

# Energy Trust of Oregon

## Meter-Based Energy Modeling and Tracking Platform for Commercial Buildings

### RFI: Answers to Questions Posted

**Date Posted:**

January 4<sup>th</sup>, 2019, 5:00pm (PST)

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**RFI Submission Deadline:**

January 30<sup>th</sup>, 2019, 5:00 p.m. (PST)

- 1. *On the potential scale of the project: the RFI mentioned that you have '700 meter-based, whole-building models at 500 sites for Commercial SEM participants alone'. How many Buildings are under PfP offering?***

**Response:** There are no enrolled PfP projects using Energy Trust models at the time of this RFI. Energy Trust estimates approximately 20-40 new models will be developed under the SEM and PfP offers in 2019.

- 2. *Related to the above, do you anticipate a significant expansion to customers with lower savings potentials?***

**Response:** We are seeking to expand our offers to more commercial customers, including facilities with lower overall energy usage.

3. ***Can you clarify on billing data entry: do you expect the customers to enter data into the software, whether manual or batch import? Or is the expectation for the software to include bill capture service, such as paper bill processing, PDF bill parsing?***

**Response:** Energy Trust is open to multiple approaches to incorporating billing data in models. Examples include integration with Energy Trust UCI data, ENERGY STAR Portfolio Manager data or other means of minimizing customer time spent entering data manually.

4. ***In the calculation of avoided cost, do you use blended unit cost or the actual rate schedule? If you use the rate schedule, and the rate is a demand rate with TOU, do you model each TOU period and demand separately in order to calculate each component of cost? (This adds 5x-10x to the cost and complexity of the modeling and reporting process.)***

**Response:** We use a blended rate by fuel to estimate the site-specific avoided cost as a function of energy savings.

5. ***The chart on page 18 shows a column for "Other Energy Projects" as described on page 17. What is the source of the "debits" to savings due to other projects? Your requirements state that reporting is "throughout the engagement year" which means monthly updates because the current bills will be monthly. Therefore, every month there needs to be a calculation of the savings due to every capital project and every O&M activity. These calculations typically require a detailed building simulation (they can change every month due to weather and operational factors), so there is a need for detailed simulations and high skill level M&V practitioner for every building. Do you expect these monthly calculations to come from a simulation calculator in the proposed platform or will monthly values be provided to the platform from an external source? (Note: The biggest accuracy challenge of this project is here in the adjustment process, not in the basic modeling process.)***

**Response:** The "Other Energy Projects" refers to savings calculated through other Energy Trust offers, including standard incentives (measure-specific deemed savings) and custom incentives (measure-specific modeled savings). This is used to adjust for savings claimed through other Energy Trust offers, and not as a means of validating these savings. Currently, savings from "Other Energy Projects" are pro-rated based upon the calculated savings and installation date or other site-specific information. We do not expect these calculations to be based upon detailed building simulations.

6. ***The RFI prospectus mentions a 12 or 24 month baseline. Experience has shown that it is virtually impossible to obtain accurate occupancy data going back in time 24 or more months from project start date. That's if "occupancy data" means number of occupants and hours of HVAC/lighting operation. We have found that a much more readily obtainable yet still reasonably accurate second independent variable (in addition to weather) is simply occupied days in the billing period. This makes an adjustment for weekends and holidays that improves the model yet is low-cost and easy to obtain. Is that acceptable?***

**Response:** This is an acceptable approach for occupancy in most buildings. For some building types, however, more detailed data are available and should be used (i.e., schools and universities, hospitals, prisons or event centers).

7. ***There is no mention of variable BPT degree days. Using 65F balance point data from NOAA introduces error in models because few modern commercial buildings behave with a 65F balance point. Moreover, some NOAA sources suffer from arithmetic rounding rather than bankers' rule rounding to even integers, introducing a further bias. Are variable BPT degree days and manual or automatic BPT selection by meter desirable?***

**Response:** We currently have an algorithm to optimize degree-day temperatures and would prefer a similar automated solution in any tool.

8. ***Can the columns and rows of the response template provided as appendix B be modified or resized to allow more room for the response portion (i.e use two column with or rows for question and response)?***

**Response:** Yes.

9. ***Regarding integrations with existing ETO systems, will this be via APIs, and is there documentation for those APIs?***

**Response:** Yes, we have both SOAP and REST APIs. To date, the SOAP services have been used by external parties to import data into Energy Trust systems while the REST endpoints have been used mostly for internal development.

10. ***Regarding Energy Trust's Commercial O&M Measurement and Verification Guidelines, can you share the current process for disaggregating the monthly energy data into daily values?***

**Response:** The current process with the Energy Trust PTT is to disaggregate monthly energy use data into daily values based upon the number of days in the billing period. The equation is as follows:

Daily Consumption (kWh or therms) =  
(Electricity/Gas Consumption) / (Meter Read End Date – Meter Read Start Date + 1)

11. ***"In Appendix C of the RFI, there is a reference to Energy Trust's Commercial O&M Measurement and Verification Guidelines. I'm writing to request a copy of the relevant sections of those guidelines for the sole purpose of informing our RFI response (as mentioned in footnote #1 on page 14 of the RFI). Are you able to share those with us, or is there someone else at Energy Trust we should send this request to?"***

**Response:** Energy Trust can provide interested respondents with access to a summary of the guidelines upon request. Please submit requests to [alex.novie@energytrust.org](mailto:alex.novie@energytrust.org) with "RFI REQUEST" in the subject line by 5:00pm PST on Friday, January 14<sup>th</sup>, 2019.

