

Energy Trust of Oregon

Request for Proposals:

Residential Ductless Heat Pump Study

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About Energy Trust

Energy Trust of Oregon is an independent nonprofit organization, selected and overseen by the Oregon Public Utility Commission, to lead Oregon ratepayers in benefiting from saving energy and generating renewable energy. Our services, cash incentives, and solutions have helped participating customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas, and Avista save \$6.9 billion on their energy bills. The cumulative impact of our leadership since 2002 has been a contributing factor in our region's low energy costs and in building a sustainable energy future. More information about Energy Trust's background, funding sources, strategic and action plans, policies and programs are available on our website at www.energytrust.org/about.

Introduction

Bringing ductless heat pumps (DHPs) to the Northwest and building a residential market for them was a major focus for the Northwest Energy Efficiency Alliance (NEEA) and Bonneville Power Administration (BPA) beginning in 2006. The equipment, also known as mini-split heat pumps, showed relatively large potential for energy savings in electrically-heated single-family homes. A BPA metering study beginning in 2007¹ paved the way for the Northwest Power and Conservation Council's Regional Technical Forum (RTF) to conduct an energy savings analysis of DHPs. The RTF created a provisional measure with a deemed savings value for single-family homes at that time.² Additional studies of DHPs in single family by NEEA and BPA substantiated previous energy savings estimates, but showed high variability.^{2,3} Subsequently, BPA sponsored two additional studies of DHPs in multifamily buildings, completed in 2012 and 2016, which found substantially lower energy savings than in single-family homes.^{4,5} However, these multifamily studies were based on a small number of sites that do not broadly represent the multifamily building stock in Energy Trust's electric service territory.

¹ Bonneville Power Administration. (2009). Residential Ductless Mini-Split Heat Pump Retrofit Monitoring. Retrieved from: https://www.bpa.gov/EE/Technology/EE-emerging-technologies/Projects-Reports-Archives/Documents/BPA-Report_DHP-Retrofit-Monitoring-June2009.pdf

² Northwest Energy Efficiency Alliance. (2014). Final Summary Report for the Ductless Heat Pump Impact and Process Evaluation. Retrieved from [http://neea.org/docs/default-source/reports/e14-274-dhp-final-summary-report-\(final\).pdf](http://neea.org/docs/default-source/reports/e14-274-dhp-final-summary-report-(final).pdf)

³ Bonneville Power Administration. (2012). Ductless Heat Pump Engineering Analysis: Single-Family and Manufactured Homes with Electric Forced-Air Furnaces. Retrieved from: https://www.bpa.gov/EE/Technology/EE-emerging-technologies/Projects-Reports-Archives/Documents/DHP_FAF_Dec_12.pdf

⁴ Bonneville Power Administration. (2012). Ductless Heat Pump Retrofits in Multifamily and Small Commercial Buildings. Retrieved from https://www.bpa.gov/EE/Technology/EE-emerging-technologies/Projects-Reports-Archives/Documents/DHPx_Multifamily_Small_Commercial_Report_02-08-13.pdf

⁵ Bonneville Power Administration. (2016). Assessment of Ductless Mini-Split Heat Pump Energy Savings in Stack House Apartments. Retrieved from https://www.bpa.gov/EE/Technology/EE-emerging-technologies/Documents/Mid-Rise_Multifamily_DHP_Comparison_StackHouse_2016-10-18_Final.pdf

As a result of this work, in 2008, Energy Trust began supporting DHPs in single-family residential applications through its Existing Homes program. This move was coordinated with other northwest utility programs with regional support from NEEA. NEEA continued to conduct research, evaluate energy savings, and monitor the development of the nascent DHP market through a series of studies.

In 2009, Energy Trust's Multifamily program launched a pilot to test the energy savings and market acceptance of DHPs in multifamily buildings. Initially, the deemed savings for single-family and multifamily measures were based on the RTF's analysis, but the values have been revised over time to reflect specific applications, climate differences, and more recent analysis. Tables 1 and 2, below, show the number of DHP systems supported by Energy Trust from 2008 through 2017 in single-family and multifamily buildings. These tables also provide an overall summary of the average electricity savings claimed per system and the average reported installation cost.

Table 1: Number of Single-Family DHP Installs by Year

Year installed	# of projects	# of DHP systems	Total savings claimed (kWh)	Average savings claimed per DHP system (kWh)	Average installed cost*
2008	38	40	88,400	2,210	\$5,884
2009	158	180	392,151	2,179	\$5,200
2010	477	531	1,420,019	2,674	\$5,584
2011	521	572	1,946,439	3,403	\$5,592
2012	815	825	2,774,910	3,364	\$5,215
2013	1,231	1,236	4,192,125	3,392	\$5,228
2014	1,590	1,591	5,161,477	3,244	\$5,329
2015	999	999	2,719,452	2,722	\$5,914
2016	989	990	2,217,934	2,240	\$6,273
2017	1,842	1,848	4,167,098	2,255	\$6,404

Note: Table excludes manufactured homes, multifamily properties, and unknown housing types. As a result, number of projects and savings do not match officially reported Energy Trust results.

* The reported installation costs include systems with multiple heads and may contain add-on services or optional project costs not required for the installation of a DHP system.

Table 2: Number of Multifamily DHP Installs by Year

Year installed	# of projects	# of DHP systems	Total savings claimed (kWh)	Average savings claimed per DHP system (kWh)	Average installed cost*
2008	12	15	31,935	2,129	\$6,123
2009	12	13	27,677	2,129	\$5,754
2010	27	54	135,063	2,499	\$5,677
2011	37	154	530,532	3,273	\$5,081
2012	82	208	672,159	3,124	\$3,600

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2013	131	173	524,932	3,108	\$5,040
2014	236	525	1,458,518	2,862	\$4,738
2015	254	554	1,542,922	2,846	\$5,225
2016	291	746	2,089,725	2,839	\$5,220
2017	375	535	1,950,905	3,769	\$5,441

Note: Table includes multifamily properties that received incentives through the Existing Multifamily program and the Existing Homes program. As a result, number of projects and savings do not match officially reported Energy Trust results.

* The reported installation costs include systems with multiple heads and may contain add-on services or optional project costs not required for the installation of a DHP system.

