



Frequently Asked Questions

ONLINE COMPLIANCE SYSTEM FOR ENERGY CONSERVATION BUILDING CODE (ECBC) FOR HYDERABAD

The states of Telangana and Andhra Pradesh adopted a mandatory Energy Conservation Building Code (ECBC) for commercial buildings in 2014, applicable to both states after bifurcation. To streamline and modernize code compliance, the Greater Hyderabad Municipal Corporation (GHMC) has developed a city-wide ECBC online compliance system. The GHMC Town and Country Planning has integrated building energy efficiency compliance into the Development Permission Management System (DPMS) for buildings approval. As knowledge partners, the Administrative Staff College of India (ASCI) and the Natural Resources Defense Council (NRDC) along with key experts have been working with state and city officials to develop and implement the code.

The purpose of these Frequently Asked Questions (FAQs) is to facilitate the use of the new online ECBC compliance system. The FAQs are intended for all stakeholders, including building owners, real estate developers, energy auditors, architects and others. The FAQs include three sections: 1) Energy Conservation Building Code Overview; 2) Online Development Permission Management System for submitting applications for building construction permissions, including ECBC compliance; 3) Telangana State ECBC (TSECBC) Technical Guidelines.

Section I Energy Conservation Building Code Overview

1. What is the Telangana State ECBC?

Recognizing the need to save energy in buildings, the state of Telangana enacted statewide legislation, Government Order 30, creating the TSECBC in 2014. The code is mandatory and effective as of December 2014. The objective of the TSECBC is to establish minimum requirements for energy-efficient design and construction of buildings. It is applicable to newly constructed commercial and non-residential buildings of a certain size or specific use, the technical details are discussed in sections below. The TSECBC is based on the national Energy Conservation Building Code (ECBC), developed by

the Ministry of Power, Bureau of Energy Efficiency in 2007. G.O.Ms.No.30 dated, 28.01.2014 can be found at this website: <http://dtcp.ap.gov.in/webdtcp/pdf/30,Dt.28-01-2014-ECBC.PDF>

2. Why is ECBC important?

New buildings make up a large share of India's increasing energy demand, and as per McKinsey 2010 report, two-thirds of the buildings that will be standing in India by 2030 have yet to be built. By setting minimum energy performance levels for most commercial buildings, the ECBC will lock in energy savings for years to come while retaining occupant comfort and combating climate change. Telangana and Andhra Pradesh represent one of the fastest-growing regions in the country. In 2013 the demand for office space in Hyderabad was estimated to be 15 to 20 million square feet, up from less than 2 million square feet in 2005. Implementing



energy efficient building measures in the two states could save enough energy by 2030 to power 8.9 million Indian households a year.

3. What types of buildings does the TSECBC apply to?

The code is applicable to commercial and other non-residential buildings that have a plot area of more than 1000 square meters or built up area of more than 2000 square meters. The code does not apply to factories, individual homes and multi-family residential buildings. The code is also mandatory for multiplexes, hospitals, hotels and convention centers even if their built up area is less than or equal to 2000 square meters.

4. Is TSECBC implementation mandatory?

Yes, the code is mandatory for applicable buildings as per Municipal Administration & Urban Development Department G.O.Ms.No.30 dated, 28.01.2014.

5. Are there inspections during construction to ensure compliance with TSECBC?

Yes, in accordance with rules 25 and 26 of the AP/TS Building rules 2012, in addition to scheduled detail inspections, the Urban Local Body may conduct any additional random unscheduled progress inspections throughout the construction phase of a building for any new building, addition or alteration project to ensure that the building complies with the TSECBC.

6. What are the mandatory code requirements? Are the mandatory requirements necessary for both whole building performance or prescriptive compliance methods?

Yes, irrespective of whether whole building performance (WBP) or prescriptive methods are used for compliance, the code requires the building to meet a set of mandatory provisions. These mandatory requirements are illustrated in sections 4.2, 5.2, 6.2, 7.2, and 8.2 of the code.

7. What does the star rating system mean under the TSECBC?

Under the code, the GHMC has a star rating system where buildings qualify for a rating from one to six stars, with six as the strongest, based on energy savings compared to a standard design case. One star is achievable when the building complies with TSECBC using the prescriptive method. Under the whole building performance method, a one star rating can be achieved if energy savings are up to 5% above standard design. The rating will increase with

additional 10%, 15%, 20%, 25% and 30% energy savings above standard design. Six stars can be achieved if the building shows energy savings above 30% of standard design using the WBP method of compliance.

8. Does water conservation come under the scope of TSECBC?

No, currently, the ECBC is limited to energy efficiency in buildings. Water and other conservation practices are very important and are encouraged by GHMC.

