



SCHEDULE –

RESIDENTIAL BUILDING ENERGY LABELING PROGRAM

1. SCOPE

1.1. This schedule specifies the energy labeling requirements for residential buildings in India. The schedule is applicable for all single and multiple dwelling unit in the country for residential purpose.

2. NORMATIVE REFERENCES

Reference Standard	Title of the Standard
ECBC-R 2018	Eco-Niwas Samhita 2018
ECBC 2017	Energy Conservation Building Code 2017
NBC 2016	National Building Code 2016

3. TERMINOLOGY

For the purpose of this schedule the following abbreviations and definitions in addition to those given in standards ECRC-R 2018, ECBC 2017 and NBC 2016, shall apply.

3.1 List of abbreviations:

- a) AC – Air Conditioner
- b) BEE – Bureau of Energy Efficiency
- c) EPI – Energy Performance Index
- d) INR – Indian Rupees
- e) kWh/y – Kilo Watt Hour per Year
- f) m² - Square meter of area
- g) NV: Natural Ventilation

3.2 Single Dwelling Unit: Building structure maintained and used as a single dwelling unit. Even though a dwelling unit shares one or more walls with another dwelling unit, it is a single family residence if it has direct access to a street or thoroughfare and does not share heating facilities, hot water equipment, nor any other essential facility or service with any other dwelling unit.

3.3 Multi Dwelling Unit: Multifamily residential unit is a classification of housing where multiple separate housing units for residential inhabitants are contained within one building or several buildings within one complex.



3.4 Developer: A developer constructs, redevelops or refurbishes buildings.

3.5 Existing Owner: The owner of the residential dwelling.

3.6 Building Passport: Building passport is a certificate booklet of a building to maintain records of the label validity and energy performance through its lifecycle.

3.7 BEE Label Reference Number: A unique identification number assigned by the labelling authority to create and manage a centralized identification system for all the projects registered for the building energy label.

3.8 Label Password: The unique password issued to each project to access the online version of the building passport awarded along with the label.

3.9 Connected Load: The sum of the rated wattage of all equipment, appliances and devices to be installed in the building or part of building or building complexes, in terms of kilowatt (kW) that will be allocated to all applicants for electric power consumption in respect of the proposed building or building complexes on their completion.

3.10 Sanctioned Load: It means the load in kW / kVA which the Licensee has agreed to supply from time to time subject to the governing terms and conditions.

3.11 Energy Performance Index (EPI): The Energy Performance Index (EPI) of a building is its annual energy consumption in kilowatt-hours per square meter of the building. While calculating the EPI of a building, the area of unconditioned basements shall not be included.

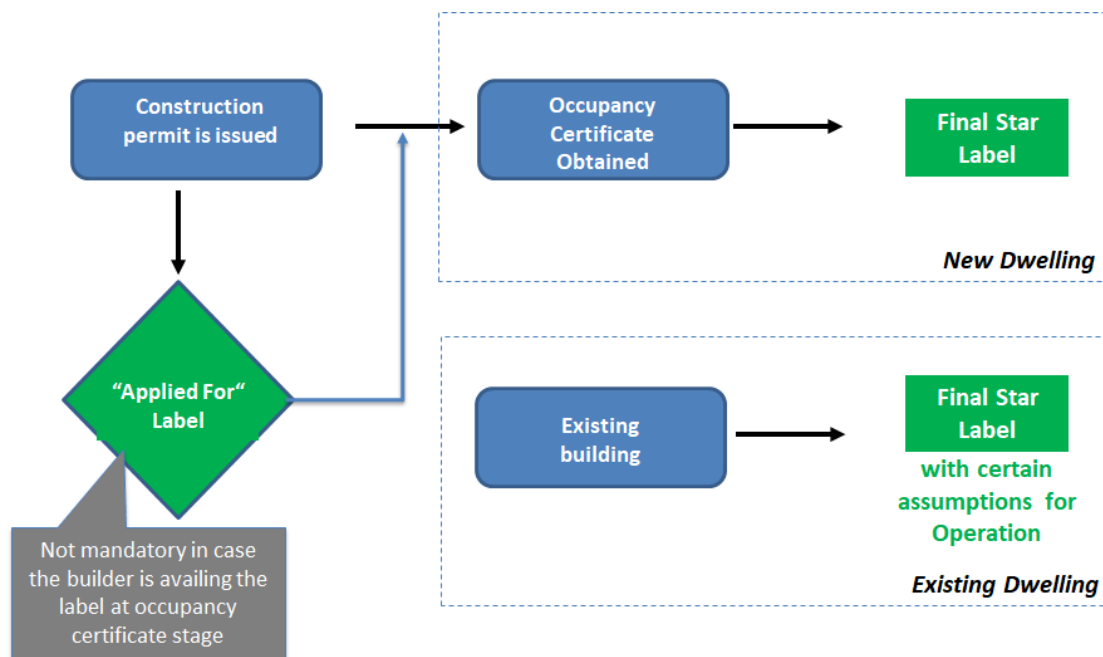
3.12 Building Envelope: the exterior plus the semi-exterior portions of a building.

