

Memorandum

Ref: M17-1-V1

Subject: Mandatory energy audit for PV projects with an installed capacity greater or equal to 60 kWp – for existing facilities only

To: Whom it may concern

From: Pierre El Khoury, Director of the Lebanese Center for Energy Conservation

Date: January 19, 2018

Reference: Contract signed between BDL and LCEC "Technical Support Consultancy Services Agreement in Energy Efficiency and Renewable Energy"

The Technical Support Unit to the Central Bank of Lebanon at the Lebanese Center for Energy Conservation (LCEC) sets the mandatory inclusion of an energy audit for PV projects with an installed capacity equal or greater to 60 kWp (for existing facilities) under the National Energy Efficiency and Renewable Energy Action (NEEREA).

Companies are hereby required to abide by these recommendations to meet the requirements set by the LCEC. LCEC reserves the right to approve or reject projects proposals upon additional requested information.

LCEC remains ready to answer any inquiries or questions via email at energy@lcec.org.lb, or by phone at 01 565108.


Pierre El Khoury
President of the Board/ General Director

efficient resources, sustainable achievements

كفاءة في الموارد، إستدامة في الإنجازات

Main Office Ministry of Energy and Water | Corniche du Fleuve | 1st Floor | Room 303 | Beirut, Lebanon | **Tel** +961 (1) 565 108 | **Fax** +961 (1) 569 101
الفرع الرئيسي وزارة الطاقة و المياه | كورنيش النهر | الطابق الأول | غرفة رقم ٣٠٣ | بيروت، لبنان | ت/ ف: +٩٦١ (٠١) ٥٦٥ ١٠٨ | ف: +٩٦١ (٠١) ٥٦٩ ١٠١

Engineering Office Karam Building | 240 Badaro | 5th Floor | Beirut, Lebanon | **Tel** +961 (1) 389 189 | **Fax** +961 (1) 389 589
فرع الهندسة بناية كرم | ٢٤٠ بدارو | الطابق الخامس | بيروت، لبنان | ت/ ف: +٩٦١ (٠١) ٣٨٩ ١٨٩ | ف: +٩٦١ (٠١) ٣٨٩ ٥٨٩

In the advent of LCEC's work to promote energy efficiency and ESCOs' activities, please note that starting the 1st of February 2018, any NEEREA application incorporating a PV installation greater than or equal to 60 kWp will require an Energy Audit Report prior to its technical evaluation by the LCEC.

The following is to be taken into consideration:

- Starting the 1st of February 2018, in order to be approved along with the NEEREA file, an energy audit has to be performed by a company qualified by the LCEC using the latest list of qualified ESCOs at the time when the energy audit is being performed. Please refer to LCEC's website for the latest list of qualified ESCOs;
- This memorandum applies to all sectors, not only to industries;
- The requirements defined in Section 1 are mandatory for all types of facilities;
- Indicative Energy Audit Pricing is provided in Section 2;
- The structure of the Energy Audit Report is mandatory and defined in Section 3;
- The cost of the Energy Audit can be part of the NEEREA loan request;
- For more information refer to Frequently Asked Questions (FAQs) in Section 4.

Section 1: Energy Audit Requirements

The energy audit report should include, as a minimum, the following:

- Interviews with site operating staff and financial auditors, if applicable;
- Review of energy bills for the past 3 years;
- Identification of all corrective and Energy Conservation Measures (ECMs);
- Detailed analysis of the energy consumption, including calculations and monitoring;
- Advanced costs and savings analysis, with payback period calculation and including a lifecycle analysis.

Section 2: Indicative Energy Audit Pricing per Type of Building

Type of building		Price range
1	Residential buildings < 10 apartments or total built area < 2,000 m ² , whichever is less or Commercial buildings < 10 floors or total built area < 2,000 m ² , whichever is less	\$1,000 - \$3,000
2	Other residential buildings or other commercial buildings	\$3,000 - \$6,000
3	Industries with annual energy consumption ≤1,000 MWh <u>and</u> a total built area ≤4,000 m ²	\$2,000 - \$4,000
4	Industries with annual energy consumption > 1,000 MWh <u>and</u> a total built area ≤4,000 m ²	\$4,000 - \$8,000
5	Other industries	\$6,000 - \$15,000
6	Hospitals, schools, universities and commercial malls with a total built area < 20,000 m ²	\$3,000 - \$5,000
7	Hospitals, schools, universities and commercial malls with 20,000 m ² ≤ total built area ≤ 40,000 m ²	\$5,000 - \$8,000
8	Hospitals, schools, universities and commercial malls with a total built area > 40,000 m ²	\$6,000 - \$12,000

Section 3: Structure of the Energy Audit Report

1. Executive Summary
 - General description of the facility and of the energy audit;
 - Summary of recommended energy conservation measures (ECMs).
2. Introduction
 - Presentation of the company performing the energy audit;
 - Profile and CVs of the auditors involved;
 - Detailed description of the facility;
 - Total surface audited;
 - Track record of major changes and works;
 - Regular and exceptional operating schedule;
 - Annual energy costs;
 - Etc.
3. Energy Audit Procedures
 - Goals of the energy audit;
 - Stages of the audit.
4. Facility Electrical System
 - Consumption Analysis;
 - Measurements;
 - Load Inventory;
 - Load Breakdown.
5. Facility Thermal System
 - Consumption Analysis;
 - Measurements;
 - Load Inventory;
 - Load Breakdown.
6. Energy Consumption Baseline
 - Total Consumption Analysis;
 - Total Load Inventory;
 - Load Breakdown.
7. Recommendations
 - Energy Conservation Measures (ECMs) including related savings and costs.

8. Savings
 - Total savings;
 - Guaranteed savings;
 - Measurements and Verifications.
9. Environmental Costs and/or Benefits of the proposed ECMs
 - Disposal costs;
 - Avoided emissions;
 - Water conservation;
 - Others.
10. Operation and Maintenance Procedures
11. Awareness Raising on ECMs and Energy Savings
12. Conclusions
 - Overall results and benefits.

Section 4: Frequently Asked Questions (FAQs)

1. What if the client has already completed an energy audit by a company that is not on LCEC's list of qualified ESCOs?

If the client has already paid for an energy audit by a company that is not on LCEC's list of qualified ESCOs and the audit was performed on or after the 1st of January 2015 and completed before the 1st of February 2018, then the energy audit report can be added to the NEEREA feasibility study.

2. Can the same company perform the energy audit and the PV installation?

Yes, the same company can perform the energy audit as well as the installation of the PV system and its components.

3. Should the energy audit be performed for the whole facility?

Yes, the energy audit shall be performed for the whole facility – even if the PV installation capacity represents only a relatively small percentage of the total energy demand.

4. Will this memorandum apply to new buildings as well?

No, new buildings are not included in this memorandum – they are already part of other NEEREA requirements.

5. What if my NEEREA file is rejected?

Throughout the development of NEEREA, statistically very few projects (<3%) have been rejected. For PV installations > 60kWp all projects have been approved so far. The aim of the NEEREA mechanism is to promote energy efficiency and renewable energy projects.

6. Is it mandatory to implement all ECMs for NEEREA approval?

No, there is no requirement for implementation of ECMs for NEEREA approval, however, it is highly recommended.

7. How can I become an LCEC qualified ESCO?

Please refer to LCEC's website (<http://www.lcec.org.lb/en/LCEC/DownloadCenter/Others>) for the latest qualification requirements and the next round of qualifications. It is advisable to be on the mailing list of LCEC to get the latest news and updates. Please contact energy@lcec.org.lb to join the mailing list.

