A Holistic Approach to Energy Efficient Buildings

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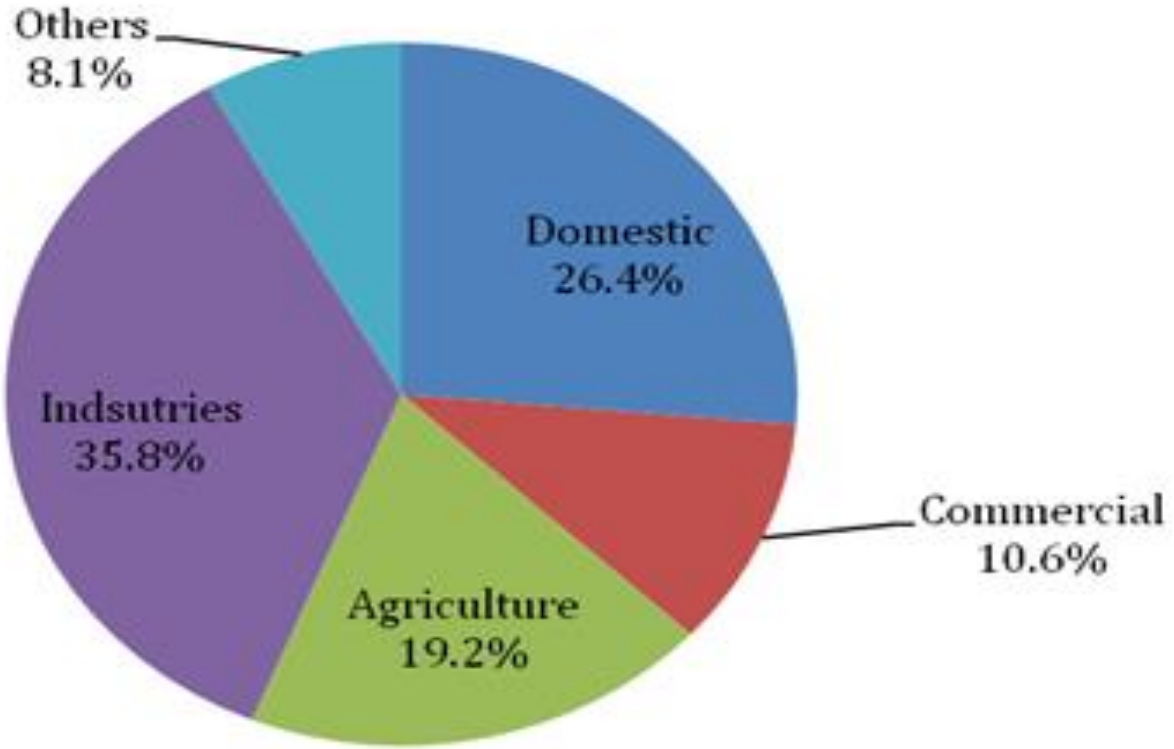
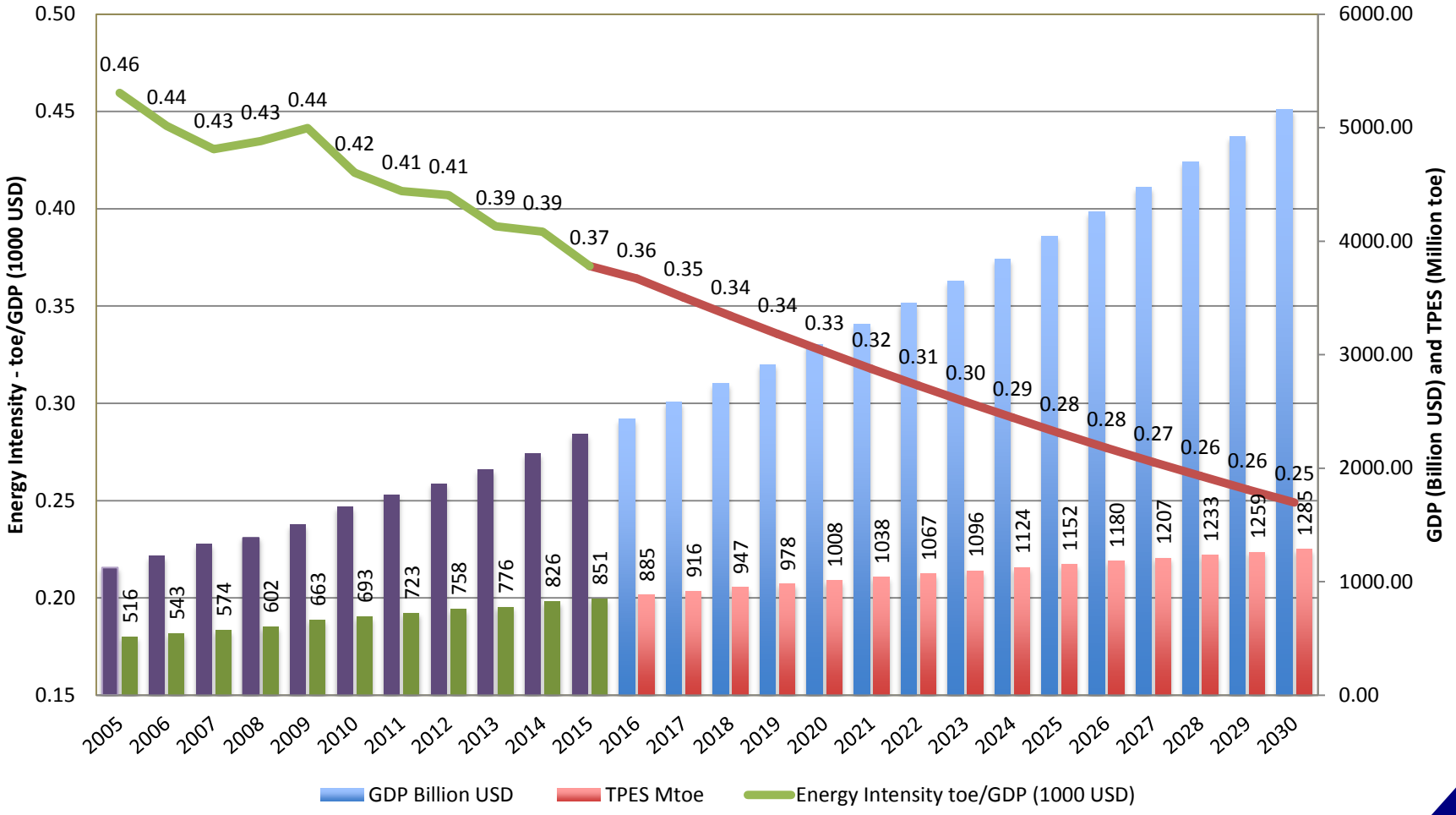
Ministry of Power

Sectoral Consumption of Electricity

2017-18
Total Installed Power Capacity : 344.68 GW
Consumption per year : 1160 Billion Units (Approx)



