

BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON

UM 1565

In the Matter of

PUBLIC UTILITY COMMISSION OF  
OREGON,

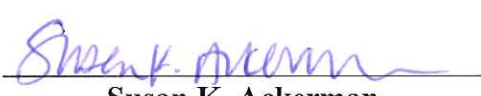
Investigation of Fuel Switching and Cross  
Fuel Energy Issues.

ORDER

DISPOSITION: STAFF'S RECOMMENDATION ADOPTED AS REVISED

This order memorializes our decision, made and effective at the public meeting on September 8, 2015, to adopt Staff's recommendation as revised. Staff's recommendation, included in the Staff Report attached as Appendix A, is adopted without prejudice to Northwest Natural Gas Company. In addition, we direct the Energy Trust of Oregon to provide: (1) an economic analysis of the use of a heat pump for heating and cooling compared to the use of a standard natural gas furnace and electric air conditioning unit for such purposes; and (2) information about possible high-efficiency air conditioning incentives.

Dated this 8 day of September, 2015, at Salem, Oregon.



**Susan K. Ackerman**  
Chair





**John Savage**  
Commissioner



**Stephen M. Bloom**  
Commissioner

A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Circuit Court for Marion County in compliance with ORS 183.484.



ITEM NO. 2

PUBLIC UTILITY COMMISSION OF OREGON  
 STAFF REPORT  
 PUBLIC MEETING DATE: September 8, 2015

REGULAR  X  CONSENT \_\_\_\_\_ EFFECTIVE DATE \_\_\_\_\_ N/A \_\_\_\_\_

DATE: August 24, 2015

TO: Public Utility Commission

FROM: *RR for EP*  
 Elaine Prause

THROUGH: *F* Jason Eisdorfer and *RR* Aster Adams

SUBJECT: OREGON PUBLIC UTILITY COMMISSION STAFF: (Docket No. UM 1565) Energy Trust's third party study confirming that Energy Trust's incentives are not the primary reason for fuel switching, consistent with the Commission's decision in Order No. 13-104.

**STAFF RECOMMENDATION:**

Staff recommends that the Commission take no action regarding Order No. 13-104.

**DISCUSSION:**

Issue

In this memorandum, Staff addresses whether the results of a third-party survey are consistent with the Commission's conclusion in Order No. 13-104 that an Energy Trust incentive for high efficiency heat pumps was not the primary factor in customers' decisions to install a high efficiency heat pump and its decision to not prohibit Energy Trust from offering the heat pump incentive to gas customers on the ground the incentive does not encourage fuel switching.

Background

In 2011, Northwest Natural Gas (NW Natural) raised questions about fuel switching as related to energy efficiency incentives. NW Natural contended that the absence of incentives for furnaces was leading to fuel switching. Energy Trust of Oregon (Energy Trust) maintained that its heat pump incentives were only relevant after the ratepayer has chosen to install a heat pump and only motivate installation of a higher efficiency model.

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The Commission opened Docket UM 1565, Investigation of Fuel Switching and Cross Fuel Energy Issues, to address the issue with stakeholders. In March 2013, the Commission concluded the docket with Order No. 13-104 and listed three specific findings related to Energy Trust's delivery of heat pump incentives.

- The Energy Trust has the discretion to provide the heat pump incentive to all customers, regardless of their heating source.
- The Energy Trust must revise its messaging and marketing activities related to the high-efficiency heat pump incentive and clarify its fuel switching policies consistent with the terms of this order.
- The Energy Trust must use an independent surveying entity to collect additional information about natural gas customers who receive the heat pump incentive.

In addition to these items, within section 2D of the order, the Commission planned to revisit these decisions in early 2015 once the Energy Trust had completed a third-party study to gather additional information about the reasons underlying a gas customer's decision to install a heat pump and to what extent these customers continue to use natural gas as a back-up heating source.

Since the Commission issued Order No. 13-104 in March 2013, Energy Trust has continued to make incentives for high efficiency heat pumps available to customers with homes primarily heated by gas based upon the incremental cost and savings of a high efficiency heat pump compared to the cost of a standard market efficiency unit.

*Messaging-* Since March 2013, the Energy Trust has revised its messaging and marketing activities related to the high-efficiency heat pump incentive and clarified its fuel switching policies. These modifications can be seen on their webpage and in their marketing materials.

*Third-party survey-* Energy Trust began work on the independent survey in 2014 and recently completed it. The survey was intended to elicit information to allow the Commission to better understand the reasons underlying a gas customer's decision to install a heat pump and to what extent these customers continue to use natural gas as a back-up heating source is addressed through the third party survey.

Energy Trust, Cascade Natural Gas, NW Natural, Portland General Electric, and Pacific Power collaborated to define four goals for the market research of customers who received an Energy Trust incentive for an efficient heat pump.

1. Verify customers' primary and secondary heating/cooling systems prior to heat pump installation;
2. Verify customers' primary heating/cooling system after the heat pump was installed;
3. Learn about the options customers considered when adding a heat pump, and in particular, if they considered efficient gas systems, and if they did not, why; and

4. Discern the primary factors influencing customers' decisions to install a heat pump.

The third party contacted 424 customers that had received Energy Trust heat pump incentives between January 2011 and mid-2014, via email, telephone, or both, and obtained 90 completed surveys. These customers completing the survey all reported that they used a natural gas furnace prior to installation of a high efficiency heat pump.

