oregon and Western Washington, the presence of rebate programs has forced them to change their product mix to include more IPI systems and higher efficiency products to qualify for the rebates.

Distributor 5 noted that they also tend to stock more standing pilot light models in the comparison region, although some of these same issues are also present in Western Washington and Oregon due to the moist climate, which can be problematic for IPI systems.

All seven distributors noted that they work closely with the manufacturers whose products they stock and that manufacturers have a great deal of input into what they stock. All distributors stated that they have formal meetings periodically throughout the year with manufacturers to determine what products to stock.

As with manufacturers, we asked distributors to explain the key determinants of the price of direct-vent hearth products. All distributors mentioned that the most important determinants of price are aesthetic features of a fireplace, including unit style, finish and log set quality, and unit size, both in terms of physical unit size and BTU output. Four distributors explained that ignition systems also impact unit price, with remote controlled IPI systems being up to \$300 more expensive than standing pilot light systems. All distributors stated that energy efficiency can be a determinant of price, but is less important than other product characteristics. All distributors noted that energy efficiency is a determinant of the overall cost of a unit due to additional engineering requirements such as more complex heat exchangers and more expensive ceramic glass.

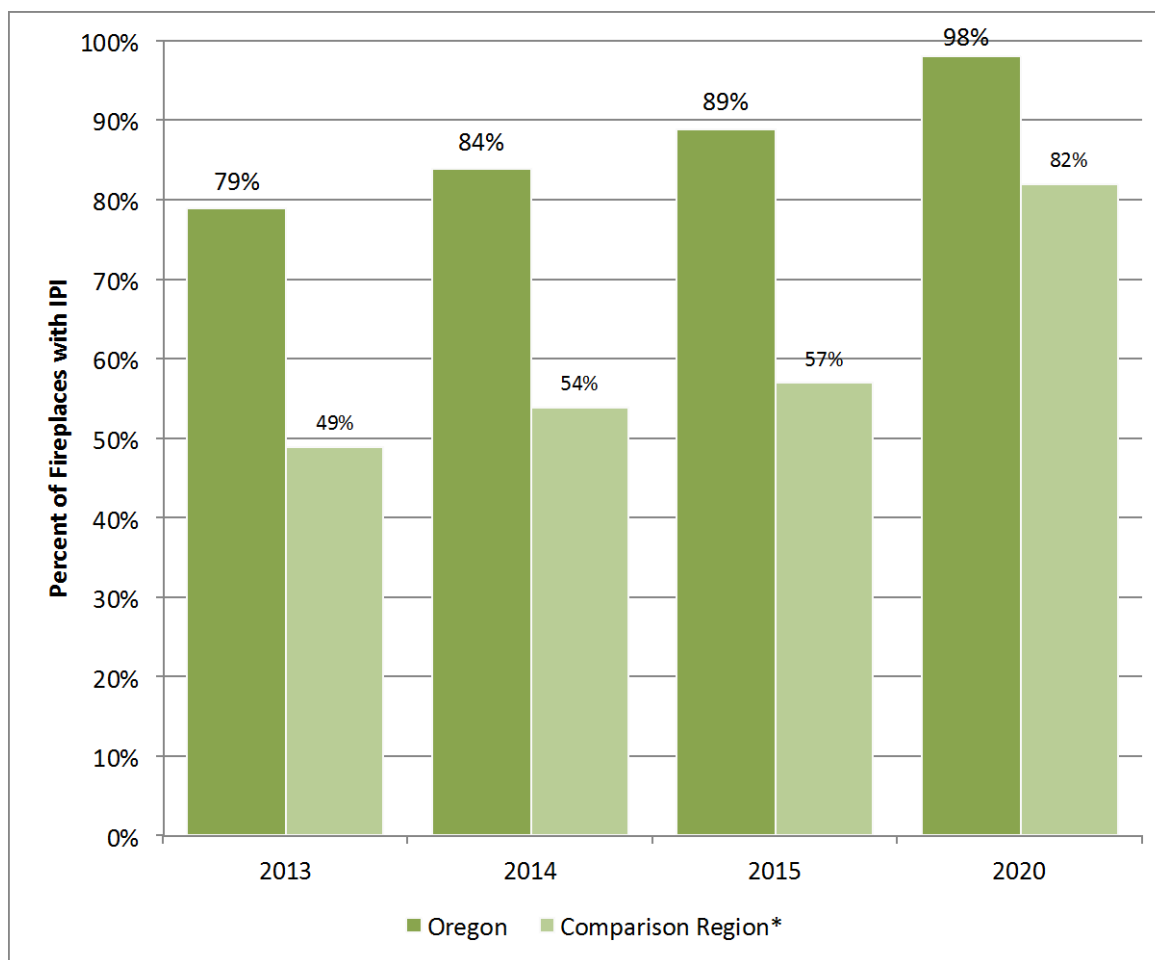
5.2.4 Distributors' Prevalence of IPI and Fireplace Efficiency Levels

Evergreen asked distributors a series of questions aimed at determining the prevalence of different ignition systems and FE ratings among products they sold. This section summarizes the distributors' responses.

Prevalence of IPI

We first asked interviewees to provide us with an estimate of the proportion of fireplace sales in 2013 and 2014 that were of products with either IPI or pilot on-demand systems. We then asked interviewees to estimate the proportion of sales that will have IPI or pilot on-demand systems in 2015 and 2020. We asked interviewees to provide these estimates for sales in Oregon, and then those in a comparison region. Figure 5, below, provides a graphical representation of the actual and predicted trend in IPI prevalence reported by distributors.

Figure 5: Comparison of Distributor-Reported IPI Prevalence – Oregon vs. Comparison Region



*The comparison region includes Northwest regions outside of Oregon and Western Washington.

All six distributors operating in Oregon predicted that the prevalence of IPI systems in Oregon will increase between 2015 and 2020 to close to 100 percent. Two of the four distributors operating in the comparison region (1 and 2) estimated approximately 80 percent penetration by 2020 in the comparison territory; distributor 4 estimated 85 percent and distributor 3 estimated 90 percent. We asked the interviewees why IPI systems have increased between 2013 and 2014 and why they predict increases in the future. The primary response from all seven distributors was that the market, nationally, is going in that direction due to federal regulation²⁸ and fireplace design. Distributor 2 noted that another important factor affecting their product mix was the promotion of IPI systems by rebate programs in Oregon and Western Washington.

²⁸ Evergreen asked distributors to provide predicted estimates based on the absence of DOE regulations in the future.

The three distributors that operate in both Oregon and the comparison region all noted that the prevalence of IPI systems in Oregon is higher than outside Oregon and Western Washington. We asked these distributors what they perceive to be the top three reasons for these differences, in order ranked from most important to least important.

Distributor 1 stated the following reasons:

1. Income in rural areas is lower so people in Eastern Washington, Idaho and Montana are more interested in low cost models that often have standing pilot lights.
2. Customers in Eastern Washington Idaho and Montana are more conservative and are used to standing pilot lights and don't want to change.
3. Customers in Eastern Washington Idaho and Montana perceive standing pilot lights as more reliable.

Distributor 2 stated the following reasons:

1. The existence of rebate programs in Oregon and Western Washington reduces the cost of more expensive IPI models.
2. Technical issues such as reduced condensation and reliability during power outages make standing pilot lights more appealing to customers in Eastern Washington Idaho and Montana.
3. Customers in Eastern Washington Idaho and Montana perceive standing pilot lights as more reliable.

Distributor 5 stated the following reasons:

1. Customers in Eastern Washington Idaho and Montana perceive standing pilot lights as more reliable.
2. The existence of rebate programs in Oregon and Western Washington reduces the cost of more expensive IPI models.
3. Vendors are more likely to promote standing pilot lights to reduce call outs.

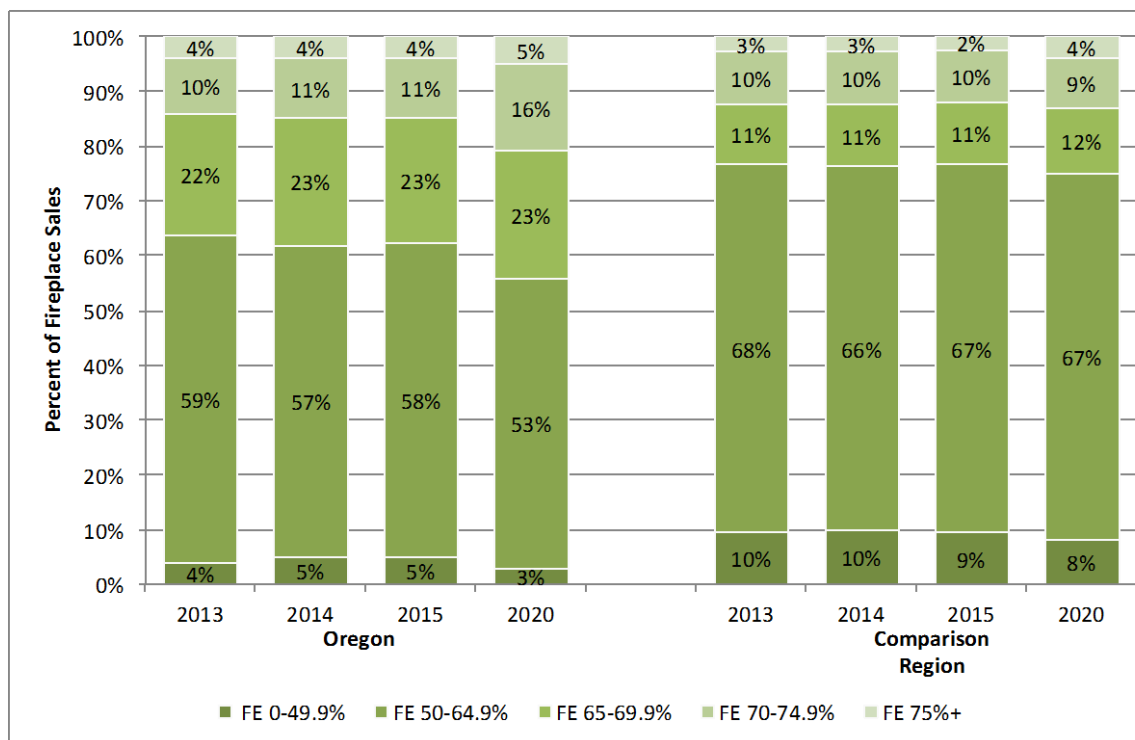
FE Distribution

We also asked interviewees if there was a relationship between the ignition system of a fireplace and the efficiency of the fireplace. All distributors stated that there is a direct relationship, with a higher percentage of high-efficiency models relying on IPI systems. Distributor 4 noted that the primary reason for this is the FE rating takes into account the ignition system.

We next asked interviewees to estimate the proportion of fireplace sales in 2013 and 2014 by level of efficiency, and then to estimate the proportions for 2015 and 2020. They provided estimates for sales in Oregon, and also sales in a comparison region. Figure 6 below presents the proportion of gas fireplace sales and forecasts from manufacturers across the five FE tiers

in Oregon and the comparison region, based on sales-weighted average responses across the interviewees.

Figure 6: Comparison of Distributor-Reported FE – Oregon vs. Comparison Region*



*The comparison region includes Northwest regions outside of Oregon and Western Washington.

Distributor-reported sales of gas fireplaces in 2013 and 2014 varied significantly across the five FE tiers in Oregon and outside of Energy Trust territory, as did predictions of future sales in 2015 and 2020. Three distributors (1, 2 and 5) operate in both Energy Trust territory and the comparison region and could provide a hypothesis on the reasons between the two regions.

The vast majority of Distributor 1's sales in 2013 and 2014 fall into the 50%-64.9% FE tier (93% and 90%, respectively). The remainder was split between the 0%-49.9% FE tier and the 75% + FE tier. This distributor also stated that the mix of product efficiency in the comparison region is approximately the same as that in Oregon because the product mix they offer is the same. However, Distributor 1 noted that because they do not personally cover Idaho and Montana that they do not have specific sales figures for these regions. When asked to provide estimated sales in 2015 and 2020 the respondent stated they would remain consistent with the product mix at present, claiming that they do not expect to see a significant change in the product mix they are providing to their customers over the next five years.

When asked what the three most important reasons for any difference between the two regions are, Distributor 1 listed the following (ranked from most important to least important):

1. The existence of rebate programs in Oregon and Western Washington. This distributor noted that these programs “really help sales of high efficiency fireplaces, they help get people thinking about efficiency”.
2. Concerns about IPI in cooler climates in the comparison region mean more standing pilot light units are sold and these are usually less efficient units.
3. Customers in the comparison region are more cost driven and buy units that have lower upfront costs.

In contrast, Distributor 2 identified a significant difference in the FE mix in their sales between Oregon and regions outside of Energy Trust territory. In Oregon, their product mix remained consistent between 2013 and 2014 with 65 percent of sales in the 65%-69.9% FE tier or greater. In the comparison region only 15 percent fall into the 65%-69.9% FE tier with the remaining sales falling in the 50%-64.9% FE tier or 0%-49.9% FE tier. Going forward, Distributor 2 does not see any change in the FE mix of their sales in 2015 in Oregon, however, they do expect to see a shift in the FE mix of their sales toward more efficient units by 2020. The distributor attributed this shift largely to the influence of rebate programs in Oregon and Western Washington. In the comparison region, Distributor 2 expects their FE mix of sales to remain stable at current levels (in the absence of any incentive programs in the region). Again, Distributor 2 attributed this difference to the existence of rebate programs in Oregon and Western Washington, resistance to IPI outside of those areas, and the prohibitive initial cost of higher efficiency models.

When asked what the three most important reasons for the difference between the two regions are, Distributor 2 listed the following (ranked from most important to least important):

1. The rebate programs in Oregon and Western Washington have led them to change their product mix in order to compete with higher efficiency models and models with IPI to qualify for rebates.
2. The prevalence of IPI in higher efficiency models is a turn off for some dealers and customers outside of Oregon and Western Washington.
3. Less disposable income among customers outside of Oregon and Western Washington and general attitudes toward energy efficiency mean people look for the cheaper option.

Distributor 5 identified a difference of approximately 5 percentage points in the FE mix of their sales between Oregon and the comparison region. In 2013 and 2014, 90 percent of Oregon sales fall in the tiers above 65%-69.9% FE, while in the comparison region, 85 percent fall into the tiers above 65%-69.9% FE. Going forward, this distributor expected that the proportion of fireplaces in the top three tiers in both regions would increase, to

approximately 97 percent in Oregon and to 95 percent in the comparison region – a difference of 7 percentage points.

