

ENERGY DEPARTMENT

NOTIFICATION

The 31st October 2022

ODISHA ENERGY CONSERVATION BUILDING CODES RULES. 2022

No. 10419—ENG-ESIEC-EC-0001-2021/En.—In exercise of the powers conferred by sub-section (1) of section 57 read with clause (a) of section 15 of the Energy Conservation Act, 2001 (52 of 2001), the Government of Odisha in consultation with the Bureau of Energy Efficiency (BEE), hereby makes the following rules, namely: -

1. Short title and commencement. –

- (1). These rules may be called the Odisha Energy Conservation Building Code Rules, 2022.
- (2). They shall come into force on the date of their publication in the OdishaGazette.

2. Definitions. –(1).In these rules, unless the context otherwise requires, -

(a) “**Act**” means the Energy Conservation Act, 2001 (52 of 2001);

(b) “**best practices**” means those measures that—

allow for optimisation of efficiencies in the identified components and systems to enhance the energy efficiency of the building; or

- (i.) reduce the cost of construction having regard to the safety, stability of the building structure, health and environmental provisions of Central laws or State laws; and

- (ii.) includes energy conservation measures approved by the OdishaEnergy Conservation Building Code Implementation Committee or OdishaEnergy Conservation Building Code Compliant Technical Grievances Redressal Committee or National Energy Conservation Building Code Implementation Committee;
- (c) “**building complex**” means a building or group of buildings constructed in a contiguous area for business, commercial, institutional purposes or assembly of buildings under the single ownership of individuals or group of individuals or under the name of a co-operative group society or on lease and sold as shops or office space or space for other commercial purposes;
- (d) “**built-up area**” means the total covered areas on all floors of a building from the basement to all storeys covered by walls and parapet measured at the floor levels excluding parking;
- (e) “**bye-laws**” means the building bye-laws framed by the Odisha Government or any authority under its control to regulate the building activities in its areas falling in the jurisdiction of-
- (i.) all Municipal or Notified Area Councils constituted under the Odisha Municipal Act,1950 (Odisha Act 23 of 1950)
 - (ii.) all Municipal Corporation areas constituted under the Odisha Municipal Corporation Act,2003 (Odisha Act 6 of 2003)
 - (iii.)all areas covered under the Development or Planning authorities; under various development plans notified bytheOdisha Government and enforced by such authority in its jurisdiction in which the OdishaEnergy Conservation Building Code 2022, compliant building shall be located and includes any regulation or rule framed by the Odisha Government or any other authority having jurisdiction established by the Odisha Government;
- (f) “**Certified Energy Auditor (Building)**” means a person who fulfils the eligibility criteria specified in the Energy Conservation (Minimum qualification for Energy Auditors and Energy Managers) Rules,2006 and has qualified National Examination for Energy Conservation Building Codes Compliance;
- (g) “**Code**” means the OdishaEnergy Conservation Building Code as amended from time to time;

- (h) “**compliance documents**” mean the forms specified in Appendix D of the Code and includes certificates from Empanelled Energy Auditors (Building) to conform compliance with these rules,
- (i) “**connected load**” means the total of the rated wattage of all equipment, appliances and devices to be installed or installed in the building or part of the building or building complexes in terms of kilowatt (kW) that will be allocated to all applicants for electric power consumption in respect of the proposed building or building complex, as the case may be, on their completion;
- (j) “**construction documents**” mean drawings or documents containing information pertaining to building construction processes and approvals, building materials and equipment specification, architectural details required by the authority having jurisdiction;
- (k) “**contract demand**” means the maximum demand in kilowatt (kW) or kilo-Volt Ampere (kVA) (within a consumer’s sanctioned load) agreed to be supplied by the electricity provider or utility in the agreement executed between the user and the utility or electricity provider;
- (l) “**Empanelled Energy Auditors (Building)**” means a firm consisting of the Certified Energy Auditor certified under Bureau of Energy Efficiency (Certification Procedures for Energy Auditors and Energy Managers) Regulations, 2010 and Certified Energy Auditor (Building), and empanelled with the Bureau;
- (m) “**energy conservation measures**” mean the measures incorporated in the building design for saving energy, or enhancing comfort in peak electrical or thermal demand, or reducing cooling or heating load covering any element of a component with any other element of the same or other component of the Code and includes any such measure incorporated in the said building design of the proposed or existing building;
- (n) “**energy performance index**” means annual energy consumption of a building in kilowatt-hours per square meter of the area of the building which shall be calculated as per the following formula:

$$\text{Energy performance Index} = \frac{\text{Annual Energy consumption in kWh}}{\text{Total Built-up area (Excluding Storage Area and the parking in the basement) in m}^2}$$

- (o) “**energy performance index ratio**” means the ratio of the energy performance index of the proposed building to the energy performance index of the standard baseline building;
- (p) “**establishment**” means a business or other organization, or the place where an organization operates and includes a Government establishment and private establishment;
- (q) “**form**” means the forms appended to these rules;
- (r) “**owner**” means a person, group of persons, a company, a trust, an institute, registered body, State Government or Central Government and its attached or sub-ordinate departments, undertakings and such other agencies or organizations in whose name the property stands registered in the revenue records for the construction of a building or building complex;
- (s) “**proposed design**” means the computerised design of a building consistent with the actual design of a building which complies with all the requirements of the Code either through prescriptive or whole building performance method;
- (t) “**standard baseline design**” means the standard design that complies with all the mandatory and prescriptive requirements of the Code and has the same built-up area of the proposed building;

(2). Words and expressions used herein and not defined, but defined in the Act, or in the Code, shall have the meanings respectively assigned to them in the Act or in the said Code.

3. Application. - These rules shall apply to every building, which is used or intended to be used for commercial purposes, having a connected load of 100 kilowatt (kW) or above or a contract demand of 120 kilo-Volt-ampere (kVA) or above or total built-up area of 1000 sqm. or above excluding stilt or basement meant for parking area, and such building shall cover the following components, namely:-

- (a) building envelope;
- (b) comfort systems and controls (heating, ventilation and air conditioning service hot water system);
- (c) lighting and controls;
- (d) electrical and renewable energy systems;

(e) any other system, as may be specified from time to time by the Bureau:

Provided that these rules shall not apply to equipment, appliances, devices and parts of building that use energy primarily for manufacturing processes:

Provided further that wherever these rules are in conflict with safety, security, health or environmental codes, or Bureau of Energy Efficiency's Standard and Labelling for equipment or appliances and Star Rating Program for buildings and if they are more stringent than the requirement of these rules then they shall prevail over these rules:

Provided also that if any existing building after additions or alterations changes its connected load to 100 kilo- Watt (kW) or above or a contract demand of 120 kilo-Volt Ampere (kVA) or above or total built-up area of 1000 sqm. or above excluding stilt or basement meant for parking area; shall comply with the provisions referred to in clauses (a) to (e) of this rule.

4. Compliance mechanism. – (1). The compliance of energy performance of a building shall be ensured by the owner by following either of the following methods, namely: -

- (a) **Prescriptive Method.** – The building shall comply with the mandatory requirements and prescriptive requirements as specified in the Code for envelope components, comfort systems and controls, lighting and controls, electrical and renewable energy systems;
- (b) **Whole Building Performance Method.** – The building shall comply with all mandatory measures and the requirements specified in the whole building performance method of the Code and the energy performance index of the proposed design under this method shall be the same or less than the energy performance index of the standard baseline design of building as follows:

$$\text{Energy performance index ratio} = \frac{\text{energy performance index of proposed design}}{\text{energy performance index of standard baseline design}} \leq 1$$

(2). The summary covering building envelope, comfort systems and controls, lighting and controls, and electrical and renewable energy systems and their checklists under Prescriptive Method and Whole Building Performance Method shall be as specified in the Appendix D of the Code.

