CHANGES REQUIRED IN BUILDING BYE-LAWS FOR IMPLEMENTATION OF SOLAR ROOFTOP INSTALLATIONS

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Need of revision of Model Building Bye-laws

Model Building Bye-Laws were prepared in 2004 by Town and Country Planning Organization.

The *Raison d'être* for revising the Bye-Laws are as under:

1. Growing Environmental concerns
2. Increased Safety and Security measures
3. Technological Developments
4. Components of Swachh Bharat Mission
5. Focus on Ease of Doing Business

- The Model Building Bye Laws have been circulated to all the State Governments and UTs for guidance in terms of revision and amendment.

- States like Haryana,Jharkhand and Bihar have amended their respective Bye Laws while other states are in process of constituting the committees to examine and recommend for revision/amendment.

Salient Features of MBBL (2016) -I

Environmental Concerns

✓ Green Buildings

✓ Rainwater Harvesting

✓ Solar Roof Top

✓ Waste water Reuse and Recycle

ROOF TOP SOLAR ENERGY INSTALLATIONS

- Rooftop photovoltaic power station, or rooftop PV system, is a photovoltaic system that has its electricity-generating solar panels mounted on the rooftop of residential or commercial buildings.

- The various components of such a system include photovoltaic modules, mounting systems, cables, solar inverters and other electrical accessories.

- Rooftop PV systems are faster than other types of renewable power plants. They're clean, quiet, and visually unobtrusive.

Table 10.2 MBBL,2016 stipulates the Norms for Roof Top Solar PV Installation

S.No.	Category of buildings/area	standards	Generation requirement *
	Residential		
1	**Plotted Housing**	For HIG Plots and above	Minimum 5% of connected load or 20W/sqft for *"available roof space"***, whichever is less.
2	**Group Housing**	All proposals, as per Group Housing Norms	Minimum 5% of connected load or 20W/sqft for *"available roof space"*, whichever is less.
	All other buildings (Government or Private, defined as per clause 1.16 b to g) (mandatory for buildings having shadow free rooftop area > 50 sqmt)		
3 4 5 6 7 8	**Educational** **Institutional** **Commercial** **Industrial** **Mercantile** **Recreational**	Plot size of **500 sqmt and above**	Minimum 5% of connected load or 20W/sqft for *"available roof space"*, whichever is less.

* Area provisions on roof top shall be @12 sqmt per 1KWp, as suggested by Ministry of New and Renewable Energy.

** *"available roof area"* = 70% of the total roof size, considering 30% area reserved for residents' amenities.

INSTALLATION OF SOLAR ASSISTED WATER HEATING SYSTEM IN BUILDINGS

I. No new building in the following categories in which there is a system of installation for supplying hot water shall be built unless the system of the installation is also having an auxiliary solar assisted water heating system:

a) Hospitals and Nursing Home.

b) Hotels, Lodges, Guest Houses, Group Housing with a plot area of 4000 sq m.

c) Hostels of Schools, Colleges and Training Centres with more than 100 Students.

d) Barracks of armed forces, paramilitary forces and police.

e) Individual residential buildings having more than 150 sq m. plinth area.

f) Functional Buildings of Railway Stations and Air Ports like waiting rooms, retiring rooms, rest rooms, inspection bungalows and catering units.

g) Community Centres, Banquet Halls, Barat Ghars, Mangal Karyalayas and buildings for similar use.

INSTALLATION OF SOLAR WATER HEATING SYSTEM contd....

a) ***New Buildings:*** Clearance of plan for the construction of new buildings of the aforesaid categories shall only be given if they have a provision in the building design itself for an insulated pipeline from the rooftop in the building to various distribution points where hot water is required.

b) The building must have a provision for continuous water supply to the solar water heating system. The building should also have open space on the rooftop, which receives direct sun light. The load bearing capacity of the roof should at least be 50 kg. per sq m. All new buildings of above said categories must complete installation of solar water heating systems before obtaining necessary license to commence their business.

II.Existing Buildings:

Installation of Solar Assisted Water Heating Systems in the existing building shall be made mandatory at the time of change of use to above said category provided there is a system or installation for supplying hot water.

III Capacity: The capacity of solar water heating system to be installed on the building of different categories shall be decided in consultation with the local bodies. The recommended minimum capacity shall not be less than 25 litres per day for each bathroom and kitchen subject to the condition that maximum of 50% of the total roof area is provided with the system.

IV. *Specifications:* Installation of Solar Assisted Water Heating Systems shall conform to BIS specification IS 12933. The solar collectors used in the system shall have the BIS certification mark.

V. *Auxiliary System:* Wherever hot water requirement is continuous, auxiliary heating arrangement either with electric elements or oil of adequate capacity can be provided.

