Recommendations on Integrating Third-Party System into Building Permitting Process in Rajasthan

Joshi Lalit and Jyotirmay Mathur

Center for Energy and Environment, Malaviya National Institute of Technology

Sha Yu and Meredydd Evans

Pacific Northwest National Laboratory

September 2014
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**List of Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEE</td>
<td>Bureau of Energy Efficiency</td>
</tr>
<tr>
<td>BPC</td>
<td>Building Plan Committee</td>
</tr>
<tr>
<td>CEPT</td>
<td>Centre for Environmental Planning and Technology</td>
</tr>
<tr>
<td>ECBC</td>
<td>Energy Conservation Building Code</td>
</tr>
<tr>
<td>ECBD</td>
<td>Energy Conservation Building Directive (in Rajasthan)</td>
</tr>
<tr>
<td>JMC</td>
<td>Jaipur Municipal Corporation</td>
</tr>
<tr>
<td>JDA</td>
<td>Jaipur Development Authority</td>
</tr>
<tr>
<td>LSG</td>
<td>Local Self Government</td>
</tr>
<tr>
<td>NOC</td>
<td>No Objection Certificate</td>
</tr>
<tr>
<td>PNNL</td>
<td>Pacific Northwest National Laboratory</td>
</tr>
<tr>
<td>RRECL</td>
<td>Rajasthan Renewable Energy Corporation Limited</td>
</tr>
<tr>
<td>SDA</td>
<td>State Designated Agency</td>
</tr>
<tr>
<td>SERC</td>
<td>State Electricity Regulatory Commission</td>
</tr>
<tr>
<td>TPA</td>
<td>Third-party assessor</td>
</tr>
<tr>
<td>TWG</td>
<td>The Weidt Group</td>
</tr>
<tr>
<td>ULB</td>
<td>Urban local body</td>
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Introduction

Background

Buildings account for 35% of total final energy consumption in India today. With income and population growth, rapid urbanization and construction boom, building energy use in India is expected to grow at 8% annually [1-3], which will aggravate India’s power shortages.

The concerns and need for energy efficiency in buildings are now widely appreciated; however, the penetration and commitment for efficiency measures at all levels still remain a challenging task. With the continuing exponential growth in building stocks and floorspace, it is thus imperative, at this stage, for all the concerned agencies and stakeholders to work in tandem and adopt measures that are proven beneficial and have long-term energy and environmental benefits.

Rajasthan, the largest state of India, has an installed generation capacity of 14,372 MW (as of March 2014)¹ and a sanctioned plan for adding 4,950 MW capacity during the 12th Five-Year plan period (2012-2017) [4-6]. The demand for electricity is also growing rapidly in the state, with an annual growth rate of 11% in the past few years, and the State of Rajasthan is experiencing chronic peak power shortages [7]. The buildings sector is emerging as a major energy consumer in Rajasthan, and it is critical to develop focused and sustainable initiatives to improve building energy efficiency.

The Energy Conservation Building Directives (ECBD), adopted by the Government of Rajasthan in 2011, is a milestone in this direction. Robust collaboration between stakeholders is now critical for implementation.

Objective of this report

To effectively implement ECBD, stakeholders in Rajasthan have recognized the need for an agency or an individual (i.e. a third party) to conduct compliance checks and enforce ECBD at different stages of building design, construction and commissioning. The third party would be independent of a building’s design and construction team and also, by definition, not part of

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¹ The installed capacity from state-owned projects, allocation from central sector projects, and renewable sources are 5,405 MW, 2,797 MW and 14,372 MW, respectively. The present installed capacity of Rajasthan Rajya Vidyut Utpadan Nigam is 5,357 MW.
the urban local bodies (ULBs). The expertise and competence of (certified) third parties can, to a large extent, supplement the limited resources available at UBLs for plan reviews and compliance checks. Therefore, the defined work portfolio of the third party should complement, facilitate and expedite the process of implementing ECBD.