We asked what the three most important reasons for the difference between the two regions were. Distributor 5 provided the following reasons (ranked from most important to least important):

1. Higher proportion of rural buyers in the comparison region. The distributor noted that they tend to see similar models sold in urban areas between the two regions, but rural buyers in the comparison region tend to opt for less efficient models.
2. The presence of rebate programs in Oregon and Western Washington promote sales of higher efficiency models and models with IPI that tend to be more efficient.
3. Buyers in the comparison region are more price sensitive, partly due to the lower income rural areas, so will tend to purchase lower cost models that are usually less efficient.

Three distributors (3, 4 and 6) operate in Energy Trust territory only.

Distributor 3's sales in 2013 and 2014 consisted of 50 percent of sales in the high efficiency tier or above, and 50 percent of sales in the standard efficiency tier (50%-64.9% FE) or below. This distributor predicted that there would be an increase between 2015 and 2020 in the energy efficiency of products that they sell with about 10 percent of products sold moving from the 50%-64.9% FE tier into the higher efficiency tiers. This distributor attributes the predicted increase to the general market trend toward more efficient products and the existence of rebate programs in Oregon that reduce the cost of high-efficiency products.

Distributor 4 sells mostly higher efficiency models and predicts that their sales will trend toward higher efficiency models going forward. In 2013 and 2014, 95 percent of distributor 4's sales were in the high-efficiency tier (65%-69.9% FE) or higher. This distributor predicts that this will increase to 100 percent by 2020. This distributor attributes the increase in efficiency to the existence of rebate programs in the northwest, and a trend toward higher efficiency products in the market. This distributor noted they are a higher end seller and tend to stock higher efficiency models as a result. This distributor also noted that they thought that there were some inherent problems with the FE rating that may be increasing efficiencies. In particular the distributor expressed concerns that the rating system is not regulated and is performed by multiple parties across the country, including by manufacturers themselves.

Distributor 6's sales in 2013 were comprised of approximately 50 percent of sales in the high efficiency tier or above. In 2014 this increased to approximately 60 percent of sales. This distributor predicts that by 2020 approximately 70 percent of sales will be units that fall into the high efficiency tier (65%-69.95% FE) or higher. Similar to distributors 3 and 4, distributor 6 attributed the increase to a general market trend toward higher efficiency units, more demand for higher efficiency units among existing home buyers and the existence of rebate programs in the Northwest.

Distributor 7 operates in the comparison region only. Distributor 7's sales in 2013 and 2014 were static with 55 percent of sales falling in the standard efficiency (50%-64.9%) or below tiers and 45 percent in the high efficiency tier (65%-69.9%) and above. Overall this distributor believed that the efficiency levels of fireplaces they sell will remain about the same in the foreseeable future with a small shift toward the high efficiency tiers over the next five years - 50 percent of sales in the high efficiency tier or above by 2020. The distributor attributed the increase in efficiency over the next five years to the greater prevalence of IPI systems in the fireplaces they sell which result in higher FE ratings.

Awareness of other incentive programs in the Northwest among the seven distributors was very high. All interviewees were aware of Energy Trust's program, including the one distributor who operated solely in Eastern Washington and Idaho. Of the six distributors that had experience with rebate programs, including Energy Trust's program, all provided unsolicited positive feedback that the programs have a positive impact on their sales of higher efficiency products. All distributors also stated that they are aware of incentive programs offered by Puget Sound Energy and Fortis BC.

5.3 Gas Hearth Vendors

Evergreen Economics conducted seven in-depth interviews with direct-vent gas fireplace vendors in the Northwest, but outside of Oregon and Western Washington. The interviews ranged in length from 15 minutes to 40 minutes. Table 26 shows the initial sample size for vendors within each of the targeted cities along with the number of completes.

Table 25: Vendor Sample Size and Completes, by City and State

City, State	Sample Size	Completes
Boise, ID	13	4
Spokane, WA	34	1
Idaho Falls, ID	19	2
Twin Falls, ID	8	0
Total	74	7

The following sections focus on the business scope, stocking and customer purchasing decisions, direct-vent gas fireplace sales, and FE levels for the responding vendors.

5.3.1 Vendors' Business Scope

Table 27 provides select vendor information for the group of seven interviewed Northwest fireplace vendors (findings in subsequent sections will refer to the vendor by the number in the left column).

As shown, five interviewed vendors represent independent businesses and two interviewees managed locations of a larger franchise. All respondents were either storeowners or managers, with experience ranging from seven to 22 years. All seven vendors sold gas fireplaces in Idaho, with multiple vendors also selling in Washington and Wyoming. Additionally, all vendors except Vendor 3 said their companies sold log sets in addition to traditional indoor gas fireplaces. While all seven vendors said they operate in some capacity as a traditional retailer or wholesaler, six of the vendors (excluding Vendor 5) said they also do contractor or installation work for certain projects including some gas fireplace projects. The amount of installation work is dependent on the scope of a project – including measure type and budget – along with the type of customer.

Table 26: Select Vendor Firmographics

Vendor	Core Business	Target Markets	Provided Information About Comparison Region?²⁹
1	Building supplies and lumber	Builders and contractors – new construction	X
2	Outdoor fireplaces	Retailers, builders, contractors	X
3	Indoor fireplaces and fire pits	Residential contractors and owners	X
4	Heating and plumbing	Builders – new construction	X
5	Wood fireplaces	Contractors – high-end new construction	
6	Indoor gas fireplaces	Homeowners – retrofits	
7	Indoor gas fireplaces	HVAC contractors and homeowners	

²⁹ Only four of the interviewed vendors were able to provide information IPI prevalence and FE in the comparison region.

5.3.2 Vendors' Gas Fireplace Sales

Participating vendors were asked to estimate their overall gas fireplace sales for 2013 and 2014. We spoke with vendors who report very different quantities of fireplace sales for 2013 and 2014. Furthermore, vendor reports of the percentage of their sales that went to builders varied widely, as did the percentage of each vendor's overall sales that came from gas fireplaces.

Only four of the interviewed vendors supplied sales estimates for their 2013 and 2014 gas fireplace sales.³⁰ Three out of four vendors that supplied sales estimates reported that 2014 sales were greater than 2013 (vendors 1, 3, and 7). The remaining vendor, vendor 4, said that sales were the same in 2013 as they were in 2014. Vendors indicated their sales increases were caused by a strong increase in consumer spending and overall increases in home remodels and new construction projects.

Table 27: Vendors' 2013 Fireplace Sales Statistics

Vendor #	Provided 2013 Sales?	% Of sales to new construction builders	% Of overall sales from gas fireplaces	% Of market share in vendors' region
Vendor 1	Yes	95%	1%	40%
Vendor 2	No	65%	90%	40%
Vendor 3	Yes	5%	40%	30%
Vendor 4	Yes	100%	10%	5%
Vendor 5	No	5%	20%	60%
Vendor 6	No	20%	N/A	N/A
Vendor 7	Yes	55%	30%	20%

³⁰ Vendors were asked to provide this information during the interview, and were also emailed a table following the interview if they could not estimate sales on the phone. Vendors who did not supply sales estimates did not respond to the email or to additional follow up calls.

Table 28: Vendors' 2014 Fireplace Sales Statistics

Vendor #	Provided 2014 Sales?	% Of sales to new construction builders	% Of overall sales from gas fireplaces	% Of market share in vendors' region
Vendor 1	Yes	95%	1%	40%
Vendor 2	No	65%	90%	40%
Vendor 3	Yes	10%	40%	30%
Vendor 4	Yes	100%	10%	5%
Vendor 5	No	8%	10%	60%
Vendor 6	No	20%	N/A	N/A
Vendor 7	Yes	55%	30%	20%

Only Vendor 2 said gas fireplace sales accounted for a majority (90%) of their overall company sales. Vendors 3 and 7 estimated that gas fireplace sales account for 40 and 30 percent of sales, respectively, and the rest of the vendors reported 10 percent or lower. Participating vendors also estimated their respective market shares in their primary sales regions. Vendor 4 – the smallest participating vendor, by reported 2013 and 2014 sales – estimated only a five percent market share, while the remaining vendors all provided estimates between 20 and 60 percent depending on their market. The respective markets varied across vendors, and these results reflect the conditions within their defined markets.

Participating vendors sold a variety of different gas fireplace makes and models in 2014, ranging in brand, size, and price. Vendors said the key factors that determine the price of the direct-vent gas fireplaces they sell are the efficiency (mentioned by five), brand name of the fireplaces (five), and the fireplace aesthetics (four). Table 31 below shows all of the primary factors that vendors reported influence the price of the gas fireplaces they sell.

Table 29: Vendor Reported Factors that Influence Gas Fireplace Price

Vendor	Primary Factors
Vendor 1	<ul style="list-style-type: none"> • Venting – cost of pipe
Vendor 2	<ul style="list-style-type: none"> • Efficiency • Features (control options) • Aesthetics – trim options
Vendor 3	<ul style="list-style-type: none"> • Brand • Efficiency • Aesthetics – doors/facings • Size • Heating output
Vendor 4	<ul style="list-style-type: none"> • Brand
Vendor 5	<ul style="list-style-type: none"> • Brand • Aesthetics • Efficiency • Size
Vendor 6	<ul style="list-style-type: none"> • Brand • Aesthetics • Efficiency
Vendor 7	<ul style="list-style-type: none"> • Efficiency • Size • Brand

Looking ahead, participating vendors identified broad trends in the gas fireplace market, both in terms of specific factors that are influencing sales currently and trends that they anticipate will impact the market in the next few years. Some of the key trends that vendors identified included:

- Changing aesthetics:
 - Linear design with clean finish – modern finishes.
 - More visible glass; larger viewing area.
- Improved market potential as new home construction increases.
- An increase in IPI models from manufacturers as the technology improves.
- Efficiency becoming more important as demand increases.

Additionally, as gas fireplace models with IPI become more popular in the market, three of the vendors (vendors 2, 3, and 7) said the primary issues they have experienced with customer complaints and callbacks revolve around IPIs. Specifically, these vendors pointed out that they have customers complain about the performance of IPI models during the winter months, especially when the temperature drops below freezing. Otherwise, participating vendors

overall said they have received a relatively small amount of customer complaints with regards to the gas fireplaces they have sold.

5.3.3 Vendors' Stocking and Customer Purchase Decisions

Vendors were asked a series of questions about the characteristics of the fireplaces they stock and about customers' interests when shopping for a direct-vent gas fireplace. When selecting which fireplaces to promote to customers, vendors indicated it is critical to first identify what the customer's interests are along with their budget and home size. Providing customers a variety of fireplace options is important to most vendors because customers may not be familiar with the variety of fireplace brands and aesthetic styles. Once the customer's primary desires are identified, interviewed vendors consider several factors when selecting which fireplace they promote to customers. Table 32 below summarizes the most important factors mentioned by the interviewed vendors.

Table 30: Factors Vendors Consider When Promoting Gas Fireplace Products

Factor	# Vendors
Efficiency	6
Aesthetics	5
Price	4
Size	3

* Multiple responses allowed

However, despite being a primary promotional factor for vendors, only Vendor 2 and Vendor 3 said efficiency was one of the most important factors for customers when deciding to purchase a new direct-vent gas fireplace. Vendor 1 and Vendor 7 added that efficiency is sometimes an important factor depending on the situation, but is generally not the most important factor. Instead, aesthetics and price point were the most important factors for customers, specifically the log style and frame style. Vendor 7 summarized the importance of aesthetics with the rhetorical question: "*What do they want to look at every day?*", acknowledging the fireplace as not only an appliance but also a traditional focal point within the main living room of a home. Table 32 below summarizes the factors that vendors reported influence customers' purchasing decisions.

Table 31: Vendor Reported Factors that Influence Customers' Purchasing Decisions

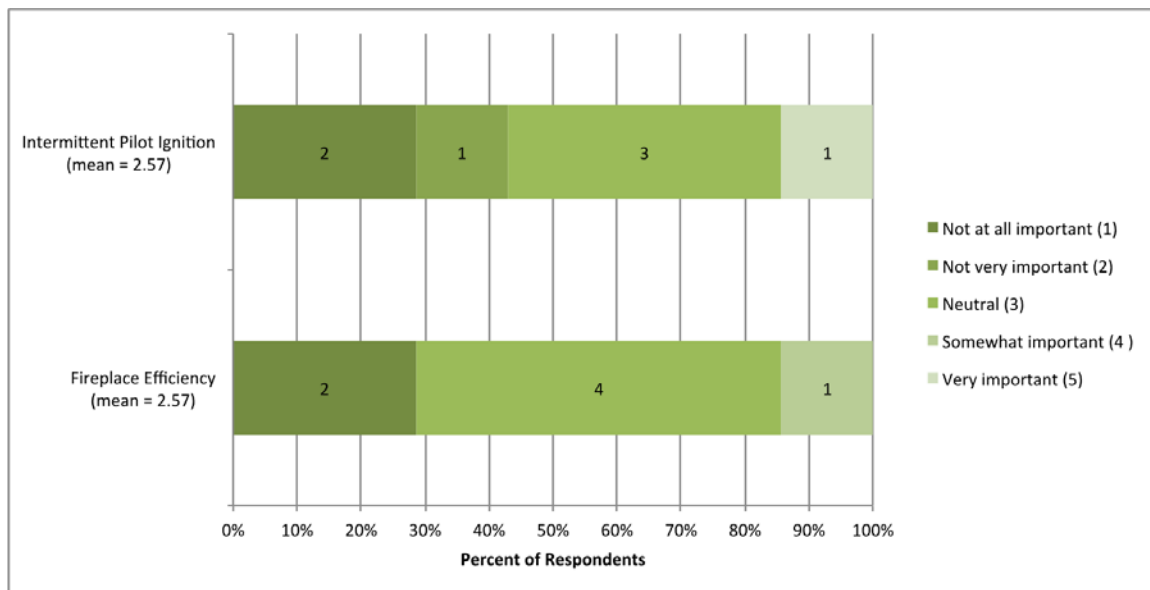
Factor	# Vendors
Aesthetics	7
Price	4
Efficiency	4
Size	3
Quality	1

* Multiple responses allowed

Additionally, Vendor 1 pointed out that buyers of custom homes might prioritize efficiency over buyers of production build homes because they have more influence on the measures that go into the home. For example, buyers of production build homes may only get to choose from two or three fireplace options based on the builder preferences. As a result, aesthetics becomes the primary factor because the products may be similar in terms of performance and efficiency, differing only in log type or outside frame.

We asked vendors to rate the level of importance of IPI and FE in their customers' purchasing decisions on a scale of one to five, with one being not at all important and five being very important. Below, Figure 7 shows that the importance of IPI and FE vary widely across vendors, and that for most vendors neither is important.