India's Energy Profile



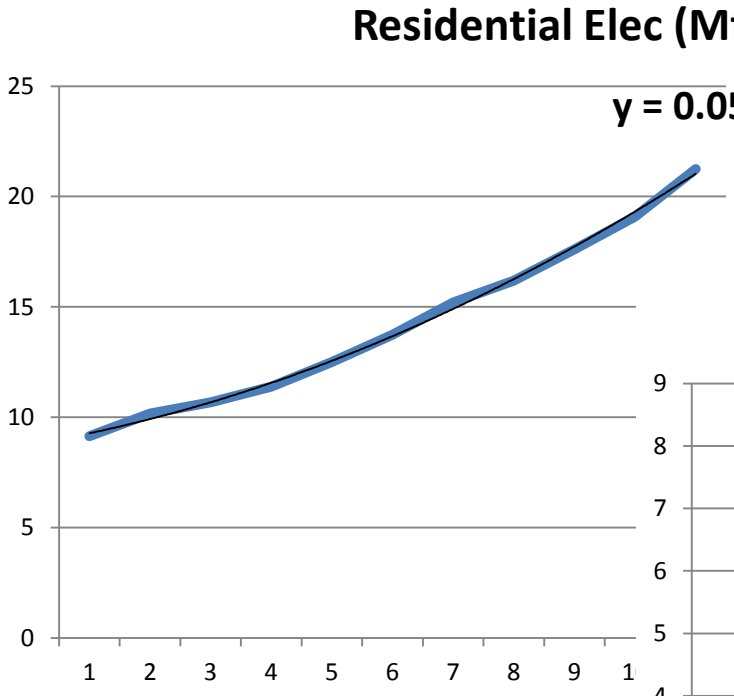
BEE - MANDATE

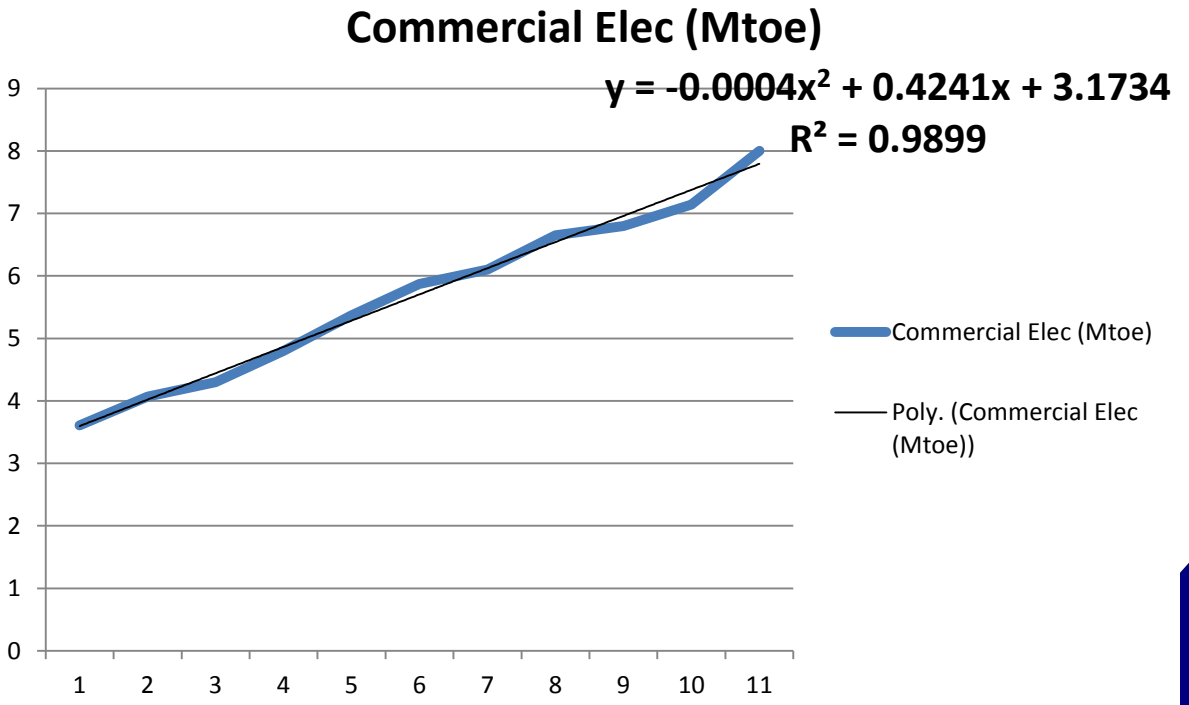
- **Established in 2002 under EC ACT 2001**
- Provides the regulatory framework for energy conservation activities
- To develop policy and programmes to promote energy efficiency and its conservation
- Mission Directorate for National Mission for Enhanced Energy Efficiency (NMEEE)
- Supported by **States Designated Agencies** at State level to implement EC Act
- For implementation of Energy Projects, Ministry created Energy Efficiency Services Limited.

BEE – MAJOR PROGRAMMES

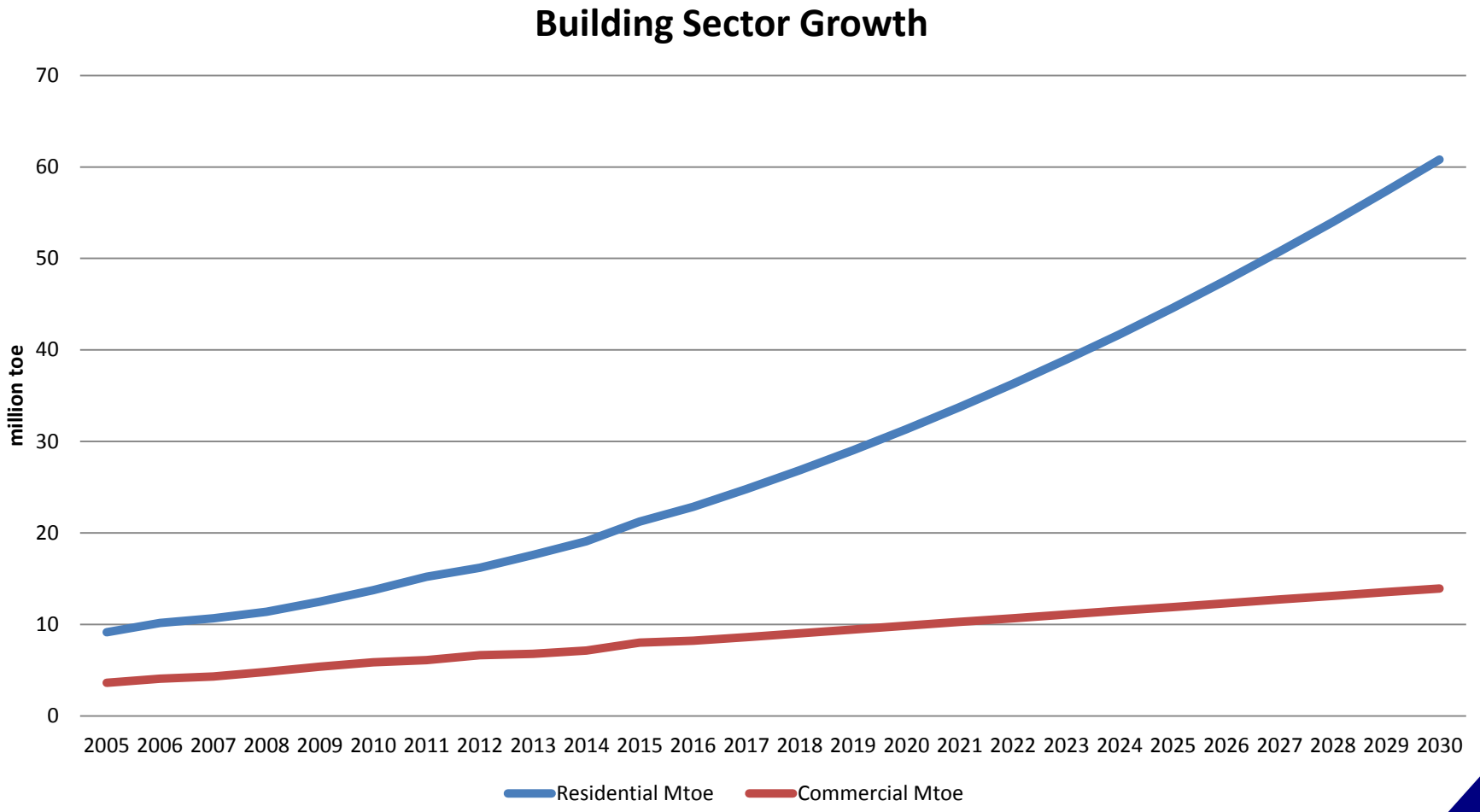
- **Regulatory programme / schemes:**
  - Standards and Labelling for appliances & equipment (S&L)
  - Energy Consumption norms for energy intensive industries (PAT)
  - Demand Side Management (DSM) programme
  - Energy Conservation Building Code (ECBC) for commercial buildings.
  - Certification of Energy Auditors and Managers
- **Promotional programme / schemes:**
  - Financing for energy efficiency projects
  - Energy Efficiency in SME sector
  - National Energy Conservation Awards & Painting Competition
  - Strengthening of SDAs
  - Awareness & Outreach
  - Capacity Building / Workshop / Seminars

