



# Implementing ECBC in Andhra Pradesh and Impacts on Real Estate Development

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# Presentation Overview

- Introduction
- ECBC in Andhra Pradesh
- Learning from Code Implementation
- Energy Efficiency and Real Estate Development

# Introduction to ASCI and NRDC



Administrative Staff College of India (ASCI) is a pioneer management and research organization established in Hyderabad in 1956 and works with the public and private sector



The Natural Resources Defense Council (NRDC) is an international nonprofit environmental organization established in 1970, working on advancing energy efficiency with business and government leaders in the US, China and elsewhere

- ASCI-NRDC work in partnership with the private and public sectors in India to promote energy efficiency in buildings and appliances since 2009
- We partner with real estate developers, financial institutions, and national and local government to promote building efficiency throughout India

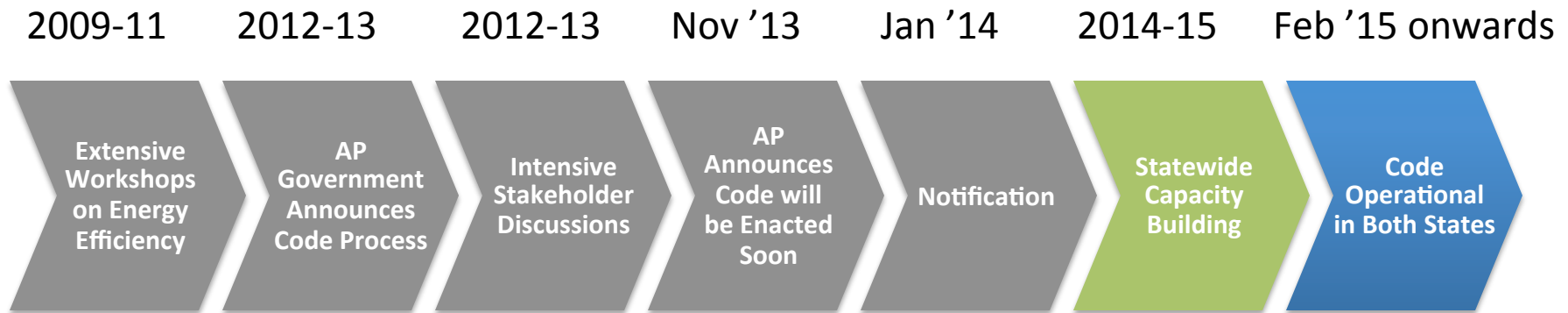
# The Energy Efficiency Opportunity



- **Rapid growth of India's real estate sector**
  - 2/3 of commercial buildings that will exist in 2030 have yet to be built
  - Large-scale urbanization, increasing income
- **Trends in Indian real estate**
  - Popularity of Green buildings (LEED, GRIHA, ECBC)
  - Increasing energy intensity of buildings
  - Growing demand for energy-saving buildings
- **Cost savings and increased market share**