5. Procedure for erection of Code compliant building. – (1). Every owner who intends to erect or re-erect a building or make alterations or additions in any building under these rules shall submit to the concerned authority having jurisdiction, an application in Form I accompanied by-

- (a) construction documents duly signed by the owner together with an undertaking in Form II;
- (b) construction documents shall ensure –
 - (i) compliance with the applicable building bye-laws in force;

- (ii.) building design incorporates energy conservation measures and best national and international practices having regard to the climatic conditions of the site and specific needs of the building so as to optimize the energy performance index ratio of the building;
 - (iii.) that all the data, building features, identified energy conservation measures under various building components and systems are shown in detail and in the manner specified in the applicable bye-laws;
 - (iv.) the drawing of plan, colour of plan, dimensions of plan, scale of plan as per requirements of the applicable bye-laws in force;
 - (c) compliance documents covering the construction of components and systems of the Code, duly certified by Empanelled Energy Auditors (Building) including the following, namely: -
 - (i.) energy performance index ratio report in respect of the proposed building at the design stage;
 - (ii.) certificate in Form III by Empanelled Energy Auditors (Building) certifying the compliance documents as specified in Appendix D of the Code;
 - (iii.) have been scrutinized or verified in respect of the identified energy conservation measures; and
 - (iv.) an application with heading super scribed “Application for permission to erect/re-erect an OdishaEnergy Conservation Building Code Compliant Building”, duly signed by the owner seeking building permit from the concerned authority having jurisdiction before starting construction work in respect of the proposed building.
- (2).The authority having jurisdiction may require submission of documents in electronic form or hard copy of the documents, referred to in sub-rule (1).
- (3).The Empanelled Energy Auditors (Building), at the design stage, shall follow the following procedure of inspection, namely: –
- (a) scrutinize the construction documents with respect to–
 - (i.) floor area;
 - (ii.) window area;
 - (iii.) wall area;
 - (iv.) roof area of the building;
 - (v.) built-up area of the proposed design of the building;
 - (b) scrutinize the Code compliance documents and the check list as specified in the Appendix D of the Code and identify –
 - (i.) The energy conservation measures that are applicable to the proposed design of building.
 - (ii.) insulation quantities in walls and roof, and the construction assemblies, solar heat gain coefficient, visible light transmittance and thermal transmittance (U-factor) for window assemblies;
 - (iii.) heating, ventilation and air-conditioning component tables for air-handling equipment, refrigeration equipment, condensing equipment and air-flow summaries;
 - (iv.) heating, ventilation and air-conditioning equipment efficiencies and control equipment;

- (v.) tables showing lighting equipment schedules;
 - (vi.) lighting power density calculations in the design documents;
 - (vii.) lighting controls;
 - (viii.) motor efficiencies and controls;
 - (ix.) findings of the document review to match with the energy model inputs for the proposed building by using the simulation tool approved by the Bureau;
- (c) scrutinize energy performance index ratio projected at the design stage;
 - (d) verify and certify the items from (i) to (ix) of (b) and (c);
 - (e) fill the check list as specified in the Appendix D of the Code and issue correction list in case the design documents of the proposed design of building provide inadequate information or do not meet the requirements of these rules and shall-
 - (i.) communicate his findings in Form IV to the owner of the building under intimation to the concerned authority having jurisdiction;
 - (ii.) give specified time to the owner to implement its findings;
 - (iii.) satisfy himself that the communication received from the owner within the specified time, meet the findings and fulfil the shortcomings;
 - (f) record his approval and complete the checklist conforming compliance with the Code and these rules, and issue the certificate of approval in Form V to the owner under intimation to the concerned authority having jurisdiction and State designated agency
- (4).The authority having jurisdiction on receipt of application under sub-rule (1) for issue of permit for construction of proposed building shall-
- (a) approve the design and sanction building plan only after it has received a certificate in Form II or Form IV from the Empanelled Energy Auditors (Building);
 - (b) grant permit to erect or re-erect the building or add to or make alterations in the building to carry out the construction works subject to the following conditions in its sanction letter, namely: -
 - (i.) the construction work shall be in accordance with the sanctioned plan and requirement under the Code and these rules;
 - (ii.) the compliance with these rules shall be achieved during construction-in-progress;
 - (iii.) the building shall not be occupied before issuance of occupancy certificate to the owner;
 - (iv.) the authority having jurisdiction may, at any stage, revoke the permit on receipt of noncompliance report from the Empanelled Energy Auditors (Building) or on the notice of any misrepresentation of material facts in the application in respect of the provisions of these rules or the Code after giving a reasonable opportunity of being heard to the owner.
- (5).After receiving the permit, the owner shall-
- (a) give notice of his intention to start the construction work of the building in Form VI;
 - (b) undertake construction of energy conservation measures incorporated in the construction documents in terms of sub-clause (ii) of clause (b) of sub-rule (1);

- (c) have flexibility in constructing the building components and systems covered in the construction documents referred to in clause (a) of sub-rule (1) to most effective use of energy by deploying best practices in such components and systems to optimize the energy performance index ratio;
 - (d) take the approval of the Empanelled Energy Auditors (Building) before undertaking such construction referred to in clause (c) if the components and systems proposed to be constructed are other than those incorporated in the construction and compliance document.
- (6).The Empanelled Energy Auditors (Building), at construction stage, shall review, verify the specifications of the parameters specified in sub-rule (3) and, -
- (a) fill out the checklist specified in the Appendix D of the Code, provide comments if the proposed design of building does not meet the construction requirements and specify the shortcomings in compliance to the Code, these rules and sanctioned plan, and shall-
 - (i.) communicate its shortcomings and finding to the owner;
 - (ii.) give specified time to the owner to implement its findings;
 - (iii.) satisfy himself that the communication received thereafter from the owner meets the specified findings and fulfil shortcomings;
 - (b) record his approval and complete the checklist indicating compliance with the Code and these rules, and issue a certificate of compliance in Form VII to the owner under intimation to the authority having jurisdiction;
 - (c) where it is determined at any stage that construction is not proceeding in accordance with the sanctioned plan or is in violation of any of the provisions of the Code and these rules, Empanelled Energy Auditors (Building) shall notify the owner, and request for additional information with respect to his findings or on the shortcomings identified by him as per Form VIII;
 - (d) in case the Empanelled Energy Auditors (Building) is satisfied with the additional information provided by the owner, he shall record the same in the certificate of compliance in Form VII and communicate the same to the owner under intimation to the authority having jurisdiction;
 - (e) in case the Empanelled Energy Auditors (Building) is not satisfied with the additional information submitted by the owner he shall report the same to the authority having jurisdiction to ensure that all further construction is stayed until correction has been effectuated and a certificate of compliance has been issued by Empanelled Energy Auditors (Building).
- (7).Every owner shall submit a notice of completion of the building in Form IX to the authority having jurisdiction on the completion of work including the works related to energy conservation measures specified in the sanctioned permit along with the certificate in Form X issued by the Empanelled Energy Auditors (Building) certifying the completion of the building accompanied by –
- (a) the duly completed compliance forms together with check list of various components covered under rule (3) at the completion stage which shall include the followings-
 - (i) review of heating, ventilation and air-conditioning component tables for air-handling equipment, refrigeration equipment, condensing equipment,

- air-flow summaries, tables showing lighting equipment specifications, and tables showing motor specifications;
- (ii.) inspection of lighting equipment like lamps, ballasts, to confirm fixture wattage and inspection shall include at least random check across according to the type of usage in the building to determine lighting power density;
 - (iii.) review the required lighting controls such as manual switching off perimeter, day lighting circuits, automated occupancy-based control, photo sensor controls, and automated timer-based controls;
 - (iv.) review of coefficient of performance values of installed heating, ventilation and air conditioning equipment and control equipment;
 - (v.) review of efficiencies of installed motor and controls;
 - (vi.) review of power factor and power distribution losses;
 - (vii.) review the required check metering and monitoring system.
- (b) a list of the energy related building features in the proposed design, if any, which are different from the sanctioned or standard baseline design;
- (c) all documents and invoices in support of the construction undertaken with respect to all energy conservation measures including insulation, fenestration, heating, ventilation and air-conditioning, lighting and electrical systems, water heating systems of the building.
- (8). If the energy performance index ratio at the completion stage is less than or equal to one as compared to the sanctioned plan of the building, it shall be deemed to have complied with the Code and these rules.
- (9). If there is deviation in the energy performance index ratio of the sanctioned plan that is it is more than one as compared to the sanctioned plan of the building, Empanelled Energy Auditors (Building) shall record its findings in Form XI and communicate the same to the owner and seek compliance of the same through incorporation of additional energy conservation measure. The Empanelled Energy Auditor (Building) shall render technical assistance to the owner to ensure that the proposed design of building becomes compliant with these rules.
- (10). The owner shall neither occupy nor allow any other person to occupy the building or part of the building covered under these rules for any purpose until such building or such part thereof has been granted occupancy certificate under the bye-laws of the authority having jurisdiction.
- (11). The owner shall give notice of completion of the building and seek permission for occupancy.
- (12). The authority having jurisdiction on receipt of such notice by the owner accompanied by a certificate by the Empanelled Energy Auditors (Building), issue the occupancy certificate in Form XII incorporating inter alia the following conditions, namely: -
- (i.) that the energy performance of the building shall be monitored and verified by the Odisha Energy Conservation Building Code Implementation Committee of the Odisha;
 - (ii.) that the owner through the Empanelled Energy Auditors (Building) shall submit to the State designated agency, an energy performance index report

as per Form XIII under intimation to Bureau for two consecutive years after the building has been fully operational;

(iii.) in case the energy performance index ratio of the building is more than one, the authority having jurisdiction may issue a provisional occupancy certificate subject to the condition that the owner shall undertake energy audit of the building to identify additional energy conservation measures to achieve the energy performance index ratio of the building approved in the sanctioned plan or permit within a period of three years;

(iv.) if the owner fails to achieve the energy performance index ratio as specified in clause (iii) within a period of three years from the date of occupancy of the building the authority having jurisdiction shall place the matter before the Odisha Energy Conservation Building Code Technical Grievances Redressal Committee, which shall hear the owner and the Empanelled Energy Auditors (Building) and make recommendations in the matter accordingly and the authority having jurisdiction shall comply with such recommendations.

