



# INTRODUCTION OF ENERGY CONSERVATION BUILDING CODE (ECBC) 2018 & SALIENT FEATURES

# INTRODUCTION

- GOI recognizes buildings as largest consumer of Energy and will continue to be a source of increasing energy.
- Building sector consumes 33% of total energy consumption.
- INDCs Commit to reduce emissions intensity of its GDP to 35% below 2005 levels by 2030
- The Building Industry alone is one of its biggest emitter of GHG in India.
- Building sector is the second largest employment provider next to agriculture.
- Focus on BEEP – by GOI, Niti Ayog, UNDP.
- To address the issue GOI/State Govt. released guide lines/Gos/regulations to promote EE in just two decades
- Other closely related subjects with Building EE, are Rating of Buildings and Renewable Energy Usage.

# GOVT. INITIATIVES TOWARDS EE IN BUILDINGS-

- GOI launched Energy Conservation Building Code (ECBC) in 2007.
- GOI announced two missions in yr 2008 under NAPCC
  - National mission for Enhanced Energy Efficiency (NMEEE)
  - National Mission for Sustainable habitat (NMSH)

## EXISTING Rules/NOTIFICATIONS TO PROMOTE EE, RE AND GREEN BUILDINGS By Uttar Pradesh Govt.

| S.No | G.O. Number & Date   | Subject   | Department issued GO                    |
|------|--|---|---|
| 1    | National Building Code<br>2005/2016                                    | Approach to sustainability  | BIS                                     |
| 2    | 3091/8-1-2008-29-vividh/ 08 TC<br>7 <sup>th</sup> August, 2008         | Provision and implementation of Solar<br>Water heating system in buildings.                 | Town and Country<br>Planning Department |
| 3    | 200/H.C./UPPCL/V-1974-1204-<br>C/2016<br>6 <sup>st</sup> August, 2016  | Solar Water Heater- Rebate in electricity<br>bills  | UPPCL/Energy                            |
| 4    | 2894/8-1-15,<br>31 <sup>st</sup> August, 2015                          | Energy conservation and reduction in<br>electricity bill in Govt. Institutions.             | Town and Country<br>Planning Department |
| 5    | 164/2015/2581/8-1-15-14<br>Meeting/14<br>9 <sup>th</sup> October, 2015 | Installation of Rooftop Solar Photo Voltaic<br>Power Plant having area 5000sqm or<br>above. | Town and Country<br>Planning Department |
| 6    | 835/8-3-15-13 vividh/15<br>12 <sup>th</sup> October, 2015              | Provision of 5% free F.A.R. for the<br>promotion of green building construction.            | Town and Country<br>Planning Department |

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|------|--|--|--------------------------------------|
| 7    | 2008/45-(UPNEDA)/ 2015<br>18 <sup>th</sup> Jan., 2016              | Implementation of energy conservation measures and use of LED lights in Govt. sector.              | UPNEDA                               |
| 8    | 33/2018/871/87-<br>UPNEDA/2018<br>28 <sup>th</sup> May, 2018       | Guidelines for providing subsidy in Grid connected Rooftop Solar Power Plant.                      | UPNEDA                               |
| 9    | 36/2018/973/87-<br>UPNEDA/2018<br>13 <sup>th</sup> June, 2018      | Guidelines for promoting the Rooftop Solar Power in Public/ Government/ Semi Government buildings. | UPNEDA                               |
| 10   | Gazette of India / Notification<br>14 <sup>th</sup> November, 2018 | Environmental clearance 20000sqm to 50000 sqm area.  | MOEF                                 |
| 11   | Notification of ECBC<br>26 July 2018                               | Mandatory Implementation   | Addl. Energy                         |
| 12   | 55/8-3-19-160 vividh / 2018<br>28 <sup>th</sup> January, 2019      | Revision of Building Bye laws as per UPECBC- 2018  | Town and Country Planning Department |

➤. ECBC is first mandatory code Notified in India

# NOTIFICATION OF UPECBC 2018

क्रम-संख्या-165(क)



रजिस्ट्रेशन नम्बर-एस0एस0पी0/एल0-

डब्ल्यू/एन0पी0/91/2014-16

लाइसेन्स दू, पोस्ट एट कन्सेशनल रेट

## सरकारी गजट, उत्तर प्रदेश

उत्तर प्रदेशीय सरकार द्वारा प्रकाशित

### असाधारण

विधायी परिशिष्ट

भाग-4, खण्ड (क)

(सामान्य परिचय नियम)