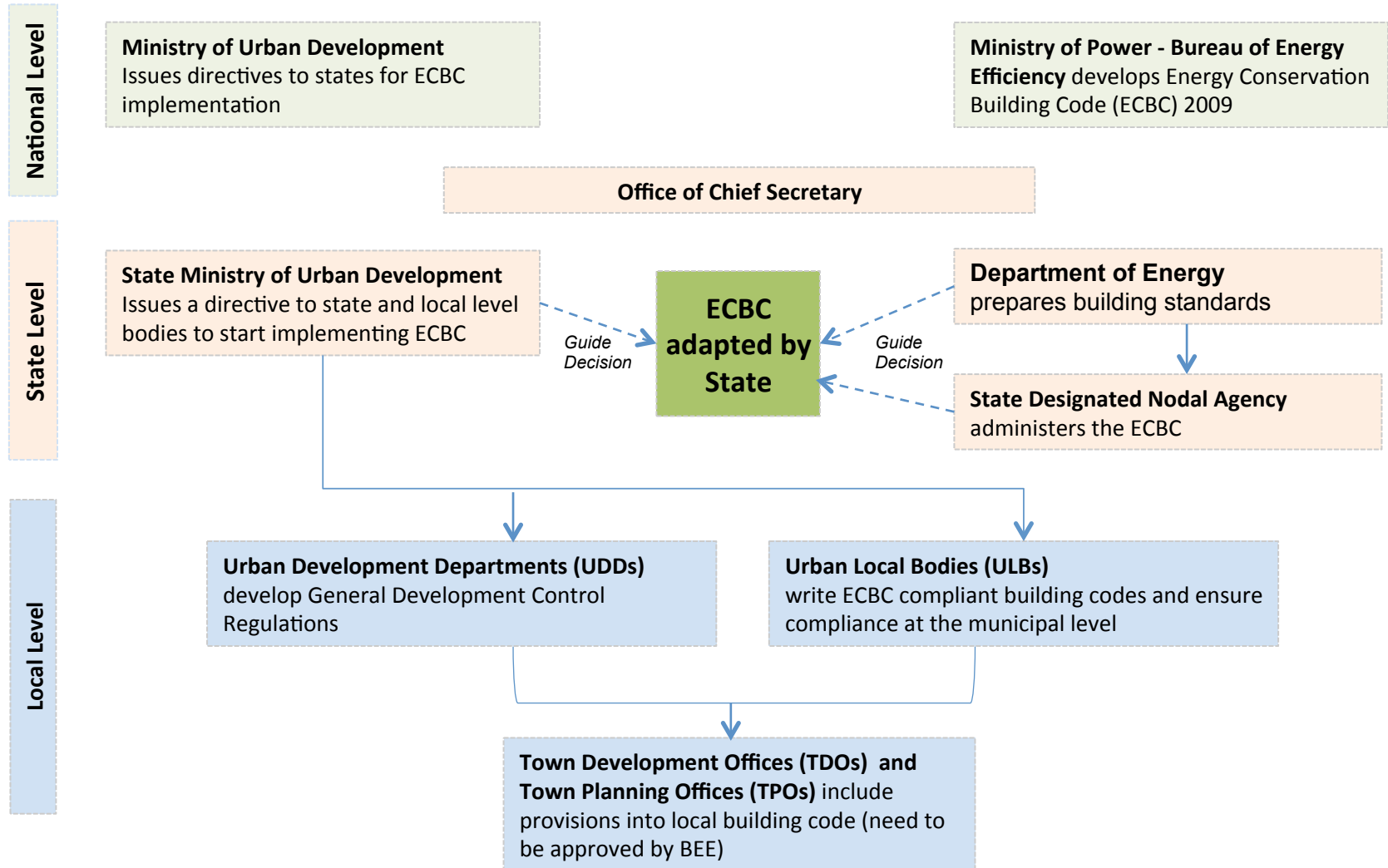
Source: McKinsey, 2012

# ECBC in Andhra Pradesh and Telangana State: Work that went into the code, and next steps



- Extensive stakeholder consultations and awareness building about ECBC
- Formation of a steering committee and a technical committee to inform process and adapt ECBC to local bylaws
- State bifurcation into Andhra Pradesh (AP) and Telangana State (TS) announced in Feb '14 – both states inherit the same code
- Empanelment of architects underway
- Training ongoing – target reaching 400 district officials, real estate developers and architects
- Aug '14 onwards in TS
- Feb '15 onwards in AP

