



Empanelment as EMC Empanelled Firms for Energy Efficient Buildings

Guidelines

1. Preamble

Energy Management Centre- Kerala (EMC) intends to empanel firms in building energy efficiency having experience and expertise in development of energy efficient buildings. The eligibility criteria for empanelment are given in this notification. Empanelment of firms in Building Energy Efficiency targets at creation of a pool of certified firms in the State of Kerala, to implement the concepts and actions of energy efficiency and conservation in building sector, ensures availability of consultants for green building certification in Kerala. The promotion of such an expert team is expected to be the spine of the ECBC implementation in the State of Kerala, providing assistance for the design and construction of ECBC compliant buildings. The service of these firms will be utilized in the providing Green rating and Green Building Certification to buildings based on green standards in Kerala.

2. EMC Empanelment of professionals in building energy efficiency

EMC has started the Empanelment of professionals in Building Energy Efficiency to create a pool of building professionals in the State of Kerala, to implement the concepts and actions of energy efficiency and conservation in building sector. There are 3 categories of empanelment and the details are as follows

a. Building Energy Simulation Expert (BESE)

- Engineers, Architects and Engineering Diploma holders can apply for this empanelment.
- The final year Engineering & Architecture students also can apply for this empanelment and the empanelment shall be come into exist only after successful completion of the degree course.
- The applicant has to complete the Training A (Online course of ECBC compliance check through energy simulation) conducted by EMC-Kerala

b. Provisional Building Energy Efficiency Expert(PBEEE)

- Engineers, Architects and Engineering Diploma holders with *BESE* empanelment can apply for this empanelment.
- The applicant has to complete Training B (Intensive training on ECBC compliance check) conducted by EMC-Kerala.

c. Building Energy Efficiency Expert



- Engineers, Architects and Engineering Diploma holders with *BESE* empanelment having minimum 2 years of relevant work experience in buildings sector or energy sector or professional teaching experience can apply for this empanelment. The applicant has to complete the Training B (Intensive training on ECBC compliance check) conducted by EMC-Kerala followed by the personal interview.

Note: Green building professionals like LEED-AP, IGBC-AP, GRIHA- Evaluator will be given relaxation attending Training A and Training B, except appearing for and clearing the online exam which happens after Training B.

- Professionals with Provisional Building Energy Efficiency Expert(PBEEE) certification also can apply for this empanelment after attaining sufficient experience in the field of building energy efficiency. The applicant has to involve in ECBC compliance check of at least 5 building projects / involve in design of ECBC compliant buildings and required to submit the certificate in the prescribed format.

More details about the empanelment of professionals in building energy efficiency are available on EMC website (<https://www.keralaenergy.gov.in/index.php/building-energy-efficiency-experts-beee>).

3. Categories of empanelment of firms:

- a. Energy Efficient Building Designers: Firms are empanelled to design and construct energy efficient buildings with Built Up Area up to 10000 Square metre
- b. Certified Designers of Energy Efficient Buildings(C-DEEB): The firms are empanelled to design and construct energy efficient buildings without any limit in Built Up Area

4. Objectives of empanelment:

- c. To create a group of firms eligible for providing services related to energy efficient building design and construction.
- d. To ensure availability of firms eligible to do the design and construct energy efficient buildings for EMC and other government bodies.
- e. To ensure availability of consultants for green building certification in Kerala.



5. Empanelment Fees: The empanelment fee for the two categories are as follows.

Sl. No.	Category of empanelment	Empanelment fee*(Exclusive of GST)INR
1	<i>Energy Efficient Building Designers (EEBD)</i>	5000
2	<i>Certified Developers of Energy Efficient Buildings (C-DEEB) /Honorary BEEE</i>	10000

The fees will be non-refundable and would be utilized for organizing meetings, workshops and printing directory. Certificate of Empanelment as EMC Empanelled Firms for Building Energy Efficiency will be issued by EMC after detailed scrutiny and evaluation of the firm's credibility. EMC Empanelled firms will be governed by the terms and conditions given below.