लखनऊ, बृहस्पतिवार, 26 जुलाई, 2018

श्रावण 4, 1940 शक सम्वत्

उत्तर प्रदेश शासन

अतिरिक्त ऊर्जा स्रोत विभाग

संख्या 1198/87-अति0ऊ0स्रो0वि0-2018

लखनऊ, 26 जुलाई, 2018

अधिसूचना

सा0पोनि0-74

ऊर्जा संरक्षण अधिनियम, 2001 (केन्द्रीय अधिनियम संख्या 52 सन् 2001) की धारा 15 द्वारा प्रदत्त शक्तियों का प्रयोग करके राज्यपाल, ऊर्जा दक्षता ब्यूरो के परामर्श से, उत्तर प्रदेश ऊर्जा संरक्षण भवन संहिता, 2018 के प्रारूप को अनुमोदित करते हैं और यह निदेश देते हैं कि अधिसूचना और उसके क्रियान्वयन की प्रक्रिया को अंगीकृत किया जायेगा।

राज्यपाल अग्रतर अनुमोदन करते हैं कि राज्य के ऐसे सरकारी भवनों का निर्माण, जिनके अतिकल्पन कार्य पूर्ण न किये गये हों, जो ऊर्जा संरक्षण भवन संहिता, 2018 के कार्यक्षेत्र से आच्छादित हों, उत्तर प्रदेश ऊर्जा संरक्षण भवन संहिता, 2018 के अनुसार कराया जायेगा।

आज्ञा से,  
आलोक कुमार,  
प्रमुख सचिव।

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उत्तर प्रदेश असाधारण गजट, 26 जुलाई, 2018

IN pursuance of the provisions of clause (3) of Article 348 of the Constitution, the Governor is pleased to order the publication of the following English translation of notification no. 1198/LXXXVII-Add. Energy Sources Deptt.-2018, dated July 26, 2018:

No. 1198/LXXXVII-Add. Energy Sources Deptt.-2018

Dated Lucknow, July 26, 2018

IN exercise of the powers conferred by section 15 of the Energy Conservation Act, 2001 (Central Act no. 52 of 2001), the Governor, in consultation with the Bureau of Energy Efficiency, is pleased to approve the draft of Energy Conservation Building Code, 2018 and to direct that the notification and the procedure of implementation thereof shall be adopted.

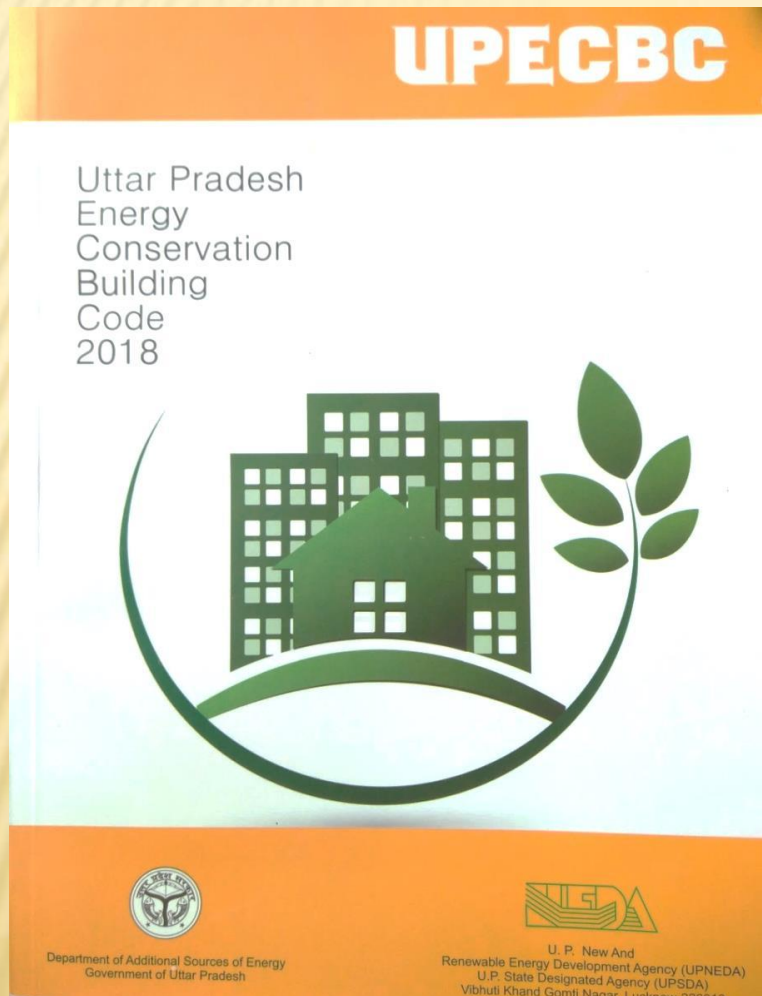
The Governor is further pleased to approve that the construction of such Government buildings of the State of which designing work has not been completed, which are covered under the purview of Energy Conservation Building Code, 2018 shall be caused to be done in accordance with Energy Conservation Building Code, 2018.

By order,  
ALOK KUMAR,  
Prमुख Sachiv.