Figure 7: Vendor Reported Importance of IPI and FE



As shown, zero vendors said FE is very important for customers in selecting their gas fireplace, with only Vendor 1 saying IPIs were very important because they only sell IPI models. Overall, the average importance score for both factors was 2.57, indicating low overall importance. As described above, vendors indicated FE and IPIs are not very important in a customer's decision to purchase a fireplace because customers primarily focus on aesthetics and price.

Despite the apparent lack of interest in FE from their customers, only vendor 4 said they do not actively promote high-efficiency direct-vent gas fireplaces in some capacity. Specifically, the other vendors said they promote efficiency to contractors working on retrofit situations because contractors are more familiar with the newer technology than end-use residential customers, and are more interested in purchasing more efficient gas fireplaces. Four of the

seven vendors (1, 2, 3, and 5) also claim to actively promote fireplaces with IPI. These four vendors provided the following reasons for promoting IPI:

- IPI provides a good selling point and differentiates them from other vendors who only have standing pilot light models – Vendors 1 and 2.
- IPI saves energy and money for customers – Vendor 1.
- IPI systems are more reliable – Vendor 3.
- The industry is moving toward IPI – Vendors 3 and 5.

In defining “high-efficiency”, a majority of vendors (five of seven) use AFUE ratings versus fireplace efficiency (FE). The vendors that knew specific AFUE ratings said fireplaces with ratings around 80 percent or greater are generally considered highly efficient. However, multiple vendors indicated that efficiency metrics that are currently being used are not always clearly defined in the information they receive from manufacturers or even are “misleading to customers” because of the current testing methods and efficiency definitions. Similar challenges exist for vendors attempting to use FE. Vendor 7 pointed out that because FE is so new to the market, not all available models include the metric:

“FE is not on everyone’s brochure so it’s hard to compare apples to oranges”

5.3.4 Vendors’ Prevalence of IPI and Fireplace Efficiency Levels

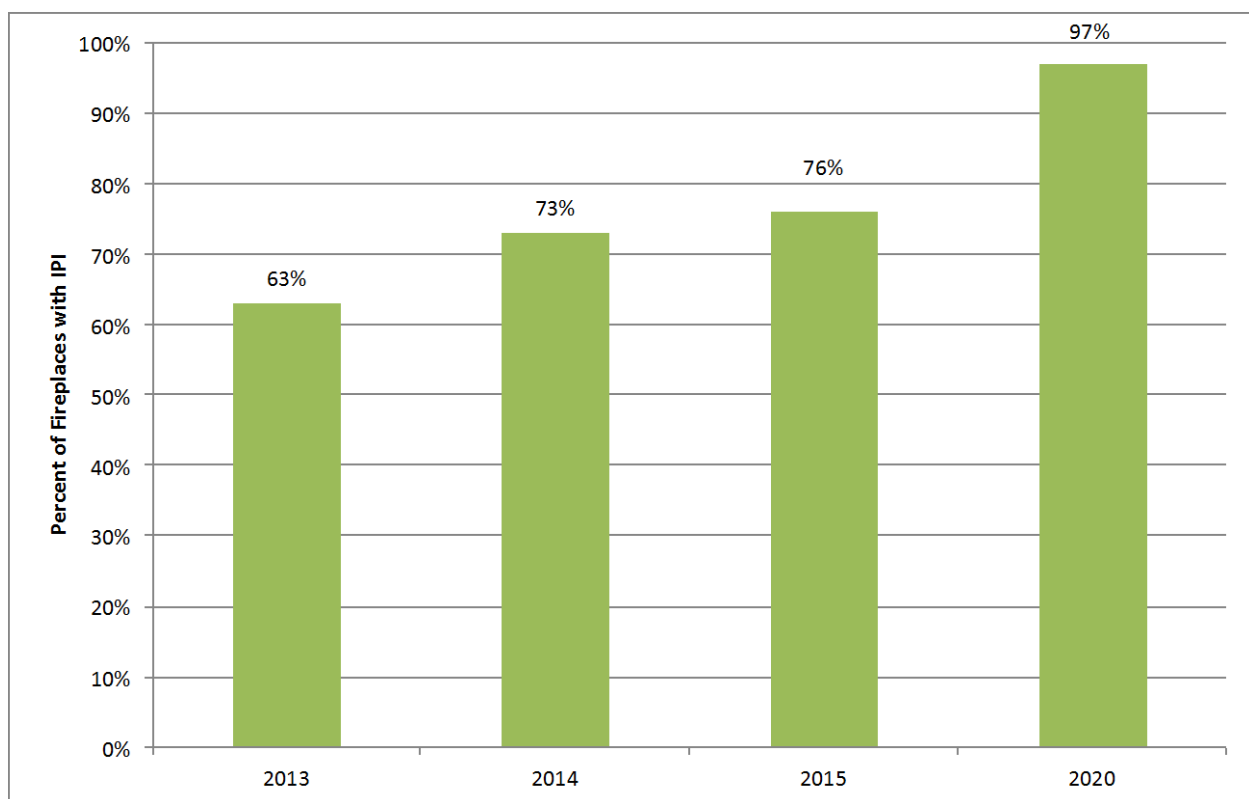
Evergreen Economics asked vendors about the prevalence of IPIs in the fireplaces they sell along with the FE rating of the fireplaces they sell now and in the future. Below, Table 33 presents the proportion of fireplace sales with IPI in 2013 and 2014 for each vendor, as well as predicted 2015 and 2020 proportions of sales with IPI and a sales-weighted average across vendors.

Table 32: Vendor Reported Prevalence of IPI Outside OR and Western WA, Current and Forecast

Distributor #	% of 2013	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
Vendor 1	100%	100%	100%	100%
Vendor 2	40%	55%	60%	95%
Vendor 3	90%	95%	95%	97%
Vendor 4	100%	100%	100%	100%
Vendor 5	N/A	N/A	N/A	N/A
Vendor 6	N/A	N/A	N/A	N/A
Vendor 7	N/A	N/A	N/A	N/A
Sales-Weighted Average	63%	73%	76%	97%

While only four of the participating vendors supplied IPI sales information, three of those four indicated between 90 and 100 percent of their 2013 and 2014 gas fireplace sales came from models that included IPI. Additionally, the two vendors reporting that less than 100 percent of their 2013 and 2014 sales included IPI estimated that IPI sales will continue to increase as a percent of overall sales over the next five years, eventually accounting for 95 percent or more of their overall fireplace sales by 2020. Vendor 2 anticipated an increase in IPI sales because of an increase in lobbying by manufacturers for an IPI mandate, while Vendor 3 said one of the primary factors leading to the anticipated increase in IPI sales are an increase in overall customer demand for IPI models. Figure 8, below, presents the sales-weighted average proportion of fireplaces with IPI.

Figure 8: Proportion of Direct-Vent Gas Fireplace Sales with IPI – Vendor



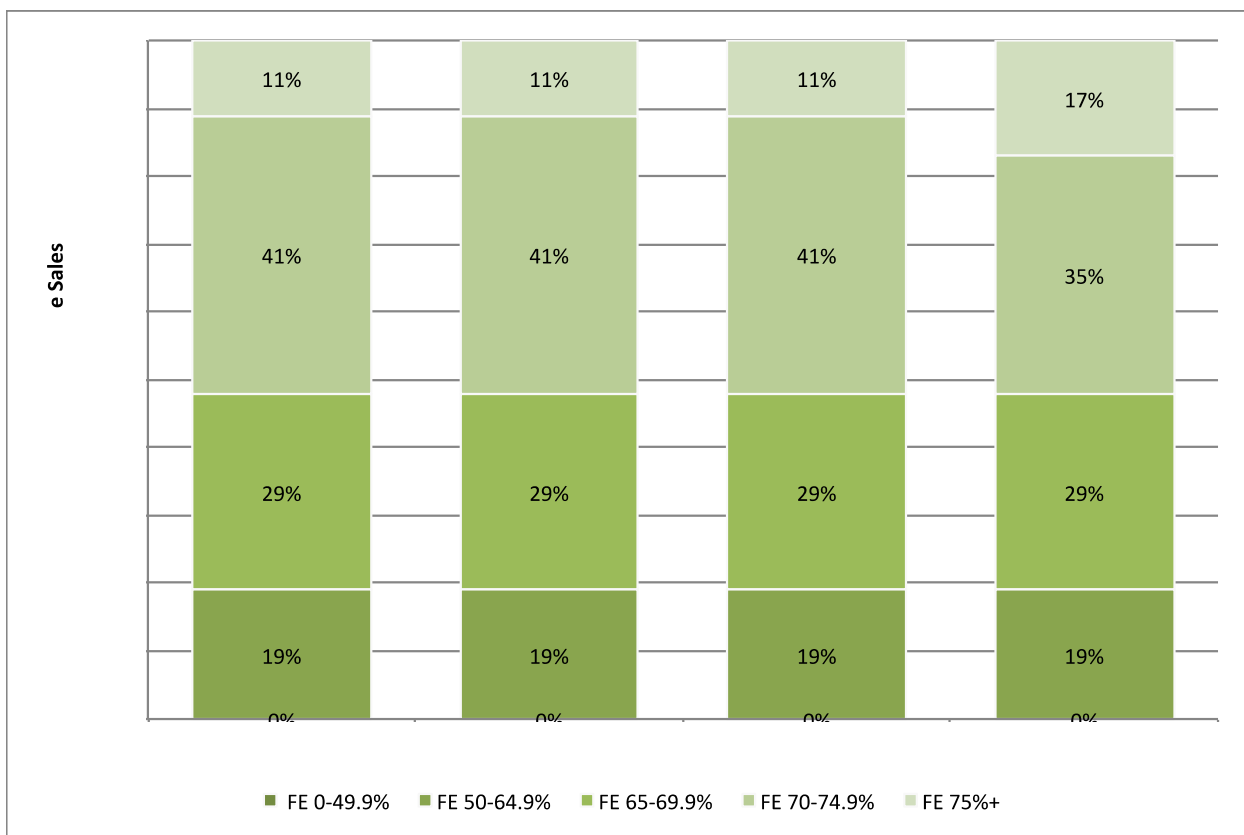
In addition to estimating IPI prevalence going forward, participating vendors also provided estimates for the proportion of their company sales at different FE tiers. Figure 9, below, shows the estimates for 2013, 2014, 2015 (anticipated), and 2020 (anticipated).

Overall, the four participating vendors that supplied FE sales information anticipated different sales trends across the five FE tiers. The following tables present a summary of responses by vendor along with the sales-weighted average across vendors. Vendor 1 and Vendor 4 indicated that the 50%-64.9% FE tier is, and will continue to be, the most common tier of gas fireplaces that their company will sell. Vendor 3 is currently focused in the 75% + FE tier and

anticipates that their company will continue to sell the most efficient gas fireplaces over the next five years. Both Vendors 2 and 3 anticipate that by 2020 between 90 and 100 percent of their gas fireplace sales will come from the 65%-69.9% FE tier or higher

A majority of the vendors (5 of 7) were unsure if there was a relationship between FE and IPI prevalence (vendors 1 and 6), or believed there was no relationship between FE and IPI prevalence (vendors 2, 4, and 5), Vendors 3 and 7 said that it seems that several of the newer IPI models tend to be more efficient.

Figure 9: Vendor Sales-Weighted Average FE Distribution - 2013 - 2020



The data from vendors proved unreliable and, most importantly, not representative of a true comparison region due to the small sample size and significant variation in their responses, and therefore is omitted from the market transformation model. Further information is provided in Section 6.1.

We asked vendors in the comparison region, where there are currently no incentive programs for gas fireplaces, if an incentive, in the form of a rebate to the homeowner for purchasing a higher efficiency gas fireplace model, would be influential in increasing the average efficiency, or IPI prevalence in gas fireplaces they stock or sell. Five of the seven vendors stated that an incentive would positively impact efficiency levels and IPI prevalence. Two vendors, vendors 3 and 4, did not think an incentive would influence fireplace efficiency or IPI prevalence.

Vendor 3 stated that they already stock high-efficiency products and did not think an incentive would influence what they already stock. Vendor 4 stated that they believe that buyers “have already done their research and have their minds made up before learning about incentives”.

6 Market Transformation Model

This section presents the results of the market transformation model.

6.1 Exclusion of Vendors from Forecasts

Evergreen obtained viable estimates of current and forecasted IPI prevalence outside of Energy Trust's service territory from four vendors, and current and forecasted FE outside of Energy Trust's service territory from three vendors. Upon incorporation into the market transformation model, we noticed that the vendor results for FE were significantly different than the estimates and forecasts from the other market actors.

Upon further investigation, we realized there were internal inconsistencies in the vendor estimates. Most notably, one vendor reported that they sell primarily to new construction (90%) and that builders do not consider efficiency in most cases (they focus on price), but that a very high proportion of their sales were of highly efficient models. Furthermore, the top two best-selling models reported from this vendor were not in the highest tiers. Other vendors' self-reported data shared similar inconsistencies.

Beyond the inconsistencies, we do not believe that the data from vendors is representative of a comparison region. Ultimately, we are not confident that the data from this small group of vendors are representative of baseline conditions, and determined that the best course of action was to exclude them from the FE and IPI baseline analysis component of the market transformation model, and rely on the estimates and forecasts from the manufacturers and distributors (who serve a larger proportion of the comparison region than the few vendors able to provide estimates and forecasts).

6.2 ODOE Tax Credits

ODOE began offering tax credits for direct-vent gas fireplaces through the Residential Energy Tax Credit Program on January 1, 2015. No interviewees mentioned the ODOE tax credit as an important factor in the difference in efficiency characteristics in direct vent gas fireplace sales between Oregon and the comparison region. As a result we do not make any adjustments to the market transformation model based on the presence of the ODOE tax credit. It is likely that market actors are not fully aware of the impact that the ODOE tax credits will have on sales in the future. We recommend investigating the impact of the ODOE tax credits in future research. This investigation could be achieved through the following methods (the first is lower cost but lower level of rigor/defensibility than the second option):

- In-depth interviews with market actors about their perceptions of the impact of the tax credits.
- Conjoint analysis with end-users to determine the relative influence of tax credits in end-user's purchasing decisions.

6.3 Market Transformation Model Findings

As described in Section 3.3, we develop 2013 and 2014 baseline estimates and five-year forecasts of hearth product efficiency characteristics (FE and IPI prevalence) using information from interviews with manufacturers and distributors regarding their sales in a comparison region (Northwest outside of Oregon and Western Washington, i.e., Eastern Washington, Idaho, and Montana). This region was selected to develop baseline estimates because it is similar to Oregon and there are no incentive programs present. Manufacturer and distributor self-reported FE and IPI prevalence estimates for Oregon sales and five-year forecasts are included for the Energy Trust region components of the model.