3.13 Energy: power derived from renewable or non-renewable resources to provide heating, cooling and light to a building or operate any building equipment and appliances. It has various forms such as thermal (heat), mechanical (work), electrical, and chemical that may be transformed from one into another. Customary unit of measurement is watts (W).

3:14 Labelling Authority: Labelling authority referred in this schedule is Bureau of Energy Efficiency

4. CLASSIFICATION OF LABELING STAGES FOR RESIDENTIAL BUILDINGS

This schedule defines two specific labeling stages for energy labeling of residential buildings. These stages are referred as “Applied For” label and Final Star Label, as explained:



4.1 “Applied For” label: This label is applicable for new buildings with construction permit issued by the authorities having jurisdiction. This label shall be mainly used for marketing of the property.

4.2 Final Star Label: This label is applicable for existing and new buildings. For new building, this label can only be awarded after the occupancy certificate is issued by the authorities having jurisdiction.

5. MINIMUM QUALIFICATION REQUIREMENTS (ELIGIBILITY)

5.1 There is no minimum requirement with respect to the Area or Connected load (kW) for a building dwelling unit to be covered under this labeling program.

6. SAMPLING (MONITORING AND VERIFICATION)

In case of “Applied For” label:

- The BEE will conduct inspection of label information provided by developer for respective marketing and advertisement campaigns post award of “Applied For” label through actual site visit. The BEE will conduct random /stratified sampling of sites to be inspected.



In case of Final Star Label:

- The BEE will conduct random /stratified sampling of dwellings awarded by Final Star Label. Random audit of new and existing dwelling will be performed for verification of technical details and complete data submitted to BEE for award of label.

7. STAR RATING CRITERIA AND CALCULATION

The star rating is calculated based on EPI, which is:

Indicator = Energy Performance Index (EPI)

EPI calculation = Annual Energy consumption (kWh)/built up area (sq. meter)

EPI Calculation = EPI for air conditioned spaces (25% area) with 24 deg C as set point (E1) + EPI for other spaces (75% area) with natural ventilation (E2) set points defined by IMAC with Air conditioner switched ON*

And EPI for other appliances: E3 (constant value)

- **IMAC refers to India model for adaptive thermal comfort tool assistant developed by CEPT University. IMAC has defined temperature set points for naturally ventilated spaces and these set points have been used for establishing the E2. To achieve these set points air conditioners have been switched ON.*
- Natural Ventilation set points in deg C as per IMAC are referred from **Annexure I**.
- **E1 and E2 includes following systems:** Building envelope characteristic; Lighting system; and Comfort system (AC)
- **E3 includes appliances such as:** Microwave oven, Grinder, Refrigerators, TV, Water Pump, Washing Machine, etc.

Calculation for label: The BEE will provide an online platform for the User of Label to apply for seeking an award of label under this program. The online platform will consists of a **Simulation Based Tool** which will be used to calculate the EPI of respective dwelling unit. The user will be required to feed-in information of the respective dwelling unit in the Tool based on which the Tool will automatically calculate the EPI.