**This report aims at recommending an operational mechanism for seamlessly integrating third parties into the existing mechanism for code compliance in Rajasthan, while critically analyzing key relevant issues.**

**Analysis approach**

Integrating a new player (i.e. a third party) into the existing matrix for ECBD compliance requires an in-depth analysis of the existing mechanism and identification of intersection points. Such analysis also requires assessing the readiness and availability of certified third-party agencies/individuals, evaluating commonality of evaluation formats, checking implementation and reporting procedures, discussing dispute resolution, incentives and penalties and analyzing the availability of material testing labs.

In this report, we assess the ECBD implementation mechanism in Rajasthan and make recommendations by investigating the following issues:

- Analyzing the roles and responsibilities of ULBs and other associated agencies, as well as the existing mechanism for ECBD approvals in Rajasthan;
- Reviewing the recommendations made for third-party assessors and operational models suggested in different studies and discussion forums in India for ECBC implementation;
- Assessing roles and responsibilities of third-party inspectors in ECBC implementation;
- Studying mechanisms for integrating third-party inspectors into the existing ECBD implementation program in Rajasthan.

**Institutional setup and the existing ECBD compliance mechanism in Rajasthan**

**Roles of ULBs and other government agencies in ECBD implementation**

Several government agencies in Rajasthan are involved in ECBD implementation, including ULBs, the Rajasthan Department of Local Self Government (LSG), development authorities and the State Designated Agency (SDA) for energy conservation (i.e., the Rajasthan Renewable Energy Corporation Limited, RRECL). These agencies play important roles in enforcing building bylaws and zoning resolution in Rajasthan and are also critical to ECBD implementation. Given their respective capacities, we recommend that they play the following roles in ECBD implementation:

- ULBs: plan reviews, on-site inspections and approvals;
LSG: administrative control for the implementation of ECBD by ULBs, issuing necessary directives/amendments pertaining to building bylaws and defining the jurisdictions of ULBs in specific cases (e.g., if small ULBs do not have trained staff for the purpose);
- Development authorities: plan reviews, on-site inspections and approvals;
- SDA: training, capacity building, demonstration projects and awareness campaigns; recommending amendments and devising implementation mechanisms; issuing directives for specific energy efficient item and co-ordination with other government departments for ECBD implementation.

Urban local bodies and Local Self Government in Rajasthan
Rajasthan has thirty three districts with 184 ULBs. The ULBs are classified into five categories based on population (Table 1) [8, 9].

Table 1. Classification of ULBs in Rajasthan

<table>
<thead>
<tr>
<th>Designation</th>
<th>Number</th>
<th>Classification norm (population; K =1000 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Municipal Corporations</td>
<td>06</td>
<td>Large cities (^a)</td>
</tr>
<tr>
<td>2 Municipal Councils</td>
<td>29</td>
<td>Population &gt; 100K &amp; all district headquarters (^b)</td>
</tr>
<tr>
<td>3 Municipalities Grade II</td>
<td>19</td>
<td>50K &lt; population &lt; 100K</td>
</tr>
<tr>
<td>4 Municipalities Grade III</td>
<td>58</td>
<td>25K &lt; population &lt; 50K</td>
</tr>
<tr>
<td>5 Municipalities Grade IV</td>
<td>72</td>
<td>&lt; 25K</td>
</tr>
</tbody>
</table>

Note:

\(^a\) Large cities include Jaipur, Jodhpur, Ajmer, Kota, Bikaner and Bharatpur (recently added).

\(^b\) According to the government budget announcement in 2012, all district headquarters were upgraded to municipal councils.

ULBs are the primary government agencies that implement ECBD. They conduct plan review, site inspection and checks, and provide approvals. Box 1 provides examples of the standard building plan approval procedures in Jaipur.

