

Questions and Answers to the Heat Pump Representativeness Project RFP

1. Are there locational preferences or restrictions? E.g. does it matter if it's northeast, or northwest, or a specific climate? Would a mild California setting be ok (where you're not running the systems through their full range necessarily)?
 - a. There is no location preference, but it does need to have the heating and cooling climate parameters specified in the RFP. Most of mild California would likely work for the summer test, but the winter test would need to have the trailers located somewhere colder. Seasonally moving trailers is a possibility, but likely expensive. Also note that in areas of high elevation (>~2000 ft) there may be further complications in normalizing measurement results to standard conditions.
2. Can the testing be done in the Midwest if it meets the needed climate requirements?
 - a. Yes
3. Is there flexibility in the desired climate conditions (5F htg design temperature, and 95F+ summer temperatures) if the testing is to be done entirely in once location?
 - a. Generally unlikely as we need to ensure the range of operation is captured that reflects AHRI climate zone 4. However, we might be flexible to a limited extent depending on budget impact of location vs travel.
4. Other than the climate requirements, is there a preference for geographic location? For example, the east coast versus the Midwest versus the west coast?
 - a. No; however we would prefer to avoid an elevation above approximately 1200 ft.
5. Will all of the heat pump equipment be donated or does the proposal budget need to include funds to purchase the heat pump equipment?
 - a. Some may be donated, but assume a \$12,000 budget allowance for equipment to be tested. Should the cost of chosen units exceed \$12k, the funders may either recommend other solutions or find additional resources. Thus the contractor will not be exposed to this budgetary uncertainty.
6. Is there an expected range or maximum for the project budget?
 - a. There is a finite level of commitment from the funders, but we prefer to see what proposers believe is realistic rather than setting an expectation in advance.
7. Do you have a specific target or minimum for the number of hours with an outdoor air temperature of 95+ F? For example, the minimum number of mean annual hours based on 2001 - 2020 data. Or could you specify the minimum number of mean annual hours with an outdoor air temperature of 90+ F?
 - a. We would expect a location where 95°F or higher can be expected statistically for a minimum of 40 hours annually. (See also the answer to question 3).
8. Is there a requirement for cost-share?

- a. No, but any cost-share that proposers can develop would be beneficial and should be included in the proposal and budget.
9. What is the level of effort envisioned for the consultant for task 6? Is the consultant responsible for overseeing the lab testing component or is the plan for that to be covered by another effort/NEEP directly?
 - a. Contractor shall be responsible for high-level project management of work done by UL. A separate contract will be established by NEEP directly with UL. The contractor will be responsible for tracking the test schedule and progress, acting as liaison to the advisory group to guide decision-making, and ensuring data gathered is delivered in a timely fashion to the project team.
10. What is the level of strategic consulting, policy guidance, and thought leadership envisioned by NEEP for this effort? Is the effort considered primarily a data collection and analysis task or is there an opportunity to shape the direction that heat pump ratings take as a result of this work?
 - a. This is not a policy guidance project. The contractor will undoubtedly develop subject matter expertise through this project, and subsequent work that builds on the results is likely, but is not within the scope of this project.
11. Could a shipping container be considered a viable option for the field tests instead of a trailer?
 - a. It's possible. The contractor would need to verify it has a heat loss, gain and thermal mass consistent with EXP07. This will need to be verified as part of the test home calibration phase. If the container has no windows, summer heat gain rates may be difficult to calibrate reasonably.
12. Fulfilling the RFP's proposed timeline of being fully-instrumented and ready by December 31st, 2021 may be untenable given current market delays on procuring specialized instrumentation equipment. Is NEEP (and the study co-funders) open to delaying project launch and therefore capturing heating conditions in early 2023?
 - a. The project team has agreed to shift the start date of field data collection to June 1, 2022 through February 28, 2023 (this assumes test buildings are calibrated and instrumented prior to data collection) This represents a revision of 6 months from the timeline specified in the RFP of Dec 31, 2021 through August of 2022.

NOTE: The project team is considering whether lab testing of equipment may be completed before, instead of after, the field-testing, depending on lab availability and other project factors. Units will be tested one at a time at the UL lab over a 12-14 week period.
13. Do you anticipate that budgets should include procuring the heat pump systems, the trailers, and all necessary data instrumentation? If so, upon completion how does ownership of these resources transfer to NEEP and/or the study co-funders?