In 2017, Energy Trust conducted an economic analysis in the course of normal measure updates; the results of this analysis suggested that the energy savings achieved by DHPs in residential applications were no longer cost-effective for most installation scenarios. Energy Trust determines measure cost-effectiveness using a societal cost-effectiveness test, as defined by policy.⁶ This change in cost-effectiveness came even though DHP installed costs have increased only slightly in recent years, across the region.⁷ The decreased cost-effectiveness was primarily a result of a decrease in the avoided cost of electricity forecasted by Energy Trust’s participating electric utilities and the expiration of the State of Oregon’s Residential Energy Tax Credit (the tax credit for DHPs was previously subtracted from the installation cost in cost-effectiveness analysis). These factors substantially decreased the economic value of the electricity savings and increased their societal cost, resulting in non-cost-effective DHP measures. Per the policy cited above, Energy Trust does not support energy efficiency measures that are not cost-effective.

After reaching this conclusion in mid-2017, Energy Trust formally requested, and was granted, a cost-effectiveness exception from the OPUC to continue providing incentives for DHPs.⁸ This cost-effectiveness exception was granted for two years, to give Energy Trust time to bring down the costs or increase energy savings to achieve a set of cost-effective DHP measures. Energy Trust may take a number of different actions to achieve this outcome, including increasing the volume of DHP installations, identifying strategies to bring down equipment and installation costs, targeting certain segments of the market, changing the program delivery model, quantifying significant non-energy benefits, or redesigning the measures and their technical requirements. In the near term, Energy Trust will continue to offer incentives and support the market for DHPs in residential applications. We believe this can be a cost-effective source of savings with a large market potential now and into the future.

⁶ Energy Trust of Oregon. (2011). Cost-Effectiveness Policy and General Methodology for Energy Trust of Oregon. Retrieved from <https://www.energytrust.org/wp-content/uploads/2016/11/4.06.000.pdf>

⁷ Northwest Energy Efficiency Alliance. (2018). Northwest Ductless Heat Pump Initiative: Market Progress Evaluation Report 6. Retrieved from: <https://www.neea.org/docs/default-source/reports/northwest-ductless-heat-pump-initiative-market-progress-evaluation-report-6.pdf>

⁸ Oregon Public Utility Commission. (2017). Order No. 17-457: UM 1696 Cost Effectiveness Exceptions Requests for Electric Measures. Retrieved from <http://apps.puc.state.or.us/orders/2017ords/17-457.pdf>

The purpose of this study is to quantify the actual energy savings achieved by DHPs installed in Oregon in single-family and multifamily buildings from 2015-2017, and identify factors that could help reduce costs and/or increase savings. Energy Trust's ultimate objective is to identify the most cost-effective installation scenarios and create new, cost-effective, residential DHP offerings. To do this, Energy Trust needs information and guidance on how to achieve higher electric savings, reduce installation costs, or quantify ancillary benefits of this technology.

Research Objectives

Energy Trust seeks empirical evidence about single-family and multifamily DHP projects that can support a robust re-design or re-analysis of its current DHP measures. The primary research goals of this study are to:

- Quantify energy savings and costs of DHPs in single-family and multifamily buildings overall and for key installation scenarios.
- Determine the primary drivers of variability in DHP energy savings and costs. Identify the most cost-effective installation scenarios as well as factors that contribute to low energy savings and high costs.
- Estimate the impact of supplemental fuel usage on DHP energy savings and quantify supplemental fuel savings and benefits.
- Estimate the impact of DHPs on cooling energy usage compared to different baseline cooling scenarios.
- Understand how DHPs and existing heating and cooling systems are controlled for key installation scenarios
- Understand the impact of different control strategies on savings.
- Understand the participant decision-making process and motivations for installing DHP systems, including important non-energy benefits.
- Estimate the electricity demand impact of DHPs on winter and summer peak.
- Identify potential improvements to Energy Trust data and data collection processes.

In addition, we have the following specific research questions:

- What are the overall annual energy savings and costs of residential DHPs installed in key scenarios (listed below)? What are the distributions of annual energy savings and costs?
 - Multifamily dwelling units with zonal electric heaters and electric forced air furnaces
 - Single-family homes with zonal electric heaters and electric forced air furnaces
- What are the trends in energy savings results over time?
- What are the energy savings and cost impacts of the following installation factors?
 - Number of systems installed (outdoor units)

- Number and locations of indoor heads
- Size and configuration of zones where indoor heads are installed
- Rated capacity of outdoor unit in tons
- DHP manufacturer and installer
- Cold climate models
- Type of controls and control settings for DHP and existing heating system
- State of existing heating and cooling systems
- DHPs installed in newly conditioned space
- What are the energy savings and cost impacts of the following building characteristics and configuration factors?
 - Climate zone of building location
 - Home size and number of bedrooms
 - Home configuration factors, such as number of floors, number of rooms, and openness of floorplan
 - Multifamily building size and number of attached units
 - Multifamily building configuration factors, such as number of floors, stacked versus side-by-side units, interior corridors, and common areas
 - Multifamily building market segment, including market rate apartments, affordable housing, owner-occupied condos, and assisted living facilities
 - Age of building
 - Building shell efficiency and heat loss
 - Existing heating and cooling systems
 - Supplemental heating fuel use (including wood, oil, propane, natural gas)
 - Changes to home or electricity-using equipment
- What are the energy savings and cost impacts of the following occupant characteristics?
 - Participant understanding and interaction with controls for DHP and existing heating equipment
 - Number of occupants and occupancy schedule
 - Vacancies and turnover
 - Occupant demographics, including tenancy, income level, age
 - Education on use of DHP from contractor
- What is the prevalence of supplemental heating fuels among participants? What types of fuels are most common? What are the impacts of DHPs on supplemental fuel use?
- How do participants decide to install DHPs and select the number of indoor heads? What are their motivations for these decisions?
- What are the winter and summer peak demand impacts of DHPs?
- How can Energy Trust improve its DHP project data and data collection processes?

Tasks

It is anticipated that the selected evaluator will be required to undertake the following major tasks and the submitted proposal should address these topics:

Task 1. Conduct Study Kick-off Meeting

The selected evaluator is expected to work closely with Energy Trust evaluation and program staff throughout the study. The evaluator will have an opportunity to meet with Energy Trust and program staff at a kick-off meeting to discuss the research goals and objectives. The evaluator will present their proposed research plan and schedule, establish points of contact with Energy Trust programs, and discuss points of coordination on related studies and with regional partners (including NEEA and BPA). The evaluator should prepare for the kick-off meeting by familiarizing themselves with prior research on residential DHPs, including the above-referenced Northwest studies, as well as other relevant studies.

The kick-off meeting will allow the evaluator to obtain input on the research goals and proposed research plan, which will feed into the work plan described in Task 2.

