ITEM NO. RA2

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: January 25, 2022

REGULAR X CONSENT ____ EFFECTIVE DATE January 26, 2022

DATE: January 18, 2022

TO: Public Utility Commission

FROM: Anna Kim

THROUGH: Bryan Conway, JP Batmale, and Sarah Hall **SIGNED**

SUBJECT: OREGON PUBLIC UTILITY COMMISSION STAFF:
(Docket No. UM 1696)
Energy Trust of Oregon cost effectiveness exceptions requests for ductless heat pumps.

STAFF RECOMMENDATION:

The Oregon Public Utility Commission (Commission or OPUC) should grant exceptions to cost effectiveness of energy efficiency measures for ductless heat pumps (DHPs), as requested by Energy Trust of Oregon (Energy Trust).

DISCUSSION:

Issue

Whether the Commission should grant exceptions to cost effectiveness for energy efficiency measures for DHPs.

Applicable Law

Order No. 94-590 in Docket No. UM 551 establishes guidelines for cost effectiveness of energy efficiency measures. Section 13 of the Order details seven conditions under which exceptions to Oregon's two cost effectiveness tests may be granted by the Commission. The exceptions listed in the Order are as follows:

A. The measure produces significant non-quantifiable non-energy benefits. In this case, the incentive payment should be set at no greater than the cost-effective limit (defined as present value of avoided costs plus 10 percent) less the perceived value of bill savings, e.g., two years of bill savings.

B. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure.

C. The measure is included for consistency with other demand side management (DSM) programs in the region.

D. Inclusion of the measure helps to increase participation in a cost-effective program.

E. The package of measures cannot be changed frequently and the measure will be cost effective during the period the program is offered.

F. The measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers.

G. The measure is required by law or is consistent with Commission policy and/or direction. [1]

The current process to consider cost effectiveness exceptions was reaffirmed in Docket No. UM 1622 and is as follows:[2]

- For minor exception requests, where the size and scope are limited, Energy Trust provides details to OPUC Staff who review, and if appropriate, provide approval through an email. A copy of the email is kept on file by OPUC Staff.

- For major exception requests, Energy Trust submits an exception request to Staff. OPUC Staff makes formal recommendations to the Commission at a public meeting. Commissioners then decide on the exception request at the public meeting. For more significant requests, the recommendation presentation and the decision may occur at different meetings to allow more time for comments.

The threshold by which Staff can consider minor exceptions was officially established in Docket No. UM 1696.[3] These orders codified a previous working arrangement in Docket No. UM 1622 whereby Staff could consider measure level cost effectiveness exceptions under the following circumstances:

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[1] The cost effectiveness test required under Order No. 94-590 is the Total Resource Cost Test (TRC). *In The Matter Of An Investigation Into The Calculation And Use Of Conservation Cost-effectiveness Levels*, Docket No. UM 551, Order No. 94-590 (April 6, 1994). Energy Trust has used this test since its inception to guide what measures can be offered by Energy Trust programs. Orders entered in Docket No. UM 551 also allow for the use of other cost effectiveness tests. Energy Trust uses the Utility Cost Test (UCT) to set the maximum allowable incentive amount that can be offered to participants.

[2] Docket No. UM 1622, Order No. 14-332.

[3] Docket No. UM 1696, Order Numbers 17-395 and 17-457.

- The measure's Total Resource Cost (TRC) score is below 1 and above 0.8;
- The measure's savings do not comprise more than 5 percent of a program's annual savings; and,
- The measure's cost does not represent more than 5 percent of the program's annual budget.

If a measure does not meet all of the minor exception criteria, the request goes through the Commission's major exception request process.

In 2015, the Commission adopted a cost threshold of $500,000 for pilots, above which Energy Trust must seek cost effectiveness exceptions. [4]

Energy Trust has had major measure exceptions for DHPs since 2014.[5] The most recent exceptions were granted for multiple DHP measures in Order No. 19-301 and Order No. 20-105.

At the December 28, 2021, Public Meeting, the Commission approved the schedule for submission of public comments and for Staff to return with final recommendations at the January 25, 2022, Public Meeting.[6]

Analysis

This memo will summarize the December 28, 2021, Staff memo that introduced this topic, discuss stakeholder comments, and present final recommendations. See Attachment 1 for the December 28 memo.

Background
Energy Trust provides incentives for DHPs across its service territory to electrically heated homes. DHPs are an important part of Energy Trust's strategy because they are the only viable energy efficiency technology to replace resistance heaters. Resistance heaters are more prevalent in low income and rural housing. In 2022, Energy Trust anticipates all DHP measures to account for eight percent of Home Retrofit program savings and twelve percent of Multifamily program savings.

[4] Docket No. UM 1696, Order No. 15-029.
[5] Docket No. UM 1696, Order No. 14-266.
[6] *In the Matter of Energy Trust of Oregon, Cost Effectiveness Exception Request for Electric Measures,* Docket No. UM 1696, Order Number 21-267.

Previously, Energy Trust was granted major exceptions for specific DHP measures through March 31, 2022.[7] Energy Trust was further granted additional exceptions for niche cases where there are supplemental fuels.[8]

Staff believes that providing this exception will support multiple policy efforts related to greenhouse gas reductions and equity considerations. DHP incentives are expected to have a disproportionately positive impact on rural and low-income housing and likely overlap with communities that traditionally may have not directly benefited as much from Energy Trust programs in the past. Amid the broad range of opportunities for DHPs, the multifamily measures are especially likely to impact lower income customers and the homes with supplemental heat are more likely to be rural residences.