# ECBC Adoption: Roles of Key Agencies

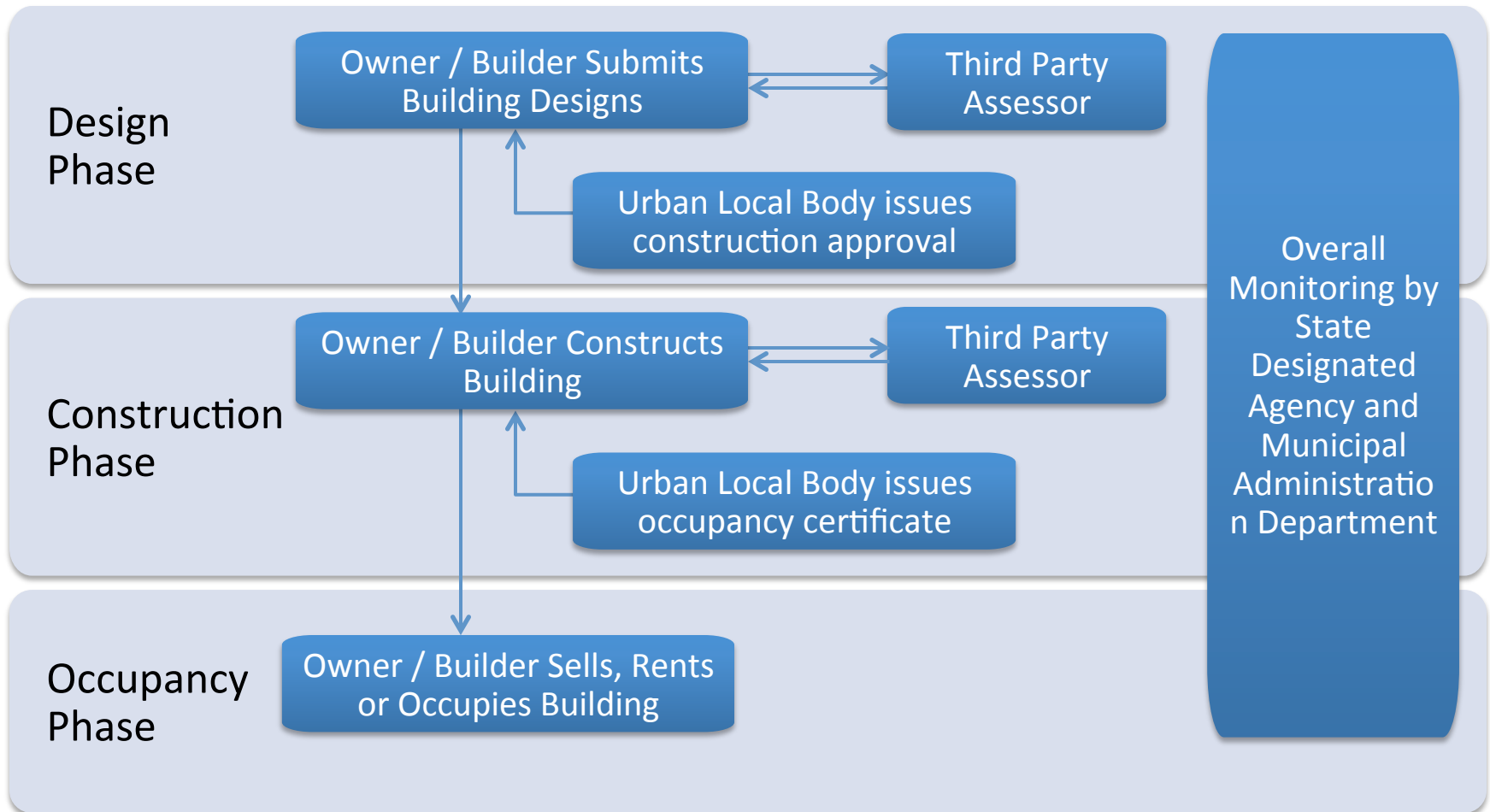


# AP ECBC: Key differences from ECBC

- Applicable to commercial buildings, offices, hospitals, IT parks
- Applicable to new commercial and public buildings with plot area of 1,000 m<sup>2</sup> or built up area of 2,000 m<sup>2</sup>
- Irrespective of plot and built-up area, all multiplexes, hospitals and hotels need to comply with ECBC
- Independent certification and validation through third party assessors at two stages
- Star rated based on level of energy savings
- Fast track approvals for buildings rated ECBC two-star and above



