



IMPLEMENTING GUIDELINES OF THE PHILIPPINE ENERGY LABELING PROGRAM FOR REFRIGERATING APPLIANCES

Pursuant to Section 9 of Department Circular No. 2020-06-0015, entitled “Prescribing the Guidelines of the Philippine Energy Labeling Program (PELP) for Compliance of Importers, Manufacturers, Distributors and Dealers of Electrical Appliances and Other Energy-Consuming Products (ECP)”, the following guidelines for Air Conditioners are hereby issued for the information and guidance of all concerned and for compliance by all manufacturers, importers, distributors, dealers and other key stakeholders.

Furthermore, this Implementing Guidelines shall include the Particular Product Requirements (PPR) for Refrigerating Appliances, as well as its Code of Practice (COPE), and shall be known as the “Ref IG”.

1. Particular Product Requirement for Refrigerating Appliances. The attached PELP Annex D.2: PPR for Refrigerating Appliances provides the requirements for Refrigerating Appliances and other relevant information, which include the following:

- i. Scope
- ii. Definition of Terms
- iii. Normative Reference
- iv. Sampling Method for Verification Testing
- v. Specific Guidelines for the Conduct of Verification Testing
- vi. Inspection of Generic Models
- vii. Monitoring
- viii. Minimum Performance
- ix. Tolerance
- x. Storage Temperature
- xi. Energy Consumption Test
- xii. Ice-Making Test
- xiii. Freezing Capacity Test
- xiv. Energy Efficiency Performance Rating of Refrigerating Appliances
- xv. Specification and Dimensions of the Energy Label
- xvi. Presentation of Energy Label
- xvii. Correction of Performance Ratings
- xviii. Validity of Energy Label
- xix. Information in the Label

2. Code of Practice on Energy Labeling of Products. Pursuant to Section 15 of the EEC Act, the Code of Practice on Energy Labeling of Products (COPE) provides for the calculation methods of the following:

2.1 The Refrigerating Appliances Energy Efficiency Performance Rating (EEPR) or the star rating shown in the DOE Energy Label is based on the **Energy Efficiency Factor (EEF)**, which is calculated as follows:



$$\text{Energy Efficiency Factor (EEF)} = \frac{\text{Total adjusted volume, in liters}}{\text{Energy consumption, in kWh/24h}}$$

Where: Total adjusted volume = SVff + SVOC;

SVff is the volume of fresh food compartment, expressed in liters;

SVOC is the summation of the volume of other compartments, expressed in liters; = ((K1x SVOC1) + (K2 x SVOC2) + (K3 x SVOC3)...))

K is the adjustment factor.

NOTE 1: The resulting EEF is rounded off to the nearest 0.1 l/kWh. The decision will be based on the rounded-off value.

The test temperature for determination of energy consumption shall be 32 degrees.

The **adjustment factor K**, (as seen above) shall be calculated as follows:

$$K = \frac{T1 - Tc}{T1 - TM}$$

where:

K is the adjustment factor;

T1 is the ambient temperature, °C;

Tc is the compartment temperatures. i.e. frozen food compartment, chiller compartment, etc., °C; and

TM is the fresh food compartment temperature, °C.

NOTE 2: Actual temperatures of each compartment shall be used in the above formula

Computation of adjusted storage volumes:

Computation of **adjusted storage volume of frozen food compartment** shall be made using the following equation:

$$\text{FZAV} = \text{SVmfz} \times \text{KFZ}$$

where:

FZAV is the adjusted volume of frozen food compartment, in liters;

SVmfz is the measured volume of frozen food compartment, in liters; and

KFZ (same formula as **K**) is the adjustment factor

Computation of **adjusted storage volume of chiller compartment** shall be made using the following equation:

$$\text{CCAV} = \text{SVmcc} \times \text{Kcc}$$

where:

CCAV is the adjusted storage volume of chiller compartment, in liters;

SVmcc is the measured storage volume of chiller compartment, in liters;
and

KCC (same formula as **K**) is the adjustment factor

Computation of **adjusted storage volume of cellar compartment** shall be made using the following equation:

$$\mathbf{CAV} = \mathbf{SVmc} \times \mathbf{KC}$$

where:

CAV is the adjusted volume of cellar compartment, in liters;

SVmc is the measured volume of cellar compartment, in liters; and

KC (same formula as **K**) is the adjustment factor

NOTE 3: The rationale for multiplying each compartment volume by an adjustment factor “K” is that, it takes “K” times as much energy to maintain a given insulated space at -18 °C than it does at +4°C in a 32°C ambient temperature.

