



Institutionalization of Energy Efficiency in India

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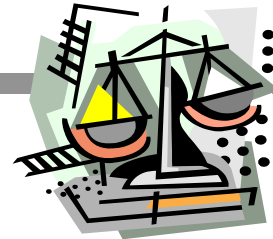
Legislative and Institutional Framework

Energy Efficiency in India





THE INDIAN ENERGY CONSERVATION ACT



- EC Act enacted in October 2001
- Became effective from 1st March 2002
- Bureau of Energy Efficiency (BEE) operationalized from 1st March 2002 and State Designated Agencies established in 32 States/Union Territories
- Energy efficiency institutional practices and initiatives in India are now mainly being guided through various voluntary and mandatory provisions of the Energy Conservation Act

MISSION OF BEE

Develop policy and strategies with a thrust on self regulation and market principles, within the overall framework of the EC Act with the primary objective of reducing energy intensity of the Indian economy.

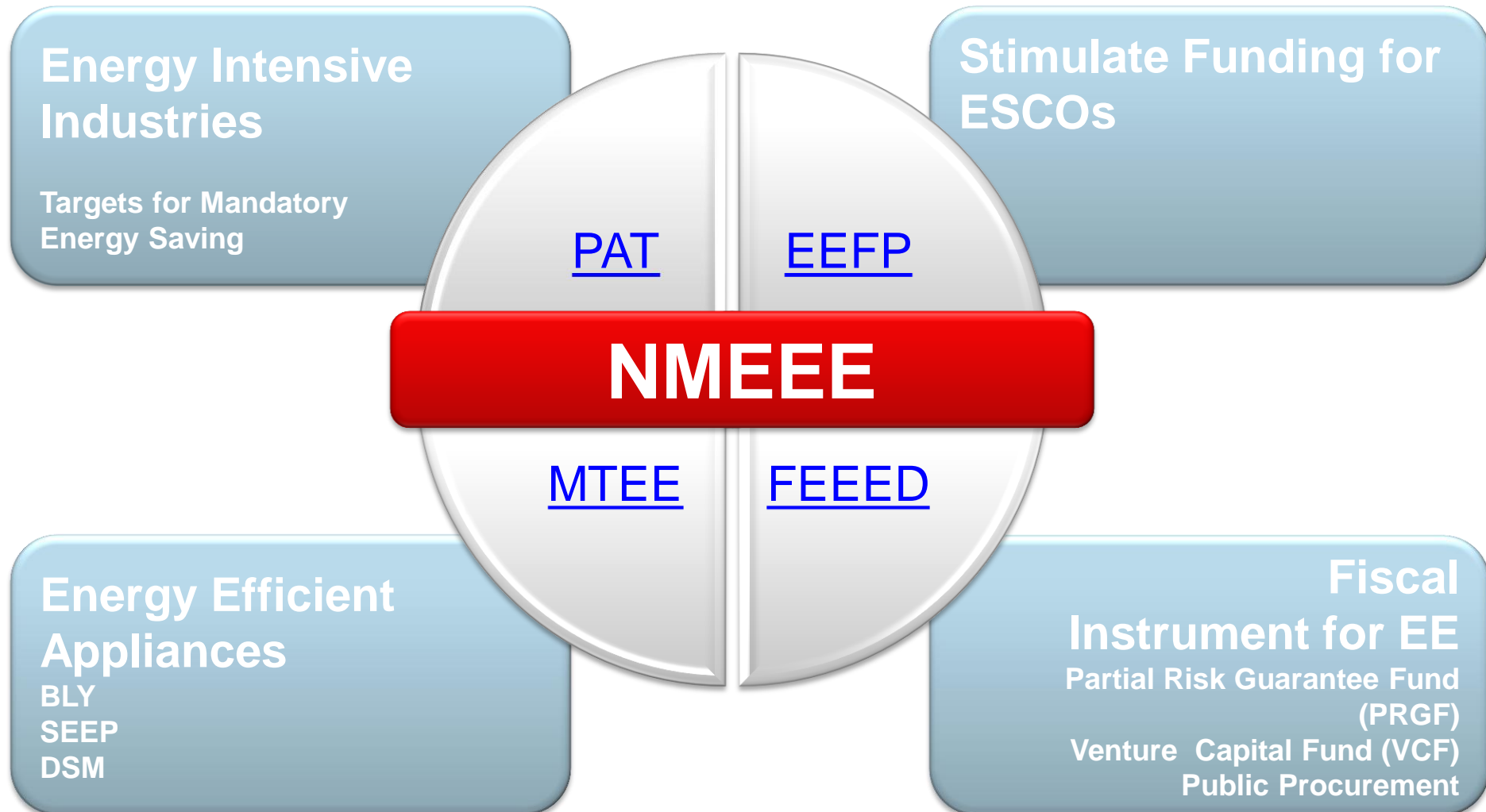


THE INDIAN ENERGY CONSERVATION ACT

- The **five major provisions** of EC Act relate to:
- **Designated Consumers** (*mainly energy intensive industries and buildings*) to comply with the specific energy consumption norms for the manufactured products and services and establishment of energy management system,
- **Standards and Labeling** of energy consuming appliances, gadgets and equipment to ensure promotion of energy efficiency of the new stocks entering the market
- **Energy Conservation Building Code** ensuring that new commercial buildings constructed in the country have less electricity consumption
- Creation of **Institutional Set up** (Bureau of Energy Efficiency at the Federal level and State Designated Agencies at the State level) for effective coordination of the energy conservation efforts in the country and
- Establishment of **Energy Conservation Fund** at Centre and States to provide necessary financial support for energy efficiency initiatives in the country.





NMEEE – Four New Initiatives





PAT Scheme