Energy Trust requests exceptions for DHPs under three different circumstances: measures that fail the TRC, measures that fail the UCT, and measures that will support a no-cost DHP pilot. The following table summarizes the requests.

Table 1: Measure exception criteria by type

Category	***Exception Description***	**Number of Measures**	**Criteria A**	**Criteria B**	**Criteria C**	**Criteria D**	**Criteria E**	**Criteria F**	**Criteria G**
I	TRC exception for select measure applications	3			X				X
II	UCT exception for supplemental fuel homes	2	X	X		X			X
III	UCT and TRC exception for no-cost DHP pilot	28			X			X	X

Under Exception Request I, Energy Trust requests exceptions for DHPs in single-family zonal homes. Measures installed in Heating Zone (HZ) 1 have a TRC of 0.8 and multifamily DHPs have TRCs of 0.6 to 0.7. In 2022, Energy Trust estimates these exceptions will account for approximately 3.8 percent of kWh savings and 4.5 percent of incentive dollars for Residential Sector; and 12 percent of kWh savings and 19 percent of incentive dollars for the Existing Multifamily initiative. That initiative is part of the Existing Buildings program.

[7] Docket No. UM 1696, Order No. 19-301.
[8] Docket No. UM 1696, Order No. 20-105.

Table 2: TRC Exception for select measure applications (Exception I)

Measure Application Name	Savings (kWh)	Maximum Incentive ($)	2022 UCT Ratio at Max Incentive	2022 TRC Ratio
Single Family DHP for Zonal HZ1	2,230	$2,922	1.0	0.8
Multifamily DHP for Zonal HZ1	1,442	$1,890	1.0	0.6
Multifamily DHP for Zonal HZ2	1,584	$2,075	1.0	0.7

Energy Trust requests the exception under Categories C and G:

C. The measure is included for consistency with other demand side management (DSM) programs in the region.

G. The measure is required by law or is consistent with Commission policy and/or direction.

Staff agrees with these assessments and believes exception Categories C and G are applicable. It is important to support the regional effort to promote DHPs in collaboration with the Northwest Energy Efficiency Alliance (NEEA), which is working with manufacturers to establish an energy efficiency rating system for DHPs.

Providing this exception will support multiple policy efforts related to greenhouse gas reductions and social equity. These efforts include the State of Oregon's 10-Year Plan to Reducing the Energy Burden in Oregon Affordable Housing; Executive Order 20-04 to reduce greenhouse gases while minimizing energy burdens; [9] UM 2114 that identifies ductless heat pumps as an opportunity to counter the disproportionate impacts of the COVID-19 pandemic;[10] and HB 3141 implementation of performance metrics for environmental justice communities.[11]

Additionally, the Commission approved DEI-specific performance metrics for Energy Trust through Order No. 21-068.[12] DHP incentives are expected to have a disproportionately positive impact on rural and low-income housing and likely overlap with communities that traditionally have not benefited as much from Energy Trust programs. Amid the broad range of opportunities for DHPs, the multifamily measures are especially likely to impact lower income customers and the homes with supplemental heat are more likely to be rural residences.

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[9] Executive Order No. 20-04 found at: https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf.
[10] Staff Report, Docket No. UM 2114, Investigation into the Effects of the COVID-19 Pandemic on Utility Customers. October 23, 2020, p. 22.
[11] OR Laws 2021, Ch. 547, Section 11.
[12] *In the Matter of Energy Trust of Oregon: Recommendations for Performance Measures,* Docket No. UM 1158, Order Number 21-068.

Staff notes that the arguments related to Category G apply to the other exception requests in this memo.

Under Exception Request II, Energy Trust requests exceptions for installations of DHPs in single family homes with supplemental fuels such as wood and propane in instances where Energy Trust is providing enhanced incentives. The increased incentives are designed for initiatives with community partners. These measures pass the TRC. At maximum incentive levels, the UCT in Heating Zone 1 is 0.7 and the UCT in Heating Zone 2 is 0.2. These are niche cases that are expected to account for 0.01 percent of Residential Program savings and 0.5 percent of Residential Program incentives.

Table 3: UCT exception for supplemental fuel homes (Exception II)

Measure Application Name	Savings (kWh)	Maximum Incentive ($)	2022 UCT Ratio at Max Incentive	2022 TRC Ratio
Single Family DHP for Zonal HZ1 - Sup Fuel - Proposed Max Incentive for Enhanced Incentive Offers	1,481	$2,900	0.7	1.6
Single Family DHP for Zonal HZ2 - Sup Fuel - Proposed Max Incentive for Enhanced Incentive Offers	458	$2,900	0.2	1.3

Energy Trust requests the exception under Categories A, B, D, and G:

A. The measure produces significant non-quantifiable non-energy benefits. In this case, the incentive payment should be set at no greater than the cost-effective limit (defined as present value of avoided costs plus 10 percent) less the perceived value of bill savings, e.g., two years of bill savings.

B. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure.

