



# Market Transformation in Energy Efficiency in India

**EESL's Initiatives**

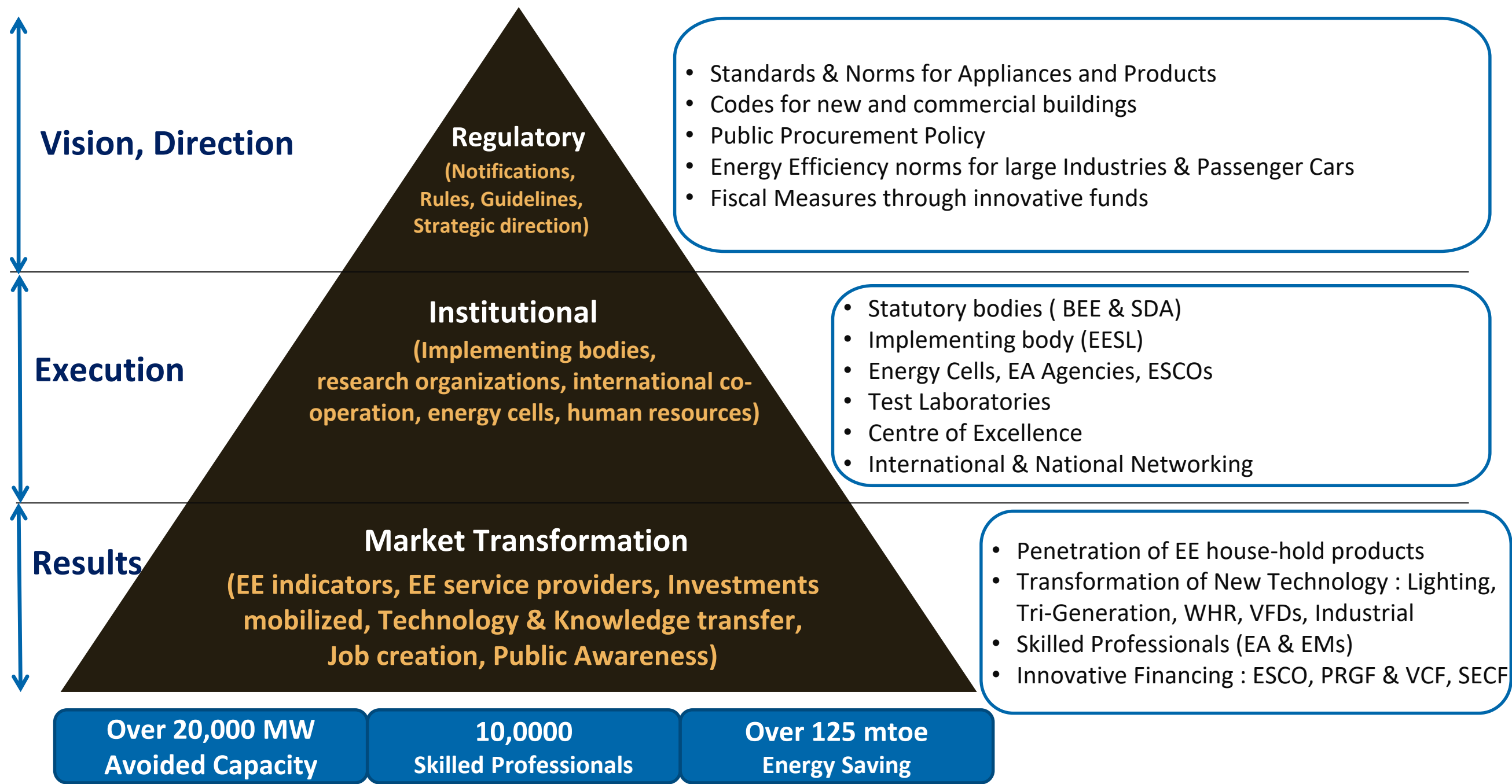
**S.P. Garnaik**  
Executive Director  
Energy Efficiency Services Ltd.  
Ministry of Power, Govt. of India