(13). The process shall be continued repeatedly till energy performance index ratio of the building comes to less than one or equal to one and Empanelled Energy Auditors (Building) shall fill and submit the compliance documents, as specified in Appendix D of the Code, of various energy conservation measures at each stage namely, design, construction and completion, to achieve conformity with the Code and these rules.

(14). The simulation tool referred in sub-rule (3) shall be based on the standard method of test for the evaluation of building energy analysis computer program.

(15). The owner may approach the Odisha Energy Conservation Building Code Compliant Technical Grievances Redressal Committee for redressal of any grievance under the provisions of these rules.

(16). **Committees.** –

(1). Odisha State designated agency, for its State, shall constitute –

(a) Odisha Energy Conservation Building Code Implementation Committee headed by Chief Secretary of the State or, his nominee and comprising of the following members, namely:-

(i.) Chief Secretary- Chairman

(ii.) Principal Secretary, Energy- Member

(iii.) Principal Secretary, H&UD- Member

(iv.) Principal Secretary, Industries – Member

(v.) Secretary, Works Dept- Member

(vi.) One CEO of DISCOM nominated by State Govt- Member

(vii.) One Nominee from Bureau of Energy Efficiency- Member

(viii.) EIC(Electricity)- Member Convenor.

to–

- (i.) promote energy efficiency standards through optimization of parameters in the various components and systems of the building in line with the provisions of these rules to enhance the building performance and provide every support to it to make it an effective instrument of promoting energy conservation and energy efficiency in the commercial buildings or establishment;
 - (ii.) forward its recommendations to the Bureau to assist the National Energy Conservation Building Code Implementation Committee to develop and revise energy consumption standards for buildings, in terms of energy performance index, zone-wise -, warm and humid and composite climate zones, classification-wise;
 - (iii.) create awareness about Odisha Energy Conservation Building Code and procedure for erection of Code compliant building;
 - (iv.) promote construction of energy efficient buildings ensuring quality and consistency in their constructions having regard to the climatic conditions and needs of the building projects;
 - (v.) promote capacity building of building professionals, developers and contractors to promote energy efficient designs of buildings in close coordination with authorities having jurisdiction;
 - (vi.) undertake performance review of annual work of all Empanelled Energy Auditors (Building) to check their credentials;
- (b) prepare a summary of violations which shall be provided by Odisha State designated agency to the Bureau and review such violations for the purpose of evaluating his professional skills;
- (c) prepare a yearly report and furnish the same to the Bureau indicating *inter alia* the progress made in compliance of these rules in the State and the steps taken by the Odisha State designated agency to improve the rate of compliance of Code in the state of Odisha;
- (d) create data base through compilation of data of energy performance index and its ratio achieved by each building constructed after coming into force of these rules;
- (e) Odisha Energy Conservation Building Code Compliant Technical Grievances Redressal Committee headed by an officer of the Urban Development Department of the State, with other members, not exceeding four, nominated by the Odisha Energy Conservation Building Code Implementation Committee who are qualified by experience and training to pass judgment upon matters pertaining to construction of Code compliant building in the state of Odisha, to–
- (i.) hear grievance filed by the owner of a Code complaint building within the specified time period given by the authority having jurisdiction relating to the building permit, completion certificate, occupancy certificate of building including determination of the energy performance index ratio at the completion stage and interpretation of these rules or any other grievance arising out of the implementation of the Code and these rules;
 - (ii.) make recommendations to the authority having jurisdiction to reconsider such issue, or for implementation by the authority having jurisdiction, as the case may be.

6. Responsibilities and duties of the owner.–

(1)The owner of the Code compliant building shall carry out the work of the said building in accordance with the requirements of the Code and these rules.

(2)Every owner shall-

(a) engage Empanelled Energy Auditors (Building) in development of building design, installation of energy conservation measures and equipment to meet with the requirements of these rules and ensure following, namely: –

- (i.) finalize the compliance approach relevant for his building project based on the complexity of the building, budget and time constraints;
- (ii.) finalize the energy conservation measures as per the Code as amended from time to time having regard to the location of the proposed building;
- (iii.)to integrate the energy conservation measures in the building design in accordance with the provisions of these rules;
- (iv.)that drawings, specifications and compliance forms are prepared and energy conservation measures are reflected in the building design documents and submitted to the authority having jurisdiction in compliance with the requirements of the rules accompanied by a certificate specifying the energy performance index ratio of the building by the Empanelled Energy Auditors (Building) that the documents are as per the requirement of these rules;

- (v.) notice is given within the validity of sanction to the authority having jurisdiction of his intention to start the construction work at the building site;
 - (vi.) commence the work within the period specified by the authority having jurisdiction from the date of such notice or seek extension of time for starting the construction work, wherever necessary;
 - (vii.) ensure that the designed energy conservation measures are deployed in the construction of the building and installation of its components and systems.
- (b) permit the Empanelled Energy Auditors (Building) to enter the building or premises at any reasonable time for the purpose of inspection to ensure compliance of building works with rules and regulations under the Act;
- (c) give written notice to the authority having jurisdiction intimating the completion of the construction work along with a certificate from the Empanelled Energy Auditors (Building) to the effect that-
- (i.) the construction of the building has been done in accordance with the sanction of the building permit;
 - (ii.) all the energy conservation measures have been installed and inspected, and they meet the requirements of the Code and these rules;
 - (iii.) the building design meet with the provisions of the Code and these rules;
- d) give written notice to the authority having jurisdiction as well as to the Odisha State designated agency in case of termination of the services of Empanelled Energy Auditors (Building) and appointment of other Empanelled Energy Auditors (Building) in its place;
- e) obtain an occupancy permit from the authority having jurisdiction prior to any occupancy of the building or part thereof after completion of the building;
- f) report the practical difficulties to the Empanelled Energy Auditors (Building), if any, in carrying out the provisions of these rules, who shall take necessary action in consultation with Odisha State designated agency and Odisha Energy Conservation Building Code Implementation Committee;
- g) on the receipt of the notice, if any, from the authority having jurisdiction, he shall discontinue such usage within reasonable time as specified in such notice and in no case, he shall disregard the provisions of these rules;
- h) where he proposes to alter the installation of any system or material or equipment on account of improving the energy efficiency of the building contrary to the system, material or equipment as indicated in the sanction plan, he shall use or install such system or material or equipment after obtaining the necessary approval of the Empanelled Energy Auditors (Building):

Provided that it does not violate the spirit and intent of the provisions of these rules:

Provided further that such change shall not compromise with the building requirements namely, structural stability, safety, health or environmental provisions of Central laws and State laws applicable to the buildings covered under these rules.

- (3) The owner may approach the Odisha Energy Conservation Building Code Compliant Technical Grievances Redressal Committee for redressal of any grievance under the provisions of these rules.