6. Eligibility Criteria for Registration

a. Basic requirements

Energy Efficient Building Designers (EEBD)

- The firm with at least one Architect/Civil Engineer with BEEE certification.
- The firm shall have /arrangements for service of, at least one BEEE and one PBEEE/BESE in the firm.
- The firm will be eligible to design and construct energy efficient buildings with Built Up Area up to 10000 Square metre
- Once, Certified Energy Auditor (Building) is created by BEE, the firm shall have at least one Certified Energy Auditor(Building) in their ranks

Certified Designers of Energy Efficient Buildings(C-DEEB)

- The firm with registration as institution, architects, engineers, town planners as per KMBR (Chapter - XXI)
- The firm should have at least 15 years of experience in the building sector (or) any Firm empanelled as Energy Efficient Building Designer can apply for an upgrade to CEEBD once they complete 3 years as EEBD and 5



completed ECBC compliant projects.

- All the technical staffs (Architects & Engineers) of the firm should attend the Training A organized by EMC-Kerala
- The firm should register at least one Architect with 15 years experience /one BEEE certified architect with 5 years of experience as BEEE and utilize the service of one Civil Engineer, one Electrical Engineer and/or a Mechanical engineer with BEEE certification as employees or authorized consultants (to be formally informed/registered with EMC).
- Once, Certified Energy Auditor(Building) is created by BEE, the firm shall have at least one Certified Energy Auditor(Building) in their ranks
- Report prepared by the BEEEs of the firm must be countersigned by the Proprietor/owner or the authorized representative of the firm specified as per clause 4.2 (i) and shall be the only person authorized to sign on behalf of the firm.

Note: *EMC shall provide the Chief architect/owner/proprietor of the firm an Honorary BEEE certification on the completion of an orientation program on ECBC & ENS and its adaptation from building energy simulations, if the firm meets the required qualification criteria of Certified - Designers of Energy Efficient Buildings (C-DEEB).*

b. The firm must have the following infrastructure facilities:

- Office Premises (permanent office address) with phone/Mobile
- GST number
- Computer Systems and internet facility
- E-mail ID

c. Personal interview / online interview of applicants, wherever found necessary, will be taken prior to granting empanelment.

7. Terms & Conditions

- a. The empanelment shall be only valid for within the State of Kerala for a specified period of 3 years from the date of issuance of Empanelment Certificate.
- b. The registration is subject to a review once in three years and renewal by EMC and shall be liable for cancellation in case of non-performance or violation of any of the terms & conditions of registration by the consultant, specified herein.
- c. EMC Empanelled Firms for Energy Efficient Buildings (EMC-EFBEE) shall be



obliged to submit yearly Work Report pertaining to their overall activity, as EMC-EFBEE, including relevant work done by them privately or under any other schemes anywhere in the country.

- d. EMC-EFBEEs may themselves identify and motivate prospective clients for developing energy efficient buildings.
- e. The assignments have to be completed within time frame as agreed upon with the client in professional manner.
- f. The EMC-EFBEEs shall be required to participate in all the meetings and workshop convened by EMC.
- g. No individual BEEE/PBEEE/BESE can register with/employed / represent more than one Firm. If same BEEE/PBEEE/BESE is found registered with/employed by / represented by more than one firm the firm may be disqualified from Empanelment.
- h. Certificate of Employment, duly signed by the Signatory of the Firm, with employment service history, shall be submitted with the application for empanelment.
- i. The review of firms as per clause will be conducted by an Expert committee constituted by EMC. Confirmation towards Empanelment will entirely be at the discretion of EMC- Kerala. Before the review the Firms have to submit their status report of Three years in online mode.
- j. Fee for renewal of empanelment are as follows.
 - i. EMC-EFBEEs which involve in development of 5 ECBC compliant buildings or above within 3 years in Kerala from the date of empanelment / renewal: – 1) EEED-Rs. 2500 (+ Applicable taxes) 2) C-DEEB- Rs. 5000(+ Applicable taxes)
 - ii. EMC-EFBEEs who are not satisfying the above conditions has to reregister for Empanelment: 1) EEED-Rs. 5000 (+ Applicable taxes) 2) C-DEEB- Rs. 10000(+ Applicable taxes)