# Strategic Areas for Energy Efficiency in India

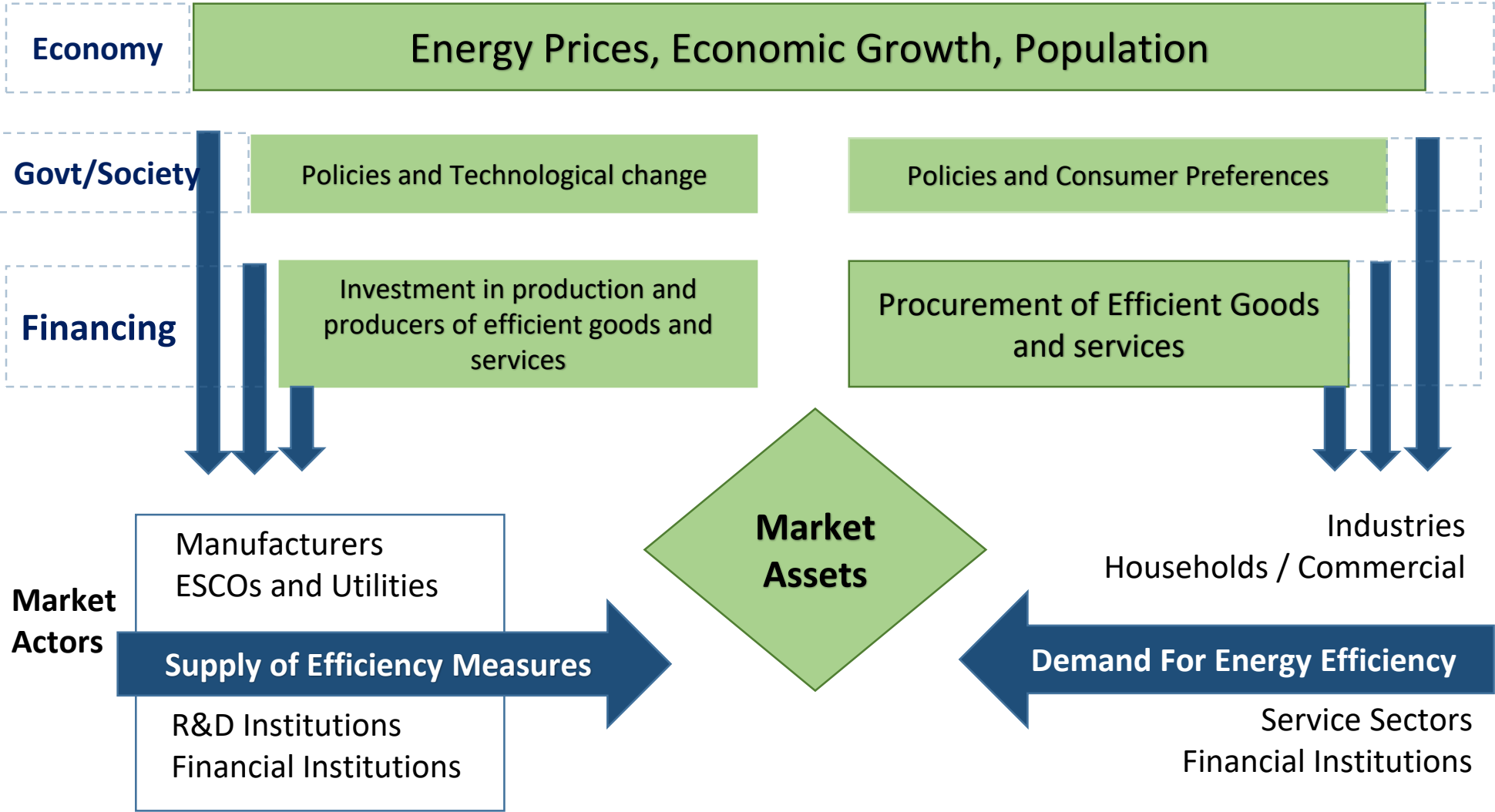
- Employ mandatory measures for energy efficiency through laws, regulations & standards
- Employ measures which creates widespread effects on awareness, behavioural change of consumers, market transformation, decision-making of entrepreneurs towards efficient use of energy
- Promote decentralized energy efficiency activities in public and private organizations which possess resource, infrastructure and experience readiness like States, Power Utilities and other Government departments
- Promote Public Private Partnership for supporting and implementing energy conservation measures
- Engage energy professionals and Energy Servicing Companies (ESCOs), as vital links, in terms of consultation and implementation of energy efficiency projects and technologies
- Increase indigenous energy efficient technology to cut cost and foster technology accessibility at all levels of energy usage



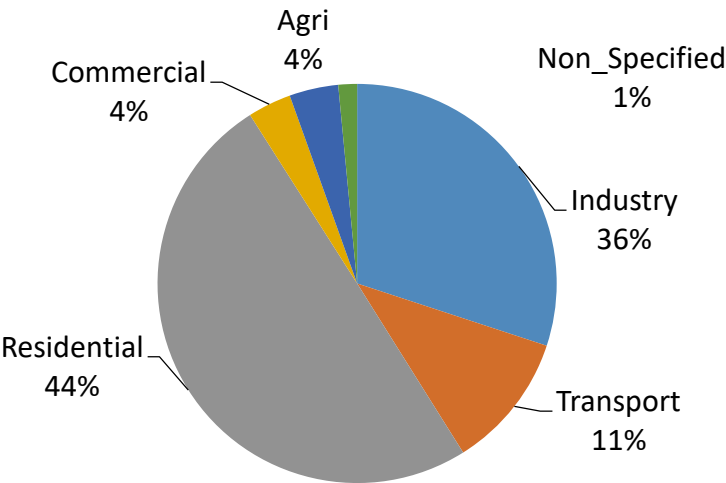
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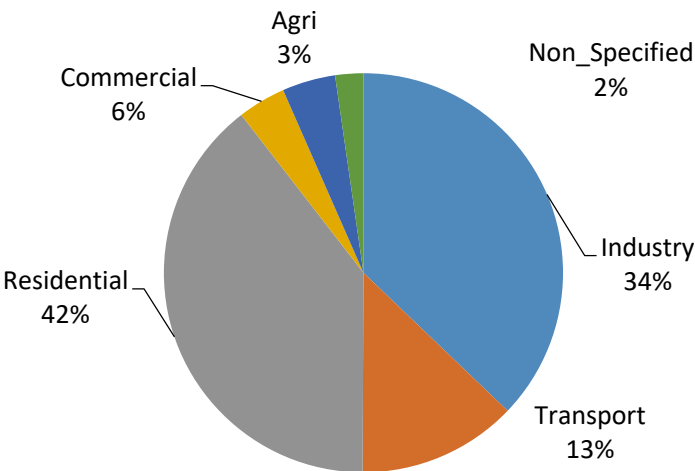
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Share of TFEC in Sectors (2000)