7. Role, responsibilities and duties of the Empanelled Energy Auditors (Building). –The Empanelled Energy Auditors (Building), whose services are engaged by the owner, shall–

- (a) verify and certify –
- (i.) the design of the building keeping in view the design criteria, energy goals of the project, energy systems performance verification plan, and the modelling approach;
 - (ii.) the energy conservation measures based on the design approach for the project under consideration;
 - (iii.) construction documents and compliance documents, compliance forms and checklists specified to ensure that the building complies with the Code and these rules;
 - (iv.) energy performance index ratio of the proposed building;
- (b) furnish a certificate under its seal and authorized signature to the effect that drawings, specifications, construction documents, compliance documents and forms prepared covering building envelope, comfort system and controls, lighting and electrical power systems, wherever applicable, and all other Code related documentation prepared for submission to the authority having jurisdiction ensuring compliance with these rules;
- (c) inspect the building works from the design stage to its commissioning stage of buildings including their uses under these rules and based on his certification, the authority having jurisdiction shall issue building permit, approve construction of building, issue completion and occupancy certificates;
- (d) the Empanelled Energy Auditors (Building) shall ensure that none of the professionals or employees working under him/her is engaged in any work in connection with the construction or alteration of the concerned building covered under these rules to ensure that there is no conflict of interest with his/her official duties with the interests of the authority having jurisdiction;
- (e) report to Odisha State designated agency on such unusual technical issues that may arise due to issue of building permit or construction of building or during occupancy stage;
- (f) provide inputs to the National and Odisha Energy Conservation Building Code Implementation Committees to facilitate for better implementation of the Code and these rules;

(g) promote norms and standards specified in the Code.

8. Responsibilities and duties of State designated agency. - The Odisha State designated agency established by Government of Odisha under clause (d) of section 15 of the Act, in consultation with Bureau, shall—

- (a) coordinate, regulate and enforce provisions of the Code and these rules for efficient use of energy and its conservation under the Act in the State;
- (b) ensure every commercial building or establishment having a connected load of 100 kW or above, or contract demand of 120 kVA or above or total built-up area of 1000 sqm. or above excluding stilt or basement meant for parking area, be constructed in compliance with these rules;
- (c) monitor the performance of the Empanelled Energy Auditors (Building) to improve the quality, consistency and rate of compliance of these rules with a view to make the cadre of Empanelled Energy Auditors (Building) as effective instruments for promotion of energy efficiency in the building sector in the State;
- (d) create a data bank in the State to measure the compliance rates of the Code compliant buildings and accurately account for the energy savings resulting from the compliance of these rules;
- (e) also create a data bank on energy use per square meter of area of the building under different zones namely, warm and humid and composite, separately for each category in the State;
- (f) take necessary steps to make energy performance index as a measure to comply with these rules in the various categories of buildings and send its recommendations to the Bureau for the formulation of energy consumption norms and standards in respect of various categories of buildings constructed zone-wise in its State;
- (g) arrange conduct site visits, if considered necessary, to determine the accuracy of reporting by Empanelled Energy Auditors (Building) in the State;
- (h) prepare a report on performance of Empanelled Energy Auditors (Building) listing out the projects complying with these rules, projects in violation of compliance with these rules and the level of violation, and provide summary of such violations for each year to the Bureau;
- (i) coordinate with the authority having jurisdiction to amend their building bye-laws incorporating the provisions of these rules for the purpose of construction of buildings in compliance with the Code and these rules;
- (j) provide necessary support to the authority having jurisdiction to conform to the provisions of these rules with regard to matters concerning design construction including energy conservation measures and occupancy for improving the energy

performance of Code compliant buildings and effectiveness in compliance of these rules.

9. Miscellaneous. –

- (1).The use of any energy conservation measures or method or design or construction not specifically specified under these rules shall not be prevented by the authority having jurisdiction if such energy conservation measures or method or design or construction is found to be satisfactory by the OdishaEnergy Conservation Building Code Compliant Technical Grievance Redressal Committee and such energy conservation measures or method or design or construction assist the owner in optimizing the energy performance index ratio in the use of energy on its occupancy.

- (2).The Code shall be reviewed periodically, at least once in five years, to determine the need for revision or withdrawal of standards specified in the Code, and such standards which in the opinion of the Bureau need no revision or amendment shall be reaffirmed.

Form I

[See rule 5(1)]

Application for seeking building permit in respect of erection/ re-erection/making alteration in the OdishaEnergy Conservation Building Code Compliant Building

To

The Commissioner or (name of the competent authority)

Authority having jurisdiction,

Name of the city

Name of the State

Date: ___/___/___

Subject: Application for erection of OdishaEnergy Conservation Building Code compliant building in premises of Plotno._____ Block No._____ Scheme _____ Street _____ Name of the town/city

Sir,

I/We the undersigned hereby give you notice of my intention to erect /re- erect/alter OdishaEnergy Conservation Building Code Compliant Building under theOdishaEnergy Conservation Building Code Rules, 2022 in the premises of plot No._____ Block No._____ Scheme _____ and request for issue of building permit for the construction of the Odisha Energy Conservation Building Code compliant building. The following documents are enclosed

- I. Construction Documents and Compliance Forms together with check-lists incorporating the installation of Energy Conservations Measures specified in the aforesaid rules.
- II. The Construction Documents and Compliance Forms together with check-lists have been verified by Shri----- Regd. number _____ Empanelled Energy Auditors (Building). A certificate in Form II duly signed and sealed in this regard is enclosed.

Yours faithfully,
(Name of the owner)
Address _____
Tel. No./Mobile No. ___

Form II

[See rule 5(1)(a)]

[Undertaking by owner for construction of the Odisha Energy Conservation Building Code compliant building]

I/We am/are the owner(s) of the aforesaid Plot No. _____ Block No. _____ and the proposed building on completion of construction shall have a connected load/contract demand/air-conditioned built-up area of 100 kW/120 kVA or above or total built-up area of 1000 sqm. or above excluding stilt or basement meant for parking area and is proposed to be constructed to use or intended to be used for commercial purposes.

The proposed building accordingly attracts the provisions of Odisha Energy Conservation Building Code Rules, 2022.

I/we undertake that the aforesaid building shall be constructed in accordance with the bye-laws of the Municipal Authority and the provisions of the Odisha Energy Conservation Building Code Rules, 2022. In case any deviation is noticed during the construction of the Building, I/we shall indemnify the loss to the authority having jurisdiction.

I/ we further undertake that the information supplied in the enclosed drawings and the application is accurate to the best of my/our knowledge and if any of the information supplied is found to be incorrect and such information result in loss to the Central or the State Government or any other authority under them. I/ we undertake to indemnify such loss.

Signature

(Name of the owner)

Address _____

Mobile No/ Tel No-----

Form III

[(See rule 5(1)(c)(ii)]

[Certificate from Empanelled Energy Auditors (Building) to be enclosed with the application for Building Permit for OdishaEnergy Conservation Building Code compliant building]

Certificate

I/We am/are Empanelled Energy Auditors (Building) having registration No / _____ under the Energy Conservation Act 2001 (52 of 2001) and am authorized to scrutinize and verify the design of OdishaEnergy Conservation Building Code compliant building. I/We certify that –

- a) I/We have scrutinized the construction documents, undertaking given by the owner duly signed by the owner/design professional showing all the pertinent data and features of the building, equipment and systems in sufficient details covering building envelop, heating, ventilation and air-conditioning, service hot water, lighting and electrical power in accordance with municipal bye-laws and with the OdishaEnergy Conservation Building Code rules,2022 in respect of building proposed to be constructed on plot on --- -----block no----- scheme in the city of _____ in the State of _____;
- b) I/We have scrutinized the compliance forms with the check- lists to ensure compliance with the bye-laws and the OdishaEnergy Conservation Building Code Rules, 2022.
- c) The compliance documents have been duly inspected by the undersigned.
- d) The energy performance index ratio of the building design as per compliance documents, at the design stage is equal to or less than one and is therefore in compliance with the OdishaEnergy Conservation Building Code Rules, 2022.
- e) It is certified that all required scrutiny and verification of the documents submitted have been carried out diligently, truthfully and all reasonable professional skill, care and diligence have been taken in scrutinizing and verifying the drawings of the buildings and compliance forms together with check–lists covering the various components of the OdishaEnergy Conservation Building Code rules, 2022.
- f) The contents of all the documents submitted along with the application are a true representation of the facts and nothing has been concealed.

There is no objection for issue of building permit in respect of the aforesaid proposed building in so far as requirements ofOdisha Energy Conservation Building Code rules, 2022 are concerned.

Signature

Name of the Empanelled Energy Auditors (Building)

Registration No /SEAL.