Deliverables:

- Participation in kick-off meeting
- Meeting notes

Task 2. Develop Work Plan

Energy Trust evaluation staff will provide the selected evaluator with a number of relevant program documents and summary data to help orient them to the project and provide additional insight and understanding of the DHP incentives offered by Energy Trust. The selected evaluator will be provided with and expected to review program documentation, past and current DHP measure approval documents, technical requirements, and program participation data. The evaluator will then develop a detailed work plan incorporating feedback received at the kick-off meeting, their review of program documents, the project goals, and findings from related studies. The work plan will contain:

- Research goals and objectives
- Research methods for:
 - Data acquisition and integration
 - Participant surveys
 - Participant site visits
 - Data cleaning
 - Comparison group selection
 - Data screening and analysis
 - Interval data analysis
- Coordination with program staff and other regional partners
- Schedule of tasks and deliverables

Deliverables:

- Draft and final work plan

Task 3. Data Acquisition and Integration

The selected evaluator will collect the data needed for this analysis from a number of existing sources and create an analysis dataset. To facilitate this, Energy Trust will provide the selected evaluator with extracts from its internal data systems and commercial datasets, including:

- **Utility Customer Information (UCI).** UCI is comprised of monthly electricity and gas usage data for nearly all Energy Trust customers going back to mid-2011. UCI data for all selected DHP participant sites will be provided to the selected evaluator. In addition, UCI data for a large sample of non-participant residential sites will be provided for identifying and analyzing comparison group sites. UCI data are particularly sensitive and confidential; UCI data must be handled with a high level of caution and security and may not be used for any purpose other than this study. Prior to accessing any UCI data, the evaluation firm and all staff that will have access to the data, must sign specific confidentiality agreements that govern the transmittal, storage, use, and destruction of UCI data (see Appendix B).
- **Project Tracking (PT).** PT data is comprised of information about Energy Trust incentives and installed measures collected during the incentive application process. PT data will be provided for selected DHP projects, and will include details about the equipment and installation, incentives, project costs, and energy savings claimed. These data will be used to identify participants, provide important project data to be used in the analysis, and identify ancillary projects that may obstruct the analysis. Some of the fields in PT related to equipment characteristics are missing data, or may contain data entry errors, for a significant number of projects. The selected evaluator will need to conduct a review of project files and invoices to identify and correct these data issues (Task 5).
- **Customer Relationship Management (CRM).** CRM contains information about Energy Trust customers and sites collected during the incentive application process, from interactions with customers, and from other data sources. The selected evaluator will be provided with an extract of CRM data that contains additional building characteristics and customer contact information for the participant survey (Task 4).
- **NOAA Weather Data.** Energy Trust uses a set of 13 weather stations across Oregon for weather normalization. These weather stations have been selected because they have provided reliable data over a long period of time. We collect and store daily weather data for these stations as well as the

- typical meteorological year data for each station. This data will be used in the energy savings analysis described in Task 7.
- **Third-Party, Parcel, and Building Dataset.** Energy Trust has access to a variety of third-party datasets. Energy Trust evaluation staff will provide a file containing building characteristics data (square footage, number of units, and year of construction) for single-family and multifamily buildings in Oregon from one or multiple third-party datasets. These data will be useful for filling in building characteristics data that are missing from PT and CRM data. It may also be useful in selecting appropriate, matched comparison sites, particularly for multifamily sites.

The selected evaluator will receive each of these datasets from Energy Trust and create an analysis dataset to be used throughout the remaining project tasks. Once the analysis dataset has been created, the selected evaluator will work with Energy Trust to define an appropriate treatment group sample of DHP projects completed from 2015-2017 with sufficient data. The treatment group sites will be used throughout the remaining tasks. This will ensure low attrition for sites that receive a survey, project file review, or site visit.

Deliverables:

- Section in report on data preparation
- Integrated analysis dataset to be used in remaining tasks
- Identify treatment group

Task 4. Participant Survey

Survey scope. The selected evaluator will conduct a survey with DHP participants in the treatment group to collect information related to the stated research questions. The survey topics should include housing characteristics and configuration, DHP installation details, occupant characteristics, existing heating and cooling equipment, supplemental heating fuels, cooling equipment, changes to home or major energy uses, control of DHP and existing heat sources, and customer decision-making. The survey will also serve as a recruiting mechanism for the site visits described in Task 6. The resulting survey data will be critical to conducting the analysis of savings and costs at the core of this project, described in Task 7. A high response rate and accurate information are crucial to a successful study. We hope to obtain responses from at least 1,500 single-family and 400 multifamily treatment group DHP participants that installed systems from 2015-2017.

Developing and testing survey instrument. The selected evaluator will draft the survey instrument to cover the topic areas of interest, as well as the applicable study objectives and research questions. In addition, a short recruitment message will be developed, based on the survey introduction, to invite participants to respond to the surveys, which will be used across survey modes. The selected evaluator will provide a draft of the survey instrument and recruitment message to Energy Trust for review and approval, incorporating any feedback received. The selected evaluator will program the survey instrument into any survey software they are using and

thoroughly test it before initiating the survey. Testing will ensure that the wording and answer choices are correct and that skip patterns make sense. In addition, Energy Trust will be provided with access to review any programmed survey instruments.

To ensure that the survey questions are clear, understandable, and produce reliable and accurate results, the selected evaluator will conduct a pre-test of the survey instrument with a small group of DHP owners that are not in the treatment group. The selected evaluator will recruit approximately 10-20 past participants or non-participant DHP owners identified through the selected evaluator's and Energy Trust's professional networks. Follow-up interviews will be conducted with the pre-test group to get more clarity on how well respondents understood and answered the questions. The survey instrument will be adjusted, as needed, based on the findings of the pre-test. The final instrument will be provided to Energy Trust.

The selected evaluator will translate the survey instrument and recruitment message into Spanish and fully test the translation of the instrument to ensure good readability, that the survey questions are intelligible in Spanish, and that their original meaning is retained. The Spanish language instruments will be programmed into any survey software the selected evaluator is using, and the skip patterns will be fully tested to ensure that the surveys are properly administered. The final Spanish survey instrument will be provided to Energy Trust.

Fielding the survey. Proposals should specify a multi-modal survey methodology, with a significant follow-up component to non-respondents. The selected evaluator will field the survey and attempt to reach as many treatment group participants as possible. The surveys may be conducted by some combination of paper, web, and telephone. The survey instrument must be adapted to each mode while ensuring maximum comparability of results between modes. The selected evaluator will conduct the survey in Spanish when a Spanish speaker is encountered who cannot, or prefers not to, complete the survey in English. Proposals should describe the process for conducting Spanish language surveys. Spanish survey results will be translated and combined with the English survey response data. Based on past surveys, less than 0.5% of Energy Trust participants speak only Spanish.