- Covers 478 designated consumers in 8 sectors, consuming about 165 million toe energy.
- National Target = 6.686 million toe at the end of 1st PAT Cycle (by 2014-15)
- Reducing India's CO₂ emissions by 24 million tons / year in 2014-15.
 - Achievement > Target  E-Scerts
 - Achievement < Target  Purchase E-Scerts / Penalty
- The Energy Savings Certificates (ESCerts) so issued will be tradable on special trading platforms to be created in the two power exchanges (Indian Energy Exchange and Power Exchange India).
- The direct benefit for the participating industries in this period is reductions in input costs related to energy of approximately US\$ 1250 million.
- **Total EE Projects planned in 2012-15: 2057**
- **Total anticipated investment : US\$ 3095 million**



Energy Conservation Building Code

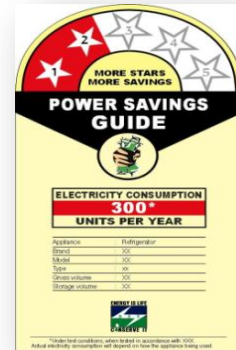
- ECBC covering five climatic zones of India (Hot & Dry, Warm & Humid, Composite, Temperate and Cold) prepared
- ECBC set minimum energy efficiency standards for design and construction
- Mandatory Scope Covers commercial buildings
- Survey indicates about 306 buildings being constructed in the country are ECBC complaint
- Star labeling programme (Voluntary) for day use office buildings, BPOs and Shopping Malls developed





Standards and Labeling

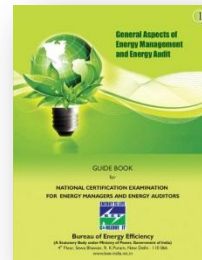
- Energy consuming Equipment and Appliances covered under S&L Programme
- All the refrigerators (frost free), air conditioners, distribution transformers and fluorescent tube lights that are sold in India must have a BEE Star label (4 products under mandatory provisions)
- Draft standards & Labelling scheme for passenger cars have been finalised.
- India became the first country in the world to comprehensively regulate the performance, safety, and quality of light-emitting diodes (LEDs). The newly published standards in 2012 by BIS with the active support of BEE will help ensure quality and avoid market-spoiling effects from poorly performing products.