Section II Online Development Permission Management System

9. What is the Online Development Permissions Management System?

Led by the GHMC's Town and Country Planning office, the Development Permissions Management System (DPMS) is a new online system created by the GHMC with stakeholders to streamline building approvals. To obtain a building construction permission, a building application and ECBC compliance forms must be submitted through the online DPMS.

10. Who is required to submit the ECBC online application?

The building architect, developer, third party assessor or owner can submit the online application for construction permission and ECBC online form.

11. What documents are required to be uploaded in the online DPMS?

Two key documents are required to be uploaded to the online DPMS:

1. ECBC Design Compliance Certificate issued by the third party assessor (TPA), which certifies that the TPA has reviewed the designs and the building complies with ECBC provisions prior to construction.
2. Prescriptive compliance checklist or energy simulation report with TPA summary.

12. Who are third party assessors?

Third party assessors are energy-efficiency experts empanelled by the State of Telangana based on a model created by the Ministry of Power, Bureau of Energy Efficiency. Third party assessors review and certify that a

building complies with the TSECBC both before and after construction. Third party assessors are critical to the system since they provide the technical expertise to developers. Since the third party assessors have a very important role to play in compliance verification, GHMC requires all applicants to take ECBC compliance-training and qualifying exam in order to be empanelled.

13. Where is the list of empanelled third party assessors?

The list of empanelled third party assessors is available with the Town and Country Planning office, GHMC and the State Designated Agency, Telangana State Renewable Energy Development Corporation Limited (TSREDCO) in Hyderabad. TSREDCO maintains the list of empanelled third party assessors on their website:

TSREDCO: http://tnredcl.telangana.gov.in/PDFs/List_of_ECBC_Third_Party_Assessors_for_Telangana_State.pdf

Section III TSECBC Technical Guidelines

14. What are the TSECBC Technical Guidelines and where are they available?

The Telangana State ECBC Technical Guidelines provide guidance for interpreting, complying and integrating TSECBC GO 30 with the new online Development Permissions Management System. The purpose of the guidelines is to facilitate and streamline online submissions and compliance with the TSECBC. The guidelines are tailored to local conditions and experiences in Telangana. The GHMC issued the guidelines based on extensive input and consultation with real estate developers, architects, key experts and other stakeholders.