Date

Form IV

[See rule 5(3)(e)(i) & 5(4)(a)]

[Certificate of Inspection by Empanelled Energy Auditors (Building) on review of Building Permit Application in respect of the proposed building -Communication of omissions and non-compliance to owner]

To

Shri _____,
Address

Subject: Application for erection of proposed Building in premises of Plot no. _____ Block No. _____ Scheme _____ Street _____ Name of the town/city- Details of omission /non-compliance with the Odisha Energy Conservation Building Code rules, 2022 on design stage inspection

Sir,

I/We,.....(Name), being an authorized Empanelled Energy Auditors (Building) vide order No. _____ hereby state I/we have reviewed and verified the undertaking given by you and have inspected the construction documents, compliance forms, check-lists, submitted along with building permit application in respect of the various elements specified in sub-rule (3) of rule 5 of the various components of the proposed building in respect of the subject building and inform that the following omission/non-compliance have been discovered on inspection –

- i)
- ii)
- iii)
- iv)

It is requested that the necessary energy conservation measure in consultation with your design team be carried out in order to bring them in compliance with the Odisha Energy Conservation Building Code Rules, 2022. You are accordingly requested to take corrective action within a period of one month from the date of issue of this letter. Further action on your application for issue of building permit shall be taken after satisfactory compliance of the aforesaid omission/non-compliance.

Signature

Empanelled Energy Auditors (Building)
Registration number/Mobile number
Seal

Form V
[See rule 5(3)(f)]

Certificate of Inspection by Empanelled Energy Auditors (Building) on review of building permit application enclosing construction documents and compliance forms in respect of OdishaEnergy Conservation Building Code compliant building]

I/We,.....(Name), being an authorized Empanelled Energy Auditors (Building) vide orderNo._____ hereby state that I/we have reviewed and verified the undertaking given by the owner, and have inspected the construction documents, compliance forms, check-lists, submitted along with building permit application in respect of the various elements of the proposed OdishaEnergy Conservation Building Code compliant building in the premises of plot No._____ Block
No._____ Scheme _____ Town/City _____ State of _____ and certify that the

- I. the omission/non-compliance pointed out by the undersigned in the certificate of Inspection dated have been complied with satisfactorily;
- II. the energy performance index ratio calculation match with the data given in the aforesaid documents and is in compliance with the Odisha Energy Conservation Building Code Rules, 2022.

I/We further certify that –

- a) all reasonable professional skill, care, and diligence have been taken in verifying the compliance forms in respect of the various elements of the components covered in OdishaEnergy Conservation Building Code rules, 2022 and contents thereof are a true representation of the facts and meet the requirements of OdishaEnergy Conservation Building Code Rules, 2022.
- b) There is no objection for issue of building permit in respect of the aforesaid proposed building in so far as requirements of OdishaEnergy Conservation Building Code Rules, 2022 are concerned.

The check-list duly completed and signed by the undersigned is enclosed.

Signature

Authorized/Empanelled Energy Auditors (Building)
Registration number/ Mobile number
Seal

Form VI
[See rule 5(5)(a)]

Notice for commencement of construction work of Odisha Energy Conservation Building Code compliant building

To

Date: __/__/__

The Commissioner or (name of the competent authority)

Authority having jurisdiction,

Name of the City

Name of the State

Subject: Erection of Odisha Energy Conservation Building Code compliant building on premises of Plot no. _____ Block No. _____ Scheme _____ Street _____ Name of the town/city-
Notice for commencement of building construction works

Sir,

I/We hereby give notice for commencement of building works including implementation of Energy Conservation Measures for erection of Odisha Energy Conservation Building Code compliant building in the aforesaid site i.e. Plot No.scheme.....street in pursuance of the sanction granted by the Authority having jurisdiction/*vide* file No./letter No.....

Yours faithfully

Signature of the owner
(Name of the owner)
Address of the owner

Form VII
[See rule 5(6)(b) and (d)]

[Certificate of Inspection by Empanelled Energy Auditors (Building) on review of construction works enclosing construction documents and compliance forms in respect of Odisha Energy Conservation Building Code compliant building-- Issue of certificate of compliance]

To
The Owner,
Address

I/We,.....(Name), being an authorized/**Empanelled Energy Auditors (Building)** vide order No. _____ hereby state I/we have reviewed the undertaking given by the owner, **energy conservation measures installed during the construction works** and have reviewed the construction documents, compliance forms, check-lists, submitted along with progress in construction works in respect of the various elements of the components referred to in sub-rule (6) of Rule 5 of the proposed Odisha Energy Conservation Building Code compliant building _____ in the _____ premises _____ of plot No. _____ Block No. _____ scheme _____ Town/City _____ State _____ of _____ and certify that the energy performance index ratio calculation matches with the data given in the aforesaid documents;

I/We further certify that all reasonable professional skill, care, and diligence have been taken in verifying the construction document and compliance forms in respect of the various elements of the components covered in Odisha Energy Conservation Building Code rules, 2022 and contents thereof are a true representation of the facts and meet the requirements of Odisha Energy Conservation Building Code rules, 2022.

The check-list duly completed and signed by the undersigned is enclosed.

Signature

Name

Empanelled Energy Auditors (Building)

/Registration No./Mobile number.

Seal

Copy to: Commissioner, Authority having jurisdiction/Name of the City/Town Chief Executive, State designated agency/Name of State/Address

Form VIII
[See rule 5(6)(c)]

[Certificate of Inspection by Empanelled Energy Auditors (Building) on review of construction works enclosing construction documents and compliance forms in respect of Odisha Energy Conservation Building Code compliant building- Issue of certificate of non-compliance]

To

Shri.....

owner

Address Date: __/__/____

Sub: Erection of Odisha Energy Conservation Building Code Compliant Building on premises of plot No. _____ block No. _____ scheme _____ street _____ name of the town/city-
Communication of findings by the Empanelled Energy Auditors (Building)

Sir/Madam,

I/We,.....(Name), being an authorized/Empanelled Energy Auditors (Building) vide order No. _____ hereby state I/we have reviewed the undertaking given by the owner, and energy conservation measures under construction and have reviewed the construction documents, compliance forms, check-lists, submitted along with progress in construction works in respect of the various elements of the components of the proposed Building in the premises of plot No. _____

Block No. _____ Scheme _____ Town/City _____ State of _____ and have to state that the construction has not proceeded in accordance with the sanctioned plan and has deviated/is deviating from the following provisions of Odisha Energy Conservation Building Code rules, 2022 namely: -

- i)
- ii)
- iii)

2. None of the above deviations are covered in the best practices approved by the Odisha Energy Conservation Building Code Implementation Committee.

or

The following deviations are covered in the best practices by the Odisha Energy Conservation Building Code Implementation Committee.

3. The building owner is requested to rectify the above deviations or take the approval of the Odisha Energy Conservation Building Code Technical Grievance Redressal Committee.

4. The building owner after obtaining the approval provided in para 3 above or rectifying the deviations notified in para 1 above may inform the undersigned of the action taken in the matter within one month from the date of approval obtained or rectification completed along with the updated check-list to enable me to inspect the works in connection with the issue of certificate of compliance provided in clause (d) of sub-rule (6) of rule 5 of the Odisha Energy Conservation Building Code Rules, 2022.

Yours faithfully

Signature

Name of Authorized/Empanelled Energy Auditors (Building)

number/Mobile number.

Seal

Copy to: Commissioner, Authority having jurisdiction/Name of the City/Town/State

Form IX
[See rule 5(7)]
Notice of completion

To
The Commissioner
Authority having jurisdiction
Name of the Town/State

Subject: Construction of Odisha Energy Conservation Building Code compliant building on plot No. _____ in block No. _____ town _____ Notice of completion of construction of Odisha Energy Conservation Building Code compliant works.

Sir,
I/We hereby give notice that the erection of the building on plot No. Block No. including execution and implementation of the energy conservation measures have been completed in accordance with the plans sanctioned *vide* your office communication No. dated. The following documents are enclosed: -

(i) A certificate of inspection on completion of the aforesaid building from S. Shri _____ Empanelled Energy Auditors (Building) vide Municipal Authority Order No. _____ dated _____

The building is fit for use for which it has been erected/re-erected/constructed.

It is requested that permission to occupy or use the aforesaid building may be granted.

Yours faithfully,

Signature

.....

Name of the owner
Plot No.
block No.
Address

(ii) Chief Executive, (By Name), State designated agency/Address/State of

Form XI
[See rule 5(9)]

[Certificate of Inspection by Empanelled Energy Auditors (Building) on review of completion of construction works in respect of OdishaEnergy Conservation Building Code compliant building-Communication of omissions and non-compliance to owner]

To

Shri _____,
Address

Subject: Application for erection of OdishaEnergy Conservation Building Code Compliant Building in premises of plot no. _____ block No. _____ scheme _____ street _____ name of the town/city- details of omission /non-compliance with the OdishaEnergy Conservation Building Code Rules, 2022 on design/completion stage inspection.