For the vast majority of single-family DHPs, the project participants, and thus survey targets, are owner-occupants. For multifamily, there is a mix of participant types—roughly half of DHP projects occur in market rate apartments, affordable housing, or assisted living properties, where the participants are the property owners or managers, not the occupants. In these cases, it will be important to find the participant contact that is most familiar with the DHP project and the physical characteristics of the treated buildings and dwellings.

Proposals should specify a robust survey recruitment and follow-up plan. Survey recruitment methods may include mail, email, phone, and text message invitations, based on the available project contact information in the analysis dataset. Roughly 85% of eligible participant contacts have an email address recorded in Energy Trust's systems. Nearly all eligible participant contacts have a telephone number and mailing address available, although there is not a reliable distinction between

landlines and mobile phones in these data. Follow-up with non-respondents will also be important to obtaining high response rates and may include email reminders, phone calls, or other methods.

Survey incentives will be used to enhance recruitment efforts and obtain higher response rates. Incentives may include a pre-incentive, completion incentive, prize drawing, or other incentive type shown to be effective. The selected evaluator will coordinate and deliver the survey incentives to motivate participants to complete the survey. The selected evaluator will be responsible for all tax reporting associated with the survey incentives. Proposals should detail the suggested incentive strategy, methods, and amounts.

Survey response data. Once the survey response data have been compiled, a dataset that identifies the survey respondents will be provided to Energy Trust. Energy Trust will keep these data confidential and secure, but may use them for additional analysis and research. The selected evaluator will need to integrate the survey response data into the analysis dataset for use in the data analysis task (Task 7).

Deliverable:

- Draft and final survey instrument and recruitment message
- Spanish version of final survey instrument and recruitment message
- Section in report on survey methods and results
- Survey response dataset for use in Tasks 6 and 7

Task 5. Review of Analysis Dataset and Project Files

The selected evaluator will supplement and refine the integrated analysis dataset, as needed, with additional information obtained from commercially available datasets or online tools (e.g. Google Maps, Bing Maps, etc.). This may be especially useful in reviewing complex multifamily sites, to verify basic building characteristics and configuration data.

Next, the selected evaluator will review the analysis dataset to identify and resolve (to the extent possible) any data quality issues and missing values, in preparation for the data analysis task (Task 7). As part of this task, the selected evaluator will conduct data quality checks of treatment group DHP projects, including identifying, investigating, and resolving potential data quality issues and missing values by manually comparing the analysis dataset with Energy Trust project files. Project files include contractor invoices, incentive application forms, and other project documentation. The review of project files should focus on projects with missing data, outliers, and anomalous values.

In a previous evaluation project, we found that roughly 20% of DHP projects were missing key data fields (such as system size/capacity) or contained outlier values. In those projects, about half of the important missing values could be filled from other sources of information, including the project files. About 20% of these records contained errors in key data fields that needed to be corrected, based on a

comparison with project files. Once identified, the selected evaluator will correct any errors in the analysis dataset. In addition, the evaluator will extract more detailed project cost information, when available, from the contractor invoices.

Deliverable:

- Section in report describing analysis dataset review process, including modifications made based on project file review, and findings

Task 6. Site Visits

The selected evaluator will conduct site visits with a nested, random sub-sample of survey respondents, to ground-truth information collected in the survey. The primary goal is to quantify the reliability of each survey item that can be verified on-site. As such, the site visits will not involve any metering or require any special equipment. Proposals should specify the number of site visits to be conducted to achieve this goal. The selected evaluator will create a data collection instrument to be used on-site by field staff when verifying survey responses. The instrument should include all items from the survey that can be physically verified, such as home/building characteristics and configuration, DHP system details and installation characteristics, existing heating and cooling equipment, supplemental fuel use, control settings and use of controls, and major changes to the home/building and electricity using equipment.

Site visit participants will be recruited from survey respondents that indicated interest in a site visit. The selected evaluator will offer an incentive to encourage participation in the site visits. After the site visits are complete, the selected evaluator will coordinate and deliver the survey incentives and will be responsible for all tax reporting, as with the survey incentives. The selected evaluator will arrange the site visits with property owners and occupants. Field staff must provide good customer service while they are on-site and collect the required information in an efficient manner. If they notice a problem with the customer's DHP system or control settings, they will report it to the customer and make a note in the data collection form.

Site visit information will be compiled and compared to each participant's survey responses. Survey response differences with a magnitude that could have a material effect on the analysis will be categorized as inaccurate. The selected evaluator will then quantify the reliability of each survey response item that was verified on-site, using standard statistical measures of accuracy and reliability. A subset of reliable survey items will be identified that contribute valuable information and will be used in the data analysis (Task 7). Survey response data deemed unreliable will be removed from the final analysis dataset and will not be used.

Deliverable:

- Section in report describing site visit methods and findings
- Subset of reliable survey response items for use in Task 7

Task 7. Data Analysis

Analysis scope. The selected evaluator will conduct analysis using the final dataset created and refined in the previous tasks. The first step in the data analysis will be to summarize the treatment group characteristics, including installation scenarios, building characteristics, project characteristics, occupant characteristics, claimed savings, and reported project costs. Next, the selected evaluator will conduct the energy savings analysis. The primary goal is to quantify the average annual electricity savings attributable to DHP systems in a few key installation scenarios and investigate the variation in savings. Last, the selected evaluator will investigate the average installation costs of DHP systems and the variation in those costs. The analysis conducted in this task should address all of the study's objectives and specific research questions, detailed above.

Comparison group. The selected evaluator will use a quasi-experimental design in the energy savings analysis, comparing DHP participant sites to a matched comparison group. To the extent possible, a unique and well-matched comparison group will be created for each key installation scenario and subset of participant sites to be analyzed. Comparison group candidate sites will be selected from a large population of non-participant sites in the analysis dataset consisting of single-family and multifamily buildings with electric resistance heat that have never received an Energy Trust-funded DHP system. For each group of participants to be analyzed, the selected evaluator will randomly select matched comparison group sites from the pool of non-participant sites of the same building type, with the same type of heating system, located in the same geographic regions and with a similar distribution of annual electricity usage. Comparison group sites will be assigned proxy installation dates based on the participant site installation dates. The selected evaluator will attempt to achieve at least a five-to-one ratio of comparison sites to participant sites for each unique comparison group created.

Exclusion criteria. The selected evaluator will exclude homes from the analysis with any of the following potential issues. They will carefully track homes excluded from the analysis and report them in a detailed attrition table.