#### Key Results of Survey

- Contractors were the most important source of information on system choice (52 percent), followed by online recommendations (11 percent), friends and family (10 percent), Energy Trust information (8 percent), and other (11 percent).
- System performance characteristics (home comfort, system efficiency, relative fuel costs, reliability, and air conditioning) were absolutely critical factors in the final purchase decision ranking ahead of the presence of Energy Trust's incentive.
- Forty-six percent considered a new high efficiency gas furnace but opted for the heat pump. Reasons included that other options were thought to be more efficient, they wanted cooling, and they wanted one system for heating and cooling.
- The decision to install a heat pump included a number of factors and sources of information and was not a quick process. Sixty-nine percent said it was at least three months from research to installation with 36 percent taking more than 9 months.
- Eighty-one percent reported the new heat pump is their primary heating system, 82 percent reported the new heat pump is their primary cooling system.
- Fifty percent reported that the heat pump replaced their gas furnace that was removed, 29 percent kept their gas furnace, 11 percent replaced their gas furnace at the same time. In many cases, gas furnaces continue to be used as supplementary heating systems.
- Twenty-nine percent did not have air conditioning before installation of the heat pump.

#### Comments

Cascade Natural Gas Corporation (Cascade), NW Natural, and Citizens Utility Board (CUB) submitted comments concerning the third party survey and how it should impact the Commission's 2013 order.

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Cascade offered the following comments:

1. If in fact incentives are not significant, then the decision to offer incentives for heat pumps in the first place should be reconsidered.
2. Alternatively, "for the purposes of parity in the energy efficiency market, an incentive should be offered for high efficiency gas furnaces" and an exception to cost effectiveness should be made for consistency with other DSM programs in the region.
3. "If Energy Trust incentives are an important consideration in making these decisions, then they should be balanced between electric and gas. If Energy Trust incentives are not an important consideration, then incentives should be curtailed for both fuels out of concern for free ridership."

NW Natural commented that the study supports arguments made by NW Natural in the UM 1565 docket process and raised five specific concerns they wanted to highlight for the Commission.

1. Thirty-seven percent of customers were influenced by Energy Trust information sources in their decision making process, this is the second highest area of information sources behind advice from an installer (66 percent).
2. Contractors leverage incentives in their overall sales presentation leading to the conclusion that the inducement to fuel switch is not made in the absence of incentives.
3. The majority of customers (61 percent) rated air cooling as absolutely critical to their purchase decision leading NW Natural to surmise that the absence of incentives for air conditioning and for gas furnaces and the presence of a heat pump incentive are leading consumers to choose heat pumps for cooling.
4. The study failed to reveal evidence of a two-step-decision-making process but shows that incentives were likely considered when customers made the decision to switch from gas space heating to electric space heating.
5. Hybrid systems (gas furnace plus heat pump) are becoming more prevalent.

These concerns led NW Natural to recommend that:

- a. Energy Trust revisit the cost effectiveness analysis for their prescriptive heat pump incentive to incorporate the impact of hybrid systems on the baseline and efficient heat pump operating assumptions,
- b. Energy Trust provide clarification of the steps they made to revise their messaging and marketing activities,
- c. Staff incorporate NW Natural's concerns in the Public Meeting memo, and
- d. The Commission review their decision to allow incentives for heat pumps for customers who currently heat with natural gas.

CUB stated in informal comments "that there is no reason to revisit any issues related to this docket. Nothing substantial has changed in the time since the docket was closed

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and the survey suggests that the decision to buy a heat pump is a complex one involving a wide range of considerations and information from ETO is but one consideration."<sup>1</sup>

### Analysis

*Messaging-* Staff has reviewed Energy Trust's messaging regarding the incentive for the high efficiency heat pump and is satisfied it complies with Order No. 13-104.

*Third-party survey-* Staff considered each concern and recommendation listed above and offers the following responses.

Regarding Cascade's comments, it is Staff's understanding that the survey results did show, as Cascade asserts, that Energy Trust information and incentives are an important piece in the decision making process for customers. However, the survey also shows that neither were the primary, most significant driver for customers. Rather, decision making seems to be supported by a myriad of sources and personal factors that are hard to tease apart, although when carefully examined show that the primary reason for installing a heat pump was not the Energy Trust incentive. Therefore, it's Staff's opinion that the survey did not provide evidence that warrants revising the Commission's decision.

To Cascade's second issue regarding parity in the energy efficiency market, this topic was addressed in Docket No. UM 1565 and was outside of the scope of the third-party survey ordered by the Commission. Therefore, the issue is not relevant for discussion as no further evidence related to the topic is provided and Docket No. UM 1565 is closed.