Sir,

I/We,.....(Name),being an authorized Empanelled Energy Auditors (Building)vide orderNo. _____ hereby state I/we have reviewed and verified the undertaking given by you and haveinspected the construction documents, compliance forms, check-lists, submitted on completion of the proposed OdishaEnergy Conservation Building Code compliant building in respect of the subject building and inform that the following omission/non-compliance have been found on inspection –

- (i)
- (ii)
- (iii)
- (iv)

You are accordingly requested to take corrective action within a period of three months from the date of issue of this letter. Further action on your application for issue of Completion Certificate shall be taken after satisfactory compliance of the aforesaid omission/non-compliance.

Signature

Empanelled Energy Auditors (Building)
Registration number/Mobile number.

Form XII
[See rule 5(12)]

Occupancy Certificate
(to be issued by Authority having jurisdiction in their occupancy certificate)

To
Name of the owner....
Address.....

Subject: Issue of Occupancy Certificate

Sir,
With reference to your notice of completion of an OdishaEnergy Conservation Building Code compliant building construction dated.....on plot no.....block no... situated atI/we hereby certify that the saidbuilding as per description annexed on plot No. _____Block No.____Scheme_____whose plans were sanctionedvideNo.....dated.....has been inspected with reference to requirements of OdishaEnergy Conservation BuildingCode Rules, 2022.

2. The building is declared fit for occupancy as follows:

Climate Zone 24-Hour use Building / Regular Building
Hospitals/Hotels/Call Centre/Other Building Types
Annexure

	Description of the building	connected load
Ground Floor	Usage	
1. 1st floor
2. 2nd floor
3. 3rd floor
4. 4th Floor
5. etc.		

2. The energy performance index ratio of the building on the completion stage is as per the sanction plan. It has been decided by the authority having jurisdiction in consultation with the State designated agency that the building is declared fit for occupancy as specified above, subject to the condition that the owner shall undertake energy audit of the building and identify additional energy conservation measures to achieve the compliance with the energy performance index of the building approved in the sanctioned plan.

3. The energy performance of the Building shall be monitored and verified by the OdishaEnergy Conservation Building Code committee for the next two years.

Enclosures: copy of certified completion plan.

Yours faithfully,

(Signature of building official)
Authority having jurisdiction

Copy to- The Chief Executive, State designated agency.....

Form XIII
[See rule 5(12)(ii)]

[Energy performance index Report Submission by Empanelled Energy Auditors (Building) to Odisha State designated agency after the building has become fully operational]

To
The Chief Executive,
State designated agency,
Government of Odisha

Sub: Energy performance index Report for Odisha Energy Conservation Building Code compliant building constructed on Plot no. _____ Block No. _____ Scheme _____ Street _____ Name of the town/city-Communication by the Empanelled Energy Auditors (Building)

Sir,

I/We,.....(Name), being the authorized/Empanelled Energy Auditors (Building) vide order No. _____ hereby state that I/we have reviewed the undertaking given by the owner, energy consumption for year of the proposed building of type in the premises of plot No. _____ Block No. _____ Scheme _____ Town/City _____ State of _____ and certify that the energy performance index ratio is which is less than or equal to one. The EPI report is enclosed.

I further certify that all reasonable professional skill, care, and diligence have been taken to verify the energy consumption of the aforesaid building.

Copies of the electricity bills have been enclosed for your reference.

Yours faithfully

Signature

Name of Authorized/Empanelled
Energy Auditors (Building)

Registration Number /

Mobile number

Seal

Enclosure: Energy performance index ratio report as specified in the Appendix D of the Code.

Compliance Forms

1. Envelope Summary

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Info	Project Address	Date
		For Building Department Use
	Project Built-up Area[m ²]	
	Project Above-grade Area[m ²]	
	Project Conditioned Area[m ²]	
	Applicant Name and Address	
Project Climatic Zone		

Building Classification	<input type="checkbox"/> Hospitality	<input type="checkbox"/> Business
	<input type="checkbox"/> HealthCare	<input type="checkbox"/> Educational
	<input type="checkbox"/> Assembly	<input type="checkbox"/> Shopping Complex

Project Description	<input type="checkbox"/> New Building	<input type="checkbox"/> Addition	<input type="checkbox"/> Alteration
	<input type="checkbox"/> Self-occupied	<input type="checkbox"/> Core and Shell	<input type="checkbox"/> Mixed-Use
Compliance is sought for Energy efficiency level	<input type="radio"/> ECBC Compliant	<input type="radio"/> ECBC+ Compliant	<input type="radio"/> Super ECBC Compliant
		EPI Ratio	

Compliance Approach	Prescriptive Method	Whole Building Performance Method	Building Trade-off Method-Envelope Compliance
---------------------	---------------------	-----------------------------------	---

Building Envelope					
Vertical Fenestration Area Calculation	Total Vertical Fenestration Area (rough opening)	/	Gross Exterior Wall Area	X100 =	%Window to Wall Ratio(WWR)
				X100 =	
Skylight Area Calculation	Total Skylight Area(rough opening)	/	Gross Exterior Roof Area	times 100 equals	% Skylight to Roof ratio(SRR)
		÷		X100 =	

OpaqueAssembly		
Wall (MinimumInsulationU-factor)		
Roof (MinimumInsulationU-factor)		
CoolRoof		
SolarReflectance		
Emittance		
WallAssembly		
Material	R-value	AssemblyU-Factor

DaylightingSummary	
%above-gradefloorareameetingthe UDI requirement for 90% ofthepotentialday-littimeinayear	
Fenestration	
Vertical	
MaximumU-factor	
MaximumSHGC(orSC)	
MinimumVLT	
Overhang/Side fins/BoxFrameProjection(yesorno)	
Ifyes,enterProjectionFactorforeach orientation and effectiveSHGC	
Skylight	
MaximumU-factor	
MaximumSHGC(orSC)	

2. Envelope Checklist

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Address							Date	
Applicability			Code Section (ECBC 2017, BEE)	Code Section (OECBC, 2022)	Component	Information Required	Location on Plans	Building Department Notes
Yes	No	N/A						
Mandatory Provisions – Building Envelope								
			4.2.1	6 (2)	Fenestration			
			4.2.1.1	6 (2) i	U-factor	Specify reference standard		
			4.2.1.2	6 (2) ii	SHGC	Specify reference standard		
			4.2.1.3	6 (2) iii	Visible light transmittance	Specify reference standard		
			4.2.2	6 (3)	Opaque Construction			
			4.2.2.1	6 (3) i	U-factors	Specify reference standard		
			4.2.2.2	6 (3) ii	Solar Reflectance	Specify reference standard		
			4.2.2.3	6 (3) iii	Emittance	Specify reference standard		
			4.2.3	6 (4)	Daylighting	Specify simulation approach or prescriptive		
			4.2.4	6 (5)	Building envelope sealing	Indicate sealing, caulking, gasket, and weather stripping		
Prescriptive Compliance Option- Building Envelope								
			4.3.1	6 (6)	Roofs	Specify implemented U factor		
			4.3.1.1	6 (6) i	Vegetative cool roof	Specify the solar reflectance, emittance, and reference standards		
			4.3.2	6 (7)	Opaque External Wall	Specify implemented U factor		

			4.3.3	6 (8)	Vertical fenestration	<p>(1) Indicate U-factors on fenestration schedule. Indicate if values are rated or default. If values are default, then specify frame type, glazing layers, gap width, low-e.</p> <p>(2) Indicate SHGC or SC on fenestration schedule. Indicate if values are rated or default</p> <p>(3) Indicate VLT of fenestration schedule. Indicate if values are rated or default.</p> <p>(4) Indicate if overhangs or side fins or box-frame projection are used for compliance purposes. If so, provide projection factor calculation and equivalent SHGC calculation</p>		
			4.3.3 (a)	6 (8) a. vi.	fenestration - U factor exemption	Specify if applicable, specify unconditioned space percentage, and specify incorporated specifications		
			4.3.4	6 (9)	Skylights	<p>(1) Indicate U-factors on fenestration schedule. Indicate if values are rated or default. If values are default, then specify frame type, glazing layers, gap width, low-e.</p> <p>(2) Indicate SHGC or SC on fenestration schedule. Indicate if values are rated or default.</p>		
Building Envelope Trade-Off Option- Building Envelope								
						Provide calculations		

3. Comfort System and Controls Summary

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Info	Project Address:	Date
		For Building Department Use
	Project Built-up Area(m ²):	
	Project Above-grade area(m ²):	
	Project Conditioned Area(m ²):	
	Applicant Name and Address:	
	Project Climatic Zone:	

Project Description

Briefly describe comfort system type and features.	Natural ventilation, mechanical Ventilation, Low energy comfort system, heating and cooling mechanical equipment. percentage area distribution for the installed system, and related information

Compliance Option	<input type="radio"/> System efficiency	<input type="radio"/> Prescriptive Method	<input type="radio"/> Whole Building Performance Method
Equipment Schedules	The following information is required to be incorporated with the mechanical equipment schedules on the plans. For projects without plans, fill in the required information below.		