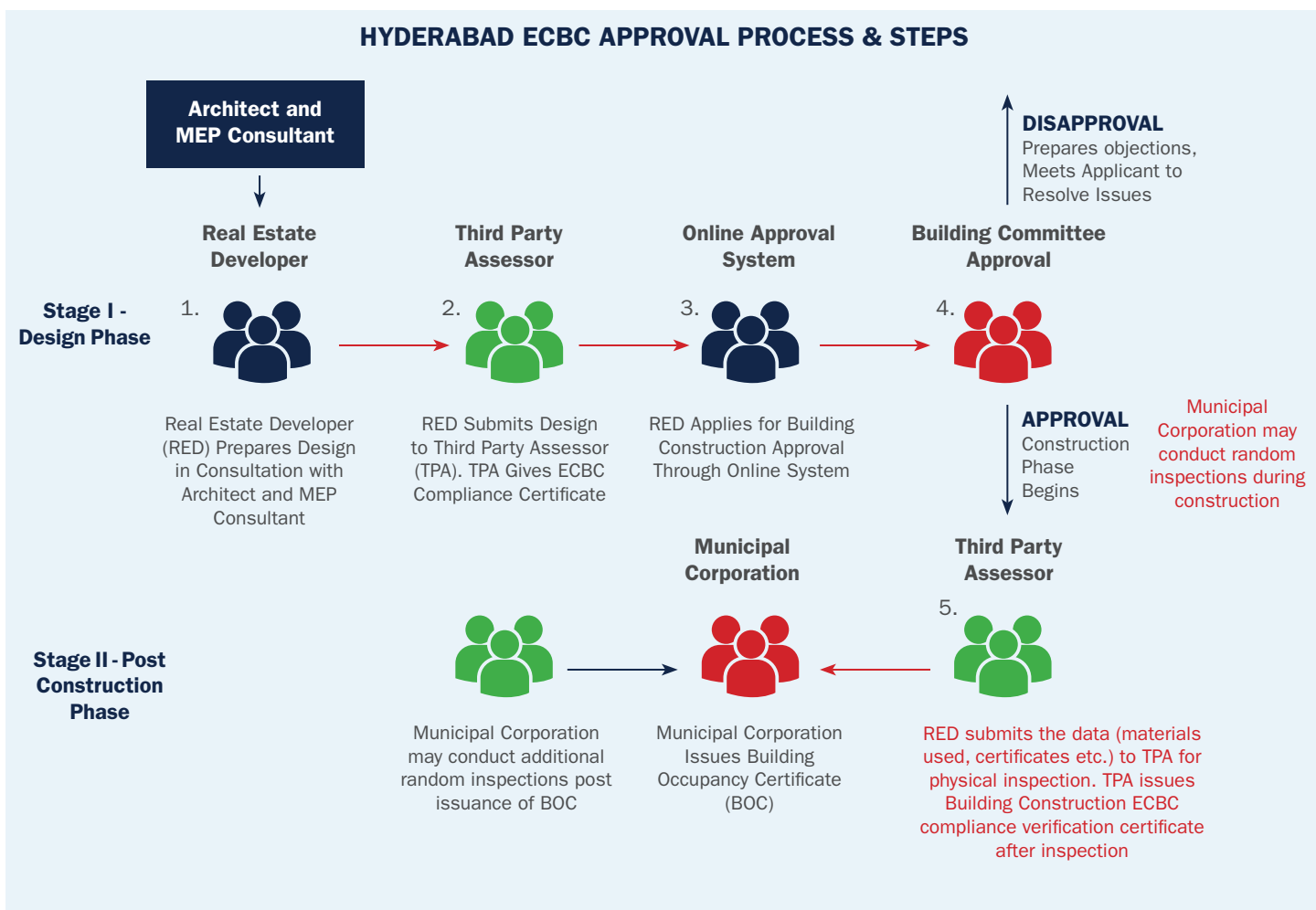


Chart Explaining the Online System Process

The TSECBC guidelines should be used in applications for building permissions through the new online Development Permissions Management System (DPMS). The TSECBC guidelines are available on the TSREDCO website:

GHMC DPMS: <http://www.ghmc.gov.in/>;
<http://125.18.177.135:7075/BPAMSCClient/>

Current Guidelines: http://tnredcl.telangana.gov.in/PDFs/TS_ECBC_guidelines_MAY_24_2017.pdf

15. Does the installed chiller have to meet the minimum energy efficiency requirements under the TSECBC, even if the proposed building energy consumption is less than standard case and the building uses the WBP method for compliance?

Yes, any chiller installed in the building must meet minimum efficiency requirements, irrespective of compliance methods or consumption. For minimum chiller efficiencies, please refer to Table 5-1 of TSECBC.

16. Is it mandatory to put double-glazed or triple-glazed glass in the building?

No, it is not mandatory. While complying using the prescriptive method, use of permanent shading devices, such as overhangs and fins can help to achieve required Solar Heat Gain Coefficient (SHGC). TSECBC Table 4-4 provides Solar Heat Gain Coefficient (SHGC) M-factor adjustment calculation. Under the WBP method there is no restriction on the SHGC of windows in the design.

17. If the building is naturally ventilated, does it still need to follow the TSECBC?

Yes, naturally ventilated buildings are also covered in TSECBC. Please refer to Section 2.4. Reference Standards of TSECBC.

18. Can there be partial compliance to the TSECBC?

No, full compliance of the code is required. As per the GO MS No. 30 there cannot be partial compliance to the TSECBC code.

19. Is it mandatory to install LED lights for interiors?

No, if the prescriptive method is adopted for compliance the building should meet the Lighting Power Density (LPD) (W/m^2) requirements based on Building Area method or Space by Space method. If WBP method is used, the proposed

design annual energy consumption must be lesser than the standard case annual energy consumption. Please refer to Section 7.3 Prescriptive Requirements under Lighting of TSECBC.

20. Is it essential to install a solar water heater system to meet hot water requirements of the building?

As per section 6.2.2 of TSECBC, commercial establishments such as hotels, hospitals and guesthouses with a centralized system shall have either solar water heating or waste heat recovery system for at least 1/5th of the design capacity.

21. Is it necessary to put roof insulation overdeck or underdeck?

It is preferable to put insulation overdeck, as stopping heat at source is more effective. However, as long as the roof U-value needs are met for the prescriptive approach, either overdeck or underdeck insulation may be used.

22. Is cool roof a mandatory requirement?

Under the prescriptive method, providing cool roof is mandatory with initial solar reflectance of not less than 0.7 and initial emittance no less than 0.75.

23. Is it necessary to install glass with low SGHC if windows are shaded with trees?

Yes, it is necessary to install glass with low SGHC even if windows are shaded with trees. The GHMC encourages increasing tree coverage and planting in the city. However, only permanent shading devices, such as overhangs and fins can be considered.

24. Can manual shading control be included in WBP method?

No, only automatic shading can be included in the WBP method.

25. Can shading from surrounding buildings be included in WBP method?

No, shading from surrounding buildings cannot be included in the WBP method.