Annexure I

Empanelment as Energy Efficient Building Designers
Application form

PART A: Details of Applicant

1. Name of the firm: :
2. Category Mark ' ✓ '
 - (Attach registration certificate of the a) Individual/ proprietorship
 - firm) b) Partnership
 - c) Private Limited
 - d) Govt., PSU, Autonomous body
3. Address

4. Telephone/s (with STD code) Pin: _____
5. Fax No. & email ID :
6. URL (website /blog) :
7. Name, Address and contact details of CEO :

8. Name/s of BEEEs (Specify BEEE empanelment ID no.)
 - 1.
 - 2.
 - 3.
9. Name/s of PBEEEs (Specify PBEEE Empanelment ID no.) if any
 - 1.
 - 2.
 - 3.
10. Name/s of BESEs (Specify BESE empanelment ID no.)
 - 1.
 - 2.
 - 3.
11. Registered with any other Organisation, if yes name of the organisation (attach copy of proof) :
12. Details of Support Facilities : (attach list with detailed specification)
 1. Instruments
 2. Computer & Internet facility
 3. Others (PI specify)

Part B: Manpower and Experience



1. Table I : Details of Technical Manpower

SI No.	Name & Designation	Professional Qualification & year of passing	Post qualification of Experience (years)	BEEE/PBEEE/BESE	Empanelment ID
1.					
2.					
3.					

(Attach resume of each of the team member. Use separate sheet if required)

2. Additional information if any : (Attach Separately)

Declaration

- The information provided in this form is accurate and true to the best of my knowledge.
 - We agree to abide by the terms & conditions of empanelment.
 - Kindly enrol our name as EMC empanelled firm: Energy Efficient Building Designers
 - Please find enclosed DD / UTR (Online transaction) of Rs. _____ drawn in favour of Director Energy Management Centre payable at Thiruvananthapuram for Empanelment Fee. (Bank: _____ Date: _____)
- EMC Account Details:** Account No: 32860100005883; IFSC: BARB0ULLOOR; Bank of Baroda, Ulloor Branch, Thiruvananthapuram

Name & Designation of the :
authorized signatory

Signature :

(Office Seal)

Date :

(for office use only)

Date of Receipt :

Date of Completion of Evaluation :

Approved or not approved :

EEBD No. allotted :



Annexure II

Empanelment as Certified Developers of Energy Efficient Buildings (C-DEEB)

Application form

PART A: Details of Applicant

1. Name of the firm: :
 2. Category : Mark ' ✓ '
(Attach registration certificate of the firm)
 - a) Individual/ proprietorship
 - b) Partnership
 - c) Private Limited
 - d) Govt., PSU, Autonomous body
 3. Address

 4. Telephone/s (with STD code) Pin: _____
 5. Fax No. & email ID :

 6. URL (website /blog) :
 7. Name, Address and contact details of CEO :

 8. Name of the Architect with an experience of 15 years or more
 9. Name of BEEE certified architect with 5 years of experience as BEEE
- Email:
- Mobile No:



10. Name/s of BEEEs (Specify BEEE empanelment ID no.)
- 1.
 - 2.
 - 3.
11. Name/s of PBEEEs (Specify PBEEE Empanelment ID no.)if any
- 1.
 - 2.
 - 3.
12. Name/s of BESEs (Specify BESE empanelment ID no.)
- 1.
 - 2.
 - 3.
13. Registered with any other Organisation, if yes name of the organisation (attach copy of proof).
14. Details of Support Facilities : (attach list with detailed specification)
1. Instruments
 2. Computer & Internet facility
 3. Others (PI specify)

Part B: Manpower and Experience

1. Table I : Details of Technical Manpower

SI No.	Name & Designation	Professional Qualification & year passing	Post qualification of Experience (years)	BEEE/PBEEE/BESE	Empanelment ID
1.					
2.					
3.					