Energy Manager Certification and Energy Audits

- 9 energy intensive industry including Railways have been notified as designated consumers
- 15 National Certification examinations have certified about 12,000 Certified Energy Managers, out of which 8000 are also qualified as Certified Energy Auditors
- Guide Books on EE and Energy Audit Manuals prepared





National Energy Conservation Awards



- Motivated industry and other establishment to adopt energy efficiency measures
- Scheme has become very popular among industries and buildings, as is evident from increasing participation level (1010 nominations in 2014 in comparison to 123 nominations in 1999)



The President of India, Shri Pranab Mukherjee, presenting the National Energy Conservation Awards at the inaugural function of the National Energy Conservation Day - 2012 at Vigyan Bhavan in New Delhi on December 14, 2012.



Painting Competition on Energy Conservation for Elementary School Students

- The scheme aims at sensitizing the children towards issues of energy conservation
- Ministry of Power and Bureau of Energy Efficiency have been organizing painting competitions on energy conservation for since 2005 for students of the 4th to 9th standards at School, State and National levels
- The scheme aims at sensitizing the children towards issues of energy conservation.
- The scheme is being executed in all the 29 States and 7 UTs of India
- In the year 2015, more than 100,000,000 students participated in comparison to about 343,000 students in 2005.





Impact of BEE Activities

Year	Electrical Energy Savings in BU	Thermal Energy Savings in MTDE	Co2 Emission Reduction in MT
2011 – 12	12.72	1.535	15.66
2012 – 13	13.70	1.706	17.05
2013 – 14	15.94	1.672	18.74

BU – Billion Units

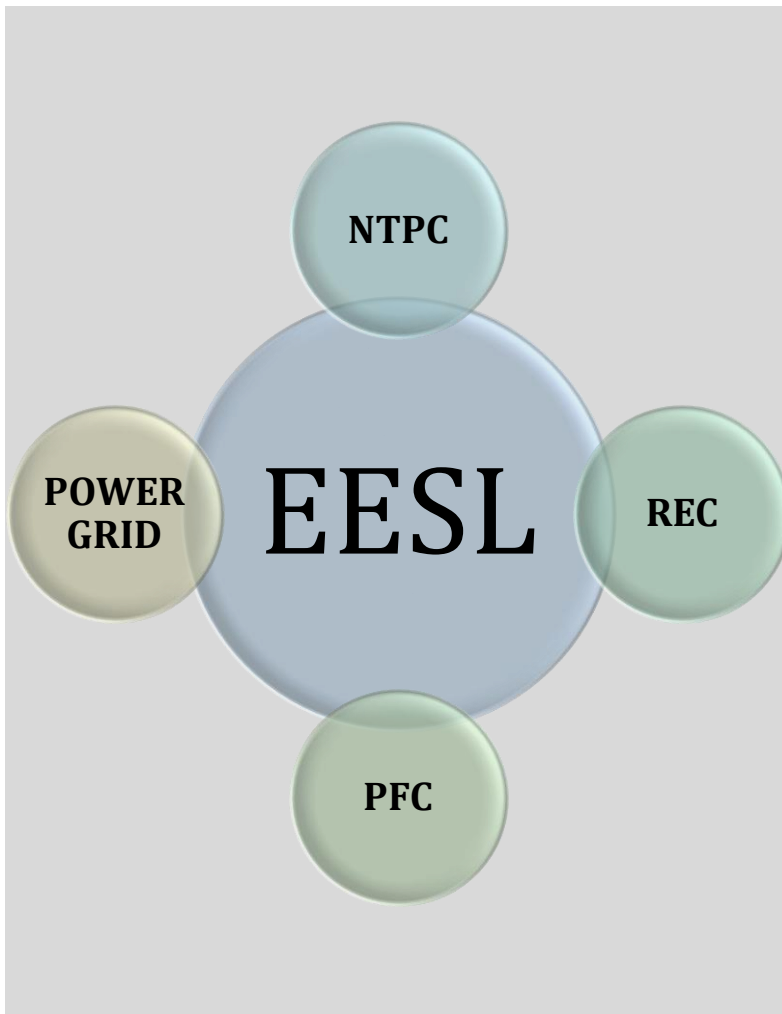
MTOE – Million Tonnes Oil Equivalent

MT – Million Tonnes



ENERGY EFFICIENCY SERVICES LIMITED

Creating an Energy Efficient India



- **100% public owned company**
- **Promoted by Ministry of Power, Government of India**
- **Governed by all rules and procedures of Government of India**
- **Audited by C&AG and oversight by CVC**
- **Board of Directors represented by Ministry of Power and Bureau of Energy Efficiency (BEE)**
- **Authorised share capital – USD 80 million**