8. STAR RATING PLAN

Residential Building Star Rating Plan				
Period: 14 December 2018 to 31 December 2024				
Star Rating	Energy Performance Index ¹ (E1 + E2) of Dwelling Unit			
	Composite	Warm & Humid	Hot and Dry	Temperate
1-star	52 < EPI ≤ 60	58 < EPI ≤ 64	55 < EPI ≤ 67	28 < EPI ≤ 31
2-star	45 < EPI ≤ 52	49 < EPI ≤ 58	47 < EPI ≤ 55	24 < EPI ≤ 28
3-star	37 < EPI ≤ 45	39 < EPI ≤ 49	38 < EPI ≤ 47	21 < EPI ≤ 24
4-star	29 < EPI ≤ 37	30 < EPI ≤ 39	29 < EPI ≤ 38	17 < EPI ≤ 21
5-star	EPI ≤ 29	EPI ≤ 30	EPI ≤ 29	EPI ≤ 17

In addition with above, the **EPI (E3)** for appliances is to be considered in the range **7 to 9**.

There is no negative tolerance for the Star Rating Bands.

9. LABEL GENERATION AND VALIDITY

The label generation stages with respect to New and Existing Dwelling units are mentioned below:

Label generation	New Dwelling stages			Existing Dwelling
	Developer	Developer	Owner	Owner
	“Applied For” Label	Final Star Label	Final Star Label	Final Star Label
Approval letter for the Label	Yes	Yes	Yes	Yes
Dwelling Passport (soft copy)	NA	Yes	Yes	Yes
Dwelling Name Plaque	NA	Yes	Yes	Yes

¹ For Composite, Warm and Humid, and Hot and Dry: 25% area operated at 24°C and 75% area operated at IMAC-NV set-point temperature
For Temperate: 100% area operated at IMAC-NV set-point temperature



Label approval letter: Upon approval from BEE, a digitally signed label approval letter will be generated and auto-emailed to the applicant through the online portal.

Passport (soft copy): Upon approval from BEE, a building passport will be generated based on the details of the label applicant. The soft copy of the passport will be auto-emailed to the applicant.

Name plaque: The plaque will be provided to the applicant (developer or owner) of the respective residential dwelling upon approval of Final Star Label. The developer or owner would be required to submit request to BEE for the plaque. The BEE will develop the coordination mechanism in this regard.

The validity of label in each stage is provided below:

Validity of label and plaque from the date of approval by BEE	
Applied For Label (new dwelling)	3 years
Final Star Label (new dwelling)	5 years
Final Star Label (existing dwelling)	5 years
Name plaque	Linked with validity of respective Final Star Label

10. DWELLING OWNERSHIP TRANSFER RELATED CASES

Assumptions:

- Developer of New Dwelling possesses “Applied For” label approved from BEE
- Owner of Existing Dwelling possesses Final Star Label approved from BEE

In cases of transfer of ownership of residential dwelling, the following shall be adhered:

Label stage	Ownership transfer cases		
	Developer to Owner	Developer to Developer	Owner to Owner
“Applied For”	NA	Yes, applicable. The already awarded “Applied For” label stands OBSOLETE. The new developer shall submit application to seek the updated label.	NA
Final Star Label	Yes, applicable. The owner after seeking the ownership shall submit	NA	Yes, applicable. The earlier issued label, passport and name plaque

	<p>request to BEE for change of identity details linked with the respective label which was earlier issued to the developer and also submit request for re-issue of label copy, passport and name plaque.</p>		<p>stands OBSOLETE. The new owner shall submit ownership change documents and respective form to BEE for change in internal records. Thereafter, the new owner shall submit request for seeking fresh "Name Plaque"</p>
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The BEE will provide list of documents needed and respective forms for submitting requests related with ownership transfer cases.

11. LABEL SPECIFICATIONS

11.1 Name Plaque Dimension and Shape

There are three optional sizes proposed for the Name Plaque. The sizes are:

- Small: Length- 381 mm (15 inches) X Breadth- 152.4 (6 inches)
- Medium: Length-476.25 (18.75 inches) X Breadth- 190.5 (7.5 inches)
- Large: Length-571.5 (22.5 inches) X Breadth-228.6 (9 inches)

An illustrative representation of the name plaque is provided below:

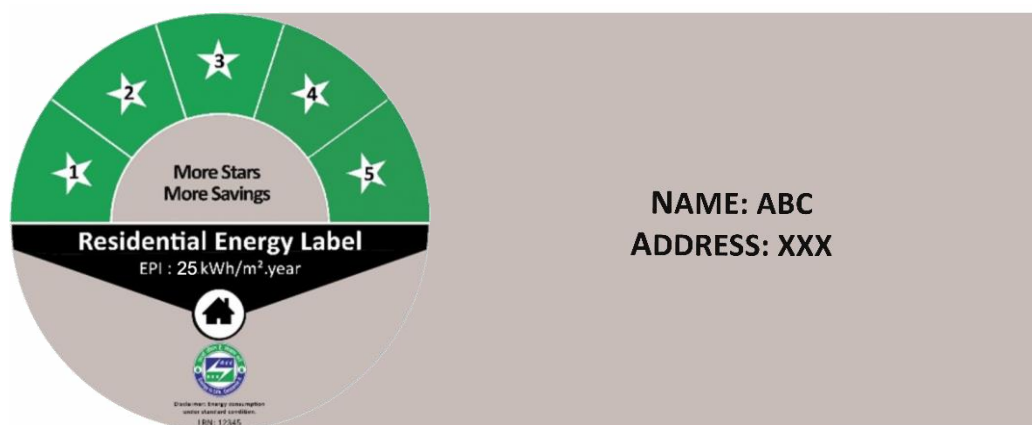


Figure 1: Sample name plaque

Further, BEE will provide selected options of Font to the User of Label for the name and details to be printed on the plaque. The User of Label will be asked to provide the details to be printed on the



name plaque. The entire interface /communication between the User of Label and BEE (including its agency for providing the plaque) will be through an online portal.

11.2 Color scheme

The label shall be considered as per the color scheme provided by BEE. The CDR file will be provided by BEE for easy reference of the stakeholders.