Cooling Equipment Schedule

Equip.ID	Brand Name	Model No.	Capacity kW	Testing Standards	OSACFM or Economizer?	COP	IPLV	Location

Heating Equipment Schedule

Equip.ID	Brand Name	Model No.	Capacity kW	Testing Standards	OSACFM or Economizer?	Input kW	IPLV	Location

Fan Equipment Schedule

Equip.ID	Brand Name	Model No.	Testing Standards	SP	Efficiency	Flow Control	Location of Service

4. Comfort System and Controls Checklist

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Address								Date	
The following information is necessary to check a building permit application for compliance with the mechanical requirements in the Odisha Energy Conservation Building Code 2022.									
Applicability			Code Section (ECBC 2017, BEE)	Code Section (OECBC 2022)	Component	Information Required	Location on Plans	Building Department Notes	
Yes	No	N/A							
Comfort Systems and Control									
Mandatory Provisions- Comfort system and Controls									
			5.2.1	7 (1)	Ventilation	Indicate all habitable spaces are ventilated with outdoor air in accordance with mandatory requirements for ventilation system and guidelines specified in NBC			
			5.2.2	7 (2)	Minimum Space Conditioning Equipment Efficiencies	Provide equipment schedule with type, capacity, efficiency			
			5.2.3	7 (3)	Controls				
			5.2.3.1	7 (3) i	Timeclock	Indicate thermostat with night setback, 3 different day types per week, and 2-hour manual override, capable of retaining programming and time setting during loss of power for a period of at least 10 hours			
			5.2.3.2	7 (3) ii	Temperature Controls	Indicate temperature control with 3°C dead band minimum if the system provides both heating and cooling.			
						Indicate thermostats are interlocked to prevent simultaneous heating and cooling, where separate heating and cooling systems are there			
						Indicate separate thermostat control for space types mentioned in mandatory requirements for temperature control			
			5.2.3.3	7 (3) iii	Occupancy Controls	Indicate occupancy controls for space types mentioned in mandatory requirements for Occupancy Controls			
			5.2.3.4	7 (3) iv	Fan Controls	Indicate two-speed motor, pony motor, or variable speed drive to control the fans and controls shall be capable to reduce the fan speed to at least two third of installed fan power			
			5.2.3.5	7 (3) v	Dampers	Indicate all air supply and exhaust equipment's having VFD shall have dampers that automatically close upon the situations mentioned in mandatory requirements for Damper Control			
			5.2.4	7 (4)	Piping & ductwork	Indicate sealing, caulking, gasket, and weather stripping			
			5.2.4.1	7 (4) i	Piping insulation	Indicate R-value of insulation			
			5.2.4.2	7 (4) ii	Ductwork and Plenum insulation	Indicate R-value of insulation			
			5.2.5	7 (5)	System Balancing	Show written balance report for HVAC systems serving zones with a total conditioned area exceeding 500 m ²			

		5.2.6	7 (6)	Condensers	Indicate location of condenser and source of water used for condenser		
		5.2.7	7 (7)	Service Hot Water Heating			
		5.2.7.1	7 (7) i	Solar Water Heating	Indicate all Hotels and hospitals have solar water heating equipment installed for hot water design capacity as per mandatory requirements for Solar Water Heating System		
		5.2.7.2	7 (7) ii	Heating Equipment Efficiency	Indicate service water heating equipment shall meet the performance and efficiency as per mandatory requirements for Heating Equipment Efficiency for service water		
		5.2.7.3	7 (7) iii	Other Water Heating System	Indicate supplementary heating system is designed in consideration with mandatory requirements for mandatory requirements for Other water heating for service water		
		5.2.7.4	7 (7) iv	Piping Insulation	Indicate the Piping insulation is compliant with mandatory requirements for piping insulation of service water heating system.		
		5.2.7.5	7 (7) v	Heat Traps	Indicate vertical pipe risers serving water heaters and storage tanks are as per mandatory requirements for heat traps under service water heating.		
		5.2.7.6	7 (7) vi	Swimming Pools	Indicate the heated pools are provided with a vapor retardant pool cover on the water surface and temperature control and minimum insulation value as per mandatory requirements for swimming pools under service water heating		
Prescriptive Compliance Option- Comfort System and Controls							
		5.3.1	7 (8) i	Chillers	Indicate chiller type, capacity, COP & IPLV		
		5.3.2	7 (8) ii	Pumps	Indicate pump type (Primary, secondary, and condenser), its total installed capacity and efficiency		
		5.3.3	7 (8) iii	Cooling Towers	Indicate cooling tower type and installed capacity		
		5.3.4	7 (8) iv	Boilers	Indicate boiler type, capacity and efficiency		
		5.3.5.1	7 (8) v a (i)	Air-Economizer (ECBC/ECBC+/Super ECBC)	Indicate air economizer is capable of modulating outside-air and return-air dampers to supply 50% of design supply air quantity as outside-air for respective building type.		
		5.3.5.1	7 (8) v a (ii)	Water-economizer (ECBC/ECBC+/Super ECBC)	Indicate water economizer is capable of providing 50% of the expected system cooling load at outside air temperatures of 10°C dry- bulb/7.2°C wet-bulb and below, if the designed building is a respective building type.		
		5.3.5.2	7 (8) v b	Partial Cooling	Indicate where required by prescriptive requirements for partial cooling by economizers shall be capable of providing partial cooling even when additional mechanical cooling is required to meet the cooling load.		
		5.3.5.3	7 (8) v c	Economizer Controls	Indicate air economizers are equipped with controls as specified in prescriptive requirements for economizer controls		
		5.3.5.4	7 (8) v d	Testing	Indicate air-side economizers have been tested as per the requirement specified		
		5.3.6	7 (8) vi	Variable Flow Hydronic Systems			
		5.3.6.1	7 (8) vi a	Variable Fluid Flow	Indicate design flow rate of HVAC pumping system		
		5.3.6.2	7 (8) vi b	Isolation Valves	Indicate water cooled air-conditioning have two-way automatic isolation valves and pump motors greater than or equal to 3.7 kW is controlled by variable speed drives		

			5.3.6.3	7 (8) vi c	Variable Speed Drives	Indicate Chilled water or condenser water systems comply with either prescriptive requirement for variable speed Drive under variable flow hydronic system.		
			5.3.7	7 (8) vii	Unitary, Split, Packaged Air-Conditioners	Indicate the type of system, cooling capacity.		
			5.3.8	7 (8) viii	Controls for ECBC+ & Super ECBC Building			
			5.3.8.1	7 (8) viii a	Centralized Demand Shed Controls	Indicate the building has a Building Management System, with all Mechanical cooling and heating systems having PLC to the zone level shall have the control capabilities mentioned in prescriptive requirements for Centralized Demand Shed Controls under controls for ECBC+ and Super ECBC Buildings		
			5.3.8.2	7 (8) viii b	Supply Air temperature reset	Indicate multi zone mechanical cooling and heating systems shall have controls to automatically reset supply air temperature in response to building loads or outdoor air temperature by at least 25% of the difference between design supply air temperature and the design room air temperature.		
			5.3.8.3	7 (8) viii c	Chilled Water Temperature	Indicate chilled water systems exceeding 350 kW shall have controls to automatically reset supply water temperatures by representative building loads or by outdoor air temperature		
			5.3.9	7 (8) ix	Controls for Super ECBC Building	Indicate that the mechanical systems comply with prescriptive requirement for Controls of Super ECBC Building.		
			5.3.9.1	7 (8) ix a	Variable Air Volume Fan Control	Indicate Fans in VAV systems shall have controls or devices to limit fan motor demand under prescriptive requirements of Variable Air Volume Fan Control		
			5.3.10	7 (8) x	Heat Recovery	Indicate for all Hospitality and Healthcare, heat recovery effectiveness, and efficiency of oil and gas fired boilers		
			5.3.11	7 (8) xi	Service Water Heating	Indicate all Buildings, Hotels and hospitals have solar water heating equipment installed for hot water design capacity as per the prescriptive requirements for service water heating.		
			5.3.12	7 (8) xii	Total System Efficiency- Alternate Compliance approach	Attach simulation report		
			5.3.13	7 (8) xiii	Low Energy Comfort Systems	Indicate system type and list the exemption claimed		