Evergreen required the interviewees to forecast 2015 and 2020 FE distributions and prevalence of IPI for both regions under the following assumptions:

- **Assumption 1:** There are no federal standards related to ignition system type or FE at any time in the future.
- **Assumption 2:** There are no incentive programs in the comparison region.³¹

It is important to note that the forecasts represent the entire market for gas hearth products including existing homes and new construction. It is likely that these two segments have different efficiency characteristics with regards to gas hearth products based on responses from market actors. The forecast estimates presented are Evergreen's best estimates based on responses from market actors. It is impossible to predict the future with 100 percent certainty, and further complicated when attempting to quantify what will happen in absence of the existing incentive offering.

We first present the forecast of IPI prevalence in these regions followed by the forecast of FE.

6.3.1 Intermittent Pilot Ignition Prevalence Forecast

In this section we present the market transformation model results related to the prevalence of IPI.

6.3.1.1 Baseline IPI Prevalence

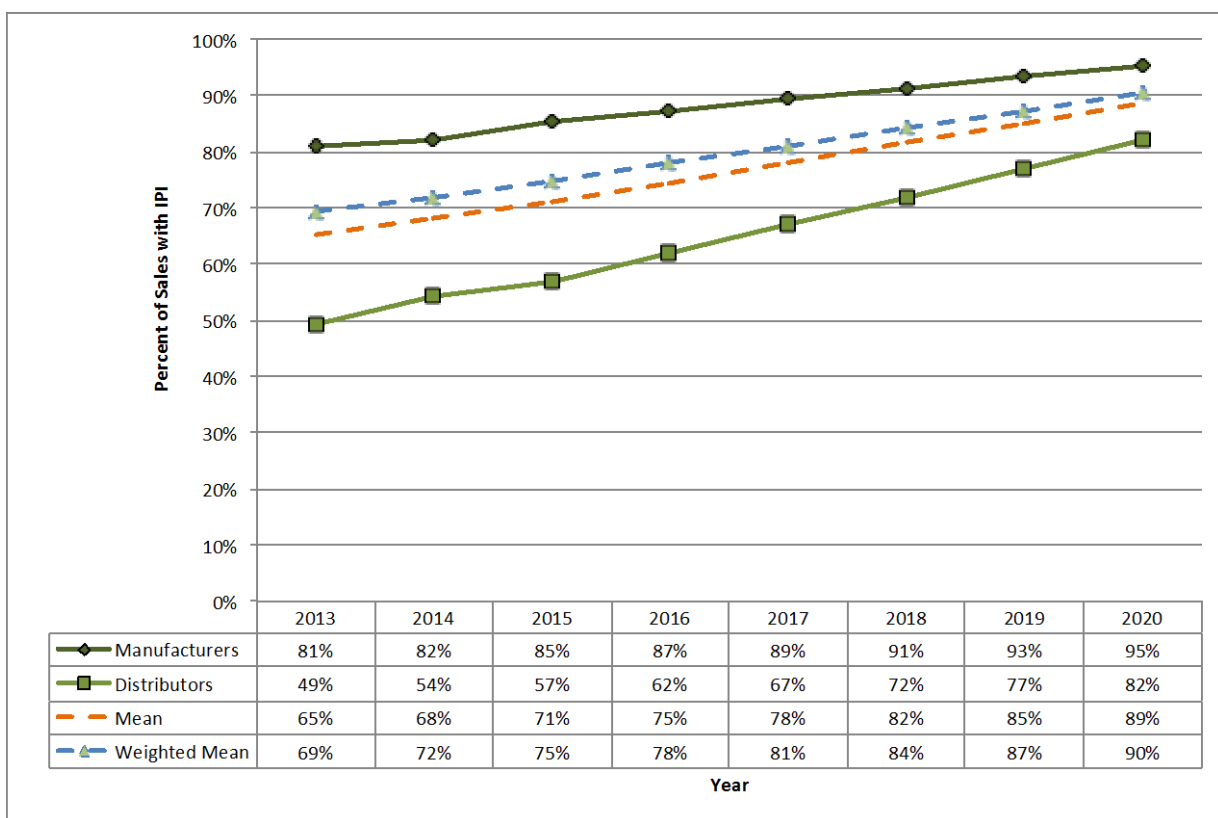
As noted above, the baseline forecast is developed using information from interviews with manufacturers and distributors with hearth product sales in a comparison region, under the assumption that no incentives and no federal regulations regarding energy efficiency are in place or will be in place in the future.

Figure 10 below presents the proportion of hearth product sales with IPI for each market actor group, as well as the mean and respondent-weighted mean across the two groups.

³¹ Evergreen excluded Western Washington from this study as a comparison region because there are incentive programs for gas fireplaces offered by Puget Sound Energy and Cascade Energy in Western Washington.

Manufacturers estimated a higher proportion of sales with IPI than distributors. Four distributors provided estimates for Eastern Washington, Idaho and Montana, with these distributors selling several products from manufacturers not represented in our interview sample. It is likely that the difference between manufacturers and distributors is due to the different product mixes represented across the market actor groups and the products they sell. We believe it is appropriate to include the distributor responses in the model as they likely represent a different part of the market than the manufacturers we interviewed. Both groups predict IPI prevalence will increase over the next five years, with the respondent-weighted mean proportion across the three groups reaching 92 percent by 2020.

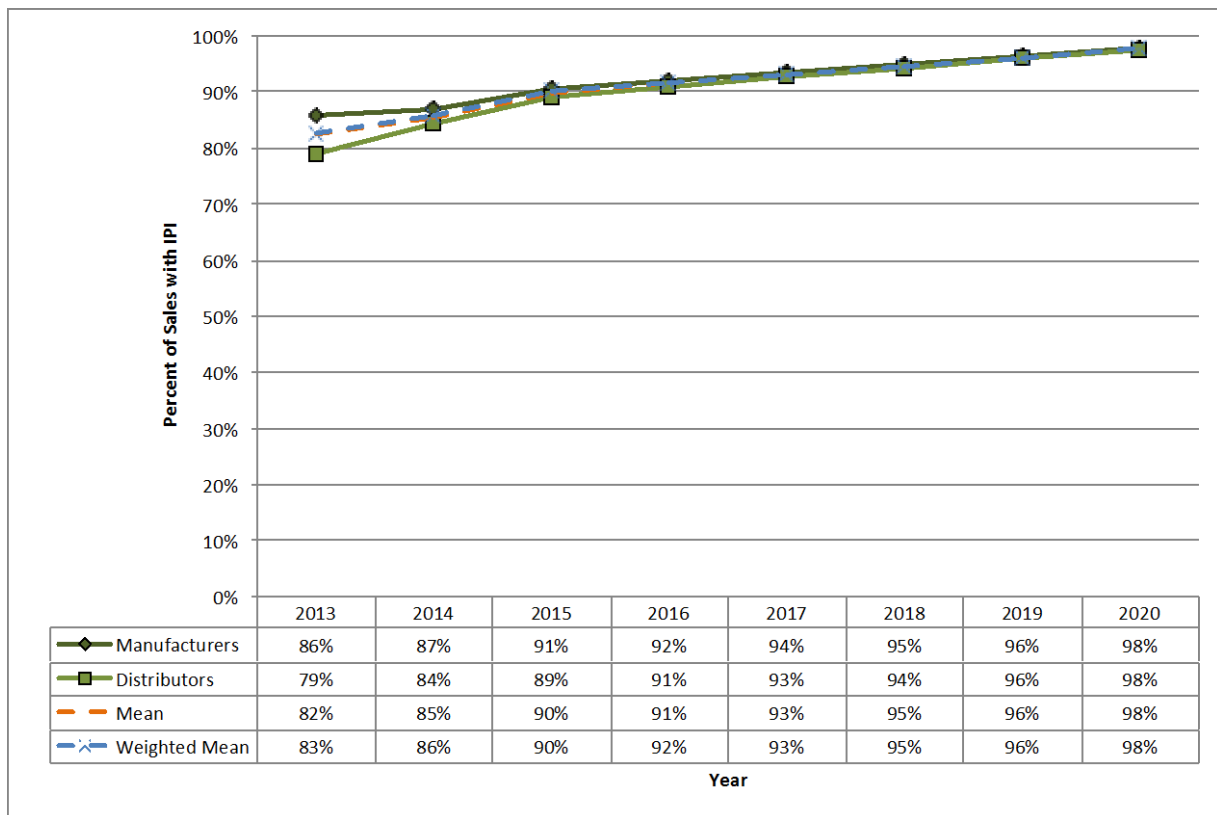
Figure 10: Forecast of Baseline IPI Prevalence (Comparison Region)



6.3.1.2 Energy Trust Territory IPI Prevalence

Figure 11 below presents the proportion of hearth product sales with IPI reported and forecasted by manufacturers and distributors in Oregon, as well as the mean and weighted-mean across the two groups. Again, manufacturers cited a higher proportion of sales with IPI than distributors but the difference is minimal. Both groups also predict that IPI will increase, with the weighted mean estimate across the two groups reaching 98 percent by 2020.

Figure 11: Forecast of IPI Prevalence in Oregon



6.3.1.3 Energy Trust Accomplishments (IPI)

Figure 12 below compares baseline IPI prevalence, with IPI prevalence in Oregon (estimated and forecast). We choose the respondent-weighted mean IPI prevalence in both regions as the most appropriate estimator as it weights the market actor groups proportionally to the number of respondents in each group rather than giving both groups equal weight.³² The proportion of IPI units sold in Oregon above the baseline is represented by the orange bars. In 2013 and 2014, IPI prevalence was higher by 13 percent and 14 percent, respectively, between the two regions. However, in both regions IPI prevalence is predicted to increase to more than 90 percent with the difference between the two regions decreasing over time. Across market actor groups there is a perception that the gas hearth industry is naturally moving toward IPI systems and by 2020 the majority of models available will have IPI.

³² The respondent-weighted mean IPI prevalence weights each market actor group sales-weighted mean IPI prevalence by the number of respondents in each market actor group (manufacturers and distributors).