LED based Home and Street Lighting Programme



PM launches: Scheme for LED bulb distribution under Domestic Efficient Lighting Programme in Delhi

- Programme has 2 components
 - (a) Conversion of conventional domestic lights with LEDs, and
 - (b) Conversion of conventional street lights with LEDs,
- 100 cities to be covered by March, 2016 and balance by March, 2019 targeting 770 million ordinary bulbs and 35 million conventional street lights



Benefits of the LED Programme

Domestic Efficient Lighting Programme (DELP)

- Replacement of **770 million** ordinary bulbs will result in savings of **100 billion units** annually and **USD 6.5Billion** in consumer bills and **80 million tonnes CO2** by 2019
- Average **reduction of electricity bill** of consumers by **USD 2.5-5** per year per LED

Street Light National Programme (SLNP)

- Replacement of **35 million** conventional street light will result in savings of **9 Billion units annually** by 2019
- Total **cost savings** of municipalities every year will be **USD 900 million**.



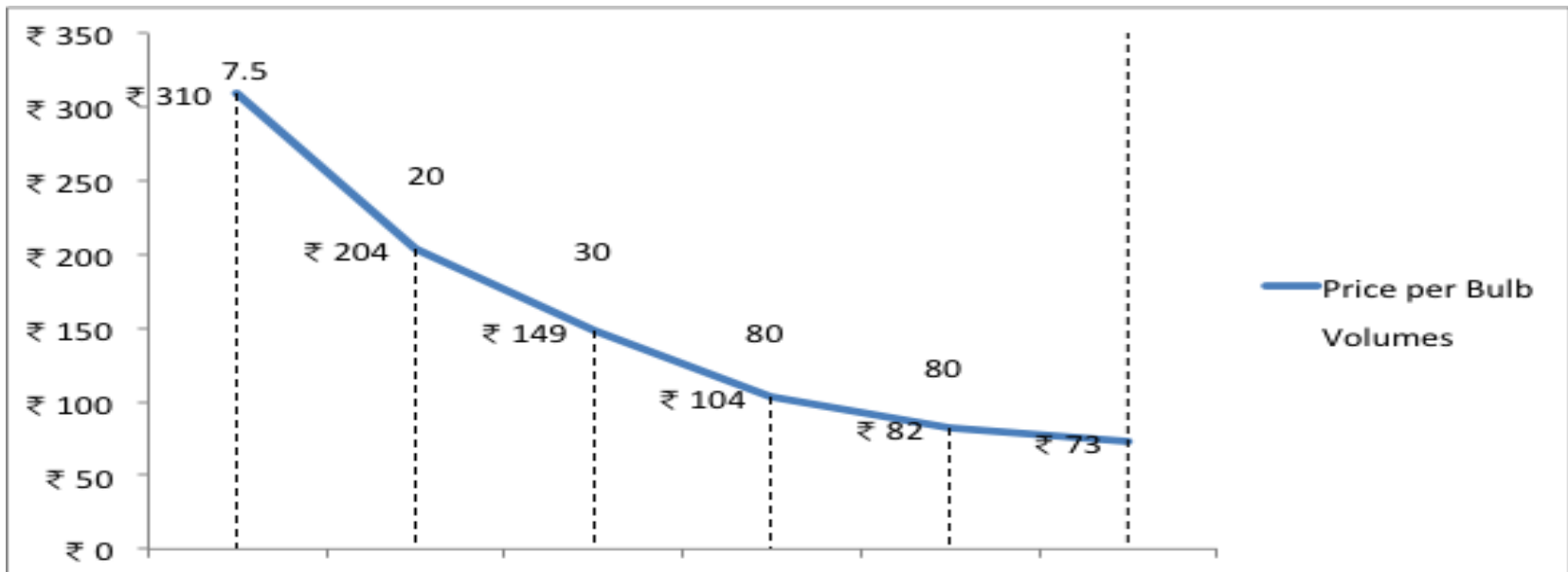
Innovative Service Model

- **Major barriers –**
 - High price of LED;
 - Insufficient availability;
 - Lack of sufficient awareness.
- **Service model** devised wherein there is no need for upfront capital investment by ULBs. Domestic consumers to get LED s in easy installments with initial payment of 15 cents
- The **cost recovery** will be done in installments over 7 year period for ULBs and 8-12 months for domestic consumers



Reduction in Price

Large scale and transparent procurement has led to sharp decline in LED bulb prices (with taxes)





EXPECTED RESULTS

Domestic Efficient Lighting Programme (DELP)

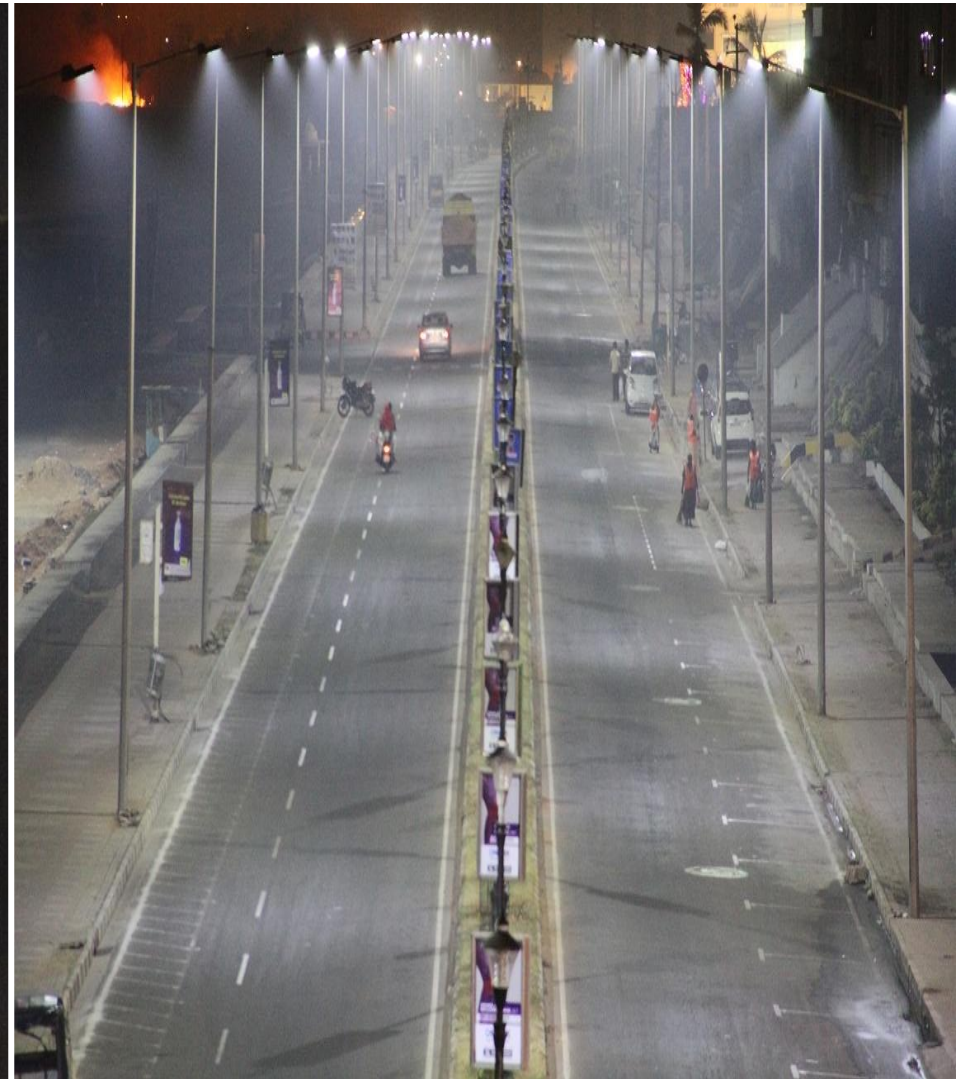
- 186 cities enrolled, 7 cities completed, 17.5 million LEDs distributed
- 150 million LEDs to be distributed by March'16
- Distribution of 770 million LEDs, expected energy savings 100BU, USD 6.5 billion and 80 million tonnes CO₂