D. Inclusion of the measure helps to increase participation in a cost-effective program.

G. The measure is required by law or is consistent with Commission policy and/or direction.

Staff agrees with these assessments and believes exception Categories A, B, D, and G are applicable. Staff agrees that air quality qualifies as significant, non-quantifiable, and non-energy. Including these measures may increase market acceptance as well as participation by supporting niche cases that could cause confusion to customers and difficulty for contractors.

Staff believes that granting cost-effectiveness exceptions for supplemental fuels addresses the Governor's Executive Order 20-04 by reducing GHG emissions and

mitigating energy burden, while at the same time enhancing system reliability and resource adequacy. As these measures are delivered through community partners, these measures are targeted specifically to lower-income customers.

Under Exception Request III, Energy Trust requests exceptions to conduct a no-cost DHP pilot targeting lower income households. The purpose of this pilot is to learn about different delivery mechanisms and barriers to installation beyond the cost of the work. Energy Trust proposes to work with community stakeholders and organizations working with low and moderate-income customers, including OHCS, community action agencies, community-based organizations, and the OPUC to inform the pilot design. As DHPs are expensive compared to conventional resistance heaters and installations can be expensive, cost-effective incentives are normally a fraction of the total cost. The overall cost has been a barrier to learning more about how to increase participation in low- and moderate-income households.

The proposed budget for the pilot under Exception III is $5,000,000 over three years. This pilot requires approval from the Commission because the budget exceeds the $500,000 pilot budget maximum allowed without authorization and the measures tested in the pilot are not cost-effective. At the maximum costs, the UCT for these measures range from 0.8 in the most ideal circumstances to 0.1 for supplemental fuels, covering the range of situations where the DHPs would be installed.

Table 4: UCT and TRC exception for No-Cost DHP Pilot (Exception (III)

Measure Application Name	Savings (kWh)	Maximum Incentive ($)	UCT Ratio at Max Incentive	TRC Ratio
Single Family DHP for Zonal HZ1 - 1:1 CRP	2,203	$4,678	0.4	0.6
Single Family DHP for Zonal HZ1 - 1:2 CRP	2,203	$7,493	0.3	0.4
Single Family DHP for Zonal HZ2 - 1:1 CRP	2,747	$4,678	0.5	0.7
Single Family DHP for Zonal HZ2 - 1:2 CRP	2,747	$7,493	0.4	0.5
Single Family DHP for FAF HZ1 - 1:1 CRP	3,853	$4,670	0.8	1.0
Single Family DHP for FAF HZ1 - 1:2 CRP	3,853	$7,485	0.5	0.6
Single Family DHP for FAF HZ2 - 1:1 CRP	3,610	$4,670	0.7	1.0
Single Family DHP for FAF HZ2 - 1:2 CRP	3,610	$7,485	0.5	0.6
Manufactured Home DHP for Zonal HZ1 - 1:1 CRP	3,885	$4,181	0.8	1.4
Manufactured Home DHP for Zonal HZ1 - 1:2 CRP	3,885	$6,902	0.5	0.8
Manufactured Home DHP for Zonal HZ2 - 1:1 CRP	3,885	$4,181	0.8	1.4
Manufactured Home DHP for Zonal HZ2 - 1:2 CRP	3,885	$6,902	0.5	0.9
Manufactured Home DHP for FAF HZ1 - 1:1 CRP	3,342	$4,174	0.7	1.2
Manufactured Home DHP for FAF HZ1 - 1:2 CRP	3,342	$6,895	0.5	0.7
Manufactured Home DHP for FAF HZ2 - 1:1 CRP	3,342	$4,174	0.7	1.4

Measure Application Name	Savings (kWh)	Maximum Incentive ($)	UCT Ratio at Max Incentive	TRC Ratio
Manufactured Home DHP for FAF HZ2 - 1:2 CRP	3,342	$6,895	0.5	0.8
Single Family DHP for Zonal HZ1 - Sup Fuel - 1:1 CRP	1,454	$4,678	0.3	1.4
Single Family DHP for Zonal HZ1 - Sup Fuel - 1:2 CRP	1,454	$7,493	0.2	0.9
Single Family DHP for Zonal HZ2 - Sup Fuel - 1:1 CRP	431	$4,678	0.1	1.2
Single Family DHP for Zonal HZ2 - Sup Fuel - 1:2 CRP	431	$7,493	0.1	0.7
Single Family DHP for FAF HZ1 - Sup Fuel - 1:1 CRP	3,503	$4,670	0.7	1.9
Single Family DHP for FAF HZ1 - Sup Fuel - 1:2 CRP	3,503	$7,485	0.5	1.2
Single Family DHP for FAF HZ2 - Sup Fuel - 1:1 CRP	3,503	$4,670	0.7	1.9
Single Family DHP for FAF HZ2 - Sup Fuel - 1:2 CRP	3,503	$7,485	0.5	1.2
Multifamily DHP - Zone 1 - 1:1 CRP	1,429	$4,102	0.3	0.5
Multifamily DHP - Zone 1 - 1:2 CRP	1,429	$7,303	0.2	0.3
Multifamily DHP - Zone 2 - 1:1 CRP	1,570	$4,102	0.3	0.5
Multifamily DHP - Zone 2 - 1:2 CRP	1,570	$7,303	0.2	0.3

Energy Trust requests the exception under Categories C, F, and G.