ULBs are under the supervision of the Rajasthan government through the LSG. The LSG monitors and coordinates activities of all municipalities. The LSG headquarter is located in Jaipur with six other extension offices in different districts to cater to the needs of all ULBs in Rajasthan. The LSG also allocates budget to ULBs and notifies ULBs about rules and regulations pertaining to building bylaws and their amendments.

Development authorities
While municipal corporations review and approve projects in the development areas, the development authorities take up the projects related to planned and sustainable development of the city and its infrastructure. The development authorities were constituted under a separate state statute, and, thus,
they have no elected members in its administrative/governance set up. The building bylaws promulgated by the State Government through LSG are also applicable to the development authorities. At present, there are three development authorities in Rajasthan, located in Jaipur, Jodhpur and Ajmer. In addition, there are six urban improvement trusts in smaller cities, which have functions similar to those of development authorities but a simpler administrative setup.

**Box 1. Project approval procedures: examples in Jaipur**

The Jaipur Municipal Corporation (JMC) and the Jaipur Development Authority (JDA) are responsible for reviewing and approving building plans in Jaipur City and outskirts, respectively.

**Jaipur Development Authority (Outskirts of Jaipur City)**

1. The architect of the concerned project has to submit a so-called Green File (or Application Form) along with the following documents at Nagrik Sewa Kendra (public service centers):
   a. Building drawings;
   b. Project report;
   c. Building ownership papers.
2. Then the file moves to the Deputy Town Planner and the Assistant Town Planner.
3. The Assistant Town Planner examines the drawings for setbacks and other mandatory zoning requirements.
4. The Deputy Town Planner issues a Demand Note along with No Objection Certificates (NOCs) from following departments:
   a. Airport Authority (for height clearance);
   b. Municipal Corporation (for fire control clearance);
   c. Environmental Department (for environmental clearance).
5. After receiving the necessary documents from the project proponent, the project goes to the Building Plan Committee (BPC). This BPC approves the start of the construction phase on the project.

**Jaipur Municipal Corporation (Walled City & other Defined Areas)**

1. The architect submits the proposal to JMC.
2. Then the file goes to the concerned Zonal Office.
3. The Zonal Office checks the proposal and issues a Demand Note with certain NOCs from the following departments:
   a. Airport Authority (height clearance);
   b. Environment Department (environmental clearance).
4. After approval of this proposal from BPC of JMC, clearance of the proposal is received from the concerned Zonal Office of JMC.
State Designated Agency for energy conservation
As noted above, RRECL is the SDA in Rajasthan for implementing the provisions of the Energy Conservation Act 2001. RRECL is responsible for developing and promoting energy conservation initiatives and building capacity to implement these initiatives in Rajasthan. In 2011, RRECL, in consultation with the Bureau of Energy Efficiency (BEE) and other stakeholders, amended ECBC for implementing it in Rajasthan. The Energy Department, Government of Rajasthan then sent out a notification of adopting ECBD.

Existing ECBD implementation mechanism in Rajasthan
The building bylaws are the governing documents that are explicitly followed by ULBs for approving any new construction. The 2010 amendment of building bylaws mentioned that buildings with a connected load of 500 kW or a contract demand of 600 kVA or more would comply with ECBD. However, the 2010 amendment did not mention the ECBD implementation mechanism or process, and ECBD was only a generic provision in the building bylaws.

After the ECBD notification in 2011 and with a close follow-up by RRECL, LSG issued a letter to the ULBs (dated 3/5/2012) with an amendment to the building bylaws (Appendix A). The amendment requires that all ULBs add ECBD compliance to their building construction approval process. This amendment has been developed considering the existing process for bylaws approval and how ECBD can be integrated with that process. It helped adopt ECBD at the ULB level, which is responsible for code enforcement, and thus would significantly accelerate ECBC enforcement and implementation in Rajasthan. Figure 1 shows the suggested ECBD implementation process.
Review of recommendations for the third-party mechanism