# Building Approval Process

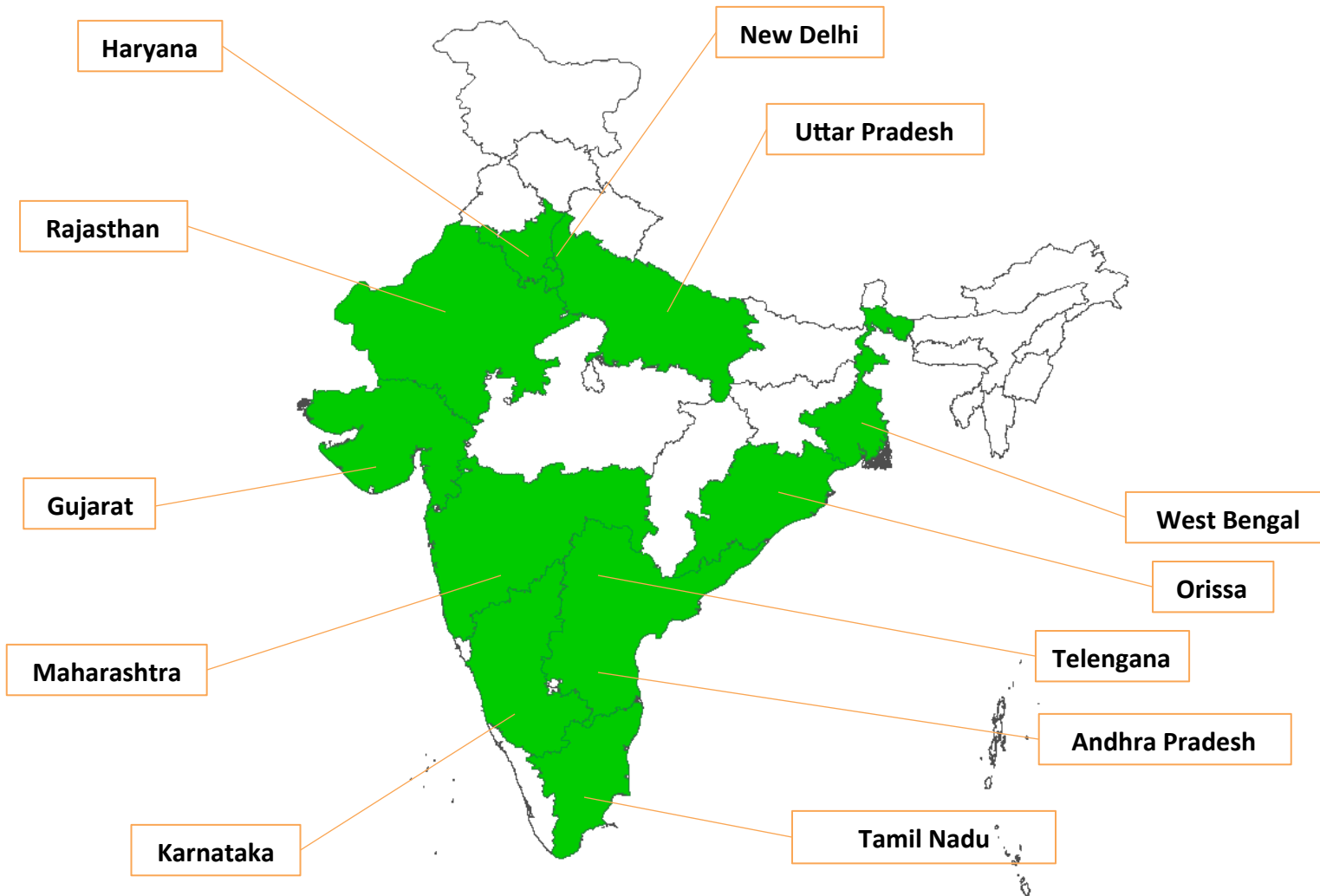




# Capacity Building Activities

Activities	Description
Capacity Building for Town Planning Officials and Elected Representatives	<ul style="list-style-type: none"> <li>• Training program for city town planners, engineers and officials at urban local bodies (ULBs)</li> <li>• Develop compliance materials</li> </ul>
Empanelment of consultants	<ul style="list-style-type: none"> <li>• Selection of empaneled consultants</li> <li>• Workshops focused on AP ECBC, GO-168, Role of Consultants, etc.</li> <li>• Workshops across major cities of AP and TS, e.g. Vizag, Vijaywada, Hyderabad, Warangal etc.</li> </ul>
Train the trainer activity	<ul style="list-style-type: none"> <li>• Tests conducted in major cities using based on ECONirman Examination</li> </ul>
Awareness building with elected representatives and others	<ul style="list-style-type: none"> <li>• Regional workshops</li> <li>• Training and certification of independent verifiers</li> </ul>
Pilot project to extend support to GHMC	<ul style="list-style-type: none"> <li>• Support to municipal corporation for effective implementation of ECBC</li> </ul>
BEE Demonstration Project	<ul style="list-style-type: none"> <li>• BEE has extended technical guidance for ECBC compliant design for government buildings</li> </ul>

# States Leading in Advancing Energy Efficiency in Buildings



# Lessons from Andhra Pradesh

- *Senior government buy-in is critical for code implementation*
- *Power shortage situation helped create political will to act on efficiency*
- *Steering committee with multiple stakeholders – real estate developers, government officials, architects, helped address issues early on, keeping stakeholders onboard*
- *Taking into account local body functioning – more comfortable with area based thresholds*
- *Importance of flexibility – expedited clearance for ECBC compliant projects rated two-star and above*

# The Business Case for Energy Efficiency

- ASCI-NRDC are developing materials and case studies to showcase energy efficiency in leading buildings, including
  - ✓ Detailed payback periods
  - ✓ Returns on key measures
- *Report: Constructing Change*, examines initial action steps for real estate developers, local governments, and financial institutions