C. The measure is included for consistency with other demand side management (DSM) programs in the region.

F. The measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers.

G. The measure is required by law or is consistent with Commission policy and/or direction.

Staff agrees with these assessments and believes exception Categories C, F, and G are applicable. This is a pilot with a limited budget and duration and specific research objectives. This is an opportunity to support the regional effort to promote DHPs in collaboration with NEEA. Further, learnings from this pilot can be shared with other organizations in the region to support low and moderate-income participation.

In addition to learnings that would benefit Energy Trust's ability to increase services to more diverse customers, this pilot has the potential to support the development of opportunities that could become programs through HB 2475.[13] Under this law, OPUC may address the mitigation of energy burdens through bill reduction measures or

[13] OR Laws 2021, Ch. 90, Section 7.

programs. While a no-cost DHP offer is a potential candidate for such a program, this research can provide learnings that may generally support options for programs through HB 2475.

Stakeholder Comments
The comment deadline for inclusion in Staff's final memo was January 11, 2022. Three comments were filed by the deadline. Staff thanks the following stakeholders for their comments:

- Clean Energy Project
- Representative Pam Marsh
- Clackamas County Department of Transportation & Development

Staff notes that Energy Trust has had successful partnerships with Clean Energy Project in the past, installing DHPs.

All three parties expressed support for exceptions that would benefit customers with lower incomes. Parties also note the need to replace wood heat. All three also support the benefits and outcomes from the proposed low-cost pilot.

Clackamas County suggests that Energy Trust consider combining the DHP pilot with insulation and air sealing measures. Staff understands that Energy Trust has been considering these measures in relation to working with community-based organizations and low-income customers. Staff will discuss opportunities to integrate those services as appropriate.

Staff Recommendations
After reviewing written comments, Staff maintains its initial recommendations to grant exceptions from cost effectiveness requirements for DHPs under the different circumstances described above. Staff determined that these exceptions met multiple criteria.

Staff proposes granting three-year exceptions for these measures. Additionally, Staff supports a $5 million cap on the DHP pilot specifically. This cap would not apply to any measures that are cost-effectively installed through the pilot.

Conclusion

At the December 28, 2021, Public Meeting, Staff presented its initial cost effectiveness recommendations. Staff proposed granting three-year exceptions for these measures with a total incentive cap of $5 million for the pilot. Staff was ordered to return with final

recommendations at the January 25, 2022, Public Meeting. To date, stakeholders have been supportive of Staff's proposed exceptions.

Staff believes that its initial recommendations for cost effectiveness exceptions needing Commission approval should be adopted by the Commission. These recommendations are to grant exceptions to cost-effectiveness requirements for all DHPs listed above through March 31, 2025, and to set a $5 million cap on measures for the no-cost DHP pilot.

PROPOSED COMMISSION MOTION:

Adopt Staff's recommendation to grant exceptions to cost effectiveness of energy efficiency measures for ductless heat pumps through March 31, 2025, for all DHP measures listed in this memo. Set a $5 million cap on the no-cost DHP pilot.

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ITEM NO. CA21

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: December 28, 2021

REGULAR ____ **CONSENT** X **EFFECTIVE DATE** N/A

DATE: December 20, 2021

TO: Public Utility Commission

FROM: Anna Kim

THROUGH: Bryan Conway, JP Batmale, and Sarah Hall

SUBJECT: OREGON PUBLIC UTILITY COMMISSION STAFF:
(Docket No. UM 1696)
Energy Trust of Oregon Cost Effectiveness Exception Requests for DHPs.

STAFF RECOMMENDATION:

Adopt Staff's proposed schedule for submission of public comments and for Staff's final recommendation on major exceptions to cost effectiveness on energy efficiency measures for ductless heat pumps (DHPs), as requested by Energy Trust of Oregon (Energy Trust).

DISCUSSION:

Issue

Whether the Commission should adopt the schedule for public comment and Staff's presentation of its final recommendation on exceptions to cost effectiveness for energy efficiency measures for DHPs.

Applicable Law

Order No. 94-590 in Docket No. UM 551 establishes guidelines for cost effectiveness of energy efficiency measures. Section 13 of the Order details seven conditions under which exceptions to Oregon's two cost effectiveness tests may be granted by the Commission. The exceptions listed in the Order are as follows:

H. The measure produces significant non-quantifiable non-energy benefits. In this case, the incentive payment should be set at no greater than the cost-effective limit (defined as present value of avoided costs plus 10 percent) less the perceived value of bill savings, e.g., two years of bill savings.

I. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure.

J. The measure is included for consistency with other demand side management (DSM) programs in the region.

K. Inclusion of the measure helps to increase participation in a cost effective program.

L. The package of measures cannot be changed frequently and the measure will be cost effective during the period the program is offered.

M. The measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers.

N. The measure is required by law or is consistent with Commission policy and/or direction. [14]

The current process to consider cost effectiveness exceptions was reaffirmed in Docket No. UM 1622 and is as follows:[15]

- For minor exception requests, where the size and scope are limited, Energy Trust provides details to OPUC Staff who review and if appropriate, provide approval through an email. A copy of the email is kept on file by OPUC Staff.

- For major exception requests, Energy Trust submits an exception request to Staff. OPUC Staff makes formal recommendations to the Commission at a public meeting. Commissioners then decide on the exception request at the public meeting. For more significant requests, the recommendation presentation and the decision may occur on different meetings to allow more time for comments.