Figure 12: Comparison of IPI Prevalence – Oregon Versus Comparison Region

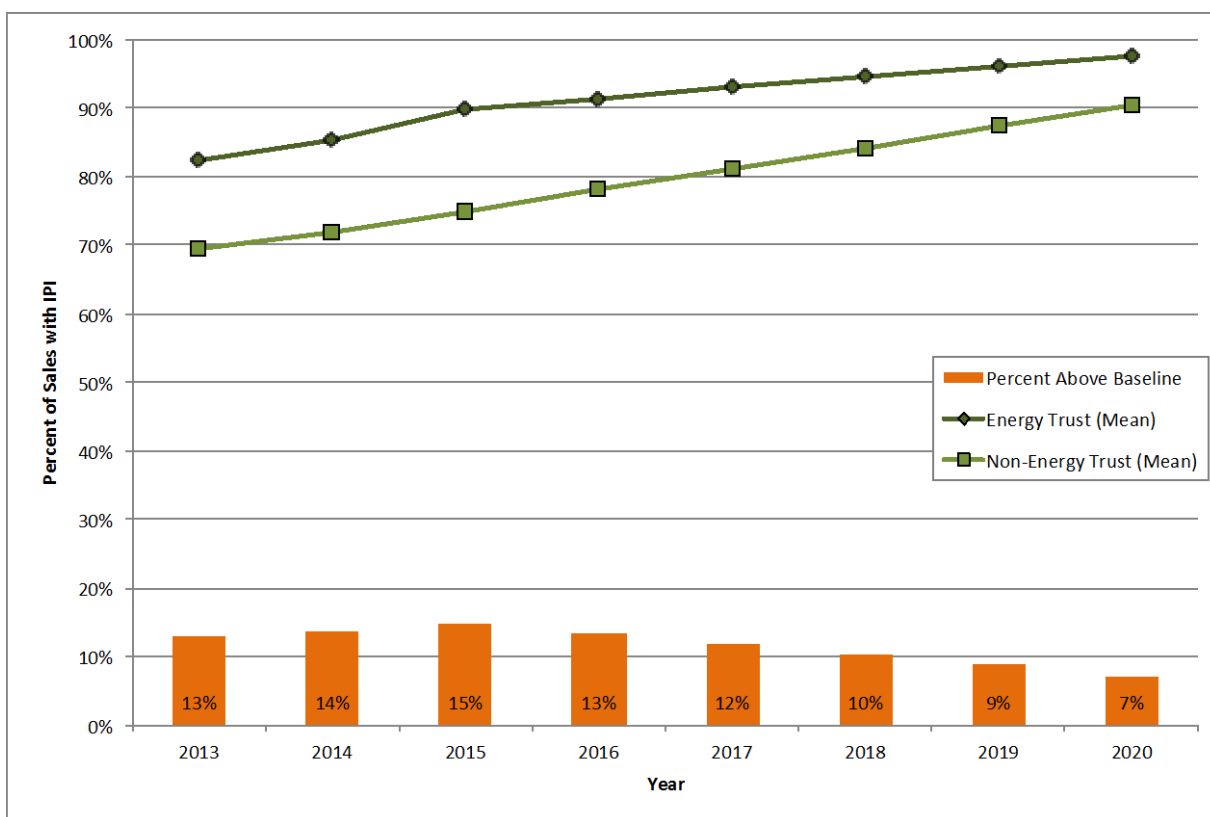


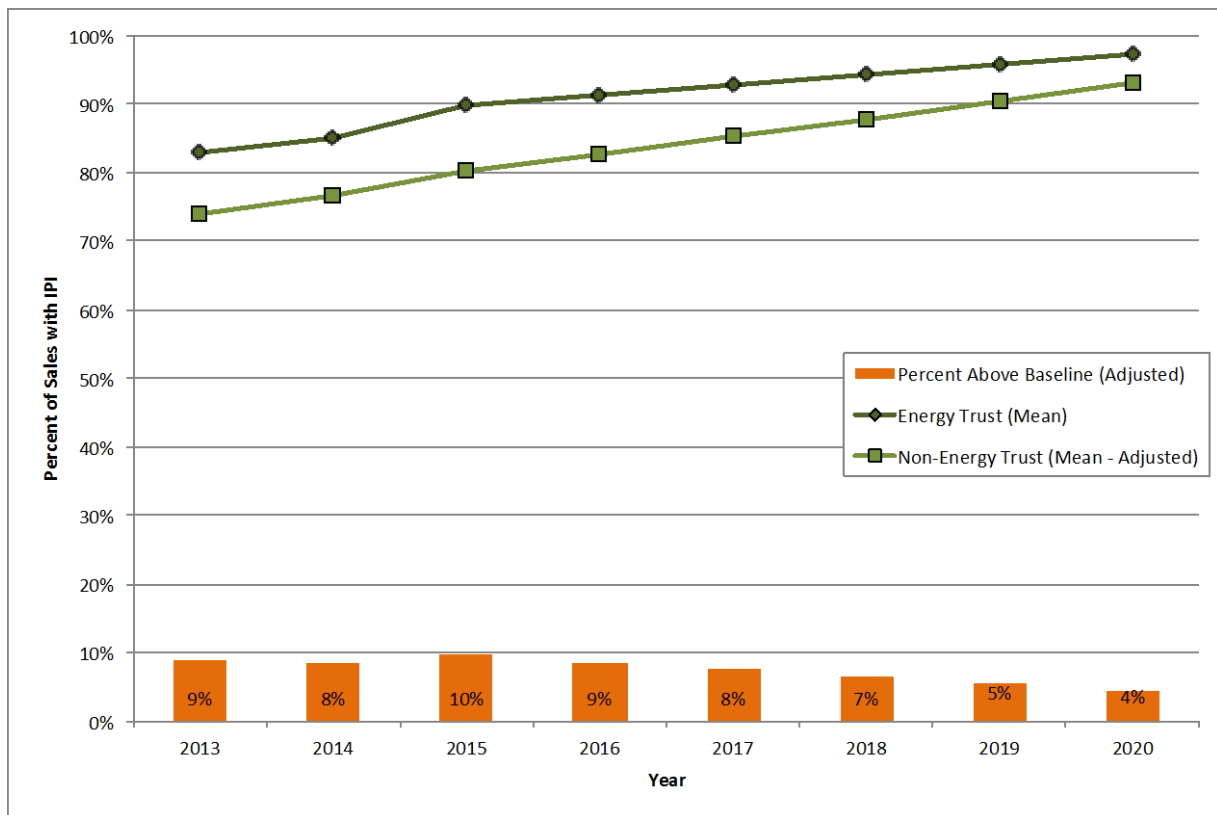
Table 34 below presents a summary of the top three reasons for the difference between the two regions provided by distributors and manufacturers. Six of eleven respondents across the manufacturer and distributor groups noted differences between the two regions. All interviewees who saw differences between the two regions attributed the difference to a combination of cost, the existence of rebate programs in Oregon, and concerns about IPI performance among dealers and customers in Eastern Washington, Idaho and Montana. All interviewees noted that the two regions were not the same with regards to real or perceived performance of IPI, which effectively equates to an additional barrier to IPI adoption in the comparison region.

Table 33: Reasons for Differences in Prevalence of IPI Across the Northwest

Manufacturer	Reasons for Differences
	1) Cost
Manufacturer 2	2) Rebate programs / availability of rebates 3) Concerns about performance
Manufacturer 4	1) Rebate programs / availability of rebates 2) Concerns about performance
Manufacturer 6	1) Concerns about performance 2) Cost 3) Rebate programs / availability of rebates
Distributor 1	1) Cost 2) Concerns about performance
Distributor 2	1) Rebate Programs / availability of rebates
Distributor 5	1) Concerns about performance 2) Rebate Programs / availability of rebates 3) Cost

For the purpose of this analysis we determined that cost – a barrier, particularly in areas without incentives – and rebates effectively equate to the same factor creating a difference between the regions. Therefore, based on the data above, cost/rebates were the most important factor for four out of six market actors who reported a difference, while concerns about IPI performance were the most important factor identified by two of the actors. Based on these observations and analysis, we estimate the baseline case to be underestimated by the model and attribute approximately 35 percent of the lower adoption of IPI technology in the baseline region to factors other than the non-existence of rebate programs. Figure 13, below, compares baseline IPI prevalence, with IPI prevalence in Oregon (estimated and forecast).

Figure 13: Comparison of IPI Prevalence – Oregon Versus Comparison Region – Adjusted Baseline



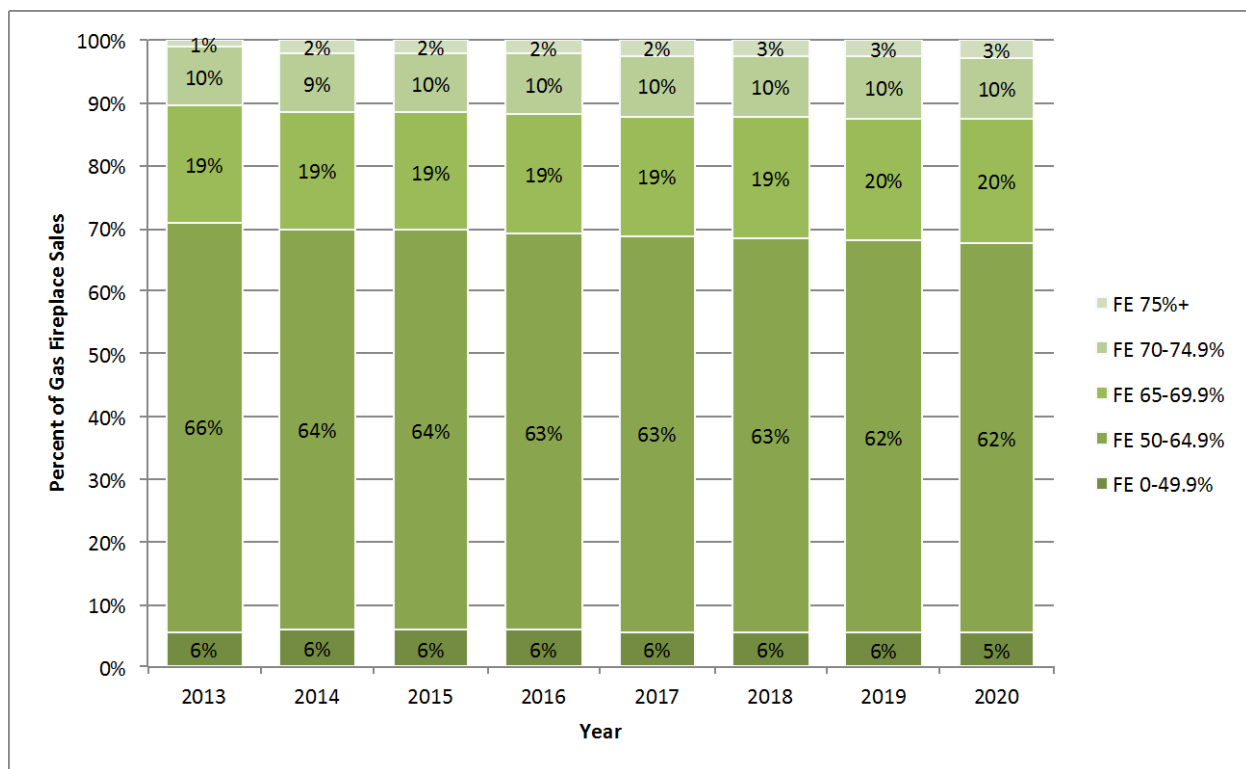
6.3.2 Fireplace Efficiency Levels Forecast

In this section we present the market transformation model results related to the distribution of fireplace sales across FE tiers.

6.3.2.1 Baseline FE Distribution

Figure 14 below presents the proportion of gas fireplace sales across the five FE tiers in the comparison region. As noted in the Methodology section (Section 3.3), we calculate these estimates by taking the respondent weighted mean of the proportions in each tier across the manufacturer and distributor groups. As the figure illustrates, interviewees cited the highest proportion of sales in the 50%-64.9% FE tier, with approximately 30 percent and 31 percent of sales falling in tiers above 65% FE in 2013 and 2014, respectively. Manufacturers and distributors predict that the mix of products is unlikely to change significantly in the absence of federal regulations or incentive programs in the comparison region with the proportion of sales in the upper three tiers predicted to reach 30 percent by 2020.

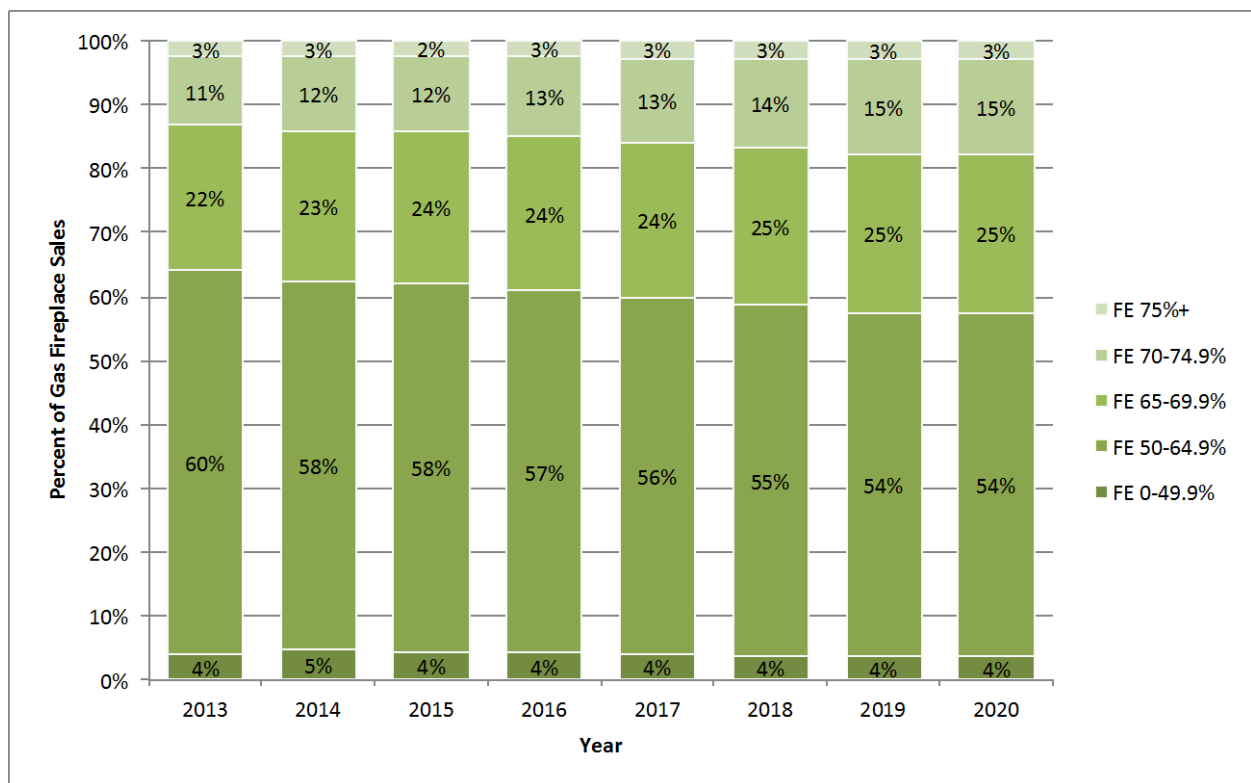
Figure 14: Forecast of Baseline FE Tier Distribution (Comparison Region)



6.3.2.2 Energy Trust Territory FE Distribution

Figure 14, below, presents the proportion of gas fireplace sales and forecasts manufacturers and distributors across the five FE tiers in Oregon. Interviewees cited the highest proportion of sales in the 50%-64.9% FE tier, with approximately 36 percent of sales falling in tiers above 65% FE in 2013. In 2014, the model shows that sales in the top three tiers increased to 38 percent. Manufacturers and distributors predict that the mix of products will change toward more efficient products in Oregon, with 42 percent of products predicted to be in the top three efficiency tiers by 2020.

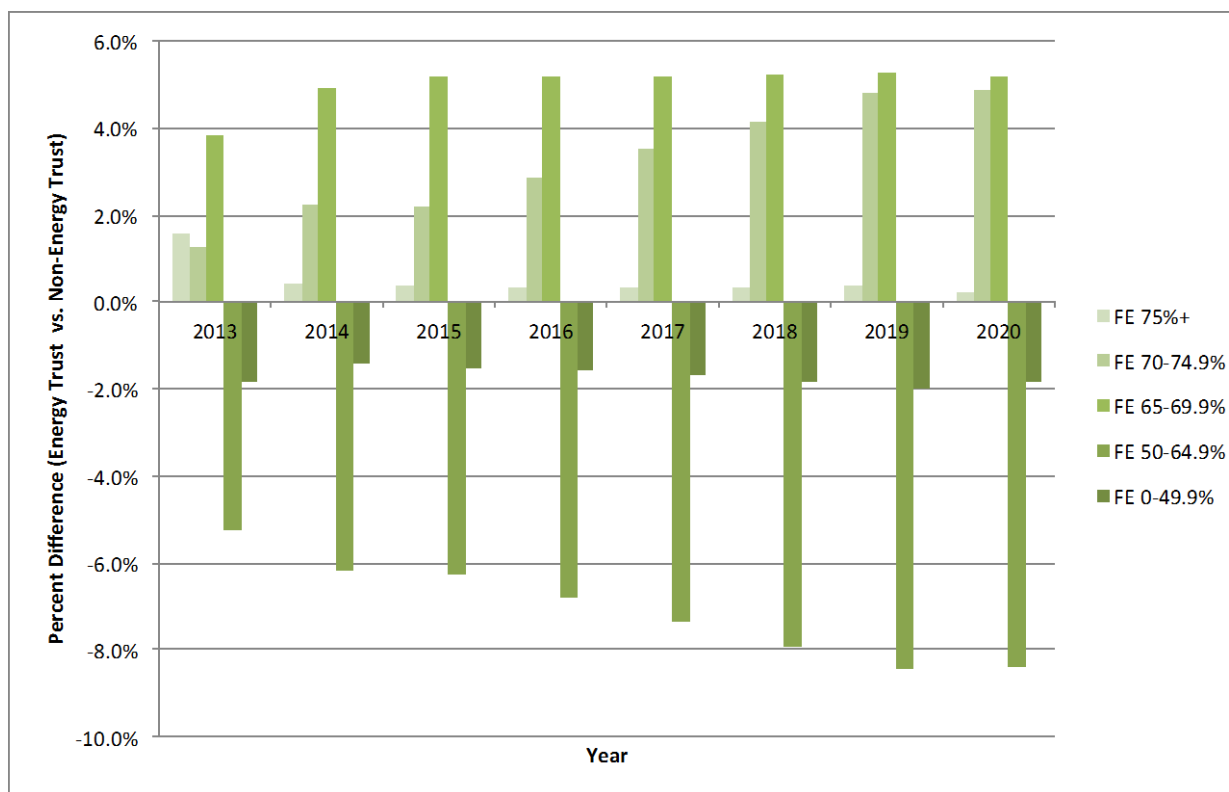
Figure 15: Forecast of Energy Trust Territory FE Tier Distribution



6.3.2.3 Energy Trust Accomplishments (FE)

Figure 16 below compares the estimates for the FE distributions in the comparison region (the baseline) with estimates for the FE distributions in Oregon by analyzing the difference in each group between 2013 and 2020. The figure shows that the proportion of gas hearth products in the top three tiers is higher in Oregon in 2013. The difference between the two regions is predicted to grow steadily in the third and fourth tiers over the next five years. The highest efficiency tier is predicted to remain approximately equal between the two regions.