- Insufficient utility billing data either pre- or post-installation
- Unusual or erratic electricity usage history during the study period
- Extended vacancies during the study period
- Account turnover during the study period
- Outliers in annual electric usage (top and bottom 1% of participants)
- Net-metered solar PV system present
- Other electric efficiency measures funded by Energy Trust, above a minimum savings threshold, completed during the study period
- Participants that reported installing DHP in a newly conditioned space
- Other issues that preclude sites from being analyzed

Energy savings analysis. The selected evaluator will analyze monthly utility billing data for each treatment and comparison site, beginning approximately one year before and ending approximately one year after each project's installation date. The billing period that includes the DHP installation, and the adjacent billing periods, will be removed from the analysis. Electricity usage will be weather normalized, to determine the heating and cooling components of each home's usage and factor out the impacts of year-to-year variations and geographic differences in weather. The selected evaluator will use weather data from the weather station nearest each site.

The selected evaluator will conduct a statistical analysis of energy savings, using at least two different types of models to test the sensitivity of results. One model will be a pre-post variable-base degree-day model (similar to the PRISM method) and the other will be a panel regression model. The structure of the statistical models must be supported by theory and adhere to statistical best practices. The proposed analysis methods must be clearly outlined and approved by Energy Trust in advance. The selected evaluator will use the approved statistical methods to estimate weather normalized annual electric savings. Electric savings will be computed as the difference-in-differences, where the pre-to-post change in electric usage is compared between the participant and comparison groups. Electric savings will also be calculated as percentages of annual pre-installation total electric load and heating load. The selected evaluator will conduct additional sensitivity analysis to ensure that the model specification and exclusion criteria do not dramatically influence the results.

The selected evaluator will estimate the overall average energy savings for DHPs installed in each key scenario in single-family and multifamily buildings. In addition to absolute energy savings, savings will also be estimated as percentages of total annual electricity usage and annual heating and cooling usage. To investigate the influence on energy savings of certain factors identified in the research questions, the selected evaluator will subset the sample based on those factors and re-run the analysis. The savings results for each subset will be documented and the evaluator will statistically compare the results between groups to identify the most influential factors.

Cost analysis. The average installation costs of DHP systems and the variation in those costs will also be examined, along the same dimensions as the savings analysis. The selected evaluator will also distill information collected from the survey relating to system costs, purchase decision-making, supplemental heating fuels, and existing heating and cooling equipment. These data will be used to quantify any additional energy and non-energy benefits or cost savings that can be identified. After both costs and savings have been quantified for all scenarios, the selected evaluator will determine the most cost-effective installation scenarios, where savings are higher than average and costs are lower. In addition, the selected evaluator will identify those scenarios where the costs tend to be high and savings are low.

The selected evaluator will describe the analysis methods and detailed results in the report and provide the final analysis dataset to Energy Trust.

Deliverable:

- Section in the report describing the analysis methods and findings
- Final analysis dataset

Task 8. Short Interval Data Analysis

The analysis described above will be supplemented with hourly electricity usage data for PGE customers.⁹ These data will allow the selected evaluator to estimate the relationship between weather and energy consumption more accurately and isolate the heating and cooling loads more precisely. Energy Trust will request hourly data from PGE, once the treatment and comparison groups are defined. It is likely that PGE will be able to provide a maximum of 12-18 months of hourly data for a subset of sites in the analysis sample. Once received, Energy Trust will transmit these data to the selected evaluator.

The selected evaluator will conduct statistical analysis of the hourly data, comparing pre-to-post changes in weather normalized energy usage between the treatment and comparison sites. The selected evaluator will use similar methods and models to those used in Task 7, while properly accounting for the high frequency of data. The selected evaluator will re-estimate the overall average energy savings for DHPs installed in each key scenario in single-family and multifamily buildings and compare them to the estimates based on monthly data.

In addition to energy savings, the selected evaluator will use the hourly data to investigate the load shapes and demand impacts of homes with DHPs. In particular, they will analyze the average winter and summer (weekday and weekend) load shapes and changes in peak electricity usage from pre-to-post installation. These changes will then be compared between the treatment and comparison groups. The selected evaluator will quantify these average, seasonal demand impacts, as well as the demand impacts that coincide with the utility system's seasonal peak.

Deliverables:

- Section in the report describing the hourly data analysis and findings

Task 9. Reporting

The selected evaluator will provide Energy Trust with a draft report that summarizes all research activities and findings. At a minimum, the report will contain an executive summary, introduction and background, methods, findings, and conclusions and recommendations. Data collection instruments and other relevant materials should be included in appendices. The report should fully address all of the study's objectives and research questions. In addition, the selected evaluator should provide Energy Trust with specific recommendations on how to improve the cost-

⁹ Roughly 60% of Energy Trust's eligible residential electricity customers are PGE customers.

effectiveness of DHPs in Oregon or how to develop new, cost-effective DHP offerings. This may involve new measure requirements or targeting criteria. It could also include quantifying new energy and non-energy benefits of DHPs that were not previously accounted for, based on the results from this study. In addition, the selected evaluator may provide evidence that adjustments are needed to the assumed DHP system costs, to better reflect the base system cost and the cost of any equipment being displaced (e.g. window AC units).

The draft report will be reviewed and commented on by Energy Trust staff, program staff, Energy Trust Board Evaluation Committee members, and other parties deemed appropriate by Energy Trust. Based upon these comments, the selected evaluator will make revisions and deliver to Energy Trust a final version of the report within two weeks of receiving comments. Achieving an acceptable final report may take more than one iteration between the selected evaluator and Energy Trust. Where applicable, data, phone conversations, non-confidential sources, publications and other media used in the report should be referenced and cited. Findings and conclusions shall be based on the information collected by the selected evaluator and referenced in the report. The use of tables and graphs is recommended for material that does not lend itself well to narrative form.

The selected evaluator will be required to submit monthly status reports presenting (1) a summary of accomplishments during the previous month, (2) current month's activities/plans; (3) variances in schedule and budget, including any necessary explanations; and if applicable, (4) issues or concerns to be addressed with proposed solutions. These reports are due by the 10th of every month and must accompany the invoice, starting with the first month after the kick-off meeting.

Deliverables:

- Monthly status reports with invoices
- Draft and final reports

Schedule

All methods, findings, conclusions, and recommendations will be summarized in a draft report, to be delivered to Energy Trust by October 12, 2018. A final report will be delivered within two weeks of having received all comments and edits on the submitted draft. The contractor will be required to provide a monthly evaluation update to Energy Trust on the 10th of every month.

Budget

The approximate budget for the scope described in this RFP will be in the neighborhood of \$140,000; however, Energy Trust reserves the right to revise budget assumptions at any time. The proposal should be bid as a time-and-materials, "not-to-exceed" type contract.