The threshold by which Staff can consider minor exceptions was officially established in

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[14] The cost effectiveness test required under Order No. 94-590 is the Total Resource Cost Test (TRC). *In The Matter Of An Investigation Into The Calculation And Use Of Conservation Cost-effectiveness Levels*, Docket No. UM 551, Order No. 94-590 (April 6, 1994). Energy Trust has used this test since its inception to guide what measures can be offered by Energy Trust programs. Orders entered in Docket No. UM 551 also allow for the use of other cost effectiveness tests. Energy Trust uses the Utility Cost Test (UCT) to set the maximum allowable incentive amount that can be offered to participants.

[15] Docket No. UM 1622, Order No. 14-332.

Docket No. UM 1696.[16] These orders codified a previous working arrangement in Docket No. UM 1622 whereby Staff could consider measure level cost effectiveness exceptions under the following circumstances:

- The measure's Total Resource Cost (TRC) score is below 1 and above 0.8;
- The measure's savings do not comprise more than 5 percent of a program's annual savings; and,
- The measure's cost does not represent more than 5 percent of the program's annual budget.

If a measure does not meet all of the minor exception criteria, the request goes through the Commission's major exception request process.

In 2015, the Commission adopted a cost threshold of $500,000 for pilots, above which Energy Trust must seek cost effectiveness exceptions. [17]

Energy Trust has had major measure exceptions for DHPs since 2014.[18] The most recent exceptions were granted for multiple DHP measures in Order No. 19-301 and Order No. 20-105.

Analysis

Consistent with the process described above, Energy Trust submitted a request for major measure exceptions for DHP measures to Staff on September 23, 2021. This analysis will a) provide background to DHPs and the work Energy Trust has done since the last request; b) review the requests and rationale for exceptions under three different circumstances; and c) present a proposal for further action.

Background

Energy Trust provides incentives for DHPs across its service territory to electrically heated homes. Energy Trust supports and coordinates with Northwest Energy Efficiency Alliance (NEEA) on the development of the DHP market. In 2022, Energy Trust anticipates all DHP measures to account for eight percent of Home Retrofit program savings and twelve percent of Multifamily program savings.

DHPs are an important part of Energy Trust's strategy because they are the only viable energy efficiency technology to replace resistance heaters. These types of equipment are inefficient and can have very long lives, while alternative heating measures, such as DHPs, are significantly more expensive.

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[16] Docket No. UM 1696, Order Numbers 17-395 and 17-457.
[17] Docket No. UM 1696, Order No. 15-029.
[18] Docket No. UM 1696, Order No. 14-266.

Resistance heat is more prevalent in low income and rural housing. In reviewing the Residential Building Stock Assessment data collected by NEEA, Energy Trust estimates that the share of multifamily housing with electric resistance heat is 75 percent and 58 percent for manufactured homes. Moderate-income single family homes were also significantly more likely to have resistance heat compared to other single family homes. Rural areas that do not have gas service are also more likely to have resistance heat or rely on wood heat. [19,20]

Cost-effectiveness is calculated based on housing type (single family, multifamily, manufactured), the equipment being replaced, and the amount of heating needed based on location, or "heating zones." Heating Zone 1 represents areas that require less heating and Heating Zone 2 represents areas that require more.

Previously, Energy Trust was granted major exceptions for DHPs through March 31, 2022, based on the potential diversity, equity, and inclusion (DEI) impacts by serving lower income and rural customers and the opportunities for demand response (Criteria G), improved cost-effectiveness and an anticipated reduction in cost (Criteria B), and consistency with other programs in the region (Criteria C). [21] Energy Trust was further granted additional exceptions for niche cases where there are supplemental fuels (wood, propane, etc.) based on the benefits to air quality (Criteria A), consistency with other programs in the region (Criteria C), and the potential DEI impacts for rural and lower income participation (Criteria G).[22]

Under prior exceptions, Energy Trust outlined a plan to reduce costs for DHPs by implementing a number of different strategies. These include enhanced incentives for a fixed-price offering, and a higher-incentive promotion working with community partners.

Since those exceptions, Energy Trust implemented the following:

- Requiring the DHP interior head is placed in the primary living space, which will result in more savings than if this were not a requirement.
- Discouraging the installation of additional heads, which increases both savings and cost, resulting in lower cost effectiveness.

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[19] NEEA's Residential Building Stock Assessment II Manufactured Homes Report. Appendix A pg. 23-24, available at: https://neea.org/img/uploads/Residential-Building-Stock-Assessment-II-Single-Family-Homes-Report-2016-2017.pdf.

[20] NEEA's Residential Building Stock Assessment II Combined Database, available at: https://neea.org/resources/rbsa-ii-combined-database.

[21] Docket No. UM 1696, Order No. 19-301.

[22] Docket No. UM 1696, Order No. 20-105.

- Incorporating cooling savings into savings estimates and the load profiles used to calculate cost effectiveness.
- Offering of unique measures for DHPs in homes with supplemental fuels in addition to electric resistance heat.
- Launching a fixed price offering to attract installers with guaranteed business coupled with a price ceiling. The offer is limited to single head systems.
- Targeting specific housing types and regions where the installations of DHPs are more likely to be cost-effective.