- a. The contractor should budget \$12k for heat pumps (see also the answer to question 5), plus appropriate budget for all onsite hardware and instrumentation. The RFP was developed assuming the trailers would be rented for the duration of the project. If the contractor wishes to purchase the trailers, the contractor would retain ownership at the end of the contract. The heat pumps would become the property of NEEP and/or the funders, after the project is completed (details of final equipment ownership TBD). Ownership of test instrumentation will remain with the contractor.
14. The RFP discusses the intention for the experimental trailers to be designed to closely represent the thermal characteristics of single-family homes. How will this representation be defined and what factors shall be included? Additionally who will make those determinations - the bidder, NEEP, the advisory group, or a combination thereof?
 - a. The thermal characteristics must be a reasonably close match to the heat transfer, thermal mass and capacitance as defined by EXP-07. We anticipate trailers will be available that are not very well insulated, nor will they have much mass, so that these can be adjusted by adding rigid insulation to the walls and/or ceiling of the structures, and/or adding lightweight CMU blocks for thermal mass as needed.
15. In lieu of construction trailers which may not viable to closely-enough match the thermal characteristics of single family homes, would NEEP and the co-funders consider an alternative test construction setup that is more representative of single-family homes?
 - a. Yes (but also see the answer to #14). Note that the aim is to match the thermal load parameters of EXP07, rather than "single family construction" *per se*. All test facilities will need to be identical and located in at the same location, with similar exterior shading and wind exposure conditions.
16. We were wondering what NEEP's thinking and preference was regarding brands. For ductless units there are many brands and for ducted units, at least three major vendors. Was NEEP thinking that each type of unit would have three different brands? Would each of the units need to be rated as cold climate, and if so how would that be defined? Several of the brands have a sub-brand or label designating performance at below -10F.
 - a. Given the small sample size, there are limitations to how much variation can be considered between units. The set should reflect several brands (at least 3, preferably more). The funders are currently reaching out to several manufactures who have expressed interest in this project. Units need not all be "cold-climate" types, but some almost certainly will be; the target as stated in the RFP is to include a range of HSPF ratings. The final mix of products tested will be decided by the advisory group based on recommendations from the selected contractor, willingness of manufacturers to participate, and cost of the units.
17. Is there any flexibility on the proposal submission date? While NEEP has provided a month's worth of time to respond, the RFP comes at the height of summer. Between staff vacations and the need to connect with viable subcontractors, the proposal period leaves little time to assemble the appropriate resources. An additional two weeks would be greatly appreciated.

- a. We will add two weeks (August 20). Please also see the revised submission and project timeline posted on the NEEP RFP web page.
18. Is there any flexibility on the proposed project schedule? The duration of data collection is very practical, however, our team believes the time to finalize site and design details and install the containers may not be sufficient, particularly if there is a change in site location (as referenced in the RFP for the possible utility site location). Getting the necessary approvals for the selected site may cause delays in meeting the targeted data collection start by December 31, 2021.
 - a. See response to question 12 regarding project timing.
19. Can a project team propose without having a secured site? Will such a proposal result in automatic rejection?
 - a. No, a guaranteed secure site is not a prerequisite for proposing. Proposing a viable site in an appropriate climate, that will minimize travel costs to the contractor would be a plus.
20. Should NEEP decide to use their alternate utility-provided site, will the awarded contractor have the opportunity to adjust their budget and schedule?
 - a. Yes. Providing options within the proposed budget for specific alternate scenarios such as this are a plus.
21. Does an insurance certificate need to be provided with the proposal, or only upon award? We do not currently meet one of the insurance limits and would need to increase our insurance levels to provide the required limits. We do not want to do so without knowing it is absolutely necessary for the project.
 - a. After the award is acceptable, but we would expect the contractor to provide proof of insurance within three weeks of the award announcement.
22. The RFP references use of “consistent simulated internal gains” for occupancy patterns. Will NEEP provide the “defined specification and schedule” for these loads? Any decisions regarding the internal heat gains and simulated occupancy will have considerable impact on the building load profile and, in turn, the system performance. Will time be allocated for the contractor to determine appropriate load profiles and evaluate the implications of these assumptions prior to testing?
 - a. The contractor will be given reasonable latitude to develop internal loads for occupancy patterns. Building America simulation prototypes (https://www.energy.gov/sites/default/files/2014/03/f13/house_simulation_protocols_2014.pdf) may be a good starting point. As this is not a test of performance, but rather a test of test procedures, the exact nature of the internal gains is not critical. Consistency between test trailers is important. Because internal gains shift the entire load line, rather than just changing it’s slope, achieving the right daily average of internal gains and matching the load line defined in EXP07 will be more important than following a detailed schedule of varying end-uses. . The advisory group will provide oversight and reach agreement with the contractor prior to the start of field data collection.

23. Similarly, building construction will substantially impact the heating load line of the site and energy consumption of the equipment. The extent to which this particular building's load profile deviates from the representative load in Appendix M1 will determine the perceived "representativeness" of the standard. Therefore any assumptions and design choices impacting building load present significant risk both to project outcomes and the credibility of the contractor and NEEP. Does NEEP already have a building design specified? What work has been done to ensure the building design is appropriate for evaluation? If so, can detailed specifications (e.g. insulation type/thickness, windows, infiltration rates) and justifications be provided so modifications can be appropriately budgeted? If not, will time be allocated for the contractor to evaluate the impacts of building design and performance on project outcomes?
- a. There is no "representative load" in M1 in terms of testing, only in the rating model. EXP07 defines a load line which is similar to M1 for testing, and that is the target for the testing. See answer to Q11.
24. Will the contractor collaborate with the national lab in data interpretation and analysis or have the opportunity to provide peer review on methodology and results?
- a. The contractor and the advisory group will have the opportunity to provide guidance and peer review. An option for providing analysis is now being requested as a separate budget item; [please see the announcement on the NEEP RFP web page](#).