Growth in Building Sector





Growth in Building Sector

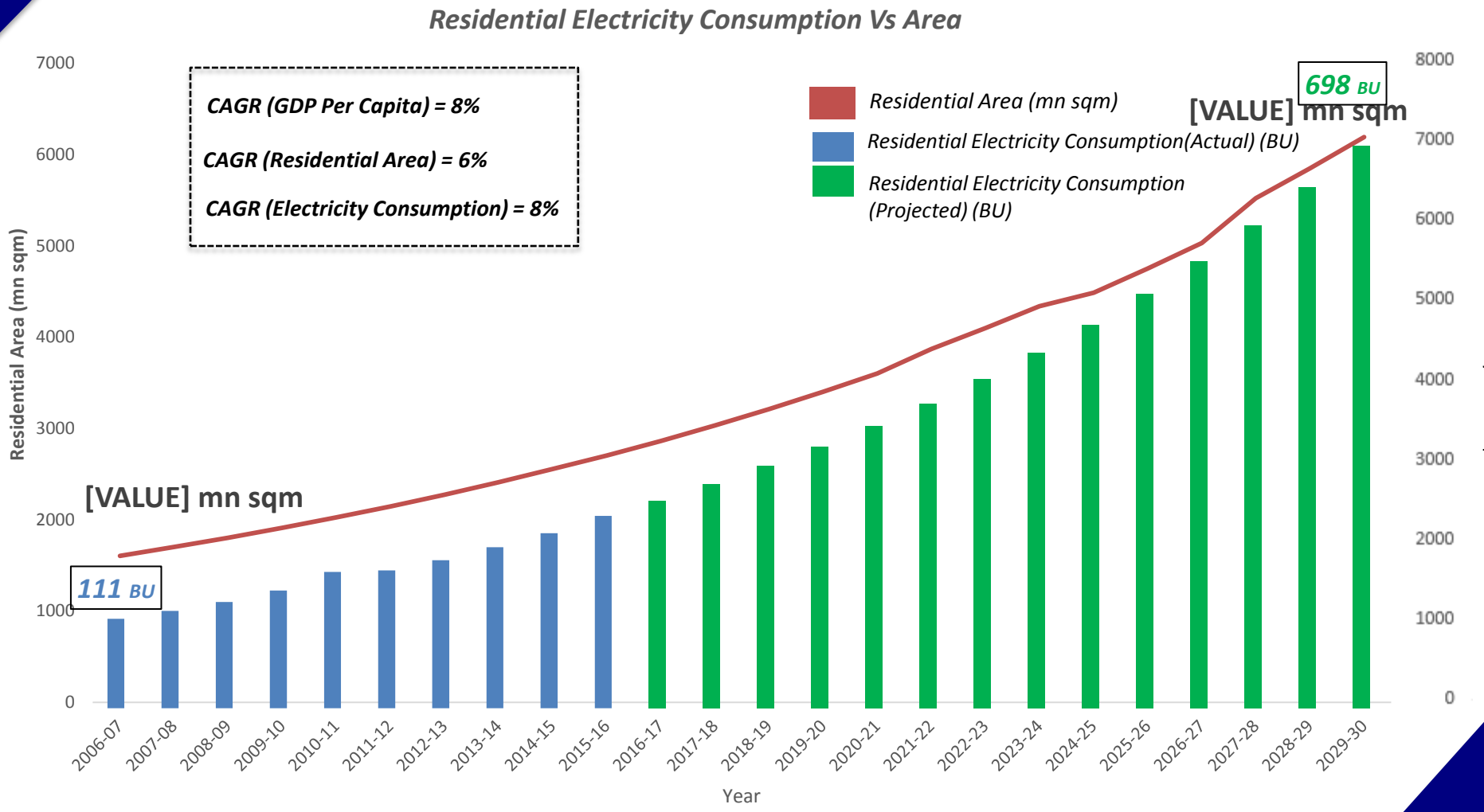


India will add

1 Billion m^2

of New Commercial Buildings by 2030

Building Sector- Built up area and electricity consumption projection



India will add
3 Billion m2 by 2030 of New
residential building w.r.t
Year 2018

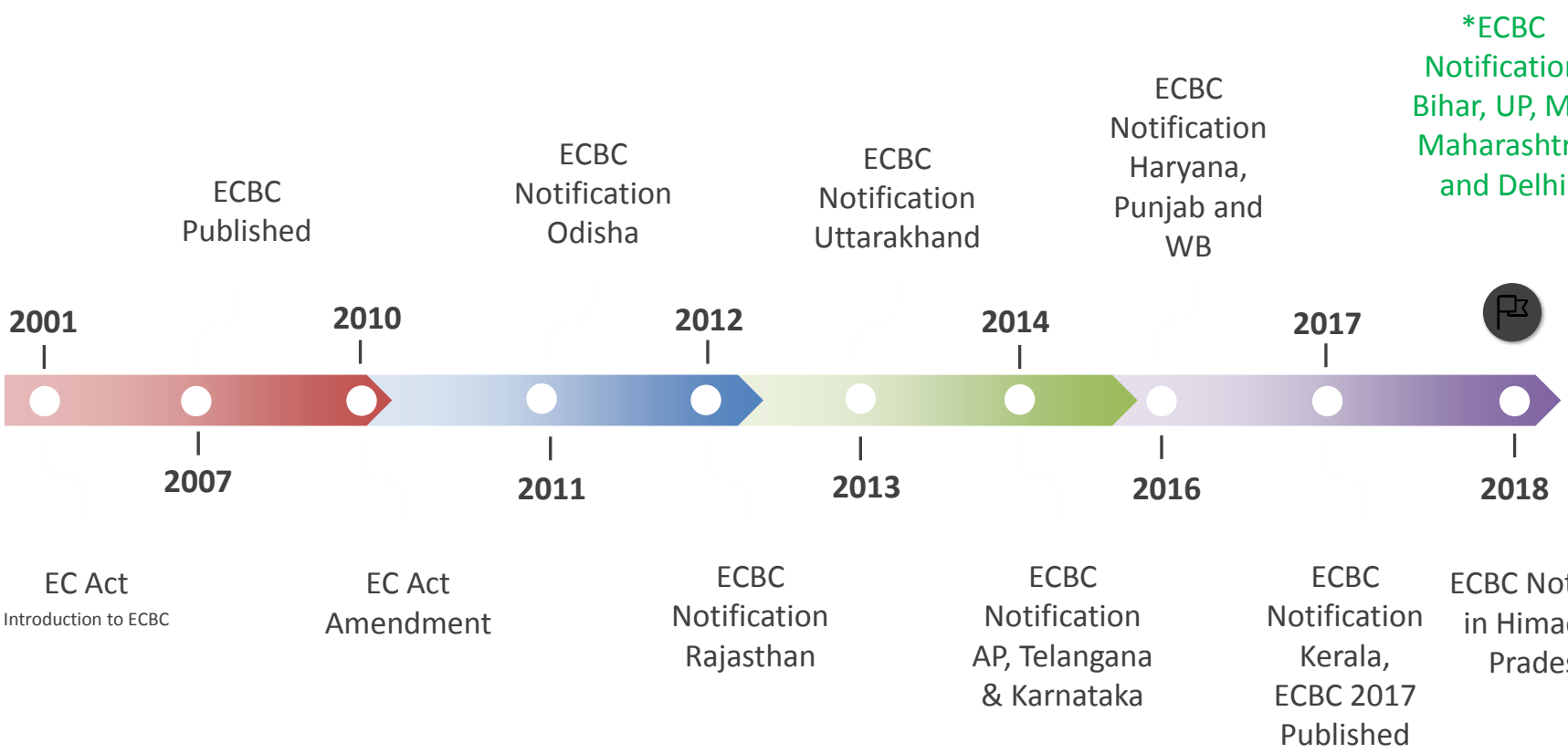
Energy Efficiency in Building Sector – Provisions under EC Act 2001

- Under the provision of Energy Conservation Act, the state Governments has been empowered to amend Energy Conservation Building Codes (ECBC) to suit regional and local climatic conditions.
- The Act empowers the Central/State Governments to issue directives for efficient use of energy and its conservation
- State Govt. are required to notify State ECBC on the basis of model ECBC issued by Central Government and to incorporate the same in local/municipal building bye-laws

BEEs Building Efficiency Programs

Energy Conservation Building Codes	Energy Management Information System	Affordable Housing	Residential Building Codes
Deep Retrofits	Commercial Buildings	Residential Buildings	Low Cost Finance
PAT Targets			Building Passport
Energy Efficient Materials	Building Passport	Standard Design	Energy Management Information System

ECBC Timeline



Energy Efficiency in Building Sector

- **Energy Conservation Building Codes (ECBC)**
  - minimum energy efficiency standards
  - Applicable to large commercial buildings
  - (connected load of 100 kW/contract demand of 120 kVA and above)
- **ECBC prescribes standards for:**
  - Building Envelope (Walls, Roofs, Windows)
  - Lighting (Indoor and Outdoor)
  - Heating Ventilation and Air Conditioning (HVAC) System
  - Solar Water Heating
  - Electrical Systems

Salient Features of ECBC

- Technology Neutral
- Renewable Energy Integration
- Incremental energy performance levels
- Applicability to various categories of buildings and Passive Design Strategies.