Regarding NW Natural's comments, Staff offers the following responses:

- 1) The study does not provide new evidence that Energy Trust's incentives are the primary reason for the fuel switching that has occurred. When survey respondents were asked to note the most critical factor in their decision making process, Energy Trust information drops to eight percent (4th in list of factors) while contractor information is most often cited at 52 percent.
- 2) The study does not include surveys of contractors and their sales presentation; therefore, Staff cannot form conclusions regarding contractor behavior.
- 3) Staff agrees that there is a general theme of customers desiring air conditioning and that the decision to purchase a heat pump is generally not made based solely on heating needs but on the combination of heating and cooling. Seventy-

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<sup>1</sup> Letter from Citizens Utility Board to OPUC staff dated 8/7/15.

one percent of respondents had air conditioning prior to their purchase (29 percent did not) and 61 percent cited the addition of air conditioning as absolutely critical. Based at least in part on this information, the third-party concluded that a heat pump would provide air conditioning to some homes that previously did not have it but also "likely means that some people who had air conditioning of some form previously were not very satisfied with that older solution."<sup>2</sup>

Staff sympathizes with NW Natural regarding the issue of cooling needs as it greatly complicates customers' decision-making process and our ability to confidently understand how much of an influence cooling plays in the process from this survey. As cooling load is expected to grow in the Northwest with forecasted trends for increasing temperatures, Staff encourages Energy Trust to develop a strategy for addressing residential cooling options generally. Although incentives for stand-alone air conditioners may not currently be cost effective, Energy Trust could be developing a three to five year plan for meeting residential cooling demand most efficiently for ratepayers.

- 4) The survey was not designed to investigate the existence of a "two-step process" for decision making and so did not elicit information that could lead to a precise understanding of the incremental influence of Energy Trust incentives. Energy Trust's measure savings calculation used within their cost effectiveness analysis continues to reflect only the incremental savings of a high efficiency heat pump compared to a standard efficiency heat pump, the resulting incentive value is therefore sized appropriately to only reflect this incremental savings magnitude.
  
- 5) Staff agrees that the notion of a growing presence of hybrid heating systems (gas furnace plus heat pump) is concerning from a cost effectiveness standpoint, however, this study did not provide enough concrete evidence to lead to incorporation of results into cost effectiveness analysis. It is Staff's understanding that heat pumps generally involve a secondary back-up heating system for the very coldest of days and the back-up systems are not intended for frequent use. With improved installation and optimization practices, use of secondary systems is minimized, improving the overall system efficiency. Customer responses regarding primary vs. secondary heating systems and operational detail appear to be greatly muddled in the survey with respondents not able to provide clear and concise feedback on system operations.

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<sup>2</sup> See page 16 of "Energy Trust of Oregon: Survey Report on Factors Underlying Customer Decisions to Install a Heat Pump."

The study conducted under Order No. 13-104 was not intended to provide the type of data needed to confidently adjust measure level cost effectiveness analysis. Evaluation of system metering data and billing analysis would provide a much higher quality of information required. Because the relative magnitude of this occurrence is still small, Staff does not recommend that Energy Trust focus significant resources to better quantify impacts of hybrid systems. However, it is an area of concern to be aware of and one that could present itself more clearly in future Residential Building Stock Assessments through NEEA and other studies Energy Trust is deeply engaged in. Although the dynamics of heat pumps and gas furnaces in existing homes may not be well known and only impact a small percentage of homes in the region, Staff encourages Energy Trust to keep this issue on their radar for future review and possible inclusion in updated heat pump measure analysis.

Finally to NW Natural's recommendations, Staff addressed the first one in recommending that Energy Trust take no action at this time (see # 5 above) to re-analyze the measure but should consider how to ensure they are tracking the existence and performance of hybrid system homes when reviewing and collecting stock data. NW Natural may have some additional ideas to share with Energy Trust to accomplish this task. Energy Trust is planning to provide additional information regarding changes made to their messaging and outreach, and Staff included their comments in this memo.

Based upon Staff's review of the survey results and stakeholder comments, Staff concludes that the basis of the Commissions' decision in Order 13-104 still holds. In Order No. 13-104, the Commission concluded "[we] lack conclusive evidence that the incentive is the primary reason for the switching that has occurred. For that reason, and because of the benefits of encouraging individuals to purchase higher-efficiency space heating equipment, we believe the incentive should be retained [for gas customers]."<sup>3</sup> Although Energy Trust's information and incentives are accessed by customers with existing gas furnaces, the results of the survey show that there are multiple other factors related to system performance characteristics that dominate the purchase decision. Customers seemed to be most heavily influenced by contractors, not Energy Trust general information sources, when learning about options. The survey does not provide evidence that the incentive is the primary reason for the switching that has occurred.

Staff is satisfied that the results of the third-party survey of natural gas customers who received Energy Trust heat pump incentives support the Commission's decision in Order No. 13-104. There are multiple factors that influence a customer's decision to switch from gas space heating to electric space heating and the incentive is not the primary reason for the switching that has occurred.

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<sup>3</sup> Order No. 13-104 at 5.

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**PROPOSED COMMISSION MOTION:**

The Commission takes no action regarding Order No. 13-104.

UM 1565– Investigation into fuel switching and cross fuel efficiency issues