Proposal Requirements

Respondent's proposal must contain:

1. Proposal Information

- 1) A description of the firm's qualifications, including key staff, to conduct this study, not to exceed four pages.
- 2) A technical proposal, not to exceed 14 pages, including proposed technical approach to the specific tasks, as well as the firm's proposed approach to the project overall, project team, and management plan.
- 3) A proposed schedule of deliverables, not to exceed one (1) page. This should include a project kick-off meeting scheduled within two (2) weeks of awarding the contract. A detailed budget broken out by task and by individual staff member, not to exceed one (1) page. Key individuals should be identified by name, with billing rates for each. Please use the budget template (below).
- 4) Resumes of key staff and subcontractor team members who will be executing the work scope.

Please note the overall 20-page limit for proposals referenced above. This page limit does not include resumes of proposed staff.

Budget Template

Staff Name	Project Role	Hourly Rate	Hours Per Task		Total Hours	Total Cost
			Task 1	Task 2		
Total Hours Per Task						
Total Cost Per Task						

2. Conflict of Interest Disclosure

Respondents should disclose any direct or indirect, actual or potential conflicts of interest Respondents may have with Energy Trust in its proposal. A "direct or indirect conflict" is defined as any situation in which an individual or a member of their family or close business or personal acquaintance, is employed by Energy Trust or the OPUC, or may be reasonably construed to have a direct or indirect personal or financial interest in any business affairs of Energy Trust, whether because of a proposed contract or transaction to which Energy Trust may be a party or may be interested or is under consideration, or whether such conflict is purely conceptual, because of similarity of business interests or affairs.

If no conflict is identified by Respondent, the proposal will explicitly provide such a statement in their RFP response. The determination of whether a conflict of interest exists is left to the sole discretion of Energy Trust.

3. Representations and Signatures Page

Respondent's proposal must contain the signature of a duly authorized officer or agent of the company submitting the proposal. Respondent's duly authorized officer or agent shall sign **Appendix A** certifying to the representations stated on **Appendix A**.

Proposal Selection Criteria

Proposals will be judged on the following criteria, and any other factors deemed relevant by Energy Trust:

- Quality of project proposal, including proposed approach to specific evaluation tasks and the evaluation overall
- Experience of proposed staff (including key staff from all subcontractors that will be involved in the evaluation) and management plan
- Experience of firm (including all subcontractors that will be involved in the evaluation)
- Proposed budget and schedule of deliverables

Schedule & Administration of Proposal Selection Process

RFP Schedule:

- **February 21, 2018** RFP issued
- **March 2, 2018** **Intent to bid due**
- **March 2, 2018** Questions/request for additional information due
- **March 7, 2018** Response to questions sent no later than
- **March 21, 2018** **Proposals due**

Requests for Additional Information and Proposal Submission

Any questions and/or requests for clarification or additional information regarding this RFP, as well as stating intent to bid on the project, must be submitted via email to the contact named below by **March 2, 2018**. Stating intent to bid does not obligate a respondent to submit a proposal. Only electronically submitted proposals (in PDF form) will be accepted; faxed or print proposals will not. A signed letter of transmittal (cover letter) is required, but can be scanned and submitted along with the proposal. All proposals must be received by 5pm PST on **March 21, 2018**. Energy Trust will not be obligated to consider information received outside this time interval for the purposes of this RFP. Please submit proposal to:

Dan Rubado
Evaluation Project Manager
Energy Trust of Oregon
Phone: 503.459.4069

Email: dan.rubado@energytrust.org

Revisions to RFP

If it becomes necessary to revise any part of this RFP, an addendum will be issued by Energy Trust and will be posted on the website. Respondents should contact Energy Trust if they find any inconsistencies or ambiguities to the RFP. Clarification given by Energy Trust may become an addendum to the RFP.

Withdrawal and Modification of Proposals

Respondents may withdraw their proposal and submit a revised proposal prior to the response deadline. After the response deadline, Respondent initiated changes will not be accepted. Respondents may withdraw their proposal from consideration at any time.

Proposal Evaluation and Notification for Negotiations

Energy Trust will review the proposals as received and will initiate negotiations with the leading Respondent(s).

RFP GOVERNING PROVISIONS

All submitted proposals are subject to the following additional provisions.

Right to Accept or Reject Proposals, Multiple Awards

Energy Trust reserves the right to make multiple awards, reject any and all proposals and to waive any nonconformity in proposals received, to accept or reject any or all of the items in the proposal, and award the contract in whole or in part as it is deemed in Energy Trust's best interest. Energy Trust may also choose to negotiate any of the details of proposals prior to contracting.

Confidentiality

Respondents shall clearly identify only those portions of their proposals that they do not want revealed to third parties and label such portions as "Confidential Information". Except as required under law or for regulatory purposes Energy Trust will maintain confidentiality of such information. Energy Trust will not accept proposals or other documents that are marked to indicate the entire document is the confidential or proprietary information of the sender or that restricted handling is required. Normal business practices will be observed in handling proposal materials.

Ownership and Return of Proposals

All materials submitted in response to this RFP shall become the property of Energy Trust and shall not be returned to the respondent.

No Verbal Addendums

No verbal agreement or conversation made or had at any time with any officer, agent, or employee of Energy Trust, nor any oral representation by such party shall add to, detract from, affect or modify the terms of the RFP, unless specifically included in a written addendum issued by Energy Trust.

Proposal Costs

Each proposal prepared in response to this RFP will be prepared at the sole cost and expense of the Respondent and with the express understanding that there will be no claims whatsoever for reimbursement from Energy Trust.

Waiver of Claims

Respondent waives any right it may have to bring any claim, whether in damages or equity, against Energy Trust or its officers, directors, employees, or agents, with respect to any matter arising out of any process associated with this RFP.

Energy Trust Rights Reserved

Energy Trust reserves the right, in its sole discretion, to reject any or all proposals in whole or in part, to waive any minor irregularities or informalities in a proposal, and to enter into any agreement deemed to be in their best interests. In addition to any other enumerated reserved rights and/or options as stated in this RFP, Energy Trust may in its sole discretion do any one or more of the following:

- Determine which proposals are eligible for consideration in response to this RFP.
- Disqualify proposals that do not meet the requirements of this RFP, in the sole determination of Energy Trust.
- Negotiate with any Respondent to amend any proposal.
- Select and negotiate and/or enter into agreements with Respondents who, in Energy Trust's sole judgment, are most responsive to the RFP and whose proposals best satisfy the interests of Energy Trust, in its sole discretion, and not necessarily on the basis of price alone or any other single factor.
- Issue additional subsequent solicitations for proposals, including withdrawing this RFP at any time and/or issuing a new RFP that would supersede and replace this one.
- Vary any timetable or schedule, add or change any provisions discussed herein.
- Conduct any briefing session or further RFP process on any terms and conditions.
- Suspend or modify the RFP process at any time.
- Enter into relationships with more than one Respondent.