This section reviews relevant reports regarding the role of third parties and the proposed operational mechanism for implementing ECBC in India. In 2010, BEE and the ECO-III project discussed strategies to successfully implement ECBC in India and suggested to use third party assessors (TPAs) as domain experts to implement ECBC at the local level [10]. In 2013, the U.S. Department of Energy and its Pacific Northwest National Laboratory (PNNL) studied international best practices of using third parties in code compliance and provided recommendations on developing third-party certification program in the Indian context [11]. CEPT University and The Weidt Group (TWG) further expanded the study of third parties and suggested roles of TPAs in implementing ECBC and mechanisms of integrating third-party assessments into existing ECBC implementation framework. The following paragraphs discuss these three reports in detail [12].

Developing an energy conservation building code implementation strategy in India

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2 It is worth noting that most architects in Rajasthan do not sign affidavits and they normally put their stamp on the drawings, which has some legal force but is not the same as an affidavit certifying that the drawings comply with all codes. However, affidavits are the standard practice in New Delhi and some other large cities.
BEE, the U.S. Agency for International Development and the ECO-III project developed a report in 2012 that discussed strategies to successfully implement ECBC in India. This report comprehensively addresses the issues related to ECBC implementation strategies and the procedures to be adopted by respective States. It also analyses the key barriers and strategies at different levels. The report recommended that after including ECBC in building bylaws, the state should improve capacity to implement ECBC at the town planning level through a possible dedicated in-house ECBC cell. The third party assessors (TPAs) are considered as domain experts that are instrumental for compliance inspections and verifications and can forward their recommendations to the town development offices. Figure 2 below shows the process.

![Diagram](image)

**Figure 2. Implementation mechanism with TPA at ULB level [10]**

The report also recommends partial compliance with the code as an intermediate strategy that can be adopted by the states to gradually advance to full scale adoption. Under this strategy, the code can be divided into components and subcomponents for an ease of implementation initially (e.g., envelope, fenestration, lighting, etc.). The partial compliance strategy has also been recommended as a bundled approach in a study prepared for the Shakti Energy Foundation (Shakti) (Figure 3) [13]. The main idea behind the bundled approach was to include the most promising energy saving measures in bundle one, which can be easily validated by ULBs (e.g., windows, wall and roof measures). Bundle two relies on the use of rated or labeled products such as HVAC system. Bundle three needs to be verified by the third party (e.g., lighting). There are several advantages of using the partial compliance approach. For example, it is less complicated for ULBs and ensures that even with limited skill sets and domain experts, the building stock do gradually transit to code compliance. However, the partial compliance approach
might set a precedent for poor compliance. Without a clear, comprehensive schedule for full compliance roll-out, partial compliance would confuse the market and delay investment.

<table>
<thead>
<tr>
<th>Compliance for ECBC by ULBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bundle 1</td>
</tr>
<tr>
<td>Building envelop and fenestration Check by ULBs</td>
</tr>
<tr>
<td>Bundle 2</td>
</tr>
<tr>
<td>Use of star-rated or labeled products (e.g., HVAC)</td>
</tr>
<tr>
<td>Bundle 3</td>
</tr>
<tr>
<td>TPA assessment for provisions such as lighting</td>
</tr>
</tbody>
</table>

**Figure 3. Bundled approach for ECBC compliance [13]**

Using third-party inspectors in building energy codes enforcement in India

Given the limited capacity and human resources available in the state and local governments in India, involving third-party inspectors could rapidly expand the capacity for plan reviews and broad implementation. To better understand essential element of third-party certification programs and feasibility of using third parties in ECBC implementation, PNNL, Alliance to Save Energy and Brookhaven National Laboratory, sponsored by the U.S. Department of Energy, studied different approaches for involving third parties in code enforcement. This report discusses code enforcement approaches (government, third-party or a hybrid approach), lists key elements of third-party certification programs and provides some options for third-party certification in India’s given circumstances. This report provides a comprehensive understanding of the importance of using third parties in code compliance and checks and balances needed for such system.