Figure 16: Comparison of FE Tier Distribution – Oregon Versus Comparison Region*



* Positive values indicate a higher proportion of sales in Energy Trust territory in an FE tier. Negative values indicate a lower proportion of sales in Energy Trust territory in an FE tier.

We investigated the reasons for differences in the FE distribution across the regions. As shown below, in Table 35, the primary reason for the difference in FE distribution between the two regions provided by six of seven market actors concerned either cost (in the comparison region) or rebates (in Energy Trust territory). The remaining market actor listed rebates as the second most important reason. As noted in the previous section, for the purpose of this analysis we determined that higher cost in areas without incentives and rebates effectively equate to the same factor creating a difference between the regions. As the majority of market actors attributed the difference in FE distribution to either the rebate program in Oregon, or prohibitive costs in the comparison region, we attribute all of the difference to the availability of Energy Trust’s cost-offsetting incentive program.

Table 34: Reasons for Differences in Prevalence of FE Across the Northwest

Market Actor	Reasons for Differences
Manufacturer 2	1) Rebate programs / availability of rebates 2) Dealers more interested in high efficiency 3) Attitudes toward energy efficiency among customers
Manufacturer 4	1) Rebate programs / availability of rebates 2) Attitudes toward energy efficiency among customers 3) Concerns about IPI performance
Manufacturer 6	1) Cost 2) Rebate programs / availability of rebates 3) Attitudes toward energy efficiency among customers
Manufacturer 7	1) Rebate programs / availability of rebates
Distributor 1	1) Rebate programs / availability of rebates 2) Concerns about IPI Performance 3) Cost
Distributor 2	1) Rebate programs / availability of rebates 2) Concerns about IPI Performance 3) Cost
Distributor 5	1) Cost 2) Rebate programs / availability of rebates

Conclusions

The purpose of this study was to provide Energy Trust with current information and data to develop a market transformation case for the gas hearth market. Specifically, the study aimed to:

- Develop a market transformation model for the gas fireplace market to inform Energy Trust's measurement of their influence on the market in terms of increasing the market share of higher FE units and prevalence of IPI.
- Characterize the gas fireplace market in Oregon and the Northwest.

To meet these goals, Evergreen engaged in extensive secondary source research and conducted interviews with three key market actor groups, specifically, Evergreen conducted interviews with:

- Seven hearth product manufacturers who reported covering at least 50 percent of the total hearth market in Oregon and the Northwest.
- Seven hearth product distributors, who reported working with both the existing and new homes market, and who reported covering over 65 percent of the total hearth market in Oregon.
- Seven hearth product vendors in Eastern Washington and Idaho. **Evergreen found that the vendor interviews were very difficult to complete and the information provided was potentially unreliable.**

This research led to the following key findings:

- **IPI systems were installed in the majority of fireplaces sold in 2013 and 2014, and are expected to increase in prevalence over the next five years.** Across interviewed manufacturers and distributors, on average, between 2013 and 2014:
 - Approximately 84 percent (2013) and 86 percent (2014) of fireplaces sold in Oregon had IPI systems
 - Approximately 74 percent (2013) and 76 percent (2014) of fireplaces sold in the comparison region had IPI systems

However, in both regions IPI prevalence is predicted to increase to more than 90 percent with the difference between the two regions decreasing over time by 2020. Across market actor groups there is a perception that the gas hearth industry is naturally moving toward IPI systems and by 2020 the majority of models available will have IPI.

- **Distributors and manufacturers differ in their expectations of IPI prevalence in the comparison region.** Both groups report very high prevalence of IPI in Oregon. However, while manufacturers also report high prevalence of IPI in the comparison region, distributors report a significantly lower prevalence of IPI, with approximately half their sales in areas outside Oregon and Western Washington having IPI currently.

Both groups expect IPI prevalence to increase to nearly 100 percent between now and 2020 in Oregon, due in part to naturally occurring market trends. While manufacturers expect IPI prevalence to reach close to 100 percent in the comparison region by 2020, distributors expect IPI prevalence to reach 80 percent by 2020.

- **Manufacturers and distributors report that increased prevalence of IPI is driven by a general market trend toward IPI; however, there is more resistance to IPI in the comparison region.** The primary reasons for differences in IPI prevalence between Oregon and the comparison region are incremental cost differences between standing pilot lights and IPI, the existence of rebate programs in Oregon (and the absence of similar offerings in the comparison region), and the perception that IPI has performance and reliability problems that do not exist in standing pilot light systems. The technical issues manufacturers raised were:
 - Increased condensation build-up in IPI models in colder temperatures that detracts from the aesthetic of the fireplace.
 - Unreliability of IPI during power outages.
 - Slow start times for IPI units in cold temperatures, or areas with high humidity.
 - More potential for drafts with IPI.
- **The distribution of FE levels across fireplace sales in 2013 and 2014 is similar between Oregon and the comparison region, but over time market actors expect a greater shift toward higher efficiency products in Oregon.** Figure 16 shows that the proportion of gas hearth products in the top three tiers (65%+ FE) is approximately six percent higher in Oregon in 2013 than in the comparison region. The difference between the two regions is predicted to grow steadily over the next five years, driven primarily by proportional increases in the 65%-69.9% and 70%-74.9% FE ranges over the next five years. The highest efficiency tier is predicted to remain approximately equal between the two regions.
- **The primary reasons for differences in FE distribution between Oregon and the comparison region were cost (in the comparison region) or rebates (in Energy Trust territory).** Of seven market actors who noted a difference between the two regions, six stated that the primary reason for the difference was either high cost in the comparison region, or the existence of rebate programs in Oregon that reduce the cost of more efficient units. These reasons are directly related and essentially uncover the same perceived difference: first cost is a barrier but incentives help, and account for some of the differences between regions.

In addition to key findings related to energy efficiency characteristics of gas fireplaces, this study also revealed important technical information that could impact Energy Trust's fireplace offering.

- **Interviews confirmed the anecdote that IPI systems can be disabled and made to function as a standing pilot light.** Three large manufacturers stated that all IPI systems on their products could be disabled and switched to standing pilot mode, and one stated that for about 20 percent of their products the user could disable the IPI. Three manufacturers stated that the IPI in their products could not be disabled. This finding raises some key questions including: How often are IPI systems disabled by end-users? Why do end-users choose to disable IPI systems? How will the potential DOE rulemaking address this (if at all)?
- **IPI systems that can be disabled may use more gas than traditional standing pilot ignitions.** One interviewee claimed that within the industry it is known that IPI systems, including those that can be disabled, have larger gas valves and hence consume more gas when lit than a traditional pilot light. We attempted to confirm this with online research but were unable to find enough information to do a valid comparison of products.
- **The biggest trade-off for increasing the efficiency of gas fireplaces is the impact on the aesthetic of the product.** All interviewed manufacturers noted that the trade-off for higher efficiency is a less appealing flame aesthetic. As fireplaces become more efficient the flame color moves away from a “natural” flame color and size that consumers desire toward a blue flame that is less desirable.
- **Market actors report a correlation between energy efficiency and product price.** Interviews with market actors suggest that there is a correlation between high price and high efficiency, with four of seven manufacturers mentioning that efficiency is a factor in higher pricing, however, the strength of this correlation is unclear (there are many factors that contribute to the prices of gas fireplaces, many related to aesthetic material choices).

This study also uncovered information about the mechanics of the gas fireplace market.

- **Across the seven interviewed manufacturers, three distribution approaches emerged.** These approaches include the following:
 - **Direct to Dealer:** The manufacturer sells products directly to fireplace vendors (retailers) with no involvement by third party distributor. This approach is typically used for distribution to the replacement or retrofit market.
 - **One-Step (Installing Distributor):** The manufacturer sells products to a distributor who then sells directly to builders or contractors primarily serving the new construction market.
 - **Two-Step Distribution:** The manufacturer sells hearth products to a distributor, who then sells products to vendors (retailers), who retail the products to end-users. This approach is typically used for distribution to the replacement or retrofit market.

- **At least two distinct market segments exist in the overall gas hearth product market – the existing homes market and the new construction market.** The new construction market can be further divided into the production build (“spec”) market and the custom homes market, which are significantly different in many ways. Manufacturers and distributors noted that the production build market is highly price driven, with builders searching for the least cost product that meets their minimum aesthetic and size requirements. This segment is least concerned with energy efficiency in their purchasing decisions. The custom home market is less price sensitive because the future homeowner often has a choice in selecting the type of gas hearth appliance installed in the home. While this market is still highly price sensitive, the involvement of the owner means they may be willing to pay a higher price for aesthetic features or efficiency. The existing home market is the least price sensitive of the three markets with homeowners most likely to be focused on aesthetics and other features including IPI and FE.

7 Recommendations

While Energy Trust's gas fireplace offering is positively impacting efficiency levels and the prevalence of IPI in Oregon, it is important to engage in ongoing monitoring and tracking of the offering to measure success of the program and identify potential challenges to the program. To support these monitoring and tracking activities we recommend the following:

- **Rely on manufacturer and distributor interviews rather than vendor interviews for areas outside Oregon.** Evergreen found it extremely difficult to recruit and interview reliable vendors outside of Oregon. Despite additional resources dedicated to recruiting vendors and offering an incentive of \$50, Evergreen was only able to complete seven interviews with vendors. Furthermore, the information gathered in these interviews was ultimately found to be in part unreliable. In future evaluations, we recommend relying on information from manufacturers and distributors in a comparison region as these actors have more interest in providing information than vendors in the comparison region because they are aware of and are directly impacted by the Energy Trust program, and are able to speak to the entire region rather than a small section of a region. If Energy Trust does decide to speak with vendors, some potential strategies to improve response rates would be to send a mailed letter to vendors prior to the study, or consider conducting a targeted online survey.
- **Energy Trust should consider differentiating between the new homes market and existing homes market in future evaluations.** This study revealed significant differences in consideration of energy efficient gas fireplaces between the new home market, and the existing homes market. According to market actors the new homes market is highly price driven with very little consideration for energy efficiency characteristics, whereas the existing home market is more willing to trade higher prices for characteristics such as higher energy efficiency. Due to these differences, the efficiency characteristics of gas fireplaces between these two segments are likely to be significantly different.
- **Energy Trust should investigate methods for evaluating the impact of other programs and rulings that have recently been introduced or may be introduced in the near future.** The ODOE tax credits introduced on January 1, 2015, the proposed DOE rulemaking banning standing pilot ignitions and NEEA's gas initiative could all have significant impacts on the gas fireplace market. Energy Trust should consider conducting attribution analysis in future evaluations, such as conjoint analysis, to determine the relative impact of the programs in comparison to Energy Trust's offering.
- **Energy Trust should continue to monitor the cost-effectiveness of gas fireplace products in the top FE tier (75%+ FE).** Higher installation costs for fireplaces with 80%+ FE may impact the cost-effectiveness of products in the top tier of the offering. This tier should be monitored to ensure that it remains cost-effective.

- **Energy Trust should conduct research with end-users to understand behaviors around ignition systems, specifically the frequency that IPI systems are disabled, and the reasons why they are disabled.** Additionally, one interviewee suggested that IPI systems that can be disabled use more gas than traditional standing pilot ignitions. While we were unable to find sufficient information through online research to support this claim, this is an issue that should be investigated further.

8 Appendix – Interview Guides

Gas Fireplace Manufacturer Interview Guide

March 25, 2015

Background:

Information from interviews with hearth product manufacturers will be used to understand the hearth market both within, and outside of, Energy Trust’s service territory and establish baseline efficiency characteristics for direct-vent gas fireplaces to inform the market characterization and market transformation model.

Key Objectives:

- Understand the gas hearth market both within, and outside of, Energy Trust’s service territory; who is selling hearth products, who is buying hearth products, how many are being sold and how they are being used.
- Collect information about average efficiency and prevalence of IPI in hearth products being sold within Energy Trust’s service territory and outside Energy Trust’s service territory where incentives have not been provided, assuming no new federal standards for fireplaces over the next five years.
- Collect information to establish current and future baseline characteristics for fireplaces, assuming no new federal standards for fireplaces over the next five years.

Target Respondents:

Evergreen aims to complete eight (8) in-depth interviews with active gas fireplace manufacturers whose products are sold in Oregon.

Introduction / Recruiting:

Hello, my name is _____ with Evergreen Economics, an energy market research firm based in Portland, Oregon. I want to assure you that this is not a sales call. We are calling on behalf of Energy Trust of Oregon who have asked us to help them better understand the market in the Northwest for gas fireplaces.

Would you be available to participate in an interview with me regarding the Northwest gas fireplace market? Our questions will take about 40 minutes. If you are not available now, could we schedule a time later in the week that would be convenient for you?

Schedule Date and Time: _____

[IF NEEDED: This study will help Energy Trust improve the market for high efficiency gas fireplaces in Oregon and the Northwest. Energy Trust of Oregon is an independent nonprofit organization that provides energy efficiency and renewable energy services in Oregon. The answers you provide are confidential and will not be linked to you or your company in any way.]

I. Business Scope

First, I would like to emphasize that when I refer to gas fireplaces I am referring to indoor, direct-vent gas fireplaces. Now, I would like to start with some general questions about you and your company.

- Q 1. What is your role at your company? How long have you been in your current role?
- Q 2. In what parts of the Northwest are your direct-vent gas fireplaces sold? Are they sold outside of the Northwest? If so, where?
- Q 3. How long has your company sold direct-vent gas fireplaces in the Northwest?
- Q 4. What distributors do you work with in Oregon?
- Q 5. Does your company produce log sets?

II. Sales

Now I have some questions about your company's sales of direct-vented gas fireplaces.