Share of TFEC in Sectors (2015)













# EESL Overview



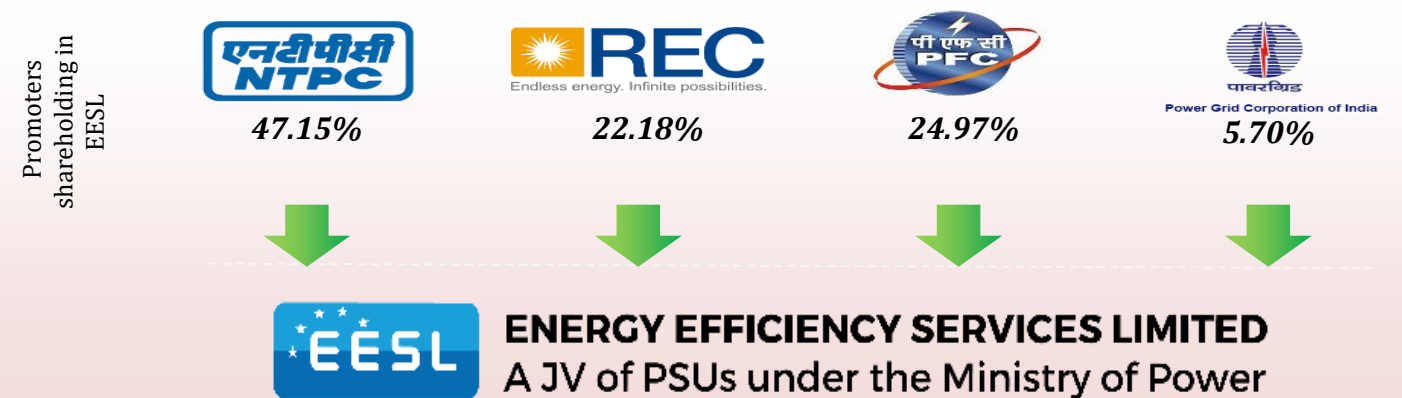
**EESL: One of the largest SUPER ESCOs in the World - Driving Energy Efficiency Solutions in India and Globally**

## Company overview

-  Founded in 2009, under National Mission on Enhanced Efficiency (NMEEE)
-  Joint venture of four Public Sector Enterprise of Ministry of Power, GoI
-  Equity Paid up capital – INR **983.33** Crore \*
-  Current employee strength - **955**
-  Total number of active schemes - **14**
-  No. of Urban Local Bodies (ULBs) touched across States - **1,500+**
-  International presence/ operations - **8 countries**
-  Estimated Energy Savings from EESL's interventions – **54 billion kWh** per year with Avoided peak demand of **10,740 MW**
-  Estimated Carbon Foot print reduction - 44 million t of CO<sub>2</sub> per year
-  Estimated Monitory Savings of INR 20,000 Crore

\* Till September '19

## EESL is promoted by 2 Navratana and 2 Maharatna PSEs



## Global financial institutions supporting growth

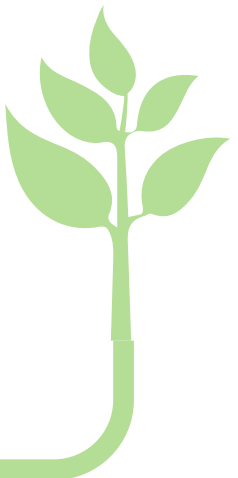
Total line of credit sanctioned ~\$ 1,062 million







# EESL's Journey



# UNNAT JYOTI BY AFFORDABLE LEDs FOR ALL



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



**Energy Efficiency** Business has resulted Electricity saving of over **45** billion kWh per annum

**360** million  
LED Bulbs  
UJALA

**7.2** million  
LED Tube Lights  
UJALA

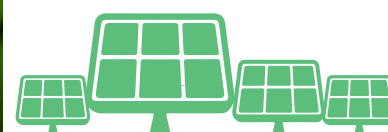
**2.3** million  
EE Fans  
UJALA

**10.4** million  
LED Street Lights  
Street Light National Program

**10400+**  
Buildings  
Building EE Program

**74700**  
EE Agri-Pumps  
Ag-DSM Program

**1** million  
Smart Meters  
Smart Meter National Program



## Enabling More





## Clean Energy Business for Sustainability and enhancing Social Value

**150,000**

**Solar LED Street Lights**

Atal Jyoti Yojana (AJAY)