11.3 Residential Building Passport (to be provided in soft copy)

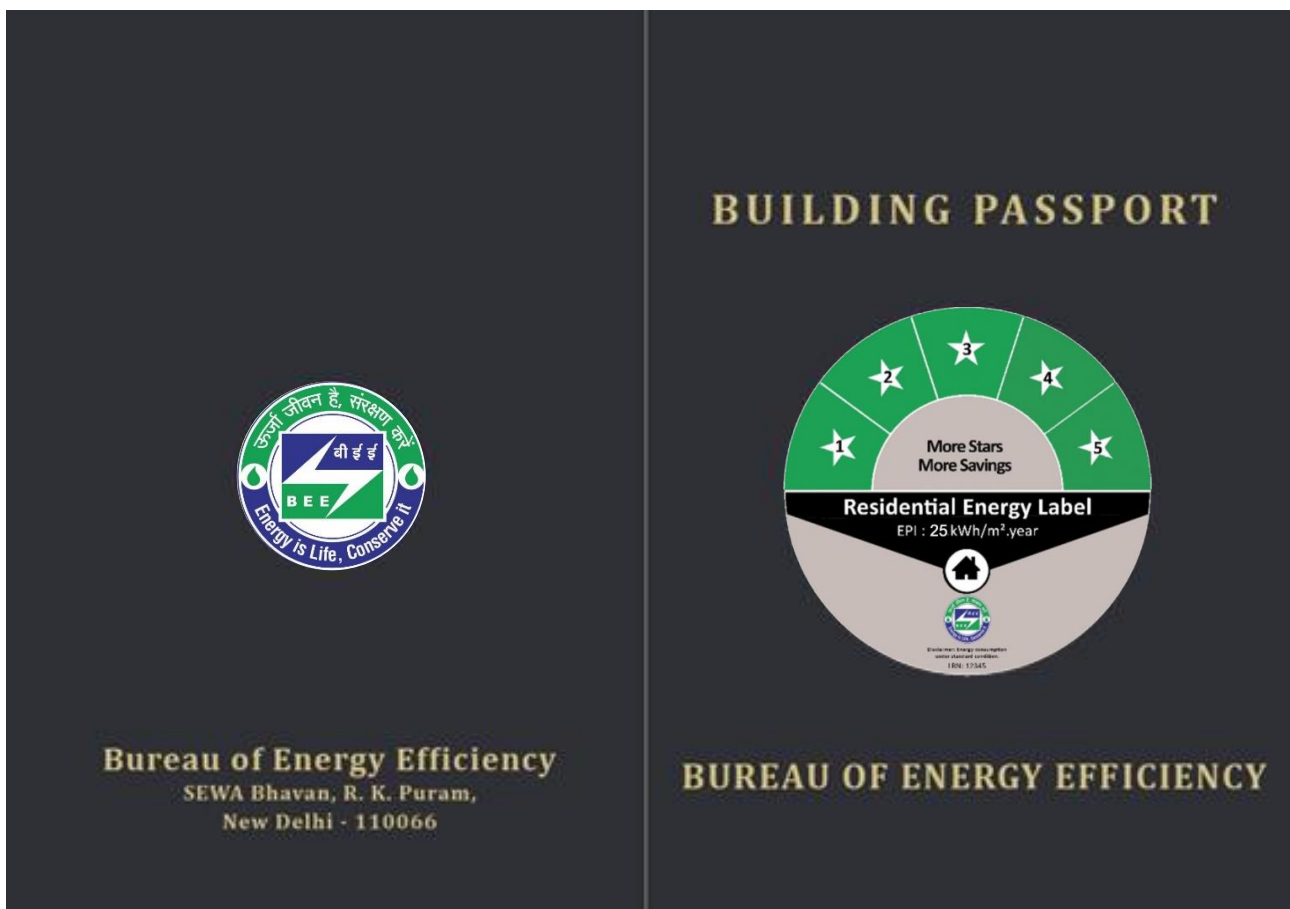


Figure 2: Residential Building Passport (cover page)



12. FEES

12.1 Application fee payable on application for assignment of the authority to affix label is described below:

No.	Description	Application fee (INR)	
		For dwelling unit with built-up area upto 100 sq. meter (Column A)	For dwelling unit with built-up area more than 100 sq. meter (in addition with amount mentioned in column A)
1	Fresh application for "Applied For" Label by developer	₹ 2000	₹ 5 per sq. meter for area above 100 sq. meter
2	Transfer of label stage from "Applied For" to "Final Star Label" by developer	₹ 1000 The charges is inclusive of cost of name plaque to be developer (irrespective of plaque size)	No extra charges (not applicable)
3	Fresh application for "Final Star Label" either by developer or existing owner	₹ 2500	₹ 5 per sq. meter for area above 100 sq. meter
		₹ 2800	
		₹ 3000	
4	Application for change in label details due to transfer of dwelling ownership	₹ 1000	Not applicable

Note: The application fee mentioned in the table above is inclusive of the cost for providing name plaque as applicable.

12.2 Application fee payable on application for renewal of authority to affix labels is INR 1000/- (Rupees One Thousand only).



Annexure I

Natural Ventilation- Cooling set points in deg C as per IMAC

Months	Composite Climate (Delhi)	Warm and Humid (Mumbai)	Hot and Dry (Ahmedabad)	Temperate (Bangalore)
Jan	22.81	28.88	26.3	26.8
Feb	23.57	28.89	26.45	27.72
Mar	25.99	29.26	28.53	28.97
Apr	29.48	30.1	31.19	30.19
May	32.39	31.13	33.16	30.22
Jun	32.97	31.28	33.72	29.4
Jul	32.18	30.71	32.2	28.48
Aug	31.68	30.22	30.72	28.12
Sep	31.44	30.24	30.76	28.19
Oct	30.51	30.39	31.4	28.09
Nov	28.19	30.21	30.19	27.66
Dec	25.06	29.32	28.18	26.86

Natural Ventilation- Heating set points in deg C as per IMAC

Months	Composite Climate (Delhi)	Warm and Humid (Mumbai)	Hot and Dry (Ahmedabad)	Temperate (Bangalore)
Jan	18.05	24.12	21.54	22.04
Feb	18.81	24.13	21.69	22.96
Mar	21.23	24.5	23.77	24.21
Apr	24.72	25.34	26.43	25.43
May	27.63	26.37	28.4	25.46
Jun	28.21	26.52	28.96	24.64
Jul	27.42	25.95	27.44	23.72
Aug	26.92	25.46	25.96	23.36
Sep	26.68	25.48	26	23.43
Oct	25.75	25.62	26.64	23.33
Nov	23.43	25.45	25.43	22.9
Dec	20.3	24.56	23.42	22.1