



Laboratory Testing for Off-/Weak-Grid Refrigerators

RFP #: 5-18

Post Date: April 4, 2018

Due Date: April 20, 2018

Topic: Product Testing

Region: Global

INTRODUCTION

Due to the improved efficacy and cost of super-efficient LEDs, a rapidly emerging off-grid solar market promises energy access to tens of millions of off- and weak-grid households and businesses globally. However, relatively little attention and financial investment have been applied to the research and development of energy efficient, high quality, market appropriate end-use appliances for off- and weak-grid consumers, for both households and businesses.

The UK aid funded Low Energy Inclusive Appliances programme (LEIA) aims to accelerate the availability, affordability, efficiency, and performance of a range of low energy inclusive appliances particularly suited to developing country contexts. LEIA was designed with extensive industry consultation regarding the specific challenges and opportunities of the off-grid clean energy access appliance market.

The LEIA programme will be delivered through an international [Efficiency for Access](#) coalition convened by UK aid and Power Africa, involving a range of co-funders including Lighting Global, Rockefeller Foundation, Shell Foundation, Sida, EnDev, Good Energies Foundation, and more. The Efficiency for Access Coalition is coordinated by CLASP, the leading international voice and resource for appliance energy efficiency policies and market acceleration initiatives, working alongside the UK's Energy Saving Trust, which specializes in energy efficiency product verification, data and insight, advice, and research.

The Efficiency for Access coalition is now scaling up and bringing together a range of support mechanisms to accelerate energy efficiency in clean energy access efforts, driving markets for super-efficient technologies, supporting innovation, and improving sector coordination.

To support the LEIA program's current effort in evaluating quality, durability, and energy performance of refrigerators¹ used in off-grid and weak-grid contexts, CLASP and EST are soliciting cost estimates from qualified test laboratories.

Information on the background, test parameters and methods, submittals, and timeline for RFP submission is provided below.

¹ Refer to electric household refrigerators that are intended for use on off-grid energy systems, such as low-voltage solar home systems, AC or DC mini- or micro-grids.

BACKGROUND

Refrigerators are a priority technology for the LEIA program. Refrigeration is central to agricultural value chains and livelihoods in off- and weak-grid regions. The availability and reliability of refrigeration for clinics in off- and weak-grid settings can also be expected to drive a variety of public health outcomes as well. However, the off-grid refrigerator present significant technical challenges to off-grid energy systems since their operation can be energy-intensive – as such, the cost of owning a refrigerator is too high for most of off-grid consumers.

Another key challenge to the off-/weak-grid refrigerator market, and thus to related energy access goals, is the lack of consistent and comparable performance data that helps market stakeholders make effective and informed decisions.

Robust laboratory testing ensures product performance lives up to the energy efficiency and quality claims of manufacturers and is a best practice, especially in nascent markets. However, the cost of laboratory testing is often a barrier for off-grid market stakeholders. When developing a test method for off-grid products it is critical that the methodologies are appropriate for the off-grid context and the costs are affordable for market stakeholders. To this end, we request detailed quotes – with line item cost breakdowns for each referenced test method – from qualified test laboratories. This requirement is further explained in the “submittal” section below.

The LEIA program will be partnering with test laboratories to evaluate refrigerators based on quality, durability and energy performance based on the [Global LEAP Off-Grid Refrigerator Test Method \(version 1\)](#). The test method for off-/weak-grid refrigerators heavily leverages existing internationally accepted test methods for refrigerators, such as IEC 62552 and WHO/PQS/E003/RF05-VP.4. In some cases, the referenced methods are modified for off-/weak-grid appropriateness.