Resulting Contract

The selected respondent will be required to execute a written contract with Energy Trust to perform the evaluation work. No award will be considered a commitment, and no

obligations or legal relations shall exist between Energy Trust and the selected respondent until a final and binding contract has been executed by and between Energy Trust and the contractor. Time is of the essence with regard to this program, and prolonged contract negotiations will not be undertaken. In general, Energy Trust strongly prefers contracts that are consistent with Energy Trust's standard terms and conditions; negotiations for such contracts can generally be completed quickly. In some cases, a few terms and conditions may need to be substituted or waived, in accordance with contract negotiations. Any party involved in these contract discussions can terminate negotiations at any time and for any reason. If it appears that contract negotiations are not proceeding in a timely manner, Energy Trust may opt to terminate the discussions and select another respondent.

APPENDIX A – REPRESENTATIONS AND SIGNATURE PAGE

I, the undersigned declare that;

1. I am an authorized agent of the respondent and have authority to submit this proposal on behalf of the respondent.
2. The information provided in this proposal is true and correct to the best of my knowledge.
3. I have read this Request for Proposals in its entirety and agree unconditionally to all of its conditions and requirements.
4. The respondent has not directly or indirectly induced or solicited any other respondent to submit a false or sham proposal.
5. The respondent has not solicited or induced any other person, firm, or corporation to refrain from proposing.
6. The respondent has not sought by collusion to obtain for itself any advantage over any other respondent or Energy Trust.
7. The respondent's proposal is genuine; not made in the interest of, or on behalf of, any undisclosed person, firm, or corporation; and is not submitted in conformity with an agreement of rules of any group, association, organization, or corporation.
8. I understand and accept that the approval or rejection of respondent's request is within the sole discretion of Energy Trust and that there is no legal commitment until all due diligence has been performed and a properly authorized contract has been duly and properly executed.
9. I authorize the representatives of Energy Trust to investigate the business and personal financial credit history of respondent, its affiliates, and all associated partners, principals and management and authorize the release of all said information.
10. I agree that I will report immediately in writing to Energy Trust any changes to the information contained herein at any time while I am under consideration for funding.

The information contained in this proposal and any part thereof, including its exhibits, schedules, and other documents and instruments delivered or to be delivered to Energy Trust is true, accurate, and complete. This proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead Energy Trust as to any material fact.

Date: _____

Authorized Signature: _____

Name and Title: _____

(please print)

APPENDIX B – ENERGY TRUST’S UTILITY CUSTOMER INFORMATION CONFIDENTIALITY AGREEMENTS FOR CONTRACTORS

UTILITY CUSTOMER INFORMATION CONFIDENTIALITY AGREEMENT (Contractor Version)

(A separate agreement to be signed by any contractor who may be granted access to confidential utility customer information provided to Energy Trust by its funding utilities.)

Energy Trust’s funding utilities (collectively, the “Utilities”) provide Energy Trust with certain Confidential Information consisting of identification and usage information about their respective customers (“Confidential Utility Customer Information”) for the sole purpose of implementing, administering, and evaluating Energy Trust’s energy programs. In the course of providing services to Energy Trust (“the Services”), INSERT CONTRACTOR LEGAL BUSINESS NAME HERE (“Contractor”) may be provided with Confidential Utility Customer Information.

Contractor understands that the Confidential Utility Customer Information is made available by Energy Trust to Contractor on a “need to know” basis and only after Contractor is advised of the confidential nature of the information and its agreement to all obligations of confidentiality herein. In addition to any and all other obligations of confidentiality as set forth in this Agreement, Contractor specifically agrees as follows:

- 1. Nondisclosure.** Contractor agrees that (a) it will not disclose, during the Term or thereafter, Confidential Utility Customer Information, directly or indirectly, under any circumstances or by any means, to any third person, other than Energy Trust its contractors, their subcontractors, or its employees who have authorized access to the Confidential Utility Customer Information confirmed in writing by Energy Trust and (b) it will comply with all Energy Trust policies and procedures for the protection of the Confidential Utility Customer Information.
- 2. Nonuse.** Contractor agrees to not copy, transmit, reproduce, summarize, quote or make any commercial or other use whatsoever of Confidential Utility Customer Information, except as may be necessary to perform the Services for Energy Trust; provided, however, Contractor agrees not to use the Confidential Utility Customer Information for telemarketing to customers under any circumstance.
- 3. Protection.** Contractor agrees to exercise the highest degree of care in safeguarding the Confidential Utility Customer Information against loss, theft, or other inadvertent disclosure and to take all reasonable precautions to protect the confidentiality of Confidential Customer Information.
- 4. Return of Confidential Utility Customer Information.** Contractor agrees that, upon request by Energy Trust, it will return to Energy Trust any documents, materials, or other information in any form that contain, reflect, or constitute any Confidential Customer Information, within forty-eight (48) hours after receipt of such request. Upon termination of the Agreement, Contractor will deliver to Energy Trust all documents, materials or other information in whatever form, which may contain, reflect, or constitute any Confidential Utility Customer Information in its possession or under its control, within twenty-four hours after receipt of a termination notice.
- 5. Expiration.** Contractor understands that its obligations of confidentiality shall survive termination or expiration of its engagement as an independent contractor in connection with the Programs.
- 6. No Grant of License.** Contractor understands that it is not being granted a license or any other right to use any Confidential Utility Customer Information except for the purpose of performing the Services. Contractor also understands that all Confidential Utility Customer Information disclosed or otherwise acquired by it and all work product, materials, and

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information arising out of, related to, or derived from Confidential Utility Customer Information including, but not limited to, studies, analyses, reports, documents, inventions, formulations, methodologies, processes, procedures, designs, and know-how, shall remain the property of Energy Trust.