Despite these efforts, prices have not changed significantly. Market responses to the COVID-19 pandemic may make it difficult to notice any effects. Energy Trust proposes to continue these and other efforts to attempt to reduce costs going forward.

Energy Trust found that in 2020, participants receiving single-family ductless heat pump incentives reported lower typical incomes (less than $70,000) compared to the overall population of Energy Trust's single-family participants in 2020, using the 2020 Fast Feedback Survey Report.

- Thirty-five percent of all residential participants had low to moderate incomes.
- Fifty-six percent of ductless heat pump participants had low to moderate incomes.
- Sixty-seven percent of fixed-price ductless heat pump participants had low to moderate incomes.[23]

These findings support the theory that lower income customers are more likely to benefit from DHPs.

In Order No. 19-301, Energy Trust was directed to conduct a market survey for DHP controllers that can support demand response. If qualified equipment is identified, Energy Trust was ordered to conduct a field test in collaboration with PGE. Energy Trust conducted the market survey as instructed and found multiple promising technologies. Energy Trust, in collaboration with PGE, screened these potential measures and identified a specific DHP controller to study through a pilot that was launched earlier this year. This research is ongoing and results are not yet available.

The Exception Requests

Energy Trust requests exceptions to cost-effectiveness requirements for the maximum incentives for DHPs, essentially requesting that Energy Trust can pay more for these measures than would normally be allowed without exceptions. Energy Trust provides a

[23] Energy Trust's 2020 Fast Feedback Survey End of Year Report, March 22, 2020 found at: https://www.energytrust.org/documents/2020-fast-feedback-annual-report/.

range of incentive levels between different offerings that are intended to target different income levels. These strategies include market rate customers, fixed-price (reduced) contracts, Savings Within Reach for low and moderate income customers, and community partnerships that target lower income customers. Additionally, included in this request is a no-cost DHP pilot.

Energy Trust requests exceptions for DHPs under three different circumstances: measures that fail the TRC, measures that fail the UCT, and measures that will support a no-cost DHP pilot.

Table 1: Measure exception criteria by type

Exception Number	*Exception Description*	Criteria A	Criteria B	Criteria C	Criteria D	Criteria E	Criteria F	Criteria G
I	TRC Exception for select measure applications			X				X
II	UCT Exception for supplemental fuel homes	X	X		X			X
III	UCT and TRC Exception for No-Cost DHP Pilot			X			X	X

This memo addresses each exception type in turn.

Exception Request I

Energy Trust requests exceptions for DHPs in single-family zonal homes. Measures installed in heating zone 1 have a TRC of 0.8 and multifamily DHPs have TRCs of 0.6 to 0.7. In 2022, Energy Trust estimates these exceptions will account for approximately 3.8 percent of kWh savings and 4.5 percent of incentive dollars for Residential Sector; and 12 percent of kWh savings and 19 percent of incentive dollars for the Existing Multifamily initiative, which is part of the Existing Buildings program.

Table 2: TRC Exception for select measure applications (Exception I)

Measure Application Name	Savings (kWh)	Maximum Incentive ($)	2022 UCT BCR at Max Incentive	2022 TRC BCR
Single Family DHP for Zonal HZ1	2,230	$2,922	1.0	0.8
Multifamily DHP for Zonal HZ1	1,442	$1,890	1.0	0.6
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Energy Trust requests the exception under Categories C and G:

D. The measure is included for consistency with other demand side management (DSM) programs in the region.

Energy Trust believes that it is important to support the regional effort to promote DHPs in collaboration with NEEA, which is working with manufacturers to establish an energy efficiency rating system for DHPs.

G. The measure is required by law or is consistent with Commission policy and/or direction.

Energy Trust argues that providing this exception will support policy efforts to reduce energy burdens. These policy efforts include: State of Oregon's 10-Year Plan to Reducing the Energy Burden in Oregon Affordable Housing; Executive Order 20-04 to reduce greenhouse gases while minimizing energy burdens; [24] work in UM 2114 that identifies ductless heat pumps as an opportunity to counter the disproportionate impacts of the COVID-19 pandemic;[25] and HB 3141 that includes the implementation of performance metrics for environmental justice communities. [26]

Staff also adds that the Commission approved DEI-specific performance metrics for Energy Trust through Order No. 21-068.[27] DHP incentives have the potential to have a disproportionately positive impact on rural and low-income housing and likely overlap with communities that traditionally have not benefited from Energy Trust programs. Amid the broad range of opportunities for DHPs, the multifamily measures are especially likely to impact lower income customers and the homes with supplemental heat are more likely to be rural residences.

Staff agrees with these assessments and believes exception Categories C and G are applicable. Staff notes that the arguments related to Category G apply to the other exception requests in this memo.

Exception Request II

Energy Trust requests exceptions for installations of DHPs in single family homes with supplemental fuels such as wood and propane in instances where Energy Trust is providing enhanced incentives. Energy Trust explains that the higher level incentives are targeted specifically for working with community partners. These measures pass the TRC. At maximum incentive levels, the UCT in Heating Zone 1 is 0.7 and the UCT in Heating Zone 2 is 0.2. These are niche cases that are expected to account for 0.01 percent of Residential Program savings and 0.5 percent of Residential Program incentives.