- *Report: Taking Energy Efficiency to New Heights*, maps stakeholder opportunities for the real estate sector using Hyderabad as a case study
- *Factsheets* and resources for saving money for building owners, managers and tenants



# Buildings Already Achieving Cost Savings from Energy Efficiency

Building	Location	Type	Key Efficiency Measures
<b>Corporate Office</b> Spectral/ AECOM	Noida	New Build	<ul style="list-style-type: none"> <li>• Design features, HVAC, lighting</li> <li>• Payback period of 3.3 years</li> </ul>
<b>Amara Raja Building</b>	Hyderabad	New Build	<ul style="list-style-type: none"> <li>• Design features</li> <li>• Extensive monitoring and verification (M&amp;V)</li> </ul>
<b>Infosys SDB-1</b> Infosys	Hyderabad	New Build	<ul style="list-style-type: none"> <li>• Radiant cooling, design, lighting, M&amp;V</li> <li>• 33% annual savings from radiant cooling</li> </ul>
<b>Godrej Bhawan,</b> Godrej and Boyce	Mumbai	Retrofit	<ul style="list-style-type: none"> <li>• HVAC, lighting, M&amp;V; 12% annual savings</li> <li>• Payback period of 4.7 years</li> </ul>
<b>Millennia Park</b> RMZ Corporation	Chennai	Retrofit	<ul style="list-style-type: none"> <li>• HVAC, building automation system</li> </ul>
<b>Mahindra Towers</b> Mahindra & Mahindra	Mumbai	ESCO	<ul style="list-style-type: none"> <li>• ESCO financed light retrofit; 14% savings</li> <li>• Payback period of 6 months</li> </ul>

# Links to NRDC Publications

## Issue Briefs

Strengthening the Real Estate Market Through Codes

<http://www.nrdc.org/international/india/files/real-estate-efficiency-codes-IB.pdf>

Incentives for Energy Efficient Buildings

<http://www.nrdc.org/international/india/files/energy-efficient-construction-incentives-IB.pdf>

## Case Studies

Mahindra Towers (ESCO)

<http://www.nrdc.org/international/india/files/esco-energy-retrofit-mahindra-CS.pdf>

Godrej Bhavan (Retrofit)

<http://www.nrdc.org/international/india/files/energy-retrofit-godrej-bhavan-CS.pdf>

AECOM (Formerly Spectral Building, New Construction)

<http://www.nrdc.org/international/india/files/energy-saving-construction-legacy-spectral-CS.pdf>

# Thank you!

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Natural Resources Defense Council  
[www.nrdc.org/international/india](http://www.nrdc.org/international/india)