Salient Features of ECBC

ECBC

Mandatory Minimum standards for Commercial Buildings

25%

better than Typical Building

ECBC+

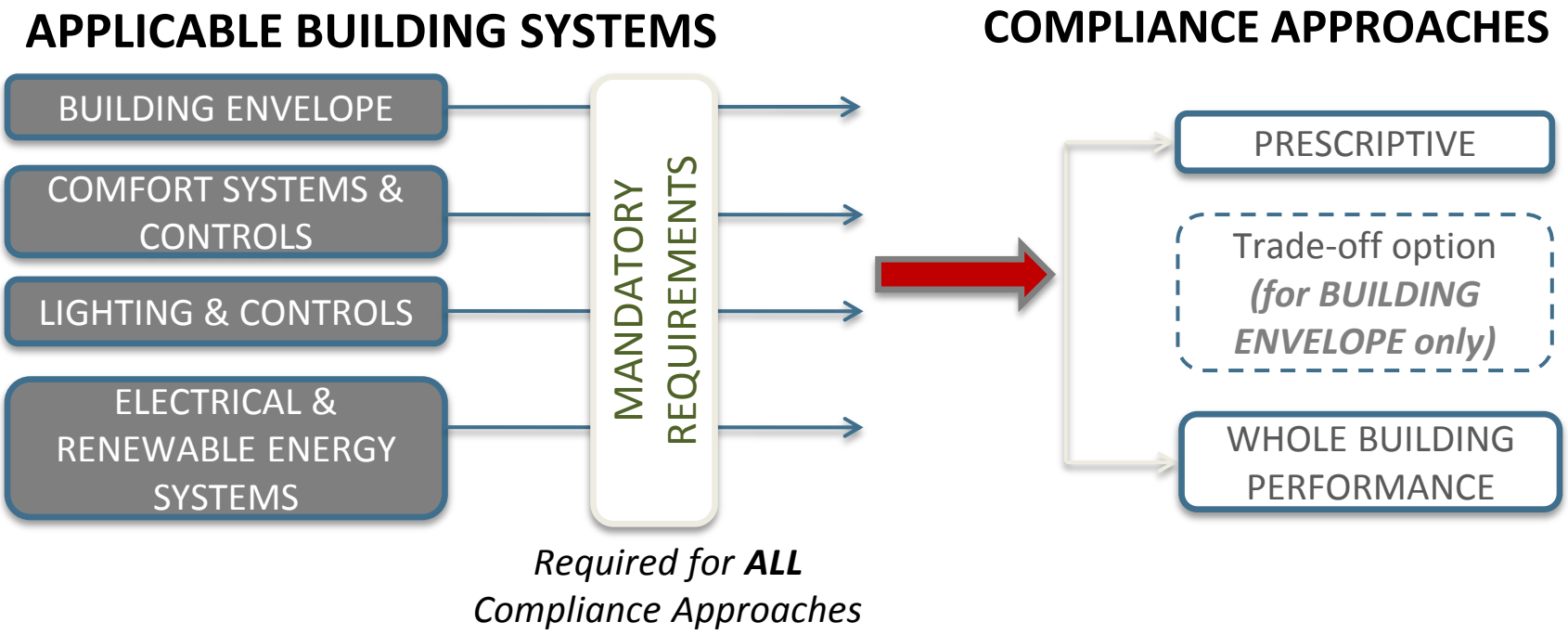
35%

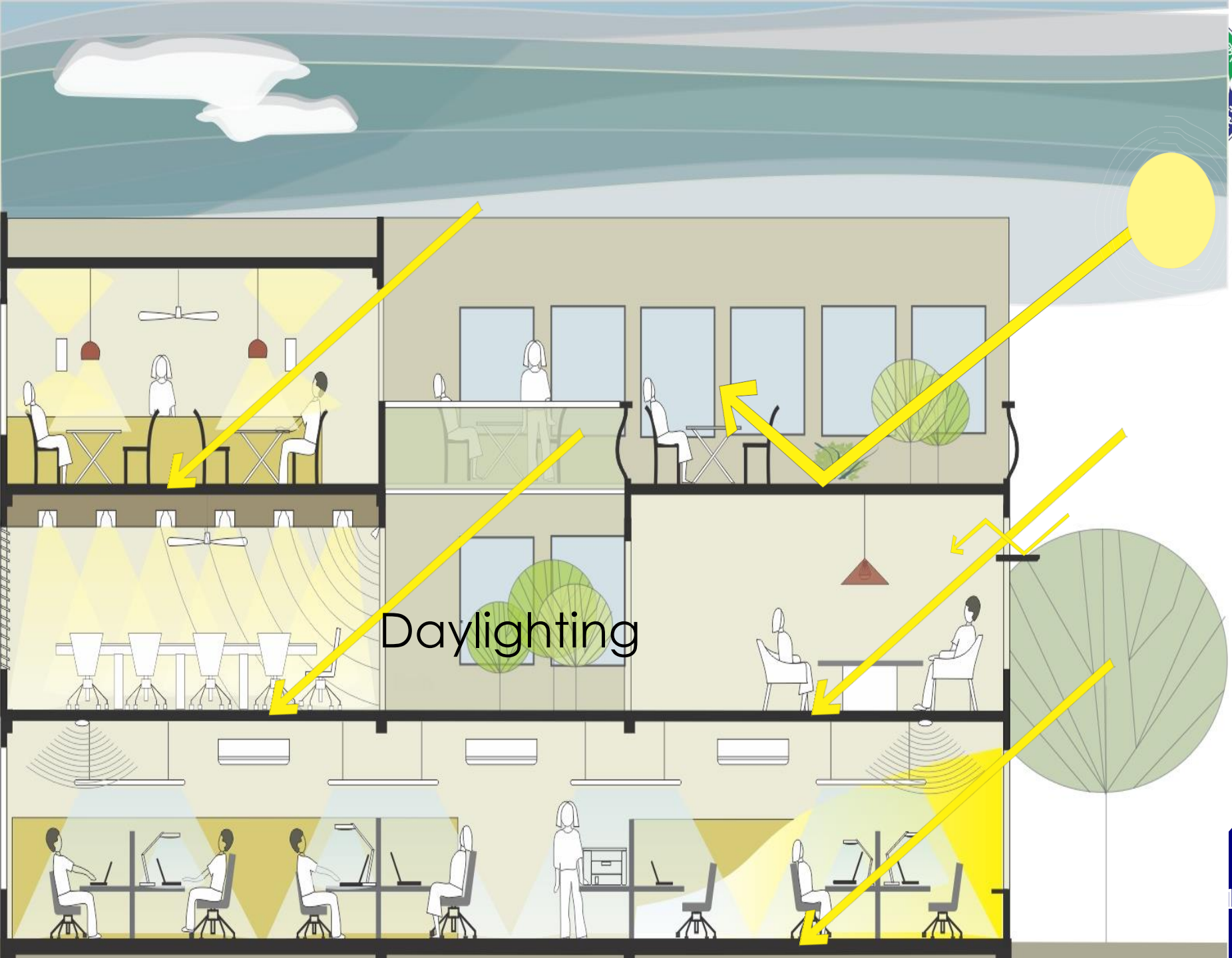
SuperECBC

50%

Towards Net Zero Energy Buildings

Applicability and Approaches




Daylighting

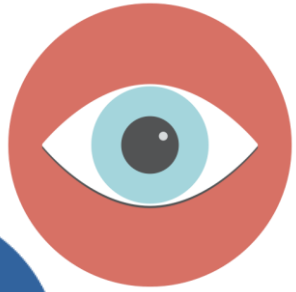

Efficient Lighting &Controls