The PNNL report reviews international best practices of using third parties in code compliance, and global experience has demonstrated that using third parties can rapidly improve compliance, when it is well organized. There are several advantages of involving third parties in compliance checks. First, it can help alleviate burdens on code officials, ULBs, and local and state governments. Second, third parties are normally professional designers or engineers, and have more expertise in technical issues and more resources through their professional affiliations. Third, using third parties for compliance checks can reduce permitting application time by allowing ULBs to distribute part of their workload to third parties. Finally, using third parties is often considered a signal to the market that the government will treat building energy efficiency more seriously, and thus, helps build market awareness for building energy efficiency. Finally, it is important to have checks and balances when using third-party inspectors. Training, certification, supervision, incentives and penalties are essential to provide consistency and ensure objectivity for third-party programs.

However, in order to guarantee a fair process, the procedures of involving third parties need to be carefully assessed and designed based on the capacity and capabilities of the municipal officials. For example, there should be multiple checks and certification requirements for third-party inspectors, and the government should have the final approval when third-party inspectors are used in a project.
Training, certification, supervision, incentives and penalties are essential to provide consistency and ensure objectivity for third-party programs.

**Third-party assessor framework**

CEPT University and TWG, sponsored by Shakti, conducted background research on third-party assessments for ECBC implementation. This study was followed by a workshop with stakeholders from different organizations and trades to further deliberate and synthesize the recommendations for an operational third party assessment model for ECBC implementation. CEPT and TWG in the process reviewed and analyzed different successful models used in India and other countries, such as chartered accountants, property assessors, company Secretaries, certification for the Leadership in Energy and Environmental Design, Green Rating for Integrated Habitat Assessment and U.S. Environmental Protection Agency’s Energy Star program.

This report recommended that the certification and enrollment of TPAs and quality checking agencies should be done at the national level to ensure quality and consistent service delivery. In addition, the TPA intervention points in checking compliance should be merged with the existing check points of ULBs to minimize ULBs’ management burden and to maximize capacity building. The report also highlighted that there should be a mechanism in place to avoid any unwarranted conflicts between project proponent, TPA and quality assurance agencies. A trained ECBC professional should also be a part of the team that designs the third-party framework, in order to facilitate interactions between TPA and other authorities, and this would also ensure quality control and assurance. Reviews and documentations prepared by TPAs can be randomly checked by the nominated quality assurance agencies to ensure correctness of compliance and provide a check mechanism for TPA deliveries.

The CEPT report also discussed TPA’s role in ECBC implementation. To implement ECBC, TPA shall have a close interaction with the project team for reviewing building plans and doing compliance checks based on the formats specified by BEE at the end of the ECBC user guide (i.e. Appendix G) or other appropriate references. TPA should ensure that the building design meets all ECBC requirements. TPA could also use the compliance tool ECOnirman to verify ECBC compliance or generate compliance reports before recommending to ULBs to accord an approval on the design document. During the construction review phase, TPA shall record its observations in specified formats, prepare site documentations with labeled pictures and material data sheets and give recommendations to ULBs for giving clearance.

The CEPT report also suggested an institutional framework to operationalize third parties in India (Figure 4). At the national level, BEE has to play a role of facilitator and regulator to enroll and certify TPAs (individuals and not registered firms) and to identify the quality assurance agency (i.e. the National Productivity Council). BEE should maintain a database of TPAs and quality assurance agencies on its web portal. At the state level, the State Electricity Regulatory Commission (SERC, for fixing differential tariff for non compliance), SDA and ULBs have been identified as the concerned agencies. The report also recommended further investigating the role of utilities. Utilities provide buildings with temporary connection to the grid during the construction phase and permanent connection after commissions, and
they can provide meaningful inputs on energy consumption of buildings for the concerned agencies. The report recommended that TPA’s remuneration shall be based on project size and complexity with the funds provisioned by SDA from the State Energy Conservation Fund. Similarly, BEE shall remunerate quality assurance agencies from the Central Energy Conservation Fund. SDA shall penalize TPA for any violations, and, on repeated instances, TPA’s license can be revoked by BEE. Similarly, BEE should check the services and performance of quality assurance agencies.