NOTE 4: Typical refrigerator-freezer models have two temperature zones, a fresh food storage area that operates at about +4°C and a frozen food storage area that operates at about -18°C for a 3-star freezer compartment. In order to compare, on an equitable basis, a model with a large percentage of its total volume devoted to freezer space, to a model with small percentage of its total volume devoted to a freezer space, an adjustment factor “K” is applied to the freezer volume. This adjustment is the ratio of heat flow through freezer wall to heat flow through an equivalent fresh food wall, which is proportional to the ratio of the temperature difference.

For the actual EEPR, please refer to the attached PPR (Annex D.2).

The EEPR reflected on the DOE Energy Label shall correspond to the EEF value shown in the product test report during product registration. The EEPR shall be adjusted accordingly (as needed) once the product has undergone verification testing.

2.2 For the estimation of **monthly energy kWh consumption** (based on a specified hour of daily usage), as shown in the DOE Energy Label, the calculation is as follows:

$$\mathit{Monthly\ kWh\ Consumption} = \mathit{Daily\ kWh} \times 30$$

Where: **Daily kWh** is the measured energy consumption for 24 hours. This corresponds to the value shown (indicated/provided/declared?) in the product test report during product registration

2.3 For the estimation of **monthly electricity cost**, the calculation is as follows:

$$\text{Monthly Electricity Cost} = \text{Monthly kWh Consumption} \times \text{Electricity Price}$$

Where: **Electricity Price** is the prevailing peso per kWh, as indicated in the electricity bill issued by an electric power distribution company.

2.4 For the estimation of **monthly Greenhouse Gas (GHG) emission** due to monthly electricity consumption, the calculation is as follows:

$$\text{Monthly GHG emission} = \text{Monthly kWh Consumption} \times 0.512$$

The unit of the calculated GHG emission shall be in kg CO₂.

3. Submission of Documents. All applicants are required to submit reportorial documents, necessary for Company Registration and Product Registration prior to the Issuance of DOE Energy Labels. The forms, indicated in PELP IG Annex A, are as follows:

- PELP Form No. 1: Application for Company Registration under the Philippine Energy Labeling Program for Energy Consuming Products
- PELP Form No. 2: Undertaking to Abide by the Terms and Conditions of the Philippine Energy Labeling Program
- PELP Form No. 3: Application of Particular Product Registration under the Philippine Energy Labeling Program for Energy Consuming Products
- PELP Form No. 4: Product Sales Inventory Report

4. Application Procedures for Compliance to PELP. All manufacturers, importers and distributors of refrigerators and freezers shall observe the following application procedures stated in PELP IG Annex B and be subject to the following fees:

- 4.1 Company Registration amounting to PhP 1,600.00 per company
- 4.2 Product Registration amounting to PhP 300.00 per product model
- 4.3 Energy Label Issuance amounting to PhP 300.00 per issuance
- 4.4 Recognition of Testing Laboratories amounting to PhP 15,000.00 per testing facility

5. Enforcement, Monitoring and Verification. The DOE, through the EUMB, shall conduct enforcement, monitoring and verification activities in relation to PELP. The detailed procedures of which shall be specified in PELP IG Annex C: Guidelines for the Enforcement, Monitoring and Enforcement (EMV) of PELP.

6. Effectivity. This Lighting IG shall take effect fifteen (15) days following its publication in at least two (2) newspapers of general circulation. Copies of this IG shall be filed with the University of the Philippines Law Center – Office of the National Administrative Register.

Issued at Energy Center, Bonifacio Global City, Taguig City.

Approved by:

PATRICK T. AQUINO, CESO III
Director, Energy Utilization Management Bureau

DRAFT