7. **Retention of Records.** Contractor agrees to keep a record of the documentary Confidential Utility Customer Information furnished by Energy Trust and the location of such Confidential Utility Customer Information.
8. **Disclosure to Employees and Others.** Contractor agrees to disclose Confidential Utility Customer Information within its organization only after having notified such persons of the confidential nature of the information and after having placed them under covenants of nondisclosure and nonuse similar to those contained in this Agreement. Contractor shall maintain documentation of such covenants of nondisclosure.
9. **Remedies.** Disclosure of Confidential Utility Customer Information in violation of this Agreement will cause irreparable harm to Energy Trust and the Utilities. In case of such disclosure, Energy Trust and the Utilities will be entitled to specific performance, including immediate issuance of a temporary restraining order or a preliminary injunction enforcing this Agreement, and to a judgment against Contractor for damages, and to any other remedies provided by applicable law. If Energy Trust or the Utilities brings an action to enforce the terms of this Agreement and prevails, the prevailing party will be entitled to recover reasonable attorney fees, costs, and expenses from Contractor in the trial court and on appeal.
10. **Indemnification.** Contractor will indemnify and hold harmless Energy Trust and the Utilities, their directors, officers, employees, agents, representatives, and affiliates, from any third party claims against those indemnified parties that result from the negligent or wrongful acts or omissions of Contractor or its Employees including, but not limited to, the misuse or unauthorized disclosure of Confidential Utility Customer Information or any other breach of this Agreement.
11. **Notice of Security Breach.** If Contractor believes that a security breach involving Energy Trust's data may have occurred, Contractor shall provide immediate notice to Energy Trust, in no case later than within 24 hours, and consult with Energy Trust regarding appropriate next steps.

Contractor has read this **Contractor Confidentiality and Nondisclosure Agreement** and understands, acknowledges and agrees to the terms and conditions herein effective as of the date set forth below.

ON BEHALF OF CONTRACTOR:

AUTHORIZED REPRESENTATIVE SIGNATURE: _____

PRINT NAME AND TITLE: _____

DATE _____ PHONE: _____ EMAIL: _____

UTILITY CUSTOMER INFORMATION CONFIDENTIALITY AGREEMENT (Individual Version)

(A stand-alone agreement to be signed by any Energy Trust employee or employee of a company contracted with Energy Trust who may be granted access to confidential utility customer information provided to Energy Trust by its funding utilities.)

Your role as an Energy Trust employee, or the employee of a company contracted with Energy Trust creates a relationship of trust and confidence with respect to Energy Trust's information. You will likely have access to confidential and proprietary business information relating to the Energy Trust, the utilities it works with, and the participants in its programs. As a result of this relationship of trust and confidence, and the sensitive and confidential nature of information to which you may have access, Energy Trust requires that you read and sign this Individual Confidentiality and Nondisclosure Agreement.

I understand, acknowledge and agree that:

- 1. Definition of Confidential Information.** Utilities provide Energy Trust with information about their energy customers pursuant to rules of the Oregon Public Utility Commission. Energy Trust and its contractors also acquire information directly from individuals and firms that participate in Energy Trust programs. Insofar as information from either source refers to utility customers or program participants by name, address, meter number, or other individually identifiable characteristics, it is "Confidential Information" and governed by the terms of this Individual Confidentiality and Nondisclosure Agreement. Confidential Information does not have to be in writing nor does it have to be labeled as "confidential" or "proprietary" or otherwise in order to be considered as Confidential Information.
- 2. Obligation of Nondisclosure.** I will use all of Energy Trust's Confidential Information solely for the purpose of performing the services Energy Trust has retained me to perform. I will not disclose any Confidential Information, directly or indirectly, under any circumstances or by any means, to any person who does not meet the criteria described in the "Permitted Disclosure" paragraph, below.
- 3. Permitted Disclosure.** Confidential Information may be disclosed only to (1) a party bound by a confidentiality and nondisclosure agreement with Energy Trust; (2) on a "need to know" basis; (3) who are authorized by Energy Trust's Legal Department. Persons satisfying these criteria are known as "authorized persons". If I disclose any Confidential Information to an authorized person, I understand, acknowledge and agree that it will be my sole responsibility to (1) clearly direct such person to treat such information as confidential in accordance with the person's confidentiality agreement with Energy Trust, (2) document the disclosure in a writing that identifies the information disclosed and the person to whom it was disclosed, and (3) provide such writing to Energy Trust's Legal Department.
- 4. Protection and Nonuse.** I will exercise the highest degree of care in safeguarding and protecting the Confidential Information against loss, theft, or other inadvertent disclosure and will take all reasonable precautions to protect the confidentiality of Confidential Information. I will not copy, transmit, reproduce, summarize, quote or make any commercial or other use whatsoever of the Confidential Information, except as may be necessary to perform the services for Energy Trust.
- 5. Retention of Records.** If I am an employee of Energy Trust, I will maintain the Confidential Information in a manner consistent with Energy Trust's document retention requirements. If I am an Energy Trust contractor or employee of an Energy Trust contractor, I will ensure that I

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retain any Confidential Information obtained from or furnished by Energy Trust in such a manner that I can locate all Confidential Information provided to me and respond to Energy Trust's request to return or destroy all such information as required by the paragraph below.

6. **Return or Destroy the Confidential Information.** If I am an employee of Energy Trust, upon termination of my employment, I must locate and return to Energy Trust any and all documents, materials, or other information in any form that contain, reflect, or constitute any Confidential Information in accordance with Energy Trust's employment policies. If I am an Energy Trust contractor or employee of an Energy Trust contractor, I will return or destroy all Confidential Information obtained from or provided by Energy Trust promptly upon the termination of my work for Energy Trust, typically within 24-48 hours.
7. **Obligation of Confidentiality Survives Termination or Expiration.** My obligations of confidentiality shall survive termination or expiration of my employment or consultant relationship, or my employer's engagement as an independent contractor in connection with Energy Trust.
8. **Energy Trust Owns the Confidential Information.** I am not being granted a license or any other right to use any Confidential Information that may be disclosed to me except for the purpose of assisting Energy Trust. All Confidential Information disclosed or otherwise acquired by me and all work product, materials, and information arising out of, related to, or derived from Confidential Information including, but not limited to, studies, analyses, reports, documents, inventions, formulations, methodologies, processes, procedures, designs, and know-how, shall remain the property of Energy Trust.
9. **Remedies.** Disclosure of Confidential Information in violation of this Confidentiality and Nondisclosure Agreement will cause irreparable harm to Energy Trust. If I fail to abide by the Individual Confidentiality and Nondisclosure Agreement, Energy Trust will be entitled to specific performance, including immediate issuance of a temporary restraining order or a preliminary injunction enforcing this agreement, and to a judgment against me for damages caused by my breach, and to any other remedies provided by applicable law.
10. **Notice of Breach.** I shall notify Energy Trust within 24 hours of any suspected security breach of the Confidential Information, and will consult with Energy Trust regarding next steps.

I, the undersigned, have read this **Individual Confidentiality and Nondisclosure Agreement** and understand, acknowledge and agree to the terms and conditions herein effective as of the date set forth below.

Print Name: _____

Signature: _____

Name of Employer: _____

Date: _____

Phone Number: _____

Email: _____