Figure 4 describes the operational mechanism of the TPA model that is recommended in the report.

**Third-party mechanism in Rajasthan**

**Roles of third-party inspectors**
This section includes the possible and prospective roles/tasks that a TPA has to deliver for successful integration into the ECBD compliance process in Rajasthan.

**Prerequisites for TPA:** The following prerequisites (handled upstream by BEE) are essential for developing a robust program for TPA.

- Availability of accredited/certified ECBC professional;
- Registration of TPA (including geographical area of interest);
• Availability of standard checklist/compliance forms (e.g., Appendix G of the ECBC User Guide³);
• Familiarity with architectural drawings (especially for engineers);
• Repository of updated common construction materials on BEE and SDA’s web portal;
• Data bank of TPAs with geographical area of operation on BEE and SDA’s web portal;
• Details of product standards and labeling on BEE’s or SDA’s web portal.

Proposed Roles of TPA and ULB: The proposed roles of TPA and ULB are listed in Table 2.

Payment to TPA: The payment shall be made to the TPA on every completed submission by the SDA from the State Energy Conservation Fund. The amount of payment should be based on the size and complexity of the concerned project.

Penalties: The SDA shall have the administrative authority to recommend to BEE to revoke the certification of the TPA in the case of any unwarranted or non-factual reporting.

Building commissioning and TPA checks: According to the notification from the Rajasthan Government, all commercial buildings with a connected load of 100kW and above or contract demand of more than 120kVA have to submit an energy audit report to the SDA once every three years. The energy auditors could act as TPA in the post-construction commissioning phase. The SDA can also devise methods for collecting data on the connected load from state utilities during construction and occupancy.

Involvement of government agencies for TPA activities: In the role matrix below (Table 2), the TPA would primarily interact with the project design and construction team and the SDA (for payments). The project proponent would submit the TPA’s report to the ULB for further processing and clearance.

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Table 2. Proposed roles of the TPA and ULB for ECBD implementation during plan review, construction and completion stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>TPA’s role</th>
<th>ULB’s role</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building plan approval</strong></td>
<td>• Coordinates with the project design team;</td>
<td>• Reviews the building plan, materials list, compliance forms and affidavit/recommendation sheet before approving the building plan.</td>
</tr>
<tr>
<td></td>
<td>• Reviews the building plan;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reviews the list of proposed construction materials and their certifications and labels (if available);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Generates and reviews compliance reports;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Highlights deviations from ECBD;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepares ECBD checklists;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepares an affidavit or recommendation sheet (to the ULB) certifying that the building plan meets the code.</td>
<td></td>
</tr>
<tr>
<td><strong>On-site inspections</strong></td>
<td>• Coordinates with the project design and construction team;</td>
<td>• Visits the site during construction to check for overall code compliance;</td>
</tr>
<tr>
<td></td>
<td>• Visits the construction site at least twice (e.g., 25-40% and 40-80% completion stages) during construction to verify that the building matches the plans and the proper materials are installed;</td>
<td>• Reviews changes to the building as built;</td>
</tr>
<tr>
<td></td>
<td>• Reviews the list of materials used in construction;</td>
<td>• Reviews and accepts the TPA’s certifications for as-built change orders.</td>
</tr>
<tr>
<td></td>
<td>• Prepares checklist to share with the ULB;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepares labeled photographs of construction;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Records deviations from design and potential impacts, and assesses changes and certifies that the changes match ECBD (with an additional fee);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepares a recommendation report for design and construction team;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If any elements do not match ECBD, TPA should advise the developer so that they can make revisions before the building is complete.</td>
<td></td>
</tr>
<tr>
<td><strong>Occupancy permit</strong></td>
<td>• Coordinates with the project design and construction team;</td>
<td>• Reviews the change orders, the affidavit/recommendation sheet from the TPA for compliance as built, inspection checklist notes and their own on-site inspection notes prior to issuing the occupancy permit.</td>
</tr>
<tr>
<td></td>
<td>• Provides labeled photographs of the building;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provides site inspection documentation;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepares an affidavit/recommendation sheet stating that the building as built complies with ECBD.</td>
<td></td>
</tr>
</tbody>
</table>
Proposed third-party model for ECBD implementation in Rajasthan: We attempt to integrate third parties into the existing ECBD compliance mechanism adopted by ULBs, and in the proposed model, there are no major changes to the existing bylaws pertaining to ECBD. The use of TPA would strengthen the process of compliance checks at various stages of building design and construction. To ensure consistent results, the compliance forms used by TPA need to be standardized by the SDA (e.g., similar to the ones recommended in the ECBC User Guide). The SDA shall have updated information on the ECBD compliant building during different phases of design and construction, as the reports of TPA are endorsed to SDA for release of payments. TPA is not hired by the project proponent, so the vested interests, if any, are also avoided. Figure 5 describes the proposed TPA model for Rajasthan and the roles of TPA, ULB and SDA at the design and construction stages.

