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# Recommendations on Implementing the Energy Conservation Building Code in Visakhapatnam, AP, India

Results of a Stakeholder Meeting,  
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## **Recommendations on a Roadmap for Implementing the Energy Conservation Building Code in Visakhapatnam, Andhra Pradesh, India**

The Visakhapatnam Urban Development Authority (VUDA) and the Pacific Northwest National Laboratory (USA) held a training and stakeholder meeting on implementing the Energy Conservation Building Code (ECBC) on 25 February 2016. The stakeholders discussed the benefits of energy efficiency in buildings and options for implementing ECBC. ECBC is India's building energy code, developed to achieve the objectives of the Energy Conservation Act of 2001. ECBC applies to all new commercial buildings with a connected load of over 100 kilowatts or a contract demand of over 120 kilovolt-amperes, and as such, when fully implemented can result in significant energy savings.

In 2014, the State of Andhra Pradesh notified that ECBC is mandatory. AP has also developed a voluntary scheme where buildings that save at least 6% more energy than a standard ECBC design will be eligible for fast track approval. Visakhapatnam, as one of India's first Smart Cities, has a keen interest in ensuring that its built environment locks in energy savings and high performance as the city grows.

The stakeholders at the workshop discussed several options for rolling out ECBC implementation, covering capacity building, implementation roll-out to public and commercial buildings, and compliance mechanisms and incentives to encourage high levels of energy savings.

### **Capacity Building**

The stakeholder meeting provided an introduction to ECBC, but the stakeholders agreed on the benefits of more extensive capacity building. This could include several elements. First, VUDA could create and fund an ECBC cell to support ECBC implementation. The cell would have 1-2 staff who are certified as ECBC Master Trainers. The cell would have some similarities and linkages to ECBC cells that the Bureau of Energy Efficiency is creating across India, but it would be more focused on local issues. In particular, the cell could focus on the following areas:

- Advise building designers and developers on how to comply with ECBC, including information on how to obtain help with building energy simulation as needed.
- Support implementation of demonstration projects.
- Support training and capacity building locally.
- Help prepare implementation guidelines, for example, clarifying local incentives.
- As implementation rolls out, play a role in reviewing third-party reports on compliance at the design and construction phases.
- Monitor and track implementation in Visakhapatnam to improve processes over time and communicate progress to public.
- Coordinate with other government departments in Visakhapatnam on ECBC implementation.

In addition, it would be helpful to organize one or more ECBC trainings in Visakhapatnam, preferably in close coordination with the ECBC cell as it starts operating.

## **Roll-out to Public and Commercial Buildings**

The stakeholders recommended emphasizing implementation in public buildings right away, such that all new public buildings would be required to have third parties check their building designs and actual construction for compliance. VUDA would also like to document one or more pilot buildings, including a new public building being built next to the main VUDA office building.

Regarding private, commercial (or non-residential) buildings, the stakeholders recommended providing incentives for compliance for the next two years, and then after two years requiring full compliance documentation. At that point, all new commercial buildings would need show ECBC compliance before they could obtain construction and occupancy permits. As with public buildings, private third-parties would review building designs and construction sites to certify compliance. Andhra Pradesh's roadmap for ECBC implementation also highlights the role of third parties.

It is also important to note that BEE is currently working on a revision to ECBC, which will likely be issued in the next year or two. The revision will likely embed a multi-tiered approach to compliance much as Andhra Pradesh has. When the new code is issued and Andhra Pradesh notifies, Visakhapatnam should consider how to update its roll-out plans. The ECBC cell could support this process.

## **Compliance Mechanisms**

To demonstrate compliance, new non-residential buildings would use private third parties to certify that building designs and actual construction comply with ECBC. These third parties could be ECBC Certified Master Trainers (if in the future, there are also ECBC Certified Assessors, this second category of third party could also be used). During the stakeholder meeting, we discussed two options for paying for the third parties. The first, which seemed to be the consensus view, was to collect a large enough permit fee from developers to cover the cost the third parties such that VUDA would pay the third parties. The advantage of this approach is that the third parties would likely be more objective, and the total costs might come down as VUDA could get volume discounts. The second approach would be to have developers pay for the services of third parties. In this case, we strongly recommend having additional checks and balances, for example, having additional spot checks by a separate set of third parties in a small, random sample of buildings. The ECBC cell could also, potentially, conduct occasional, random design reviews or site inspections both to assess the compliance system overall, and to encourage stronger implementation.

## **Incentives**

The stakeholders recommended providing incentives for private, commercial buildings to comply for the first two years. After that period, only buildings that exceed ECBC requirements would be eligible for incentives. (Andhra Pradesh's notification of ECBC outlines several AP star levels, with AP one-star for buildings that meet ECBC, AP two-star for buildings that result in energy savings of 6-10% above a standard ECBC design, AP three-star for buildings designed with excess energy savings of 11-15%, and so on up to AP six-star (for designs with 30% or higher excess energy savings). Recommended incentives include:

- Fast track approval of permits.
- Expanded floor area ratio (FAR), for example, allowing 3% additional FAR to AP one-star buildings in the first two years and 5% additional FAR for buildings with AP two-

star or above. After two years, AP one-star would no longer be eligible for expanded FAR, two-star buildings could be eligible for 3% FAR, and three-star or above could be eligible for 5%. The ECBC cell could monitor the market to make recommendations on future changes.

- Buildings with integrated renewables would be eligible for direct incentives. There was also discussion of direct incentives for higher star levels of ECBC compliance, if funding were available.

After two years, it might also be possible to provide incentives for new, multi-story residential buildings that comply with ECBC or BEE's Guidelines for Energy Efficient Residential Buildings.

### **Conclusions**

Visakhapatnam can play an important role in improving energy efficiency in its buildings by implementing ECBC. This document seeks to capture stakeholder recommendations on a roadmap for implementation, which can help all market players plan for implementation.

Visakhapatnam also has an opportunity to serve as a role model for other Smart Cities and cities in general in India. The roadmap and steps that VUDA adopts to implement ECBC can provide helpful examples to these other cities.