- Q 6. How many direct-vented gas fireplaces did your company sell in 2014? What about in 2013? What are the reasons for the change between 2013 and 2014? [PROBE: % New vs. Existing homes]
- Q 7. About what percent of your company's sales in 2014 were in Oregon? What about in 2013? [PROBE: % New vs. Existing homes] And about what percent were in Western Washington in 2014? And 2013?
- Q 8. What is your market share of direct-vent gas fireplaces in the Northwest? What about in Oregon specifically? [PROBE for %] [IF NEEDED: About what percent of the total direct-vent gas fireplaces sold in <REGION> are your company's, as opposed to another manufacturer?]
- Q 9. What brands and models of direct-vent gas fireplaces does your company manufacture? [PROBE: Can they email list? / Available on website?]
- Q 10. How do you decide which products to develop? [PROBE: What factors do they consider e.g., energy efficiency] Do you receive any input from installers or distributors? How is this input received and used?
- Q 11. Considering the Oregon market, what are the key factors that determine the price of your direct-vent gas fireplaces? [PROBE: brand, aesthetics, size, efficiency, differences between Oregon and other areas of the Northwest] Is there a relationship between the cost of a unit and the efficiency of the unit?
- Q 12. What percent of your company's direct-vent gas fireplace sales are sold to distributors versus directly to retailers versus direct to end-users versus direct to wholesale purchasers such as builders? (IF < 100%) What percent do you sell through other sales channels? Are there differences between Oregon and other parts of the Northwest? (Record percentages for all regions)

Distributors: _____%

Retailers: _____%

End-users: _____%

Wholesale purchasers/builders: _____%

Do these different groups purchase different types of products? [PROBE: Efficiency levels and prevalence of IPI between different groups]

III. Current and Future Fireplace Pilot Lights and Efficiency Levels

Now I have some specific questions about the FE rating and prevalence of Intermittent Pilot Ignition in the direct-vent gas fireplaces you sell.

Please assume that there are NO federal standards related to fireplace efficiency or ignition.

[IF NEEDED: Fireplace efficiency, FE, is a measure of a fireplace's energy efficiency performance over an entire heating season and is expressed as a percentage. The higher the rating, the more efficient the unit.]

Intermittent Pilot Ignitions

[Interviewer note: IF VALOR: Replace all references to Intermittent Pilot Ignition with On-Demand Pilot Light]

[Interviewer note: read questions to fill in table, below]

Ignition Type / Region	% of 2013	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
IPI / Oregon				
Non-IPI / Oregon				
IPI / Outside Oregon / Western Washington				
Non-IPI / Outside Oregon / Western Washington				

Q 13. About what percent of the direct-vent gas fireplaces sold by your company in Oregon in 2014 had intermittent pilot ignitions? How, if at all, was this different in 2013? [PROBE for specific %s] What are the reasons for this change?

Q 13. For about what proportion of the fireplaces with intermittent pilot ignition can the intermittent function be disabled? None? Very few? Some? Half? Most? All?

- Q 14. About what percent of your direct-vent gas fireplaces sold in the Northwest outside Oregon and Western Washington in 2014 had intermittent pilot ignitions? How, if at all, was this different in 2013? [PROBE for specific %s] What are the reasons for this change?
- Q 15. [If Oregon different from Northwest] What do you think are the three most important reasons for the difference in the prevalence of IPIs in direct-vent gas fireplaces between Oregon and other parts of the Northwest outside of Western Washington? Please rank them in order of importance from most important to least important. [IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?]
- Q 16. Based on your earlier response, about [INSERT % FROM Q 13] of direct-vent gas fireplaces your company sold in Oregon in 2014 had IPIs. Thinking about this year, 2015, do you think the prevalence of IPIs in direct-vent gas fireplaces you sell in Oregon will increase, decrease or stay about the same? By how much? Why do you say this? And how about 5 years from now, in 2020? [PROBE: Linear change over 5 years? Increases in a particular year? Why?]
- Q 17. Based on your earlier response, about [INSERT % FROM Q 15] of direct-vent gas fireplaces your company sold in the Northwest outside of Oregon and Western Washington in 2014 had IPIs. If there were no incentives available for efficient fireplaces in this region, do you think the prevalence of IPIs in direct-vent gas fireplaces you sell in Northwest (outside of Oregon and Western Washington) will increase, decrease or stay about the same this year, 2015? By how much? Why do you say this? And how about 5 years from now, in 2020? [PROBE: Linear change over 5 years? Increases in a particular year? Why?]
- Q 18. [If Oregon forecast different from Northwest] For 2020, what do you think are the three most important reasons for the difference in the prevalence of IPIs in direct-vent gas fireplaces between Oregon and other parts of the Northwest outside of Western Washington? Please rank them in order of importance from most important to least important. [IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?]
- Q 19. Is there a relationship between FE and IPI prevalence? For example, do a higher percentage of high efficiency models have IPI?

Fireplace Efficiency

In this portion of the interview, I am going to work with you to complete a table outlining the efficiency levels of the direct-vent gas fireplaces your company sold in 2014 in Oregon.

Again, please assume that there are NO federal standards related to fireplace efficiency or ignition.

[Interviewer note: read questions to fill in table, below]

Oregon Only				
Category	Fireplace Efficiency (FE) Range	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
Decorative	0-49.9%			
Standard Efficiency	50.0-64.9%			
High Efficiency	65.0-69.9%			
Innovative- Pre Condensing	70.0-74.9%			
Innovative- Condensing	75.0%+			

Q 20. Thinking of decorative fireplaces, those with a fireplace efficiency rating between 0 and 49.9%, what percent of your 2014 sales in Oregon fell into this category? And standard efficiency models, those between 50 and 64.9%?

[Continue with each efficiency category until table is complete for all categories in 2014; interviewer to work with distributor to ensure the year total = 100%]

Q 21. Based on your responses for 2014, “decorative” gas fireplaces with an efficiency rating between 0 and 49.9% FE represented [INSERT % FROM Q 21] of your sales in 2014. What do you expect the percentage of gas fireplaces in this category to be in 2015? What about sales 5 years from now, in 2020?

[Continue with each efficiency category until table is complete for all categories in 2015 and 2020; interviewer to work with manufacturer to ensure the year total = 100%]

Now I would like to discuss 2014 and future sales of direct-vent gas fireplaces in the Northwest, but OUTSIDE of Oregon and Western Washington. Please consider Eastern Washington, Idaho, and Montana.

[Interviewer note: read questions to fill in table, below]

Outside of Oregon and Western Washington				
Category	Fireplace Efficiency (FE) Range	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
Decorative	0-49.9%			
Standard Efficiency	50.0-64.9%			
High Efficiency	65.0-69.9%			
Innovative- Pre Condensing	70.0-74.9%			
Innovative- Condensing	75.0%+			

- Q 22. Thinking of decorative fireplaces, those with a fireplace efficiency rating between 0 and 49.9%, what percent of your 2014 sales in the Northwest, outside of Oregon and Western Washington fell into this category? And standard efficiency models, those between 50 and 64.9%?

[Continue with each efficiency category until table is complete for all categories in 2014; interviewer to work with manufacturer to ensure the year total = 100%]

- Q 23. [If Oregon different from Northwest] For 2014, what do you think are the three most important reasons for the difference between Oregon and other parts of the Northwest, outside of Western Washington in the sale of high-efficiency direct-vent gas fireplaces? Please rank them in order of importance from most important to least important. [IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?]

- Q 24. Based on your responses for 2014, “decorative” gas fireplaces with an efficiency rating between 0 and 49.9% FE represented [INSERT % FROM Q 23] of your sales in 2014 in the Northwest, outside of Oregon and Western Washington. If there were no incentives available for efficient fireplaces in this region, what do you expect the percentage of gas fireplaces in this category to be in 2015? What about sales 5 years from now, in 2020?

[Continue with each efficiency category until table is complete for all categories in 2015 and 2020; interviewer to work with distributor to ensure the year total = 100%]

- Q 25. [If Oregon forecast different from Northwest] For 2020, what do you think are the three most important reasons for the difference between Oregon and other parts of the Northwest, outside of Oregon and Western Washington in the sale of high-efficiency direct-vent gas fireplaces? Please rank them in order of importance from most important to least important. (IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?)

- Q 26. Are there tradeoffs between efficiency improvements (such as higher FE and IPI) and aesthetics/performance? If so, can you describe the dynamics at play and any limitations you foresee?
- Q 27. What changes, if any, do you expect to see in fireplace ignition systems in the future? [PROBE: new electronic ignition technologies, etc.] Why do you think these changes [or lack of changes] will occur?
- Q 28. [If not mentioned] Before today, were you aware of the Energy Trust of Oregon? Were you aware that they provide incentives for efficient direct-vent gas fireplaces? Were you aware that Puget Sound Energy in Western Washington provide incentives for efficient direct-vent gas fireplaces? Were you aware that Fortis BC provides incentives for efficient direct-vent gas fireplaces?

[Website for more info: energytrust.org]

Those are all the questions I have for you today. Thank you very much for your time and good information!

Gas Fireplace Distributor Interview Guide

March 25, 2015

Background:

Information from interviews with hearth product distributors will be used to understand the hearth market both within, and outside of Energy Trust territory and establish baseline efficiency characteristics for direct-vent gas fireplaces to inform the market characterization and market transformation model.

Key Objectives:

- Understand the gas hearth market both within, and outside of, Energy Trust's service territory; who is selling hearth products, who is buying hearth products how many are being sold and how they are being used.
- Collect information about average efficiency and prevalence of IPI in hearth products being sold within Energy Trust's service territory and outside Energy Trust territory where incentives have not been provided, assuming no new federal standards for fireplaces over the next five years.
- Collect information to establish current and future baseline characteristics for fireplaces, assuming no new federal standards for fireplaces over the next five years.

Target Respondents:

Evergreen aims to complete three (3) in-depth interviews with active hearth distributors in Oregon.

Introduction / Recruiting:

Hello, my name is _____ with Evergreen Economics, an energy market research firm based in Portland, Oregon. I want to assure you that this is not a sales call. We are calling on behalf of Energy Trust of Oregon who have asked us to help them better understand the market in the Northwest for gas fireplaces.

Would you be available to participate in an interview with me regarding the Northwest gas fireplace market? Our questions will take about 40 minutes. If you are not available now, could we schedule a time later in the week that would be convenient for you?

Schedule Date and Time: _____

[IF NEEDED: This study will help Energy Trust improve the market for high efficiency gas fireplaces in Oregon and the Northwest. Energy Trust of Oregon is an independent nonprofit organization that provides energy efficiency and renewable energy services in Oregon. The answers you provide are confidential and will not be linked to you or your company in any way.]

I. Business Scope

First, I would like to emphasize that when I refer to gas fireplaces I am referring to indoor, direct-vent gas fireplaces. Now, I would like to start with some general questions about you and your company.

- Q 1. What is your role at your company? How long have you been in your current role?
- Q 2. In what parts of the Northwest do you sell direct-vent gas fireplaces? Does your company distribute direct-vent gas fireplaces outside of the Northwest? If so, where?
- Q 3. How long has your company sold direct-vent gas fireplaces in the Northwest? Do you also provide installation services for your fireplaces?
- Q 4. What gas fireplace manufacturers do you work with?
- Q 5. Does your company sell log sets?

II. Sales

Now I have some questions about your company's sales of direct-vented gas fireplaces.

- Q 6. How many direct-vented gas fireplaces did your company sell in 2014? What about in 2013? What are the reasons for the change between 2013 and 2014? [PROBE: % New vs. Existing homes]
- Q 7. About what percent of your company's sales in 2014 were in Oregon? What about in 2013? [PROBE: % New vs. Existing homes] And about what percent were in Western Washington in 2014? And 2013?
- Q 8. What is your market share of direct-vent gas fireplaces in the Northwest? What about in Oregon specifically? [PROBE for %] [IF NEEDED: About what percent of the total direct-vent gas fireplaces sold in <REGION> are sold by your company, as opposed to another vendor?]
- Q 9. What brands and models of direct-vent gas fireplaces does your company sell? [PROBE: Can they email list? / Available on website?]
- Q 10. How do you decide which products to carry? [PROBE: Manufacturer decision, what factors do they consider e.g.: energy efficiency] Do you have any input in the development of fireplace products?
- Q 11. Considering the Oregon market, what are the key factors that determine the price of the direct-vent gas fireplaces you sell? [PROBE: brand, aesthetics, size, efficiency, differences between Oregon and other areas of the Northwest] Is there a relationship between the cost of a unit and the efficiency of the unit?
- Q 12. What percent of your company's direct-vent gas fireplace sales are to retailers versus direct to end-users versus to wholesale purchasers such as builders? (IF < 100%) What percent do you sell through other sales channels? Are there differences between Oregon and other parts of the Northwest? (Record percentages for all regions)

Retailers: _____%

End-users: _____%

Wholesale purchasers/builders: _____%

Do these different groups purchase different types of products? [PROBE: Efficiency levels and prevalence of IPI between different groups]

III. Current and Future Fireplace Pilot Lights and Efficiency Levels

Now I have some specific questions about the FE rating and prevalence of Intermittent Pilot Ignition in the direct-vent gas fireplaces you sell.

Please assume that there are NO federal standards related to fireplace efficiency or ignition.

[IF NEEDED: Fireplace efficiency, FE, is a measure of a fireplace's energy efficiency performance over an entire heating season and is expressed as a percentage. The higher the rating, the more efficient the unit.]

Intermittent Pilot Ignitions

[Interviewer note: read questions to fill in table, below]

Ignition Type / Region	% of 2013	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
IPI / Oregon				
Non-IPI / Oregon				
IPI / Outside Oregon / Western Washington				
Non-IPI / Outside Oregon / Western Washington				

- Q 13. About what percent of the direct-vent gas fireplaces sold by your company in Oregon in 2014 had intermittent pilot ignitions? How, if at all, was this different in 2013? [PROBE for specific %s] What are the reasons for this change?
- Q 14. About what percent of your direct-vent gas fireplaces sold in the Northwest outside Oregon and Western Washington in 2014 had intermittent pilot ignitions? How, if at all, was this different in 2013? [PROBE for specific %s] What are the reasons for this change?
- Q 15. [If Oregon different from Northwest] What do you think are the three most important reasons for the difference in the prevalence of IPIs in direct-vent gas fireplaces

between Oregon and other parts of the Northwest outside of Western Washington? Please rank them in order of importance from most important to least important. [IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?]