Action points for implementing the third-party model
The following section discusses the action points at the state level for successful integration of third parties for ECBD implementation in Rajasthan.

By SDA

- To maintain a database of TPAs and/or accredited ECBC professionals on its web portal;
- To provide payment to TPA from the State Energy Conservation Fund;
- To initiate minor modifications of building by-laws for adopting the third-party model and accepting reports from TPA for ECBD compliance;
- To strengthen data sharing on connected load during construction and on completion from state utilities;
- To maintain a close check on services delivered by TPA;
- To link the reports submitted by TPA with the prospective energy audit reports of the buildings;
- To prepare a proposal to RRECL for differential electricity tariff for non-compliant buildings and tariff incentives on ECBD compliant buildings.

By LSGs & ULBs

- To issue an amendment mentioning the acceptance and usage of TPA reports by the ULBs for ECBD compliance at different stages of building design and construction;
- To encourage active involvement of TPAs in the compliance process.

By State Electricity Regulatory Commission

- To consider and adopt differential tariffs for ECBD compliant/non-compliant buildings to extensively encourage ECBD implementation in Rajasthan.

By state utilities
• To the extent possible, to share data on the connected load of buildings during new construction/alteration phase and connected load or contract demand after completion of buildings with SDA and ULBs.
Figure 5. Proposed TPA integration model for ECBD implementation in Rajasthan
Conclusions
The TPA model has proven highly effective in implementing different policies that requires high-skill experts in domain areas. In this report, we presented a comprehensive overview of the existing compliance mechanism in Rajasthan. We also reviewed multiple reports and discussions on using TPA for ECBC implementation in India. We then proposed an operational model for integrating TPA with the existing ECBD implementation mechanism in Rajasthan. The proposed operational model has the following distinctive features:

a) Effectively and rapidly building capacity outside of ULBs (and likely within ULBs as well), which would help reduce ULBs’ administrative burden in the long term;
b) TPA providing technical expertise for ECBD compliance checks;
c) Ensuring high-quality and objective TPAs by paying them through SDA from the Rajasthan State Energy Conservation Fund, based on submitted TPA reports;
d) Quality checks within the purview of TPA during construction phase and no other external quality assurance agency involved in process;
e) No major amendments to the existing building bylaws; the TPA model can be adopted by issuing a clarification for the building bylaws;
f) Penalties for fraud or fault (e.g. TPA’s license might be suspended or revoked, or TPA may be fined).
Appendix A. Amendment to building bylaws in Rajasthan
Government of Rajasthan
Department of Local Self Government, Jaipur

Serial Number F 55() PE/SE/DLB/10/ECBC/2175 Date:3/5/2012

1. Commissioner, Rajasthan Housing Board, Jaipur
2. Commissioner, Municipal Corporation, Jaipur/Jodhpur
3. Secretary: Urban Development Authority, All Rajasthan
4. Chief Executive Officer /

Commissioner/ Executive Officer
Municipal Corporations, City Councils
All Rajasthan.