SCOPE OF WORK

As directed by CLASP, the test laboratory or team contracted for this work will be responsible for the following:

1. Coordinate with CLASP on the product shipping process, including providing any necessary assistance related to shipping, custom clearance, notifying CLASP of receipt of product(s), verifying model numbers of received product sample(s), packaging and reshipping after testing if necessary.
2. Inspect the product sample(s) received and identify and record any external damage.
3. Perform tests on product sample(s) as defined in the [Global LEAP Off-Grid Refrigerator Test Method \(version 1\)](#) (available at GlobalLEAP.org/resources).
4. As relevant, document and communicate to CLASP any difficulties with the Global LEAP test methods experienced during product testing. Where relevant and possible, suggest improvements to the test method that would improve clarity, quality and/or lower costs.
5. Record all test results in the [Global LEAP Refrigerator Data Submission Form](#) provided by CLASP and provide brief, succinct descriptions of any relevant observations.
6. Submit test results to CLASP within five (5) business days of test completion.
7. Respond to any inquiries that CLASP may have about testing, including requests for periodic updates about the testing queue and any issues that may arise during testing.

TIMELINE

Testing will commence as soon as the contract is signed and continue throughout 2018. The exact testing start date will be coordinated with the contracted test laboratory or team after contract execution.

SUBMITTAL

Companies and organizations that wish to respond to this RFP must complete the [LEIA prequalification questionnaire](#). This is a requirement for all sub-recipients of UK DFID funding. Companies must also register as a CLASP Implementing Partner. Registration is easy, and must be completed via the [CLASP website](#) before final submittal.

Applicants are also required to submit one file with required information as listed below. The file should be named as per the following example: **“Organization Name: RFP5-18”**
The quotation for refrigerator testing must include the following elements:

- Test laboratory profile, including ISO/IEC 17025 accreditation and a summary of qualifications relevant to this assignment:
 - IEC62552: Household refrigerating appliances – Characteristics and test methods (required)
 - WHO/PQS/E003/RF05-VP.4: Refrigerator or combined refrigerator and water-pack freezer: Solar direct drive without battery storage (preferred)
- A summary of regional presence, especially in Africa and Asia, and related experiences of conducting testing for refrigerators or other solar-powered products, including any experience in round robin testing.
- A summary of qualifications of key personnel that will be engaged in the assignment, along with a description of each person’s role
- Detailed cost estimate (in US Dollars) outlining testing cost and duration for one sample and ten samples respectively, as specified in the following table.

Parameter/Test	Estimates for 1 Refrigerator Sample		Estimates for 10 Refrigerator Samples		Estimates for 1 R-F Combo* Samples		Estimates for 10 R-F Combo* Samples	
	Cost (USD)	Time (Hours)	Cost (USD)	Time (Hours)	Cost (USD)	Time (Hours)	Cost (USD)	Time (Hours)
Quality Inspection								
Steady-state operation test (10C ambient)								
Steady-state operation test (16C ambient)								
Steady-state operation test (32C ambient)								
Steady-state operation test (43C ambient)								

Autonomy test								
Pull down test								
Over- and Under-Voltage Test								
Freezing capacity test (for Refrigerator-Freezer Combination Units only)								
Total								

* "R-F Combo" here refers to refrigerator-freezer combination units that have a combination of at least one fresh food and at least one freezer compartment.

The deadline for quotation submission is **April 20, 2018**. Proposals must be submitted online via the CLASP website using the "**Submit Bid**" button above and filling out all the requested information. Late or incomplete quotations or quotations submitted directly to anyone at CLASP will not be accepted.

All questions may be addressed to Elisa Lai at elai@clasp.ngo. The last date for submission of questions related to this RFP is **April 16, 2018**. We request all inquiries be made by e-mail and not by phone.

INFORMATION FOR POTENTIAL APPLICANTS

Confidentiality Statement

All data and information received from test laboratories or other entities for the purpose of this assignment are to be treated confidentially and are only to be used in connection with the execution of this assignment. All intellectual property rights arising from the execution of this assignment are assigned to LEIA program donors and their designees. The contents of data sets or written materials obtained and used in this assignment may not be reused or disclosed to any third parties without the expressed advance written authorization of LEIA designees.