Street Light National Programme (SLNP)

- 302 Urban Local Bodies ULBs enrolled, 6 ULBs completed, 0.207 street light replaced
- 1.5 million LEDs to be distributed by March' 16
- Replacement of 35 million Conventional Street light, expected savings 9 BU, USD 900 MILLION, 7.2 million tonnes CO₂



Vizag Street Light Project





EESL Demo Projects - Puducherry

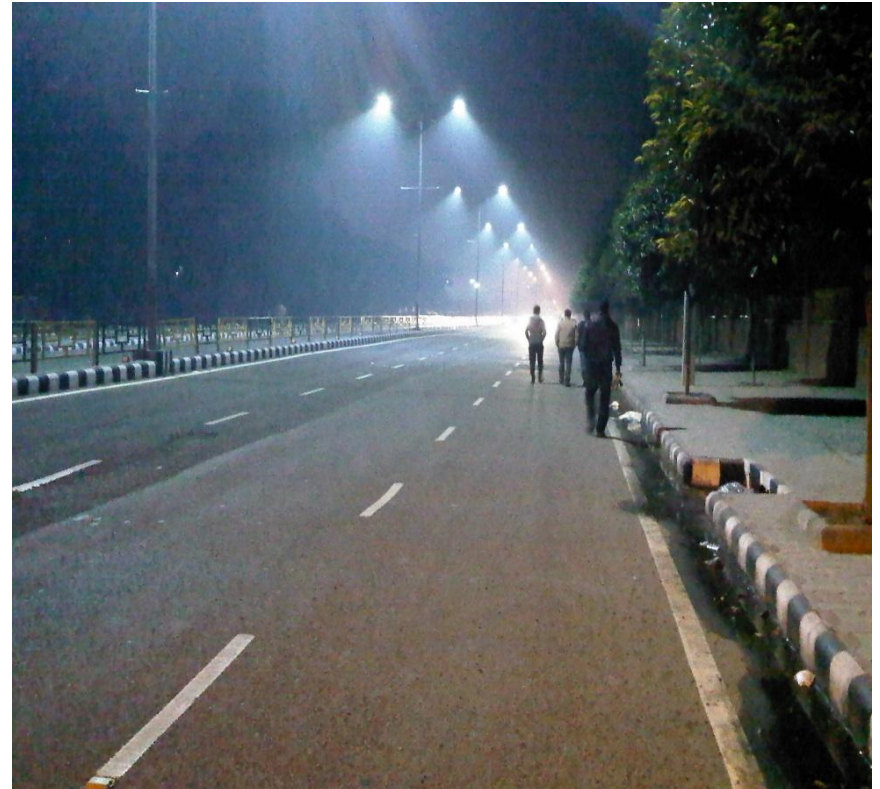


- Over 55% energy savings achieved
- Lux level improvement by 55% - lux levels higher than standard
- Power factor improvement leading to additional savings of about 15%



Road Category B1 As per NLC (12 M road width)

Left side Image 250W HPSV 28M span and Right side image 120W LED on same road



Power Saving more than 55% .

Lux level is more than required lux level as per standard

Power factor improvement leading to additional savings of about more than 25% at DISCOM end

EESL Demo Projects- Mohali



Creating an Energy Efficient India



You Save, India Smiles.....