**6.3** million

**Solar Study Lamps**

SoUL Program

**80** MWp

**Decentralized Solar**

Solar Program

**1510**

**E-Cars**

National e-mobility Program

**470+**

**AC & DC Captive Chargers**

National e-mobility Program

**66**

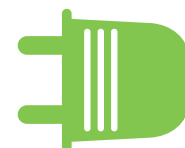
**Public Charging Stations**

National e-mobility Program

**1** MW

**Tri-Generation**

40 MW in Pipeline



## Enabling More





# Value Proposition

**More Efficiency | More Innovations | More Savings | More Productivity**

Project Management for  
complete project period –  
repair & maintenance

Project  
Management

05



**Transparent operations,  
outcomes in Public Domain**

EESL follows the Public  
Procurement Guidelines to  
procure Goods & Services –  
Bulk Procurement Approach  
followed.

Procurement

03



EESL takes full responsibility  
to design, install and  
commissioning of the project

Implementation

04



Problem  
Statement

01



Feasibility Studies,  
Energy Audits, Diagnostic  
Studies to understand the  
energy saving potential  
and the business model

Investment

02



Mobilize investment to  
implement the project on  
ESCO model – **Pay-as-You-  
Save (Pays) Model**



## PMC MODEL (*Upfront Investment done by Client*)

Inventory Collection

Procurement Facilitation

Warranty Obligation

Project Monitoring

Total Project Cost: Capital Cost + EESL PMC Fees

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## ESCO MODEL (*Upfront Investment done by EESL*)

Inventory Collection

Procurement Facilitation

Warranty Obligation

Investment by EESL

Project Monitoring

Total Project Cost: Capital Cost + EESL PMC Fees + Financing Cost



# LED LIGHTING

## Energy Efficient



**50-70 %**

### Energy Saving

Energy Saving is calculated on “Deemed Saving” approach by considering baseline wattage and hours of operation.



**20-25%**

### Price Reduction

EESL adopts open public bidding process for Bulk Procurement



**10-14%**

### Project Management Cost

EESL Project Management Cost depends upon the Project size, extent of involvement

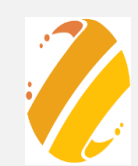


**More than 4 Million Lights have been deployed in Industries and Buildings by EESL worth 85 million USD**

EESL provides various ranges of LED lights from 9 Watts to 190 Watts with 3-5 years warranty period. Typical supply period is one month to three

months. Deployments of LED lights have been done in **10400 Buildings, 100 PSUs/Industries, 800 Railway Stations, 64 Airports and 1200 Bank ATMs** across the country.





# Super Efficient AC Program

- About **30%** reduction in price as compared to retail price
- Consumer could save somewhere **INR 2000 to INR 3000 per year** compared to 5-star AC and 3-star AC respectively.
- **Hassle-free** service experience, comprising of complaint redressal support during the life of the programme, **buyback option**.
- There is **no derating** of the cooling capacity even at high ambient temperature i.e. as high as 43 degree Celsius, in contrast, ACs currently available in the market degrade their cooling capacity as room temperature increases.
- **Support in Indian Cooling Action Plan** and NITI Aayog @75 vision on energy savings and CO2 emission reduction
- Opportunity to scale-up and creating **manufacturing base** towards more efficient products.
- Optimized investment on power infrastructure, Synergy with the ongoing demand side management programme



**Sab se Sasta**



**Sab se efficient**



**Eco Friendly**



**Easy Buyback**

**ISEER 5.4**

40% more efficient  
than 3-Star ACs

**INR 39990**

Price equivalent  
to 4-Star ACs

**20-25%**

Energy Saving

**2000+ ACs**

Deployed

**3-7 days**

Delivery time in  
Tire-1 and Tire-2  
cities



**EESL** ENERGY EFFICIENCY SERVICES LIMITED  
A JV of PSUs under the Ministry of Power

**Cool: How EESL is meeting India's cooling needs in a sustainable manner**

**gef** **ADB** ASIAN DEVELOPMENT BANK **UN** environment



# Energy-Efficient IE3 Motor

National Motor Replacement Program (NMRP)