Compliance

ECBC Compliance

Upload Documents

Collaborate

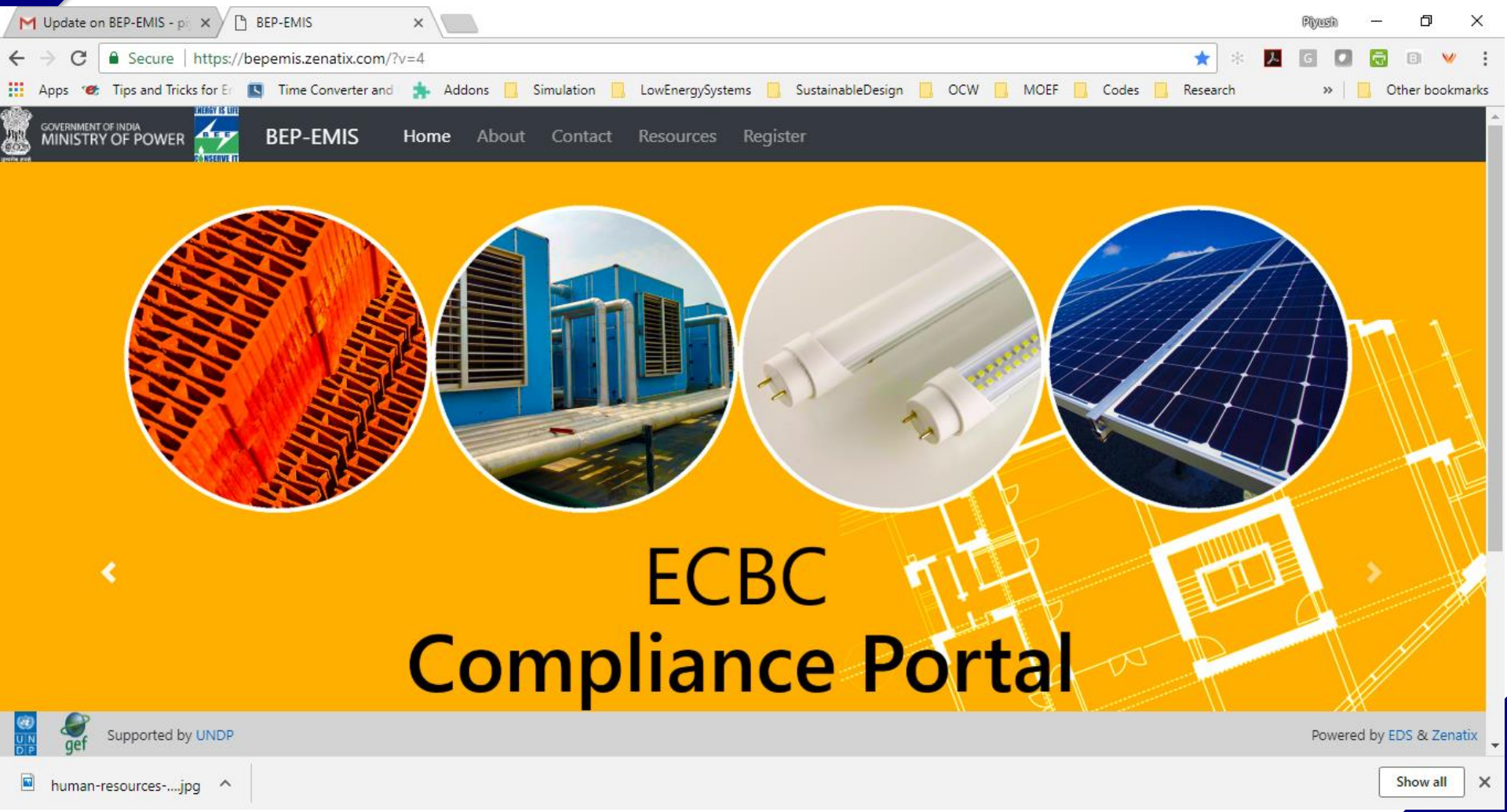


Review Documents

Issue Approvals

20

Homepage


Update on BEP-EMIS - pi
BEP-EMIS
Piyush
Secure
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Apps
Tips and Tricks for Er
Time Converter and
Addons
Simulation
LowEnergySystems
SustainableDesign
OCW
MOEF