5. Lighting and Controls Summary

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Info	Project Address:	Date
		For Building Department Use
	Project Built-up Area(m ²):	
	Project Above-grade area(m ²):	
	Project Conditioned Area(m ²):	
	Applicant Name and Address:	
	Project Climatic Zone:	

Compliance Option	<input type="checkbox"/> Space by Space method	<input type="checkbox"/> Whole Building Method
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Maximum Allowed Lighting Power(Interior)					
Location (Floor/room no.)	Occupancy Description		AllowedWattsp ² **	Areainm ²	Allowed x Area
**Document all exceptions Total Allowed Watts					

Proposed Lighting Power(Interior)				
Location(floor/room no.)	Fixture Description	Number of Fixtures	Watts/Fixture	Watts Proposed
Total Proposed Watts may not exceed Total Allowed Watts for Interior			Total Proposed Watts	

Maximum Allowed Lighting Wattage(Exterior)				
Location	Description	Allowed Watts perm ² orperlm	Area in m ² (or lm for perimeter)	Allowed Watts xm ² (or xlm)
Total Allowed Watts				

Proposed Lighting Wattage (Exterior)				
Location	Fixture Description	Number of Fixtures	Watts/Fixture	Watts Proposed
Total Proposed Watts may not exceed Total Allowed Watts for Exterior			Total Proposed Watts	

6. Lighting and Controls Checklist

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Address							Date	
The following information is necessary to check a building permit application for compliance with the lighting requirements in the Odisha Energy Conservation Building Code 2022.								
Applicability			Code Section (ECBC 2017, BEE)	Code Section (OECBC 2022)	Component	Information Required	Location on Plans	Building Department Notes
Yes	No	N/A						
Lighting and Controls								
Mandatory Provisions- Lighting and Controls								
			6.2.1	8 (2)	Lighting Controls			
			6.2.1.1	8 (2) i	Automatic shutoff	Indicate automatic shutoff locations or occupancy sensors		
			6.2.1.2	8 (2) ii	Space control	Provide schedule with type, indicate locations		
			6.2.1.3	8 (2) iii	Control in Daylight Areas	Provide manual or automatic control device schedule with type and features, indicate locations		
			6.2.1.4	8 (2) iv	Ext. lighting control	Indicate photo sensor or astronomical time switch		
			6.2.1.5	8 (2) v	Additional control	Provide schedule with type, indicate locations		
			6.2.2	8 (3)	Exit signs	Indicate wattage per face of Exit signs		
Prescriptive Interior Lighting Power Compliance Option- Lighting and Controls								
			6.3.1	8 (4)	LPD compliance	Indicate whether project is complying with the Building Area Method or the Space Function Method		
			6.3.2	8 (5)	Building area method	Provide lighting schedule with wattage of lamp and ballast and number of fixtures. Document all exceptions.		
			6.3.3	8 (6)	Space function method	Provide lighting schedule with wattage of lamp and ballast and number of fixtures. Document all exceptions.		
			6.3.4.1	8 (7)i	Luminaire wattage	Indicate the wattage of installed luminaires on the floor plan. In case of luminaires containing permanently installed ballasts, the operating input wattage has to be provided, either from manufacturer's catalogs or values from independent testing laboratory reports.		
			6.3.6	8 (9)	Controls ECBC+ and Super ECBC Buildings	Provide centralized control system schedule with type and features, indicate locations		
Prescriptive Exterior Lighting Power Compliance Option- Lighting and Controls								
			6.3.5	8 (8)	External light power	Provide lighting schedule with wattage of lamp and ballast and number of fixtures. Document all exceptions.		

7. Electrical and Renewable Energy System Summary

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Info	Project Address		Date
			For Building Department Use
	Project Above-grade Area[m ²]		
	Project Conditioned Area[m ²]		
	Applicant Name and Address		
	Project Climatic Zone		

Project Description	Transformers, Diesel Generator sets, Uninterruptible Power Supply, Renewable Energy Systems and related information
Briefly describe Electrical systems And renewable Energy installed in The facility	

Compliance Approach	<input type="radio"/> Prescriptive Method <input type="radio"/> Whole Building Performance Method
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Transformers	
Type of Transformer	Dry Type Transformer/Oil Type Transformer
	X100 =
Transformer Losses	kVA Rating of / Lossesat50% / Lossesat100%Transformer Loading in kW Loading in kW
Diesel Generator Sets	
Star Rating of DG set	3Star/4Star/5Star
Uninterruptible Power Supply	
Efficiency at 100% Load	
Renewable Energy Systems	
Capacity and Type of Renewable Energy Installed	

8. Electrical and Renewable Energy System Checklist

Odisha Energy Conservation Building Code 2022 Compliance Forms

Project Address					Date			
The following information is necessary to check a building permit application for compliance with the Electrical and Renewable Energy requirements in the Odisha Energy Conservation Building Code 2022.								
Applicability			Code Section (ECBC 2017, BEE)	Code Section (OECBC 2022)	Component	Information Required	Location on Plans	Building Department Notes
Yes	No	N/A						
Electrical and Renewable Energy Systems								
Mandatory Provisions- Electrical and Renewable Energy Systems								
			7.2.1	9 (2)	Transformers			
			7.2.1.1	9 (2) i	Maximum Allowable Power Transformer Losses	Provide losses at 50% load and 100% load, capacity and efficiency		
			7.2.1.2	9 (2) ii	Measurement and Reporting of Transformer Losses	For less than 500 kVA transformer meters are calibrated of 0.5 class accuracy and digital meters		
						For above 500 kVA additional Ct's and PT's are installed		
			7.2.1.3	9 (2) iii	Voltage Drop	Indicate the Voltage drop for feeders shall not exceed 2% at design load. Voltage drop for branch circuit shall not exceed 3% at design load.		
			7.2.2	9 (3)	Energy Efficient Motors	Indicate the motor class IE2/IE3/IE4.		
						Indicate the motors capacity more than 0.375 kW have efficiency according to the latest version of IS 12615.		
						Motor nameplate indicates nominal full-load motor efficiencies and full-load power factor.		
						Indicate the motor horsepower rating does not exceed 20% of the calculated maximum load being served.		
			7.2.3	9 (4)	Diesel Generator Sets	Indicate the star rating of the Diesel Generator Set		
			7.2.4	9 (5)	Check-Metering and Monitoring	Indicate the services exceeding 1000 kVA have permanently installed electrical metering to record kVA, kWh and total power factor. And provision for display of current in each phase, voltage between each phase and between each phase and neutral and total harmonic distortion as a percentage of total current.		
						Indicate the services not exceeding 1000 kVA but over 65 kVA shall have permanently installed electric metering to record kW, kWh and power factor or kVA_{Rh} on hourly basis.		
						Indicate the services not exceeding 65 kVA shall have permanently installed electric metering to record kWh on hourly basis.		
						Indicate in case of tenant based building, for recording metering should be provided at a location from where each tenant could attach the services.		

			7.2.5	9 (6)	Power Factor Correction	Indicate that the power factor correction has been maintained at the point of connection.
			7.2.6	9 (7)	Power Distribution System	Indicate the power cable has been sized so that the distribution losses do not exceed the values mentioned in the code.
			7.2.7	9 (8)	Uninterruptible Power Supply	Indicate the UPS meets or exceed the energy efficiency requirements listed in the table 7-4.
			7.2.8	9 (9)	Renewable Energy Systems	Indicate the buildings have provision for installation of renewable energy systems in the future on rooftop or the site.
			7.2.8.1	9 (9) i	Renewable Energy Generating Zone	Indicate a dedicated REGZ equivalent to at least 25 % of roof area or area required for generation of energy equivalent to 1% of total peak demand or connected load of the building, whichever is less, shall be provided in all buildings.
						Indicate the REGZ shall is free of any obstructions within its boundaries and from shadows cast by objects adjacent to the zone
			7.2.8.2	9 (9) ii	Main Electrical Service Panel	Indicate the minimum rating is displayed on the main electrical service panel. And space is reserved for the installation of double pole circuit breaker for future solar electric installation.
			7.2.8.3	9 (9) iii	Demarcation on Documents	Location for inverters and metering equipment,
		Pathway for routing of conduit from the REGZ to the point of interconnection with the electrical service,				
		Routing of plumbing from the REGZ to the water-heating system and,				
		Structural design loads for roof dead and live load.				

By Order of the Governor

NIKUNJA B. DHAL, IAS

Principal Secretary to Government