(Attach resume of each of the team member. Use separate sheet if required)

2. Additional information if any : (Attach Separately)

Declaration

- The information provided in this form is accurate and true to the best of my knowledge.
- We agree to abide by the terms & conditions of empanelment.
 - Kindly enrol our name as EMC empanelled firm: Certified Developers of Energy Efficient Buildings (C- DEEB)
 - Please find enclosed DD / UTR (Online transaction) of Rs. _____ drawn in favour of Director Energy Management Centre payable at Thiruvananthapuram for Empanelment Fee.
(Bank: _____ Date: _____)

EMC Account Details: Account No: 32860100005883;
IFSC: BARBOULLLOOR; Bank of Baroda, Ulloor Branch, Thiruvananthapuram



Name & Designation of the :
authorized signatory

Signature :

(Office Seal)

Date :

(for office use only)

Date of Receipt :

Date of Completion of Evaluation :

Approved or not approved :

Annexure III – Training Syllabus

Training A

Online Certificate Course on ECBC compliance check through Energy Simulation		
Session no.	Session title	Duration(mins)
1	1.1 ECBC- A Brief on ECBC and Kerala State ECBC Rules 2017	30
	1.2 Understanding Building Physics	60
2	2.1 Introduction on ECBC & Compliance Approach <ul style="list-style-type: none"> • Mandatory Requirements • Prescriptive Approach • Whole Building Performance Approach 	45
	2.2 Case Study ECBC Compliant Building with Cost Analysis	60
3	3.1 Technical Aspects of ECBC	30
	3.2 Building Physics, U-Value Calculation	45
	3.3 Building Design, Form, Zoning & Orientation Optimization	45
4	4.1 Daylighting Analysis - Shading, Daylighting, Glass	60



	Selection	
	4.2 Case Study – Presentation	30
5	5.1 Introduction to Energy Modelling	45
	5.2 Demonstrations on Tools Interface	45
	5.3 Presentation of Case Study	30
6	6.1 Hands-on Training for Sample Energy Model: <ul style="list-style-type: none"> • Building Geometry Development 	90
7	7.1 Optimization of Building Envelope (<i>Zoning, Insulation, Shading Devices, and their Impact on Building Energy-Load Calculation</i>)	45
	7.2 HVAC System Sizing	45
8	8.1 Modelling of Different Systems	60
	8.2 Simulation of Developed Model	30
9	9.1 Simulation-Output Analysis	90
10	10.1 Hands-on Training Exercise Problem <ul style="list-style-type: none"> • Base case modelling as per KSECBC Rules (ECBC 2007 Guide) – Notified in the State 	90
11	11.1 Hands-on Training Exercise Problem Proposed Case as per Sample Exercise Shared <ul style="list-style-type: none"> • Proposed Case Modelling as per the exercise given. 	90
12	12.1 Hands-on Training- Exercise Problem EPI evaluation and comparison of Base Case and Proposed Case Models-(Specific Building Type from the Code)	90
	Total course duration	20Hrs
<u>EXAMINATION</u>		
1	ECBC Examination for Participants – Multiple Choice Questions type.	1 Hrs
2	Simulation Examination for a sample energy model of typical building type– With the Building Descriptions shared with participants	30 Hrs.

