

# **ENERGY CONSERVATION BUILDING CODE (ECBC) & ENERGY EFFICIENCY IN EXISTING BUILDINGS**

## **Energy Conservation Building Code (ECBC)**

The Energy Conservation Building Code (ECBC) was developed by the Govt. of India for new commercial buildings on 27th May 2007. ECBC sets minimum energy standards for new commercial buildings having a connected load of 100kW or contract demand of 120 KVA and above. While the Central Government has powers under the EC Act 2001, the state governments have the flexibility to modify the code to suit local or regional needs and notify them. Presently, the code is in voluntary phase of implementation.

The ECBC defines norms of energy performance and takes into consideration the climatic regions of the country where the building is located. The major components of the building which are being addressed through the code are:

- Envelope (walls, roofs, windows)
- Lighting systems
- HVAC System
- Water heating and pumping system
- Electrical Power System

While the ECBC has been developed by BEE, its enforcement lies with the State governments and urban local bodies through notification within their states. States of Uttar Pradesh, Rajasthan, Odisha, Uttarakhand, Karnataka, Andhra Pradesh, Telengana and UT of Puducherry have notified the code while many other states are in the process of amending the ECBC to suit their local requirements.

## **Updated status on ECBC**

To promote adoption of ECBC in the built environment, several enabling measures were taken up during 11<sup>th</sup> Plan period. These included (1) Empanelment of ECBC expert architects, (2) Development of technical reference material such as ECBC User Guide, Tip Sheets for lighting, envelope, HVAC, simulation, (3) Development of conformance/compliance check tool (ECONirman) to help architects/design professionals and code compliance officials to assess conformance with code requirements, (4) Standard ECBC Training Modules covering various aspects of the code, (5) Developed model building bye-laws to mandate minimum energy standards for residential and commercial buildings/ complexes

for formulation of draft National Sustainable Habitat parameters on energy efficiency.

The focus during the 12<sup>th</sup> plan is more on the wide scale implementation of ECBC in built environment and energy efficiency improvement in existing commercial building through activities and those have been taken up during the year 2014-15 are given below:

- The process of ECBC Update in view of technological advancement, market change in regard to energy demand, supply scenario has been initiated. Technical Committee and Working Groups constituted for this purpose.
- Technical support has been provided for various demonstration projects for different categories of buildings in different climatic zones.
- ECBC Intensive training and Awareness workshops organized in different locations of the country for capacity building in the state.
- 59 Master Trainers new have been identified by conducting 3 Training of Trainers programme at MNIT, Jaipur, CEPT, Ahmedabad and IIIT, Hyderabad under the scheme for training and capacity building of ECBC professionals. These Master Trainers will be responsible for providing training to Architects/design professionals, code compliance officials of the state government/ULBs based on the requirement of the states.

### **Updated Status on Residential Buildings**

Bureau of Energy Efficiency (BEE) developed the “Design Guidelines for Energy-efficient Multi-storey Residential Buildings for Composite and Hot-dry Climates” in order to include passive design features. Previously, energy efficiency residential was addressed through labeling of appliances and equipment used in households and passive design features were not being considered.

The Design Guideline was launched on 2nd of September, 2014 by Shri. Dharmender Pradhan, Hon’ble Minister of State for Petroleum and Natural Gas, Shri. P K Sinha - Secretary Power and Director General- BEE.

## **Updated Status on Existing buildings**

The scope for energy efficiency improvements in buildings is immense. However, a lack of awareness amongst building owners and managers about the specific interventions that could lead to greater energy efficiency, and the non-availability of an appropriate delivery mechanism to capture future energy savings as a result of these interventions, discourages the large-scale enhancement of energy efficiency in buildings. Energy savings are determined by comparing energy baseline with energy consumed after implementation of EE measures. Energy Audit Studies have revealed a savings potential to the extent of 40% in end use such as lighting, cooling, ventilation, refrigeration etc. Energy cost savings resulting from EE measures directly benefit building owners and occupants over the life cycle of the building.

It has been seen, time and again, that energy conservation in such buildings can be achieved through well-known interventions, which are cost effective as well. However, the implementation of these interventions is hampered by institutional, procedural and process barriers, particularly the inability of building managers to assess and guarantee the energy savings due to these interventions. In order to address this institutional barrier, the Bureau of Energy Efficiency has taken up the task of institutionalizing energy efficiency services, and of promoting energy efficiency delivery mechanisms, such as the development of a market for Energy Service Companies (ESCOs), which address the risks perceived by building owners. ESCOs provide a business model through which the energy-savings potential in existing buildings can be captured, and the risks faced by building owners can be addressed as well. The performance-contract based payments for energy savings achieved through the interventions carried out by the ESCO ensures that savings are achieved, and that the payments by the building owners to the ESCO are related to the achievement of these savings. In order to create a sense of credibility amongst the prospective agencies that are likely to secure the services of an ESCO as well as the financial institutions, BEE does an accreditation exercise for ESCOs through a process of rating these applicants in terms of success in implementation of energy efficiency projects based on performance contracting, availability of technical manpower, financial strength, etc. The rating exercise is done through SEBI accredited agencies such as CRISIL, CARE and ICRA. The results of this exercise are made available in public domain and to the

various State Governments/SDAs, so as to facilitate them in implementing Energy Efficiency programmes in their respective states. 129 ESCOs are empanelled with BEE. With an aim to overcome the barriers for achieving energy efficiency in existing facilities on the performance contracting mode, BEE has introduced a scheme for implementing energy efficiency in existing central government buildings through the ESCO mode. The approved scheme provides for funding of Investment Grade Energy Audits (IGEA) being arranged by the Central Government Agencies/ State Designated Agencies.

In order to promote a market pull for energy efficient buildings, Bureau of Energy Efficiency developed a voluntary Star Rating Programme for buildings which is based on the actual performance of a building, in terms of energy usage in the building over its area expressed in kWh/sq m/year. This Programme rates buildings on a 1-5 star scale, with 5-Star labelled buildings being the most energy efficient. Star Labels for day use office buildings, BPOs and Shopping complexes have been developed. More than 150 commercial buildings have been star rated under different categories.