## Pilot Studies (2018)



अब उद्योगों में होगा ऊर्जा दक्ष मोटरों का इस्तेमाल

■ नई दिल्ली (भाषा) ।  
सार्वजनिक क्षेत्र की कंपनी ईईएसएल धरो में ऊर्जा संरक्षण और दक्षता को बढ़ावा देने के वाद अब उद्योगों पर ध्यान केंद्रित कर रही है। कंपनी ने अगले छह महीने में उद्योगों में विभिन्न कार्यों के लिए उपयोग में लाई जा रही 1.20 लाख मोटरों को बदलने का लक्ष्य रखा है।  
अधिकारियों के अनुसार पानी खींचने के पंप, पंखे, खींचलर, कम्प्रेसर जैसे तमाम उपकरणों में मोटर का इस्तेमाल होता है। देश में इस तरह की मोटरों की संख्या करीब 1.1 करोड़ है।  
इन मोटरों को अगर ऊर्जा दक्ष मोटरों से बदला जाय है तो इससे करीब 15 अरब यूनिट बिजली यानी करीब 12,000 करोड़ रुपए की बचत होगी। बिजली मंत्रालय के अधीन आने वाली एनटीपीसी, आरईसी, पीएफसी और पावरग्रिड की संयुक्त उद्यम कंपनी, एनर्जी एफिशिएंसी सर्विसेज लि. (ईईएसएल) ने इसे चरणबद्ध तरीके से लागू करने की योजना बनाई है।  
पहले चरण में इस साल अक्टूबर तक कम बिजली खपत वाली 1.20 लाख मोटर लगाने का लक्ष्य है।  
ईईएसएल के मुख्य महाप्रबंधक (प्रौद्योगिकी) एस. पी. गहनायक ने कहा, 'ऊर्जा संरक्षण के लिये उद्योग क्षेत्र में ईईएसएल का यह पहला हस्तक्षेप है। इस कार्यक्रम के तहत उद्योगों में अक्टूबर तक कम बिजली खपत वाली 1.20 लाख मोटर तथा 2020 तक 20 लाख मोटर लगाने की हमारी योजना है।' इसके बारे में विस्तार से बताते हुए उन्होंने कहा कि उद्योगों में छोटी रेंज की मोटर की यदि बात की जाए तो 1.1 किलोवाट से 22 किलोवाट तक की क्षमता की 1.0 से 1.1 करोड़ मोटरों का उपयोग हो रहा है।



- इस कदम से होगी 12,000 करोड़ रुपए की बचत
- 15 अरब यूनिट बिजली की भी हो सकती है बचत
- पंप, पंखे कंप्रेसर में यूज होते हैं 1.1 करोड़ मोटर
- इस साल लगाई जाएगी 1.20 लाख ऊर्जा दक्ष मोटर

अक्टूबर तक कम बिजली खपत वाली 1.20 लाख मोटर लगाने का लक्ष्य है।  
ईईएसएल के मुख्य महाप्रबंधक (प्रौद्योगिकी) एस. पी.

4000+  
IE3 Motors Deployed  
20000+  
In Pipe-line

[www.motor.eeslindia.org](http://www.motor.eeslindia.org)

motor@eesl.co.in 01145801260 Saving Calculator Enquiry Now Follow us: f t w

**EESL ENERGY EFFICIENCY SERVICES LIMITED**  
A JV of PSUs under the Ministry of Power

**National Motor Replacement Program**

Home About EESL About NMRP How It Works Downloads Gallery FAQs Contact Us

Annual electricity saving: 175 million units

PRODUCT DETAILS

Parameters & Specifications



2.2 kW to 75 kW range  
2-Pole/4-Pole/6-Pole Foot/Flange Mounted

15–20% Less Cost with 3 years warranty  
Products from Reputed Manufacturers

10-15% Energy Saving  
As observed in 36 pilot demonstrations

1.5 to 2 years Payback Period  
Considering 5000 hrs/year and Rs.7/kWh tariff





Sustainable Development Initiative  
Buildings | Industry | Corporates



**10400+**  
Buildings



**870**  
Railway Stations



**64**  
Airports



**1200**  
Bank ATMs

# Launched as a National Program in May 2017

## Energy efficient devices to power state govt bldgs

Somit.Sen@timesgroup.com

**Mumbai:** Nearly 1,500 state government buildings will now be made 'energy efficient' to save 128 million units of power across the state.

The Energy Efficiency Services Ltd (EESL) on Thursday announced that it will embark on this massive project of installing 23,000 energy efficient air-conditioners, 11 lakh LED lights and 8 lakh ceiling fans in state government buildings. The electricity efficient appliances will result in savings of over Rs 130 crore annually to the state exchequer.

"It is the first-of-its-kind venture and the entire project costing Rs 325 crore is funded entirely by EESL. There will be no design change in any building, and we will be retrofitting all existing appliances with energy efficient ones," EESL chief general manager S P Gar-

₹325Cr BRIGHT IDEA				SAVINGS
				128 million units of electricity
				48% reduction in energy consumption
Number of state govt buildings	No. of energy efficient appliances to be installed			₹130cr savings annually
1500	23,000 ACs	11 lakh LED lights	8 lakh ceiling fans	

naik told TOI. He stated that the ground work for the project has already begun, with the EESL receiving in-principle consent from the public works department of the state government. "We plan to complete the project latest by March 2019," he said.

It is learnt that the building sector in the country accounts for approximately 35% of total energy con-

sumption and is growing at a rate of 8% annually, which is alarming, another official said. EESL will also organise a day-long workshop in Mumbai on Saturday on 'Energy Efficiency in Buildings', which will act as a platform for knowledge sharing with stakeholders. Delegates from Thailand and Vietnam are also expected to participate in this workshop.