STATUS OF AMENDMENT

S.No	State/UT	Building Bye Laws
1	**Andhra Pradesh**	The Andhra Pradesh Building Rules - 2012
2	**Arunachal Pradesh**	Arunachal Pradesh Building Byelaws, 2009
3	**Assam**	Guwahati Building Construction (Regulations), Bye Laws, 2014
4	**Bihar**	Bihar Building Bye Laws, 2014
5	**Jammu and Kashmir**	Jammu Municipal Corporation (Building) Bye- Laws 2010
6	**Goa**	The Goa Land Development and Building Construction Regulations, 2010.
7	**Maharashtra**	(i) Development Control Regulation of Greater Mumbai, 1991 (ii) Standardized Development Control and Promotion Regulations for Municipal Councils and Nagar Panchayats in Maharashtra, 2013
8	**Mizoram**	(i) Aizawl Municipal Council Building Regulations, 2011 (ii) The Aizawl Development Authority Building Regulations, 2008
9	**Rajasthan**	Jaipur Development Authority Building Bye Laws, 2010
10	**Tamil Nadu**	Tamil Nadu District Municipalities Building Rules, 1972. Development Regulations of Chennai, 2013.
11	**Punjab**	Punjab Model Building Bye-Laws, 2010
12	**Uttar Pradesh**	Uttar Pradesh Building Construction and Development Bye Laws, 2008
13	**Uttarakhand**	Uttarakhand Building Construction and Development Bye Laws, 2008
14	**West Bengal**	The West Bengal Municipal (Building) Rules, 2007
15	**Chandigarh**	Planning, Construction & Usage of Various Buildings Rules of Chandigarh framed under Capital of Punjab (Development and Regulation) Act, 1952.
16	**Dadra and Nagar Haveli**	Development Control Rules of Dadra and Nagar Haveli, 2014
17	**NCT Delhi**	Unified Building Bye Laws,2016

Energy Efficient Buildings: Additional FSI As a tool

Category I: Components, which are of *structural nature* and are to be incorporated into the civil works, identifiable at the time of preparing building plans.

Category II : Components which are in the *nature of interventions* and actions required *post construction*, either during interior design stage or during continuous usage.

- It is clear that additional FSI, if provided as an incentive will have to be awarded **UPFRONT** at the time of building plan approvals. At that stage, it will not be possible to ensure compliance to category II components.

- The benefits of additional FSI, if given upfront, and utilized by the builder (Citizen) by constructing the additional square feet area, will have to be **followed up by inspections, verifications and regular monitoring**. There will be serious issues for ULBs regarding human resource, interpretation and technical understanding to do this apart from evolving a legal framework to take action against defaulters.

Ministry of Urban Development viewpoint:

- Granting additional FSI to Green buildings will become an inspection and enforcement issue for ULBs.
- Energy efficient building is more of a retrofitting and installation of appliance and fixtures exercise and not a part of building plan application.
- Independent evaluation of building plans will be required from competent technical agencies regarding the incorporation of green building norms of structural nature in the building plan using modern software and IT Tools.
- Verification and inspections at the time of issue of completion certificate will be difficult.
- At present, there is a mandate to reduce the number of procedures and time taken for sanctioning the building plan approvals.

Alternative Approaches:

Other incentives like

- Rebate in registration of property at the time of transferring title of a certified green building.
- Property taxes rebates.
- Incentivizing reduced power consumption.
- Promote renewable energy generation by policies of net metering etc.

AMRUT Mission - Solar Roof Top

Reforms Milestones and Timelines for AMRUT Cities

Sl.No	Type	Milestones	Implementation timeline
6	Review of Building by-laws	1. Revision of building bye laws periodically.	12 months
		2. State to formulate a policy and action plan for having a solar roof top in all buildings having an area greater than 500 square meters and all public buildings.	12–24 months
		3. State to formulate a policy and action plan for having Rain water harvesting structures in all commercial, public buildings and new buildings on plots of 300 sq. meters and above.	12–24 months
		4. Create single window clearance for all approvals to give building permissions.	12 months

AMRUT Mission - Solar Roof Top

SAAP - Reforms Type, Steps and Target for AMRUT Cities FY-2016-2017

Sl.No	Type	Steps	Impleme -ntation Timeline	Target to be set by states in SAAP			
				April to Sep, 2015	Oct, 2015 to Mar, 2016	April to Sep, 2016	Oct, 2016 to Mar, 2017
6	**Review of Building by-laws**	1. State to formulate a policy and action plan for having a solar roof top in all buildings having an area greater than 500 squaremeters and all public buildings. 2. State to formulate a policy and action plan for having Rainwater harvesting structures in all commercial, public buildings and new buildings on plots of 300 sq. meters and above.	24 months				

CHALLENGES AHEAD

- Ensuring all the States to revise their respective Building Bye Laws
- Enforcement and Monitoring Mechanism at the ULB/UDA level.
- Increased Awareness and Incentivisation for using the Solar Energy
- Limited rooftop space and
- Potential assessment for rooftop installations using GIS techniques.
- Reduction of Initial cost Rs.75,000 per kWp (MNRE)