Codes
Research
Other bookmarks
GOVERNMENT OF INDIA
MINISTRY OF POWER
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Home
About
Contact
Resources
Register
ECBC
Compliance Portal
Supported by UNDP
Powered by EDS & Zenatix
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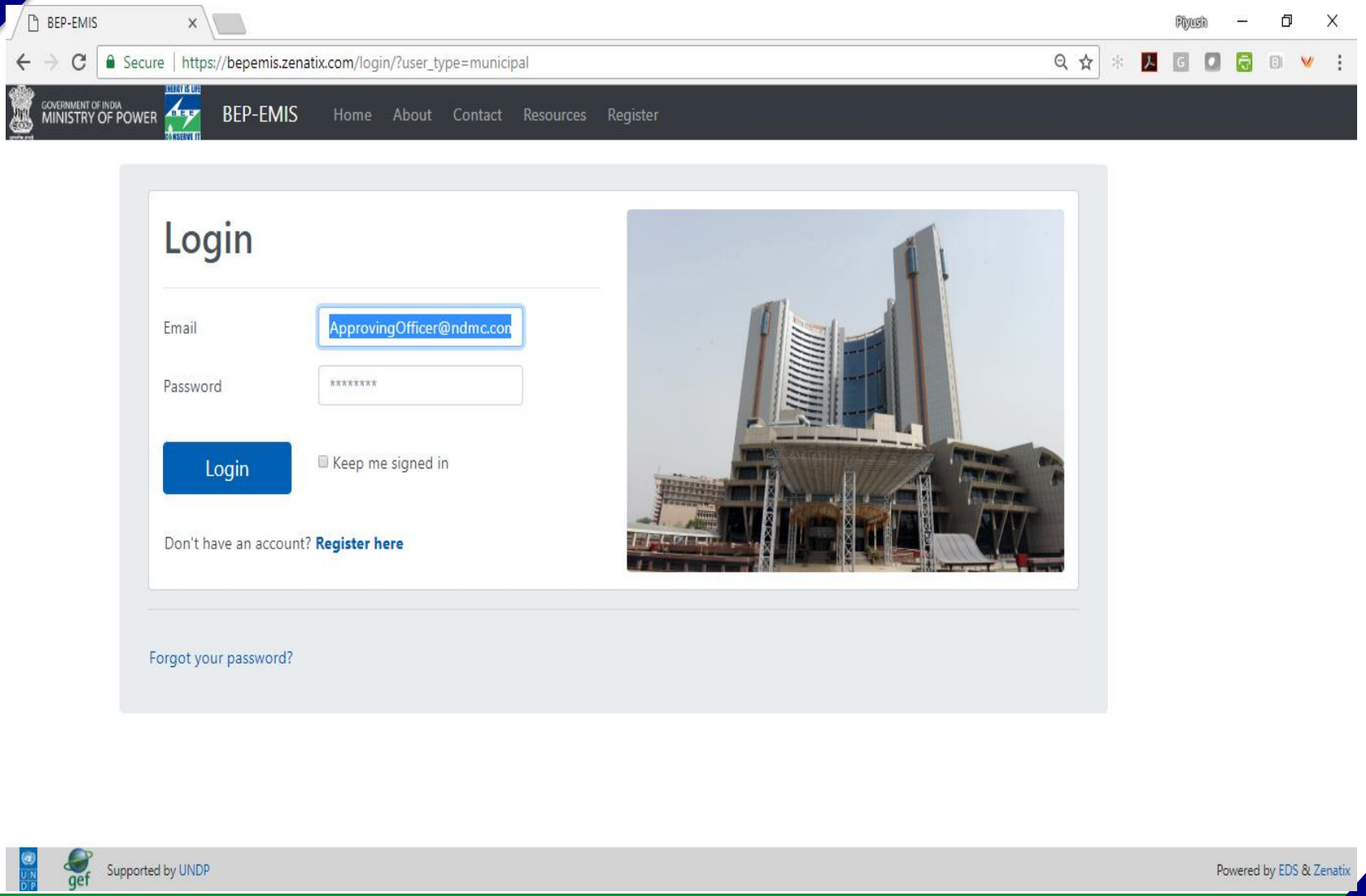
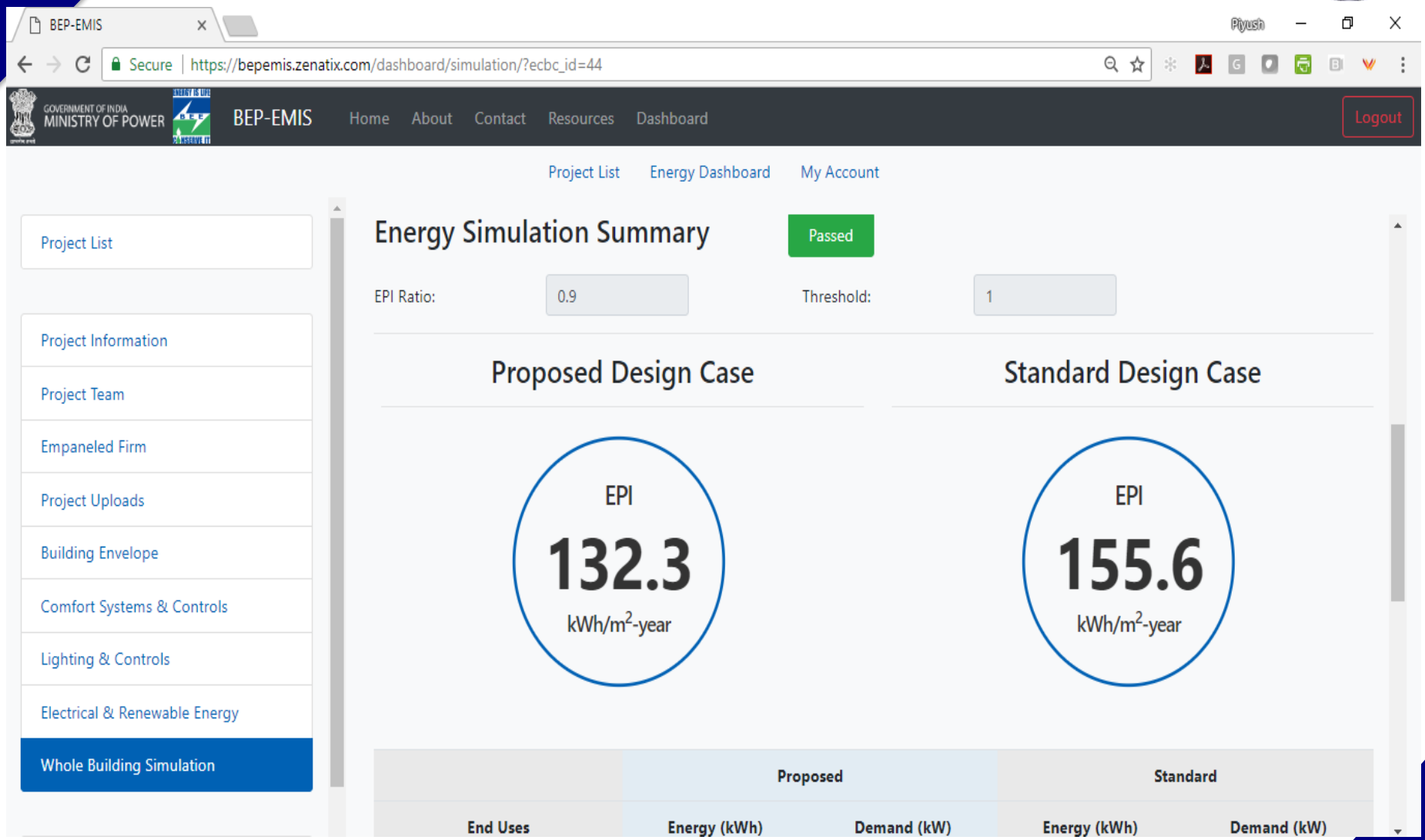
LOGIN PORTAL