# Gol mandated EESL to Implement BEEP

## LED Lights Installation

2 Million

## Investment

INR 350 Crores / \$ 50 Million

## Estimated Energy Saving

360 Million kWh per annum

## Estimated CO2 Reduction

184000 Tons per annum

## Payback Period

About 24 months



F.No. 25(24)/E.Coord/2017  
Ministry of Finance  
Department of Expenditure  
(E.Coord)  
North Block, New Delhi  
Dated: 4th August, 2017

**OFFICE MEMORANDUM**

Subject: Economy Measures - Mandatory installation of LED based lighting in all Government buildings - regarding

The Hon'ble Prime Minister on 5th January 2015 launched the National LED programme to facilitate rapid adoption of LED based home and street lighting across the country. The programme components, Unnat Jyoti by Affordable LEDs for All (UJALA) and Street Lighting National Programme (SNLP) are under implementation in 34 States and UTs. This programme along with Building Energy Efficiency Programme (BEEP) is being implemented by Energy Efficiency Services Limited (EESL), a joint venture company of four power sector Central PSUs. EESL works on Energy Services Company (ESCO) model wherein upfront investment is done by EESL and the investment is recouped on annuity basis with performance based guaranteed energy saving during the project period.

2. Pursuant to the above the Central Government has taken a decision for mandatory installation of LED based lighting and energy efficient equipments (Fans & ACs) in all Government buildings.

3. Government buildings is a major source of energy consumption. Usage of LED based lightings and energy efficient equipments in Government buildings will lead to economy in expenditure and savings in the long run through reduction in energy consumed.

4. Keeping in view the economy in expenditure and savings that will entail, all Ministries/Departments are requested to convert the existing lightings/equipments into LED based lightings and energy efficient equipments on priority utilizing the services of CPWD/EESL.

5. The model Agreement/Contract to be entered in to between the Client Ministry/Department and EESL is enclosed for reference. The Client Ministry/Department and EESL on mutual agreement can modify/amend the provisions of the model Agreement/Contract to suit their specific requirements.

6. In respect of those Government buildings maintained by CPWD but where the electricity bill is borne/paid by the respective Ministries/Departments, CPWD (as third party) will countersign the agreement to provide comfort to the Ministry/Department as well as extending help for implementing the contract.

7. Action taken in this regard be reported to Ministry of Power and Department of Expenditure by 15.08.2017 for monitoring purposes.

(H. Athali)  
Director

To  
All Secretaries of Ministries/Departments

Copy to

1. Cabinet Secretary, Government of India
2. Prime Ministers' Office, South Block
3. Managing Director, EESL, IWA1, A-13, Sector-1, Noida.

Letter from MoF

अजय भल्ला  
सचिव  
भारत सरकार  
AJAY BHALLA  
Secretary  
Government of India

विद्युत मंत्रालय  
अनुराग शक्ति भवन  
नई दिल्ली-110001  
Toll : 23710271/23711316  
Fax : 23721487  
E-mail : sacy-power@nic.in

Ministry of Power  
Shri Ashok Lavasa  
New Delhi - 110001

D.O.No. 9/6/2017-EC  
Dated the 2<sup>nd</sup> August, 2017

Dear Sir,

As you may be aware, lighting accounts for about 20% of total electricity consumption in India. Use of LEDs in domestic and public lighting could result in 50-90% reduction in energy consumed by lighting. The National LED Programme was launched on 5<sup>th</sup> January, 2017 by the Hon'ble Prime Minister of India, to facilitate rapid adoption of LED based home and street lighting across the country. This programme along with Building Energy Efficiency Programme (BEEP) is being implemented by Energy Efficiency Services Limited (EESL), a joint venture company of four power sector Central PSUs.

2. EESL qualifies as a "deemed Government Company" within the meaning of section 619B of the Companies Act, 1956 [equivalent sections 139(5) and 139(7) of the new Companies Act, 2013 as per clarification dated 31 July 2014 of the Ministry of Corporate Affairs, GoI ( extracts at Annexure-I)]. Further, EESL is subject to oversight of the Central Vigilance Commission, Government of India under CVC mechanism. The MD of EESL is appointed by a committee chaired by Secretary, Ministry of Power, Government of India and Ministry of Power and Bureau of Energy Efficiency (BEE) are represented in EESL's Board of Directors.

3. EESL follows a business model of demand aggregation for price optimization and passes the price benefit to end consumers. EESL works on ESCO model where upfront investment is done by EESL and which is recouped on annuity basis with performance based guaranteed energy saving during a project period.

4. I would like to mention here that way back in August, 2014, the then Secretary (Power) had written to the then Secretary, Department of Expenditure, GoI, requesting to issue necessary directive to all Ministries/ Departments of the Government of India to procure only LED bulbs in place of CFL and JCL for future lighting (Annexure-II). In view of the emphasis of the Government of India for early conversion of all Buildings to Energy Efficient ones and the above credentials of EESL, I request you to kindly consider issuing

...contd...

-2-

suitable directions/guidelines to enabling Central Government procuring entities across the country to procure services from EESL for Building Energy Efficiency Programme. In this connection, a copy of the Model agreement between CPWD and EESL for Implementation of Energy Efficiency Measures on deemed energy savings based ESCO model with 100% financing by EESL is also enclosed (Annexure-III).

