

# Penetration of Energy Efficient Envelope

## Residential and Commercial

### Level 1

Level 1 assumes that Energy Conservation Building Code (ECBC) compliance may remain voluntary and penetration of energy efficient building design & materials remain low. This could be because of technological, knowledge and financial barriers. Smart building penetration is limited to state capital and periphery areas.

### Level 2

Level 2 assumes slightly higher penetration of energy efficient building designs and materials in urban areas. This could be supported by policy measures like a reduced property tax, registration fees, etc., for the energy efficient buildings.

Residential and commercial sectors currently account for almost one third of the total electricity consumption, which is expected to increase substantially in the near future, if present trends continue. The state government has planned for development of 10 smart cities which will increase demand efficiently. This lever analyses impact of user's choice on building sector energy demand. Users can choose four different scenarios on reducing the cooling load of buildings through greater penetration of energy efficient building materials and appliances. The savings achieved depend on the chosen lever and the GDP growth.

Penetration of Efficient Envelope Interventions					
Category	2015	L1-2050	L2-2050	L3-2050	L4-2050
<b>Residential</b>					
High Rise	5%	11%	54%	81%	98%
Horizontal	3%	5%	43%	60%	87%
Affordable Housing	0%	0%	0%	0%	0%
<b>Commercial</b>	10%	25%	50%	75%	100%

### Level 3

Level 3 assumes mandatory compliance of energy efficiency standards for new buildings. Smart buildings penetration also increases, which could be due to government schemes and incentives.

### Level 4

Level 4 is the most aggressive scenario which assumes more aggressive Energy Performance Index (EPI) standards for buildings and mandatory adoption of new codes by new buildings. Penetration of smart buildings also increases significantly in urban centers and periphery areas.