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[24] Executive Order No. 20-04 found at: https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf.
[25] Staff Report, Docket No. UM 2114, Investigation into the Effects of the COVID-19 Pandemic on Utility Customers. October 23, 2020, p. 22.
[26] OR Laws 2021, Ch. 547, Section 11.
[27] *In the Matter of Energy Trust of Oregon: Recommendations for Performance Measures,* Docket No. UM 1158, Order Number 21-068.

Table 3: UCT exception for supplemental fuel homes (Exception II)

Measure Application Name	Savings (kWh)	Maximum Incentive ($)	2022 UCT BCR at Max Incentive	2022 TRC BCR
Single Family DHP for Zonal HZ1 - Sup Fuel - Proposed Max Incentive for Enhanced Incentive Offers	1,481	$2,900	0.7	1.6
Single Family DHP for Zonal HZ2 - Sup Fuel - Proposed Max Incentive for Enhanced Incentive Offers	458	$2,900	0.2	1.3

Energy Trust requests the exception under Categories A, B, D, and G:

C. The measure produces significant non-quantifiable non-energy benefits. In this case, the incentive payment should be set at no greater than the cost effective limit (defined as present value of avoided costs plus 10 percent) less the perceived value of bill savings, e.g., two years of bill savings.

Reducing the use of supplemental fuels leads to improved air quality both indoors and outdoors. The benefit of improved air quality is difficult to quantify.

D. Inclusion of the measure will increase market acceptance and is expected to lead to reduced cost of the measure.

Energy Trust believes that supporting these niche cases will help with market acceptance in general.

E. Inclusion of the measure helps to increase participation in a cost-effective program.

Energy Trust argues that allowing customers with supplemental fuels to enter the program may improve general participation through their community partner relationships. It may be difficult to identify these homes in advance, which would lead to poor experiences that may discourage participation overall.

H. The measure is required by law or is consistent with Commission policy and/or direction.

Energy Trust makes the same arguments as in the previous exception type. As these measures are delivered through community partners, these measures are targeted specifically to lower-income customers.

Staff agrees with these assessments and believes exception Categories A, B, D, and G are applicable. Staff agrees that air quality qualifies as significant, non-quantifiable, and non-energy, and that including these measures may increase market acceptance as well as participation. Staff believes that granting cost-effectiveness exceptions for supplemental fuels addresses the Governor's Executive Order 20-04 by reducing GHG emissions and mitigating energy burden, while at the same time enhancing system reliability and resource adequacy.

Exception Request III
Energy Trust requests exceptions to conduct a no-cost DHP pilot targeting lower income households. The purpose of this pilot is to learn about different delivery mechanisms and barriers to installation beyond the cost of the work. The proposed budget is $5,000,000 over three years.

Research objectives will include:

1. Gaining program design and implementation experience delivering a no-cost ductless heat pump offer to low and moderate-income customers working with community action agencies (CAAs) and community-based organizations (CBOs) as delivery partners most experienced with serving these customers.
2. Develop a working definition to screen customers for the offer that can be implemented in practice and is not onerous or a barrier for customers to participate. This definition will be CAAs and CBOs as delivery partners most experienced with serving low-income customers and combining multiple sources of funding.
3. Collect feedback on customer experience and data on housing conditions from participating homes to better understand who will benefit the most, the existing conditions of participating homes, and barriers to accessing benefits of DHPs.

Additional research questions may be included in this pilot effort, which Staff plans to contribute toward as it is shaped and finalized.

Energy Trust proposes to work with community stakeholders and organizations working with low and moderate-income customers, including OHCS, community action agencies, community-based organizations and the OPUC to inform the pilot design. While some details of this pilot have not been finalized, Energy Trust would like to secure permission to pursue this effort. Staff anticipates this pilot will come before the appropriate committees at Energy Trust before launching and there may be an opportunity for Commissioner briefings in early 2022.

This pilot requires approval from the Commission because the budget exceeds the $500,000 pilot budget maximum allowed without authorization and the measures tested in the pilot are not cost-effective. As DHPs are expensive compared to conventional resistance heaters and installations can be expensive, cost-effective incentives are normally only a fraction of the total cost. The overall cost has been a barrier to learning more about how to increase participation in low and moderate income households.

These measures are the same as found in other Energy Trust offerings, but with a higher maximum incentive amount to cover the full cost of the equipment and installation. At the maximum costs, the UCT for these measures range from 0.8 in the

most ideal circumstances to 0.1 for supplemental fuels, covering the range of situations where the DHPs would be installed.

Table 4: UCT and TRC exception for No-Cost DHP Pilot (Exception (III)