With regards,

Yours sincerely  
(A.K. Bhalla)

Shri Ashok Lavasa,  
Finance Secretary & Secretary (Expenditure),  
Ministry of Finance,  
North Block,  
New Delhi

Copy to MD, EESL with request to follow up with  
JS (Exp), Deptt. of Expenditure

Letter from MoP

Simple Intervention Big Gains





# Electric Vehicle

**EESL's e-Vehicles**  
completed **30 Million**  
green Kilo-Meter

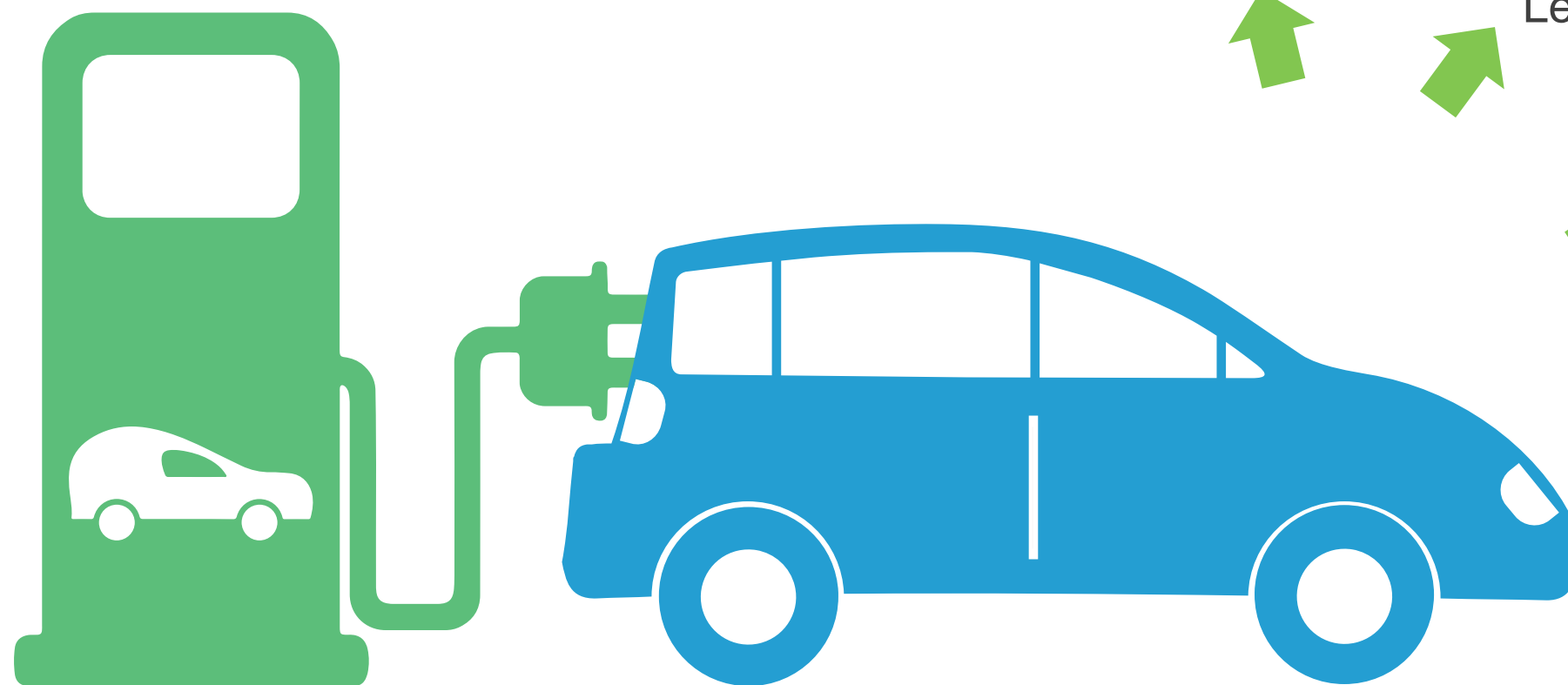
**2000+** e-vehicles  
deployed

**> 140 km**  
Per Charge

**6 Years**  
Leasing Period

Rs. **22500** per month  
Dry Lease

Rs. **40000** per month  
Wet Lease





# EESL's Work at Mahindra & Mahindra

**Mahindra**  
Rise.

01

## LED Lights

**160,000** LED lights installed in 17 plants across India

02

## Energy Efficient Motors

**1140** Energy Efficient (IE3) motors ranging 5.5 kW to 75 kW installed

03

## Super Efficient ACs

**1200** Super-Efficient ACs installed in office uses

04

## Tri-Generation

Plant with **800** kW and **120** TR cooling capacity installed in Paint Shop

05

## 'UJALA' for Employees

Distributed LED Bulbs, LED Tube lights, 5-Start rated fans to over **20000** employees

