ENERGY EFFICIENT BUILDING RENNOVATION POLICY

PURPOSE:

Energy efficiency standards for buildings, such as India's Energy Conservation Building Code (ECBC), are mandatory regulations that set minimum energy performance levels for building systems like envelopes, HVAC, lighting, and power. These standards aim to reduce a building's energy consumption and lifecycle costs by specifying requirements for insulation, efficient equipment, and renewable energy integration, often with different compliance tiers reflecting increasing energy savings.

Procedure:

- Building Envelope:

  Requirements for walls, roofs, and windows to minimize heat and moisture transfer, including specifications for insulation (low U-factors), solar heat gain coefficients (SHGC), and window efficiency.
- Heating, Ventilation, and Air Conditioning (HVAC):

  Standards for system efficiency, equipment types, duct sealing and insulation, and controls like economizers and variable speed drives.
- Lighting:

  Prescriptive requirements for lamp types, wattage, and efficacy, as well as advanced lighting controls such as occupancy sensors and automatic shutoff.
- Electrical Power and Motors:

  Guidelines for transformer losses, motor efficiencies, power factor correction, and the provision of electric check metering and monitoring systems.
- Renewable Energy Systems:
  Provisions for integrating renewable energy sources, such as solar water heating, and ensuring sufficient solar zone area for collection.

India's ECBC:

Bureau of Energy Efficiency code sets minimum energy standards for new commercial buildings and provides pathways to achieving higher levels of energy performance, such as the newer ECSBC 2024 which integrates sustainability measures alongside energy efficiency.

Practice:

Sustainability at DRMGRERI begins with infrastructure and operational systems. Rooftop solar panels across multiple campuses generate nearly 234,900 kWh annually, directly replacing fossil fuel electricity and reducing 192 tonnes of CO_2 emissions per year. A campus-wide energy efficiency program, including the deployment of LED lighting and BLDC fans, contributes additional annual savings of 68,000 kWh. Together, these measures reduce energy costs, improve efficiency, and make renewable energy central to operations.

Wastewater and liquid waste management are equally robust. With 200,000 liters/day sewage treatment plants, DRMGRERI ensures 100% of wastewater is treated and reused for flushing, cooling, and landscaping, saving 60 million liters of freshwater annually. Sludge is converted into organic compost, supporting a green campus. Hazardous effluents and biomedical waste are managed in compliance with CPCB and TNPCB norms, ensuring zero untreated discharge. On the solid and e-waste front, composting pits and biogas plants convert organic waste into usable energy and manure. Annual collection drives manage over 100 kg of e-waste, while student pledges ensure responsible disposal. By approaching waste as a resource, the Institute demonstrates circular economy principles in action.

Transportation is a major contributor to emissions, and DRMGRERI has pioneered a mobility shift. With two EV charging stations (60 kW and 120 kW), the University supports a growing electric fleet: 4 EV buses, 5 EV cars, 10 EV autos, and 4 EV buggies.

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