Measure Application Name	Savings (kWh)	Maximum Incentive ($)	UCT BCR at Max Incentive	TRC BCR
Single Family DHP for Zonal HZ1 - 1:1 CRP	2,203	$4,678	0.4	0.6
Single Family DHP for Zonal HZ1 - 1:2 CRP	2,203	$7,493	0.3	0.4
Single Family DHP for Zonal HZ2 - 1:1 CRP	2,747	$4,678	0.5	0.7
Single Family DHP for Zonal HZ2 - 1:2 CRP	2,747	$7,493	0.4	0.5
Single Family DHP for FAF HZ1 - 1:1 CRP	3,853	$4,670	0.8	1.0
Single Family DHP for FAF HZ1 - 1:2 CRP	3,853	$7,485	0.5	0.6
Single Family DHP for FAF HZ2 - 1:1 CRP	3,610	$4,670	0.7	1.0
Single Family DHP for FAF HZ2 - 1:2 CRP	3,610	$7,485	0.5	0.6
Manufactured Home DHP for Zonal HZ1 - 1:1 CRP	3,885	$4,181	0.8	1.4
Manufactured Home DHP for Zonal HZ1 - 1:2 CRP	3,885	$6,902	0.5	0.8
Manufactured Home DHP for Zonal HZ2 - 1:1 CRP	3,885	$4,181	0.8	1.4
Manufactured Home DHP for Zonal HZ2 - 1:2 CRP	3,885	$6,902	0.5	0.9
Manufactured Home DHP for FAF HZ1 - 1:1 CRP	3,342	$4,174	0.7	1.2
Manufactured Home DHP for FAF HZ1 - 1:2 CRP	3,342	$6,895	0.5	0.7
Manufactured Home DHP for FAF HZ2 - 1:1 CRP	3,342	$4,174	0.7	1.4
Manufactured Home DHP for FAF HZ2 - 1:2 CRP	3,342	$6,895	0.5	0.8
Single Family DHP for Zonal HZ1 - Sup Fuel - 1:1 CRP	1,454	$4,678	0.3	1.4
Single Family DHP for Zonal HZ1 - Sup Fuel - 1:2 CRP	1,454	$7,493	0.2	0.9
Single Family DHP for Zonal HZ2 - Sup Fuel - 1:1 CRP	431	$4,678	0.1	1.2
Single Family DHP for Zonal HZ2 - Sup Fuel - 1:2 CRP	431	$7,493	0.1	0.7
Single Family DHP for FAF HZ1 - Sup Fuel - 1:1 CRP	3,503	$4,670	0.7	1.9
Single Family DHP for FAF HZ1 - Sup Fuel - 1:2 CRP	3,503	$7,485	0.5	1.2
Single Family DHP for FAF HZ2 - Sup Fuel - 1:1 CRP	3,503	$4,670	0.7	1.9
Single Family DHP for FAF HZ2 - Sup Fuel - 1:2 CRP	3,503	$7,485	0.5	1.2
Multifamily DHP - Zone 1 - 1:1 CRP	1,429	$4,102	0.3	0.5
Multifamily DHP - Zone 1 - 1:2 CRP	1,429	$7,303	0.2	0.3
Multifamily DHP - Zone 2 - 1:1 CRP	1,570	$4,102	0.3	0.5
Multifamily DHP - Zone 2 - 1:2 CRP	1,570	$7,303	0.2	0.3

Energy Trust requests the exception under Categories C, F, and G.

D. The measure is included for consistency with other demand side management (DSM) programs in the region.

Energy Trust believes that it is important to support the regional effort to promote DHPs in collaboration with NEEA. Energy Trust believes learnings from this pilot can be shared with other organizations in the region to support low and moderate-income participation.

H. The measure or package of measures is included in a pilot or research project intended to be offered to a limited number of customers.

This is a pilot with a limited budget and duration and specific research objectives.

I. The measure is required by law or is consistent with Commission policy and/or direction.

Energy Trust makes the same arguments as with Exception I and Exception II for this category. Energy Trust also notes that this pilot can collect information that will help support potential programs that could be pursued under many initiatives, including through HB 2475..[28]

Staff agrees with these assessments and believes exception Categories C, F, and G are applicable, and supports the development of opportunities that could become programs through HB 2475.

Proposed Action Plan for the Exception
Staff proposes granting three-year exceptions for Exception I, Exception II, and Exception III measures with a total incentive cap of $5 million over the exception period for Exception III measures. At a $5 million cap, Exception III measures may potentially reach five percent of total Residential Program costs in a given year.

Staff invites stakeholders to comment on these exception requests and Staff's assessment, and notably on the pilot for Exception III. Recognizing that additional comment options appear appropriate, Staff proposes that the Commission adopt a schedule to allow the filing of public comment through January 11, 2022. This will allow stakeholders two weeks after the December 28, 2021, public meeting to review and respond to Energy Trust's exception request. If the Commission adopts the proposed

[28] Under OR Laws 2021, Ch. 90, Section 7. OPUC may address the mitigation of energy burdens through bill reduction measures or programs.

schedule, Staff will receive and compile comments, and return at the January 25, 2022, Public Meeting with a final recommendation.

Proposed Schedule:

Event	Date
Deadline to file written public comments or contact Staff in Docket No. UM 1696 on major exception requests	January 11, 2022
Staff's Final Recommendation to Commission	January 25, 2022

Conclusion

Staff's preliminary conclusion is that Energy Trust should be granted exceptions for ductless heat pump measures through March 31, 2025, for all DHP measures listed in this memo with a total incentive cap of $5 million for measures under Exception III. Staff proposes that stakeholders have until January 11, 2022, to file comments or contact Staff regarding the recommended major cost effectiveness exceptions. Staff will present stakeholder comments and Staff's final recommendations at the January 25, 2022, public meeting.

PROPOSED COMMISSION MOTION:

Adopt Staff's proposed schedule for submission of public comments on Energy Trust's request for major exceptions and for Staff's final recommendation on major exceptions to cost effectiveness of energy efficiency measures for ductless heat pumps.