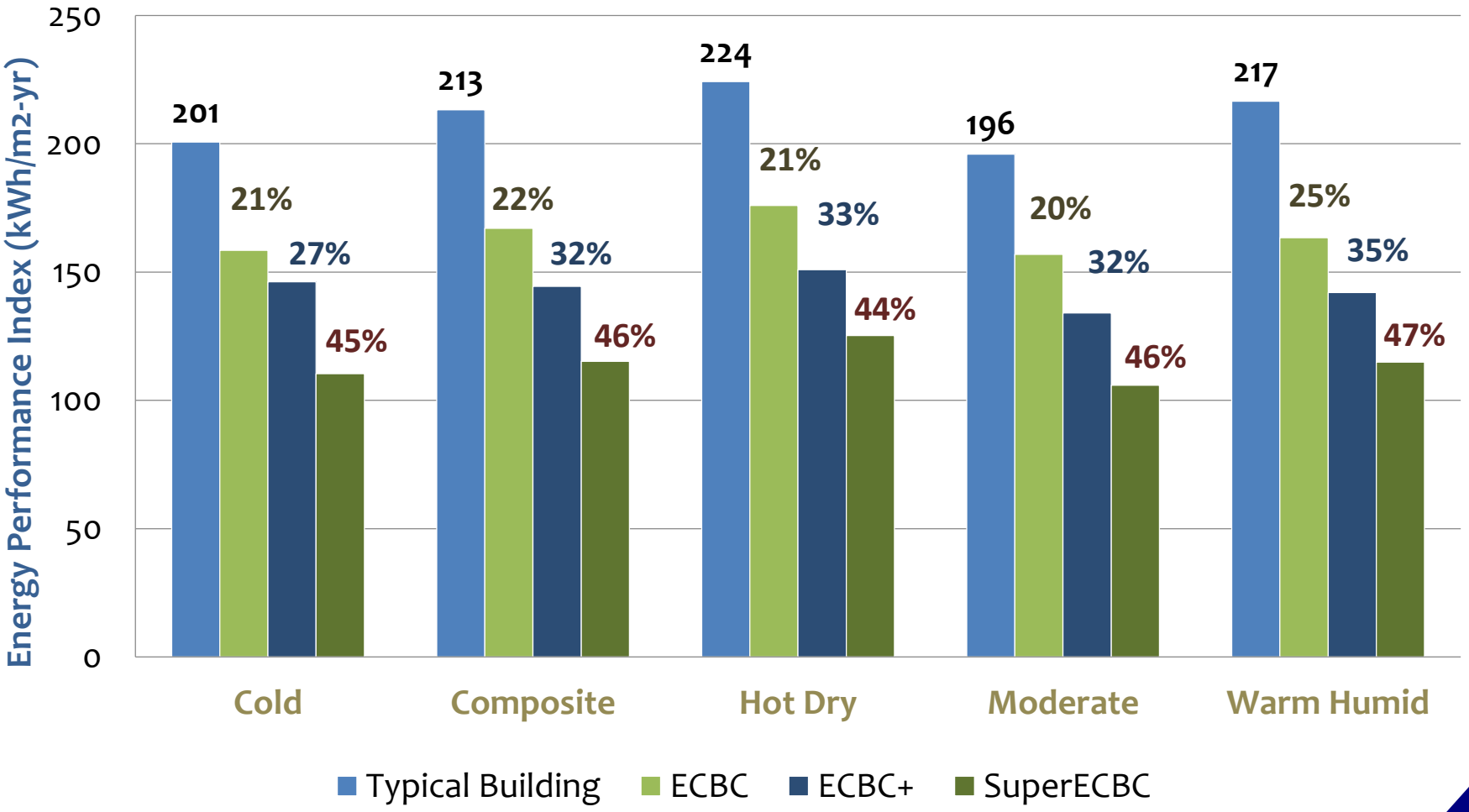


ENERGY SIMULATION OUTPUT



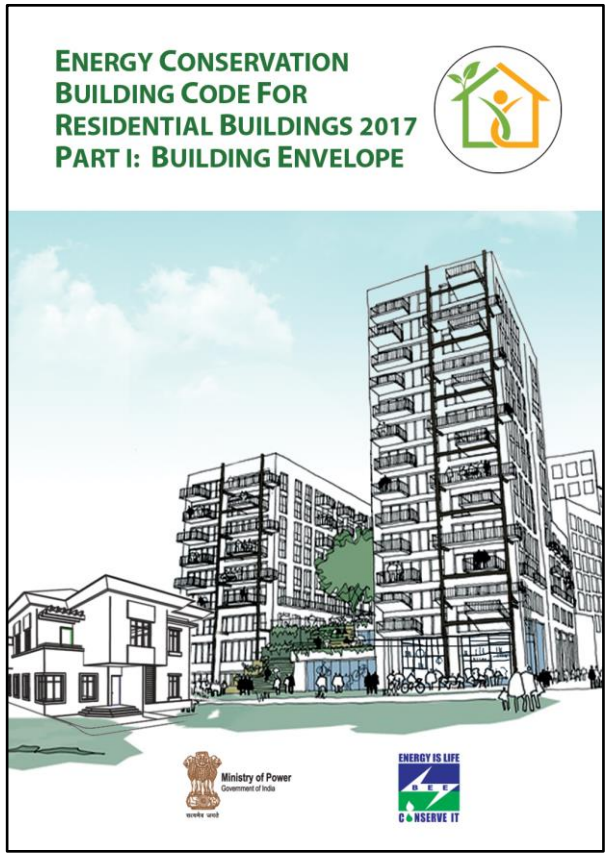
PROPOSED CASE ENERGY MODEL IS UPLOADED AS SUBMISSION IN idf FORMAT