06

## Energy Audit & Capacity Building

Energy Audit of Electrical & Thermal Utilities ; Technical Training to employees

## Simple Intervention Big Gains

EESL implemented this project on PMC model where upfront investment was borne by M&M in just 4 months period – Tube lights, High bay lights and Down Lights were installed across the plant locations

### LED Lights

17 Locations – 160,000 lights

### Investment

INR 150 Million

### Estimated Energy Saving

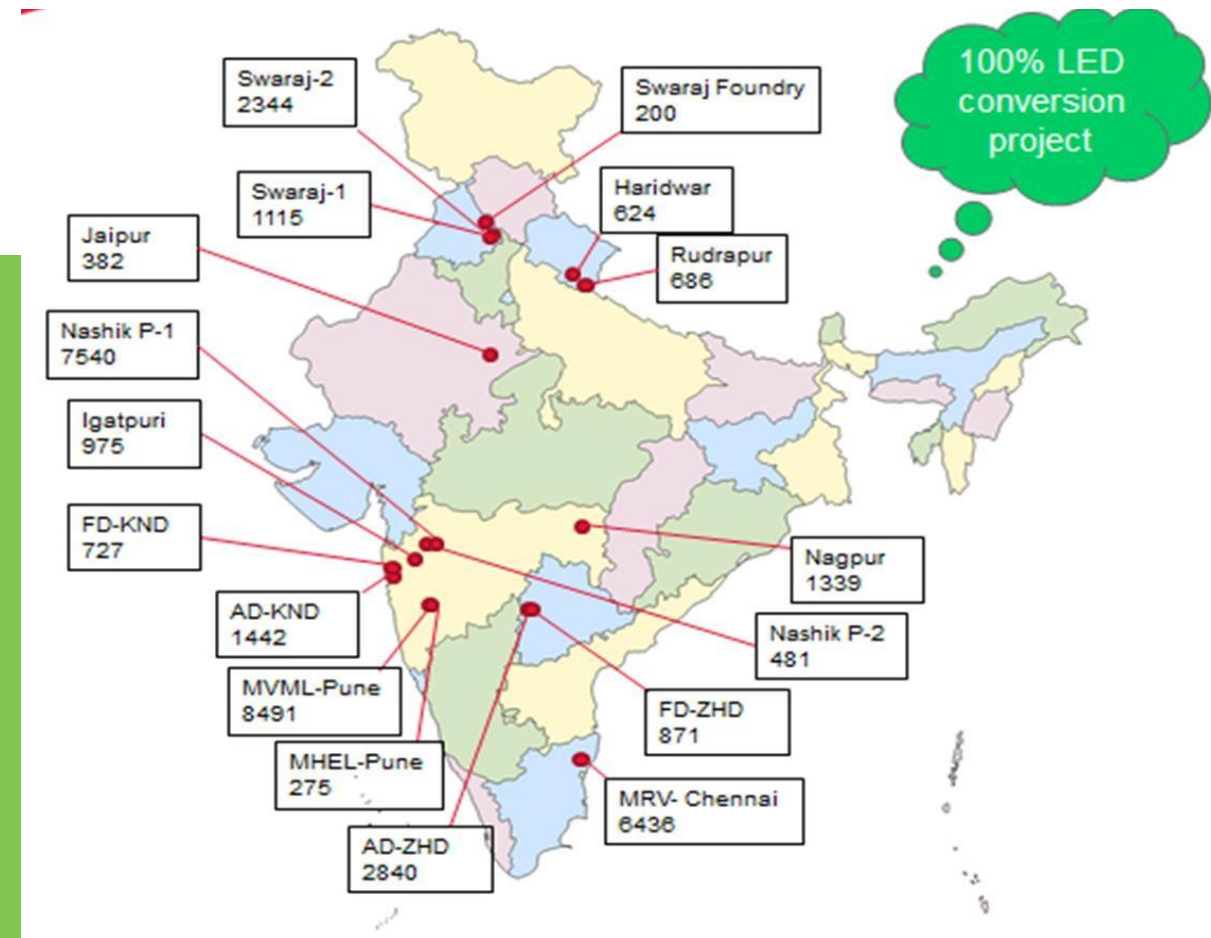
20 Million kWh per annum

### Estimated CO2 Reduction

16400 Tons per annum

### Payback Period

14 months



## We Created Professional Partnership with M&M

The journey started in 2017 as a 'Sustainability' initiative by Mahindra & Mahindra. EESL provided LED lighting solutions – the flagship program of EESL by leveraging the price advantage through 'Bulk Procurement'



# EMPLOYEE ENGAGEMENT

U J A L A P R O D U C T S



Rudrapur



Swaraj Division



Jaipur



MRV



Nashik



Haridwar



AD-Z'bad



Igatpuri



Kandivli



MVML



Nagpur



FD-Z'bad

Engagement with **20,000** people

**30,000** LED bulbs and **5000** EE fans distributed

Estimated Energy Saving : **1.24** Million kWh per annum

Estimated CO2 Emission Reduction : **1024** Tons per annum

On the Occasion of World Environment Day





# Thank You



spgarnaik@eesl.co.in



@Soumya\_Garnaik