- Q 16. Based on your earlier response, about [INSERT % FROM Q 13] of direct-vent gas fireplaces your company sold in Oregon in 2014 had IPIs? Thinking about this year, 2015, do you think the prevalence of IPIs in direct-vent gas fireplaces you sell in Oregon will increase, decrease or stay about the same? By how much? Why do you say this? And how about 5 years from now, in 2020? [PROBE: Linear change over 5 years? Increases in a particular year? Why?]
- Q 17. Based on your earlier response, about [INSERT % FROM Q 14 of direct-vent gas fireplaces your company sold in the Northwest outside of Oregon and Western Washington in 2014 had IPIs? If there were no incentives available for efficient fireplaces in this region, do you think the prevalence of IPIs in direct-vent gas fireplaces you sell in the Northwest (outside of Oregon and Western Washington) will increase, decrease or stay about the same this year, 2015? By how much? Why do you say this? And how about 5 years from now, in 2020? [PROBE: Linear change over 5 years? Increases in a particular year? Why?]
- Q 18. [If Oregon forecast different from Northwest] For 2020, what do you think are the three most important reasons for the difference in the prevalence of IPIs in direct-vent gas fireplaces between Oregon and other parts of the Northwest outside of Western Washington? Please rank them in order of importance from most important to least important. [IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?]
- Q 19. Is there a relationship between FE and IPI prevalence? For example, do a higher percentage of high efficiency models have IPI?

Fireplace Efficiency

In this portion of the interview, I am going to work with you to complete a table outlining the efficiency levels of the direct-vent gas fireplaces your company sold in 2014 in Oregon.

Again, please assume that there are NO federal standards related to fireplace efficiency or ignition.

[Interviewer note: read questions to fill in table, below]

Oregon Only				
Category	Fireplace Efficiency (FE) Range	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
Decorative	0-49.9%			
Standard Efficiency	50.0-64.9%			
High Efficiency	65.0-69.9%			
Innovative- Pre Condensing	70.0-74.9%			
Innovative- Condensing	75.0%+			

Q 20. Thinking of decorative fireplaces, those with a fireplace efficiency rating between 0 and 49.9%, what percent of your 2014 sales in Oregon fell into this category? And standard efficiency models, those between 50 and 64.9%?

[Continue with each efficiency category until table is complete for all categories in 2014; interviewer to work with distributor to ensure the year total = 100%]

Q 21. Based on your responses for 2014, “decorative” gas fireplaces with an efficiency rating between 0 and 49.9% FE represented [INSERT % FROM TABLE ABOVE] of your sales in 2014. What do you expect the percentage of gas fireplaces in this category to be in 2015? What about sales 5 years from now, in 2020?

[Continue with each efficiency category until table is complete for all categories in 2015 and 2020; interviewer to work with distributor to ensure the year total = 100%]

Now I would like to discuss 2014 and future sales of direct-vent gas fireplaces in the Northwest, but OUTSIDE of Oregon and Western Washington. Please consider Eastern Washington, Idaho, and Montana.

[Interviewer note: read questions to fill in table, below]

Outside of Oregon and Western Washington				
Category	Fireplace Efficiency (FE) Range	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
Decorative	0-49.9%			
Standard Efficiency	50.0-64.9%			
High Efficiency	65.0-69.9%			
Innovative- Pre Condensing	70.0-74.9%			
Innovative- Condensing	75.0%+			

- Q 22. Thinking of decorative fireplaces, those with a fireplace efficiency rating between 0 and 49.9%, what percent of your 2014 sales in the Northwest, outside of Oregon and Western Washington fell into this category? And standard efficiency models, those between 50 and 64.9%?

[Continue with each efficiency category until table is complete for all categories in 2014; interviewer to work with distributor to ensure the year total = 100%]

- Q 23. [If Oregon different from Northwest] For 2014, what do you think are the three most important reasons for the difference between Oregon and other parts of the Northwest, outside of Western Washington in the sale of high-efficiency direct-vent gas fireplaces? Please rank them in order of importance from most important to least important. [IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?]

- Q 24. Based on your responses for 2014, “decorative” gas fireplaces with an efficiency rating between 0 and 49.9% FE represented [INSERT % FROM TABLE ABOVE] of your sales in 2014 in the Northwest, outside of Oregon and Western Washington. If there were no incentives available for efficient fireplaces in this region, what do you expect the percentage of gas fireplaces in this category to be in 2015? What about sales 5 years from now, in 2020?

[Continue with each efficiency category until table is complete for all categories in 2015 and 2020; interviewer to work with distributor to ensure the year total = 100%]

- Q 25. [If Oregon forecast different from Northwest] For 2020, what do you think are the three most important reasons for the difference between Oregon and other parts of the Northwest, outside of Oregon and Western Washington in the sale of high-efficiency direct-vent gas fireplaces? Please rank them in order of importance from most

important to least important. [IF NEEDED: Of the three reasons you mentioned, what is the most important? What is the second most important? What is the least important?]

- Q 26. [If not mentioned] Before today, were you aware of the Energy Trust of Oregon? Were you aware that they provide incentives for efficient direct-vent gas fireplaces? Were you aware that Puget Sound Energy in Western Washington provides incentives for efficient direct-vent gas fireplaces? Were you aware that Fortis BC provides incentives for efficient direct-vent gas fireplaces?

[Website for more info: energytrust.org]

Those are all the questions I have for you today. Thank you very much for your time and good information!

Gas Fireplace Vendor Interview Guide

March 25, 2015

Background:

Information from interviews with hearth product vendors will be used to understand the hearth market outside of Energy Trust's service territory and establish baseline efficiency characteristics for direct-vent gas fireplaces to inform the market characterization and market transformation model.

Key Objectives:

- Understand the gas hearth market outside Energy Trust's service territory; who is selling hearth products, who is buying hearth products how many are being sold and how they are being used.
- Collect information about average efficiency and prevalence of IPI in hearth products being sold outside Energy Trust's service territory where incentives have not been provided, assuming no new federal standards for fireplaces over the next five years.
- Collect information to establish current and future baseline characteristics for fireplaces, assuming no new federal standards for fireplaces over the next five years.

Target Respondents:

Evergreen aims to complete 20 in-depth interviews with active hearth product vendors in Northwest regions that do not have energy efficiency incentive programs for gas fireplaces.

Introduction / Recruiting:

Hello, my name is _____ with Evergreen Economics, an energy market research firm based in Portland, Oregon. I want to assure you that this is not a sales call. We are calling on behalf of Energy Trust of Oregon who have asked us to help them better understand the market in the Northwest for gas fireplaces.

Would you be available to participate in an interview with me regarding the gas fireplace market? Our questions will take about 20 minutes. If you are not available now, could we schedule a time later in the week that would be convenient for you?

SCREEN: We are interested in talking with vendors who sell direct-vent gas fireplaces outside of Oregon. Does your store in <REGION> sell gas fireplaces in Oregon? (If YES – Thank vendor for their time and end call)

Schedule Date and Time: _____

[IF NEEDED: This study will help Energy Trust improve the market for high efficiency gas fireplaces in Oregon and the Northwest. Energy Trust of Oregon is an independent nonprofit organization that provides energy efficiency and renewable energy services to Oregonians. The answers you provide are confidential and will not be linked to you or your company in any way.]

I. Business Scope

First, I would like to emphasize that when I refer to gas fireplaces I am referring to indoor, direct-vent gas fireplaces. Now, I would like to start with some general questions about you and your company.

- Q 27. What is your role at your company? How long have you been in your current role?
- Q 28. Is your store the only store operated by your company? [IF YES SKIP TO Q 5] Or is your store part of a franchise or chain?
- Q 29. Does your company have any stores in Oregon that sell direct-vent gas fireplaces?
- Q 30. Does your store make decisions about what products to stock independently of a parent company?
[IF Q 3 = YES and Q 4 = NO, then thank and terminate call]
- Q 31. Is your company's core business selling indoor gas fireplaces? [If NO] What is your company's core business?
- Q 32. Would you classify your company as a contractor firm, a wholesaler or distributor, or a fireplace installer firm? Or something else?
- Q 33. In what parts of the Northwest does your company sell direct-vent gas fireplaces?
- Q 34. How long has your company sold direct-vent gas fireplaces? Do you also provide installation services for your fireplaces?
- Q 35. What are your target markets for direct-vent gas fireplaces? [PROBE: Customer type - retail customers, builders, contractors, existing homes vs. new homes, high income, medium income, low income]
- Q 36. Does your company sell log sets?

II. Stocking and Customer Purchase Decisions

Now I have some questions about the characteristics of the fireplaces you stock and what your customers are looking for in a direct-vent gas fireplace.

- Q 37. What factors do you consider when selecting which fireplaces to promote to customers? [PROBE: Unit size, aesthetics, price, energy efficiency]
- Q 38. Typically, what is the single most important factor for customers when they are deciding to purchase a new direct-vent gas fireplace?
- Q 39. What are other important factors for customers when they are deciding to purchase a new direct-vent gas fireplace? [PROBE: Unit size, aesthetics, price, energy efficiency]

Q 40. On a scale of 1 to 5 where 1 is not at all important and 5 is very important, how important is fireplace efficiency in the customer's decision to purchase a direct-vent gas fireplace?

Select One: **1 2 3 4 5**

Why do you say this?

Q 41. On a scale of 1 to 5 where 1 is not at all important and 5 is very important, how important is Intermittent Pilot Ignition in the customer's decision to purchase a direct-vent gas fireplace?

Select One: **1 2 3 4 5**

Why do you say this?

Q 42. Do you actively promote high efficiency, direct-vent gas fireplace models? Why/Why not? How? [PROBE for: frequency and factors that impact decision to promote high efficiency]

Q 43. Do you actively promote models with intermittent pilot ignition over standing pilot lights? Why/Why not? How? [PROBE for: frequency and factors that impact decision to promote high efficiency]

Q 44. How do you define "high efficiency" for customers that ask about high efficiency, direct-vent gas fireplaces?

III. Sales

Now I have some questions about your company's sales of direct-vented gas fireplaces.

Q 45. How many direct-vented gas fireplaces did you sell in 2014 in the <REGION> area? What about in 2013? What are the reasons for the change between 2013 and 2014?

Q 46. About what percent of your company's sales came from the sale of direct-vented gas fireplaces in 2014? What about in 2013? What are the reasons for the change between 2013 and 2014?

Q 47. Of the direct-vent gas fireplaces sold, what percent were sold to builders constructing new homes in 2014? What about in 2013? What are the reasons for the change between 2013 and 2014?

Q 48. What is your market share of direct-vent gas fireplaces in the <REGION> area? [PROBE for %] [IF NEEDED: About what percent of the total direct-vent gas fireplaces sold in <REGION> are sold by your company, as opposed to another vendor?]

Q 49. What brands and models of direct-vent gas fireplaces does your company stock? [PROBE: Can they email list? / Available on website?]

Q 50. What were your five best-selling direct-vent gas fireplace models for 2014? Can you tell me the specific make and model numbers, and unit price (not including vent and install costs) for each of the top five models? What % of total direct-vent gas fireplace sales do these top five models account for?

#	Make	Model	Cost
1			
2			
3			
4			
5			

Q 51. What are the key factors that determine the price of the direct-vent gas fireplaces you sell? [PROBE: brand, aesthetics, size, efficiency] Is there a relationship between the cost of a unit and the efficiency of the unit?

Q 52. Thinking broadly, what trends are you noticing in the gas fireplace market? What factors are influencing sales? What do you anticipate in the next few years? Why?

Q 53. What issues have you experienced, if any, that have prompted customer complaints or callbacks? Are there particular types of systems that are more likely to prompt customer complaints or callbacks? [PROBE: brands, ignition type, etc.] [If vendor states they have had customer complaints or callbacks related to IPI, ask: How often do you switch the fireplace to standing pilot mode (if at all)?]

IV. Current and Future Fireplace Efficiency Levels

Now I have some specific questions about the prevalence of Intermittent Pilot Ignition in the fireplaces you sell, and the FE rating of the fireplaces you sell now, and in the future.

Please assume that there are NO federal standards related to fireplace efficiency or ignition.

[IF NEEDED: Fireplace efficiency, FE, is a measure of a fireplace's energy efficiency performance over an entire heating season and is expressed as a percentage; the higher the rating, the more efficient the unit.]

Intermittent Pilot Ignitions

[Interviewer note: read questions to fill in table, below]

Ignition Type	% of 2013	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
IPI				
No IPI				

- Q 54. About what percent of the direct-vent gas fireplaces sold by your company in the <REGION> area in 2014 had intermittent pilot ignitions? What was this percentage in 2013? [PROBE for specific %s] What are the reasons for this change?
- Q 55. Based on your earlier response, about [INSERT % FROM Q 28] of fireplaces you sold in 2014 had IPIs. If there were no financial incentives for high efficiency fireplaces in the <REGION> area, in 2015, what percent of the fireplaces sold by your company will have intermittent pilot ignitions? What do you think will lead to this change? What about fireplaces sold in 5 years time, in 2020? [PROBE: Linear change over 5 years? Increases in a particular year? Why?]

Fireplace Efficiency

In this portion of the interview, I am going to work with you to complete a table outlining the efficiency levels of the direct-vent gas fireplaces your company sold in 2014 in the <REGION> area.

Again, please assume that there are NO federal standards related to fireplace efficiency or ignition.

[Interviewer note: read questions to fill in table, below]

Category	Fireplace Efficiency (FE) Range	% of 2014	% of 2015 Sales (expected)	% of 2020 Sales (expected)
Decorative	0-49.9%			
Standard Efficiency	50.0-64.9%			
High Efficiency	65.0-69.9%			
Innovative- Pre Condensing	70.0-74.9%			
Innovative- Condensing	75.0%+			

- Q 56. Thinking of decorative fireplaces, those with a fireplace efficiency rating between 0 and 49.9%, what percent of your 2014 sales in the <REGION> area fell into this category? And standard efficiency models, those between 50 and 64.9%?

[Continue with each efficiency category until table is complete for all categories in 2014; interviewer to work with vendor to ensure the year total = 100%]

Q 57. Based on your responses for 2014, “decorative” gas fireplaces with an efficiency rating between 0 and 49.9% FE represented [INSERT % FROM Q 30] of your sales in 2014. If there were no financial incentives for high efficiency fireplaces in the <REGION> area, what do you expect the percentage of gas fireplace sales in the <REGION> area in this category to be in 2015? What do you think will lead to this change? What about sales 5 years from now, in 2020? [PROBE: Linear change over 5 years? Increases in a particular year? Why?]

[Continue with each efficiency category until table is complete for all categories in 2015 and 2020; interviewer to work with distributor to ensure the year total = 100%]

Q 58. Is there a relationship between FE and IPI prevalence? For example, do a higher percentage of high efficiency models have IPI?

Now I have a few final questions about the future for direct-vented gas fireplaces and then we will be done.

Q 59. Do you think an incentive – in the form of a rebate to the homeowner for purchasing a higher efficiency model – would be influential in increasing the average efficiency of fireplaces you sell or stock? Why or why not?

Q 60. Do you think an incentive – in the form of a rebate to the homeowner for purchasing a model with IPI – would be influential in increasing the number of fireplaces with IPI you sell or stock? Why or why not?

Those are all the questions I have for you today. Thank you very much for your time and good information!