Impact of ECBC



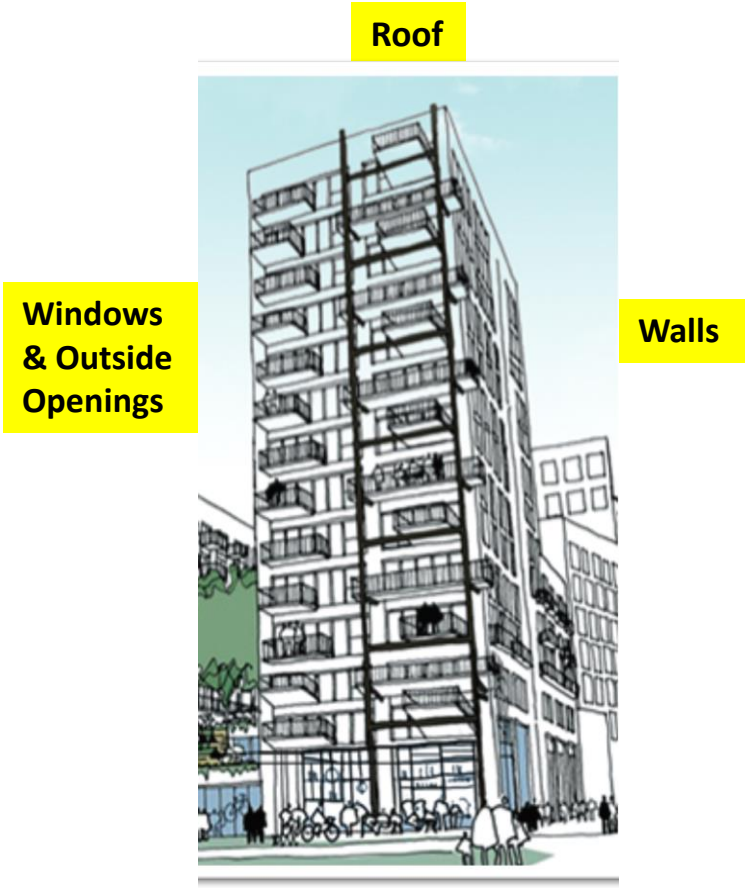
ECBC-Residential

- Aim to improve thermal comfort and reduce energy use in residential buildings.

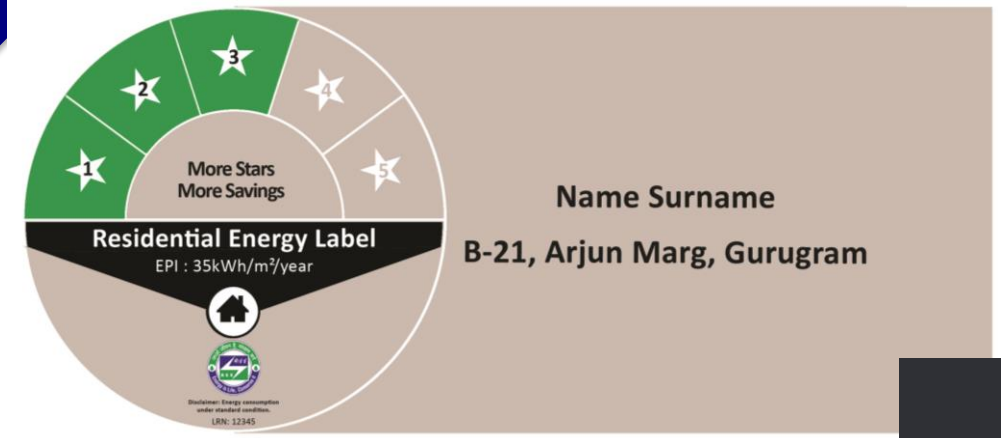


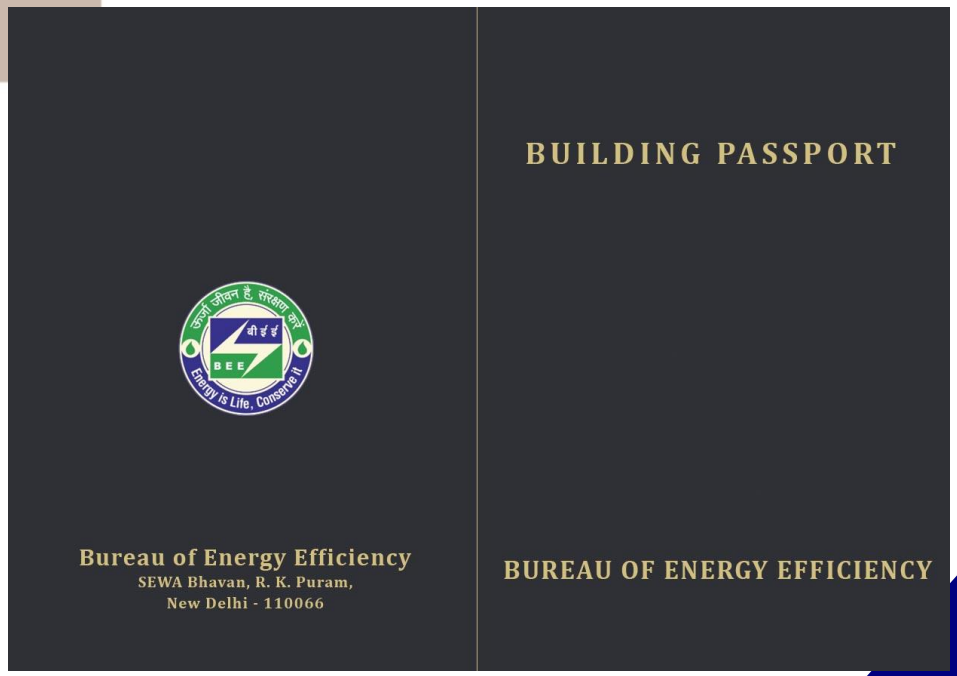
ECBC –R: Scope

- Building envelope (roof, walls, windows and outside openings)
- Sets minimum building envelope performance standards to
  - Limit heat gains (for cooling dominated climates) and to limit heat loss (for heating dominated climates)
  - Ensuring adequate natural ventilation potential
  - Ensuring adequate daylighting potential.



Residential Building Label





Way Forward

- Launch of ECBC for Residential Sector and development of labelling program for Residential Sector.
- Addition of new sectors (Hospitals/Airport Buildings/Shopping Malls/PwD Buildings etc) in the PAT - Commercial Building
- Examination for creating building professionals which would be called as Certified Energy Auditor (Buildings).
- Development of plaque (label) for awarding the buildings for compliance with code on the basis of three categories as UTTAM (ECBC Compliant), ATTI UTTAM (ECBC+) and SARVOTTAM (SuperECBC).

Thank You