Administrative Staff College of India  
[www.asci.org.in](http://www.asci.org.in)

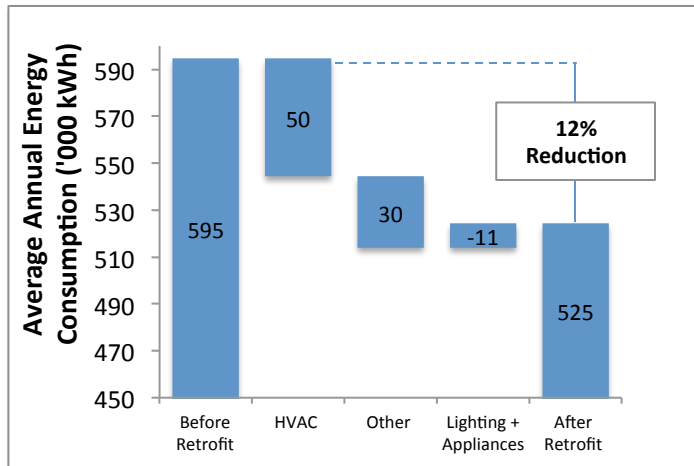
# Additional Slides



# Efficient Building: Godrej Bhawan, Mumbai



- Retrofit of building constructed in 1970
- Key measures
  - Replacement of old HVAC system
  - Efficient lighting measures
  - Building management system for monitoring and verification
- Overall 12% reduction in energy use
- ASCI-NRDC case study



# Proposed Implementation of ECBC in Andhra Pradesh

- 1 day Orientation
  - Lead by government with support from NRDC and ASCI
  - Attended Town and Planning Departments
- 3 day Training Sessions
  - Groups of about 20 people, 8-10 occurrences
  - Trainings for:
    - Municipal Officials/Engineers
    - Architects/Engineers

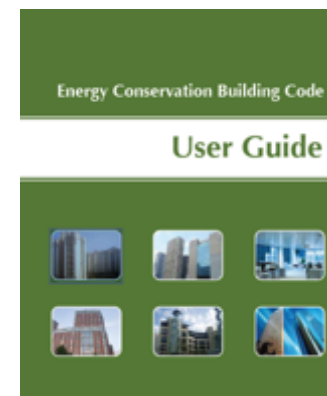
# BEE Training Resources

- Training of Master Trainers
  - Master Trainers train other stakeholders (architects/engineers, state officials, etc.)
- Lists of ESCOs and empanelled architects
- Conformance Check Tools
- Energy Management Tools
- Online Guides
- Examples

\*Source: Bureau of Energy Efficiency, ECBC Schemes, <http://www.beeindia.in/schemes/schemes.php?id=3>

# India ECO-III Training Resources

- Interactive Q&A sessions
- Technical Guidance
- Examples/Case Studies
- Resources and Reference Material
- Building energy simulation effort
- ECBC in Architecture Curriculum
- ECBC Training and Awareness workshops
- Guides
- ECBC User's Guide



\*Source: USAID|India, 2010, ECBC Training Workshop, <http://ibecc.in/sites/default/files/documents/lectures/01%20Introduction.pdf>

# What Developers Are Saying about ECBC Implementation Barriers

- Strong first cost bias
- Availability of efficient products
- Equipment testing & certification
- Energy expertise
- Awareness, information and tools
- Electricity rate structures / rural subsidies
- Territoriality by agencies
- Potential code official abuses
- Lack of government & utility “Champions”

\*Source: Hisham Ahmad, 2010, *Energy Conservation Building Code*, Environmental Design Solutions. [http://www.trackbee.com/credai/presentations.php?event\\_id=6](http://www.trackbee.com/credai/presentations.php?event_id=6)

# Key Barriers Identified at ECBC Impact Assessment

- Need more technical expertise and training
- Technical skills in ULB
- Scattered information
- Weak information flow
- Voluntary nature weakens market trends
- Need plan for mandatory implementation
- Need demonstrations
- Limited certified materials → reduces confidence in savings
- Split incentive
- Multiple agencies