26. Where are construction material properties available?

Construction material properties are available from supplier's test certificates. If they are not available with manufacture/vendor/supplier, refer to Appendix A of the TSECBC for default values.

27. What software is available for WBP simulation? Are there any open-source or freely available tools?

To meet the requirements of section 10.2.1, Appendix B of TSECBC, there are many software and tools available, including eQUEST, EnergyPlus, Design Builder, IES-VE, Simergy and Open Studio. Of these, eQUEST and EnergyPlus are free tools.

28. Where is weather data for a specific city to use in building simulation exercises available?

The Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE) provides weather data for Indian locations for simulations. Weather files can be downloaded from EnergyPlus website at this URL: https://energyplus.net/weather-region/asia_wmo_region_2/IND

29. Does emergency lighting load in LPD calculations need to be taken into account?

No, emergency lighting that is automatically off during normal building operation and is powered by battery, generator or another alternate power source is exempted.

30. Can different schedules (such as occupancy and thermostat) in standard and proposed design be used?

No, all the schedules must be identical in both designs.

For More Information, Please Contact

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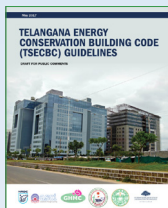
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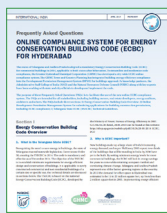
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***This FAQ is available online at:
http://www.ghmc.gov.in/Townplanning_Reports/TSECBCFAQs.pdf***

Highlighted Resources for the TSECBC Online Compliance System:



Telangana Energy Conservation Building Code (TSECBC) Guidelines
http://tnredcl.telangana.gov.in/PDFs/TS_ECBC_guidelines_MAY_24_2017.pdf

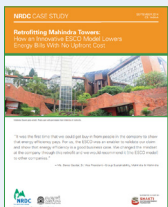


Frequently Asked Questions Online Compliance System for Energy Conservation Building Code (ECBC) for Hyderabad
http://www.ghmc.gov.in/Townplanning_Reports/TSECBCFAQs.pdf



Building a Better Future: Implementing the Energy-Saving Building Code in Hyderabad
<https://www.nrdc.org/sites/default/files/better-future-energy-saving-building-code-hyderabad.pdf>

ASCI – NRDC Building Efficiency Case Studies:



Retrofitting Mahindra Towers: How an Innovative ESCO Model Lowers Energy Bills with No Upfront Cost
<https://www.nrdc.org/sites/default/files/esco-energy-retrofit-mahindra-CS.pdf>



Building Smart from the Start: Spotlight on Energy-Saving Commercial Office Building in Noida, India
<https://www.nrdc.org/sites/default/files/energy-saving-construction-legacy-spectral-CS.pdf>

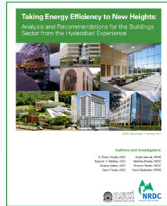


Saving Money and Energy: Case Study of the Energy-Efficiency Retrofit of the Godrej Bhavan Building in Mumbai
<https://www.nrdc.org/sites/default/files/energy-retrofit-godrej-bhavan-CS.pdf>

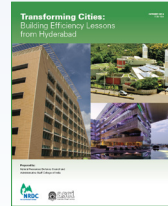
ASCI – NRDC Building Efficiency Reports and Papers:



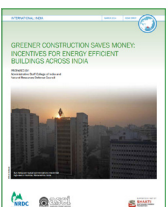
Building Efficient Cities: Strengthening the Indian Real Estate Market through Codes and Incentives
<https://www.nrdc.org/sites/default/files/real-estate-efficiency-codes-IB.pdf>



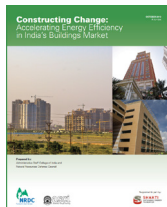
Taking Energy Efficiency to New Heights: Analysis and Recommendations for the Buildings Sector from the Hyderabad Experience
<https://www.nrdc.org/sites/default/files/efficiencynewheights.pdf>



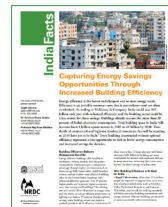
Transforming Cities: Building Efficiency Lessons from Hyderabad
<https://www.nrdc.org/sites/default/files/india-transforming-cities-2014-report.pdf>



Greener Construction Saves Money: Incentives for Energy Efficient Buildings Across India
<https://www.nrdc.org/sites/default/files/energy-efficient-construction-incentives-IB.pdf>



Constructing Change: Accelerating Energy Efficiency in India's Buildings Market
<https://www.nrdc.org/sites/default/files/india-constructing-change-report.pdf>



Capturing Energy Savings Opportunities through Increased Building Efficiency
<https://www.nrdc.org/sites/default/files/energyefficiency-fs.pdf>



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