**Training B**

Intensive training on ECBC compliance check	
MODULES	DURATION
Module 1	
ECBC Awareness & Overview	
World Energy Scenario & Energy scenario in India	15
About ECO-III Project, Milestones, EC Act,	10
Introduction to ECBC	15
Impact of ECBC Compliance	10
Q & A Session	10
Total Duration (Minutes)	0
Total Hours	1hr.
Module 2	
ECBC Scope & Administration	
ECBC Scope, Applicability	10
ECBC Compliance approach KSECBC Rules 2017	10
ECBC Compliance Process in Kerala	15
Administration and Enforcement	10
ECBC Documents in force	15
Q & A Session	10
Total Duration (Minutes)	0
Total Hours	1.2hrs.
Assignment: ECBC Compliance check building permit documentation	
Module 3	



Envelope Design Considerations	
Design & details of opaque construction, Fenestration, Shading devise, cool roofs	30
Heat transfer principles - Material Properties - Moisture & Infiltration – Design methods Calculations	30
Code requirements – Mandatory & Prescriptive- ECBC Compliance forms	15
Q & A Session	15
Total Duration (Minutes)	90
Total Hours	1.5 hrs.
Assignment: Calculation of thermal property of Construction materials /U-Value calculation for a sample building	
Module 4	
Heating Ventilation & Air-Conditioning – basics ECBC	
Whole building design approach and role of HVAC	15
Refrigerative cooling, system types and details	25
HVAC System components & Efficiency	25
Cooling load reduction	15
System Balancing & Building Commissioning overview	10
Mandatory & Prescriptive- ECBC Compliance forms	15
Q & A Session	15
Total Duration (Minutes)	0
Total Hours	2hrs.
Assignment: HVAC modelling in Simulation tool for a sample system	
Module 5	
Lighting Basics	
Lighting Principles, Light Quality optimisation	20
Energy Efficient Lighting Systems	15



Lighting control design, BAM, SFM	15
Whole building approach, Concept of LPD	10
Mandatory & Prescriptive -ECBC Compliance forms	15
Q & A Session	15
Total Duration (Minutes)	0
Total Hours	1.5hrs.
Assignment: LPD calculations (Manual and Simulation tool based)	
Module 6	
Daylighting Analysis	
Significance of Daylighting Analysis, DEF, Surface Reflectance, UDI Code Requirements	20
Daylighting Analysis Simulation Method	55
Q & A Session	15
Total Duration (Minutes)	90
Total Hours	1.5 hrs.
Assignment: Daylighting factor calculation (based on Prescribed ECBC Methods)	
Module 7	
Electrical Power	
Power Distribution, Transformers, Electric Motors	10
Types- selection criteria- Sizing	10
Losses- PF & PFC- Efficiency	10
Mandatory & Prescriptive- ECBC Compliance forms	10
Service Hot Water & Pumping – basics	
Types of water heaters - Source type and system details	10
Solar water heater sizing- Efficiency- Supplementary water heating	10
Energy loss- piping Insulation- heat traps	10
Mandatory & Prescriptive- ECBC Compliance forms	10



Q & A Session	10
Total Duration (Minutes)	90
Total Hours	1.5hrs
Assignment: Modelling Service hot water systems in simulation tool (for a sample building)	
Module 8	
Hands-on Compliance Check	
Prescriptive requirements	50
Trade- off compliance	30
Q & A Session	15
Total Duration (Minutes)	0
Total Hours	1.5hrs.
Assignment: Prescriptive analysis method for a hypothetical project	
Module 9	
Hands-on Compliance Check	
Whole Building Performance using software	150
Q & A Session	60
Total Duration (Minutes)	210
Total Hours	3.25hrs.
Assignment: Whole building analysis method for a sample project	
Module 10	
Report Generation & Assessments	
Guidance on Report Generation as per the ECBC	30
Assessment on ECBC Compliance	30
Total Duration (Minutes)	60
Total Hours	1hrs.
Assignment: Report generation for a Pre-modelled sample project.	
Total Course Duration in Hours	16 hrs.



<p>Examination: KSECBC compliance checking and report generation on a sample project</p>	<p>14 days</p>
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