पी०एस०यू०पी०-ए०पी० 185 राजपत्र (हि०)-2018-(462)-599 प्रतियां (कम्प्यूटर/टी०/आफसेट)।

पी०एस०यू०पी०-ए०पी० 5 सा० ऊर्जा-2018-(463)-500 प्रतियां (कम्प्यूटर/टी०/आफसेट)।

# UTTAR PRADESH ENERGY CONSERVATION BUILDING CODE 2018



- ❖ Energy Conservation Building Code notified in UP on 26 July 2018 called UPECBC 2018.
- ❖ After the notification of UPECBC 2018 the code has been incorporated in the building by-laws of concern development authorities/up housing board.

## ➤ Building Stock –

- Existing built-up area for commercial - 1.46  $\text{bm}^2$
  - Expected next 20 years - 2.25  $\text{bm}^2$
  - 40% Building stock yet to built.
- Nation wide Estimated Energy saving for ECBC Compliant(Commercial Buildings) -1.7 BU
- Nation wide Estimated Energy saving potential for Residential Buildings -3.5 BU
- ## ➤ Implementation Process:
- UPNEDA as UPSDA will be the nodal agency to monitor the UPECBC and to create awareness.
  - Housing and Urban Planning deptt. or development authorities in their respective jurisdiction would be the enforcing authority for implementation of UPECBC.



- **For implementation other departments involved are:**
  - Housing and town planning deptt.
  - All development and industrial authorities/housing board
  - PWD
  - UPNEDA/UPSDA
  
- **Energy Performance Index (EPI): KWH/M<sup>2</sup>/Annum**
  - Indicator of Energy Consumption in buildings
  - Commercial buildings in India – 200Kwh/m<sup>2</sup>/annum
  - ECBC compliant 70-80 Kwh/m<sup>2</sup>/annum

## ➤ Salient Features of UPECBC:

- **Purpose:** UPECBC to provide minimum requirement for energy efficient designs & construction in UP under composite climatic zone.
- **Scope:** The code is applicable to building or building complexes that meet either of following:
  - a) has a connected load of 100kW or greater: or
  - b) has a contract demand of 120kVA or greater: or
  - c) plot area of the building is more than 1000 m<sup>2</sup> with minimum 2000 m<sup>2</sup> as built-up area (excluding basement)Buildings for private residential not covered.

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➤ **Building Performance Level:**

- ECBC
- ECBC<sup>+</sup>
- SUPER ECBC

➤ **Building Typology:**

1. Hospitality
2. Educational
3. Health Care
4. Shopping Complex
5. Business
6. Assembly

All Govt. buildings in the scope of ECBC

## Success story of ECBC Implementation

### Uttar Pradesh Electricity Regulatory Commission

|  |  |
|--|--|
| <b>Location</b>                                | <b>Vibhuti Khand, Gomti Nagar,<br/>Lucknow</b> |
| <b>Total Project Area</b>                      | <b>5288 sqm</b>                                |
| <b>Number of buildings and<br/>designation</b> | <b>Single building</b>                         |
| <b>Type of building</b>                        | <b>Office Building</b>                         |
| <b>Climate</b>                                 | <b>Composite</b>                               |
| <b>Occupancy</b>                               | <b>5 Days a week, Daytime occupancy</b>        |

# Success story of ECBC Implementation

## Key Features of UPERC Building

- ❖ In outer wall AAC blocks are used.
- ❖ DGU glass are used in windows.
- ❖ XPS used as an insulation on roof (over deck) and wall (inside)
- ❖ HVAC-VRV system has been used in the building
- ❖ Use of LEDs and Occupancy sensor
- ❖ Use of rooftop solar power plant of 70 KW
- ❖ Level-1 transformer had been used in the building
- ❖ Use of Regenerative lift
- ❖ Building Monitoring system (BMS) is also there

## Cost Analysis of UPERC Building

- ❖ The Overall cost of the UPERC Building is approx 23 Crores after applying ECBC standards the incremental cost was Rs. 1,28,63,825
- ❖ Payback Period : Approx 4.6 Years

# Tips for Energy Savings in Buildings

## Existing Building

- ❖ Use of LED
- ❖ Use of Five star rated appliances
- ❖ Use of sensors Occupancy/Manual control
- ❖ Use of Solar Roof top
- ❖ Use of Capacitor Bank (APFC)
- ❖ Use of SRI Paint on roof and wall

## Existing Building (Through Retrofitting)

- ❖ Replacement of window glass by High Performance Glass
- ❖ Use of Shading devices for windows.
- ❖ Use of Capacitor Bank (APFC)
- ❖ Use of 5 star rated Split/window AC & high performance HVAC system like VRV
- ❖ Use of Insulations in roof/wall
- ❖ Use of metering system at different levels
- ❖ Use of SRI Paint at roof and Wall

## Tips for Energy Savings in Buildings

### Mantra : - “Shading, Ventilating, Insulating”

#### New Building

- ❖ Use of Energy Efficient materials like AAC blocks & Flyash bricks.
- ❖ Use of Insulation material
- ❖ Use of high performance glass like DGU
- ❖ Application of UPECBC – 2018 in new building