Subject: In order to implement rules of “Energy Conservation Building Directives – 2011” by including it in “Rajasthan Urban Building Exchange”

Sir,

It is requested in above subject that as per notification of the Energy department, Govtment of Rajasthan, number F 20 (6) /energy/98/part/ECBC/ date 28.03.2011, in order to implement rules of “Energy Conservation Building Directives – 2011” and making it an integral part of “Rajasthan Urban Building Exchange”, following points should be added to rules of building construction approval process.

1. “Energy Conservation Building Directives – 2011” should be inferred from notification number F 20 (6) /energy/98/part/ECBC/ date 28.03.2011 only. This applies to commercial buildings with 100 kilowatt connected load or 120 KVA contract demand or more.

2. “Energy Conservation Building Directives – 2011” will apply to commercial buildings with 100 kilowatt connected load or 120 KVA contract demand or more as per Rajasthan State Electricity Distribution Corporation. For this, there should be no failure in the compliance of specifications generated by compliance tool, which is available on the website of Bureau of Energy Efficiency, Government of India (www.bee.ic.in). Applicant has to submit an affidavit for this to the designated authority, and its format is sent as an attachment of this letter. Related design documents can be acquired from website.
3. Applicants with less than 100 kilowatt connected load or less than 120 KVA contract demand has to submit an affidavit with respect to the same.

So in future make sure to implement rules of “Energy Conservation Building Directives – 2011”.

Attached: as per above

Deputy Governance Secretary

1. Personal Secretary, Chief Secretary, Chief Minister, Government of Rajasthan, Jaipur
2. Special Assistant, Minister, Department of Local Self Government, Rajasthan
3. Personal Secretary, Additional Chief Secretary, Urban Development and Revenue Department, Rajasthan
4. Personal Secretary, Governance Secretary, Department of Energy, Rajasthan. Notification Number: F 20 (6) /energy/98/part/ECBC/ date 28.03.2011
5. President and Director of Management, Rajasthan Renewable Energy Corporation in continuation to letter: 14219 Date 17.11.11
6. Chief Executive Officer/ Commissioner/ Executive officer Municipal Corporations, City Councils All Rajasthan
7. District Collector, All Rajasthan
8. Main City Planner, Rajasthan, Jaipur
9. Director, Planning, Jaipur Development Authority, Jaipur
10. Additional Main City Planner (Building Exchange) , Rajasthan, Jaipur
11. Deputy Director (Regional) Local Body Department, Rajasthan, Jaipur

(The attachment)
Certificate of Undertaking
For Compliance of the ECB directives-2011
(Applicable for buildings with connected load of 100 Kw or contract demand of 120 KVA)
(To be submitted at the time of approval of building plan)

Plot No.  

Scheme  

Area of Plot  

Estimated connected load /contract demand———/Kw/KVA

1. Certify that the building specification including building services/utilities complies with the requirement of ECB directive- 2011 and there are no deviations in specification used in generating compliance report.

2. Any further modification shall also be compliant with the ECB directive.

Signature of Owner  
Name and Address  

Signature of Architect  
Name and Address  

Registration No.of Arch.  

Encl :-
(a) Compliance Report for ECB-directive using compliance tool.
(b) Building Plan.
(c) Design document of building services/utilities relevant to ECB directive.
References


13. The Weidt Group and CEPT University *A Stepped Bundle Approach to ECBC*, 2011, Shakti Sustainable Energy Foundation