12. ***We have developed similar tools for other entities, and some of the details of these tools may be construed as confidential by those entities. While we are willing and***

***able to discuss these details directly with Energy Trust through this RFI, some material would not be appropriate to detail publicly as part of a subsequent competitive solicitation. Therefore, is there a way we can mark such content as confidential so it is not articulated publicly in any subsequent step?***

**Response:** Section 4 (Governing Provisions) addresses RFI Confidentiality. Except in the case of litigation or other legal disclosure and/or audit requirements, Energy Trust will not disclose information submitted in response to an RFI to any third-party.

***13. On page 3 of the RFI, it is stated that, "...Energy Trust will determine next steps and may subsequently issue a competitive solicitation for services, products and/or equipment." Is Energy Trust able to provide more detail about the potential next steps any further at this juncture?***

**Response:** Not at this time.

***14. Can we cut and paste the Appendix B template into a word document to fill in our answers within the 20 page limited?***

**Response:** Yes, that is acceptable.

***15. How do you currently obtain data from these commercial sites/customers?***

**Response:** Customers provide information to Energy Trust as part of our program enrollment process. Energy Trust also receives energy usage information from our sponsor utilities (UCI data).

***16. Do all variables used in energy modeling like occupancy have to be tracked in-app?***

**Response:** All model variables must be tracked within the modeling application or platform.

***17. There is mention of rollup analyses/reports - is it acceptable for reports to be generated outside of the app?***

**Response:** We prefer that any rollup analyses and/or reports are generated within the application or platform and exportable.

***18. What is the ETO's expectation on the level of precision with existing methods? Does the ETO view this as an opportunity to improve precision with the proposed new solution or is success of the proposed solution measured simply by automating/productionizing the existing process?***

**Response:** Energy Trust views this as primarily automating and streamlining the existing process with current methodology. We are open to alternative modeling approaches, both more streamlined and more accurate, as long as sufficient documentation of methodology is provided.

**19. What is the maximum number of customers, models or both the ETO would like to scale up to?**

**Response:** Energy Trust does not currently have a maximum number of models or customers. We don't anticipate having more than 2,000 models for the current offers at a given time. We are interested in a tool that can accommodate additional meter-based, whole-building models for smaller buildings.

**20. How often are savings estimates to be re-estimated and made accessible within the solution?**

**Response:** Model variable values are updated monthly and the savings estimates are automatically computed with on-demand access. Models are QC'd during initial development and at the end of the annual engagement period.

**21. What sort of systems integration, if any, is required?**

**Response:** The systems integration needs include daily weather data, utility billing data and information on any "Other Energy Projects" from Energy Trust's project tracking database. Energy Trust may also be consider importing additional facility characteristics – address, square footage, occupancy information, unique identifiers – from the model platform into Energy Trust project tracking and CRM systems.

**22. What is the skillset/knowledge base of the typical modeler?**

**Response:** Most modelers have an engineering background and experience with utility meter data, whole building regression models and energy performance management. Modelers have familiarity with building science fundamentals and details on the specific sites that are being modeled.

**23. Will the platform be expected to support a wide variety of users or more geared towards power users?**

**Response:** Energy Trust seeks information on platforms that apply primarily to power uses (energy modelers) to develop models. The platform is expected to be easily accessible and intuitive for program participants to view (e.g., dashboards with engagement information) and potentially enter site information (e.g., occupancy data or utility billing data).

**24. Can an example model be shared to demonstrate complexity of the 700+ models?**

**Response:** Approximately 80 percent of current models follow our "Standard" model approach with energy usage as a function of weather (can be one or more degree-day variables) and occupancy. The equation for this is as follows:

$$\text{Consumption} = a_0 + b_1X_1 + b_2X_2 + b_3X_3$$

Where:  $X_1$ ,  $X_2$  and  $X_3$  represent cooling degree days (CDD), heating degree days (HDD), and an occupancy variable.  $b_1$ ,  $b_2$  and  $b_3$  represent the coefficients for these independent variables.  $a_0$  represents the intercept or 'baseload' energy use of the site that is always present within the normal range of independent variables.

Approximately 20 percent of current models follow our "Complex" model approach with interaction and/or indicator variables based upon unique facility characteristics. In addition to the model variables, our current models track statistical criteria for model fit (i.e.,  $R^2$ , CV(RSME), t-statistic, p-value), information on energy actions at the site (i.e., Opportunity Registers), and allows for the application of any additional indicator variables for major facility changes (e.g., major change in equipment use and/or occupancy that was not already accounted for in the model).