ENERGY EFFICIENCY SERVICES LIMITED

... ENABLING MORE

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

Consulting that's implementable. Products that are energy efficient.

Vision

Universal access to sustainable energy solutions to enable a low carbon future, with significant economic and social impact.

Mission

To enable ecosystems for responsible energy adoption with innovations and market creation approaches.

CONTENTS

An Introduction

About us

Energy Efficiency Services Limited (EESL) is a Super-Energy Service Company (ESCO), which enables consumers, industries and governments to effectively manage their energy needs through energy efficient technologies. EESL is implementing the world's largest non-subsidised energy efficiency portfolio across sectors like lighting, buildings, e-mobility, smart metering and agriculture at a scale which no organization has been able to achieve. EESL focuses on solution-driven innovation with no subsidy or capital expenditure (CAPEX). It is able to do so using its Pay-As-You-Save (PAYS) model, which obviates the need for any upfront capital investment by the consumer. The entire investment by EESL is recovered through monetised energy savings over a scheduled project period.

EESL is promoted by the Ministry of Power Government of India as a Joint Venture of four reputed public-sector undertakings - NTPC Limited, Power Finance Corporation Limited., REC Limited, and POWERGRID Corporation of India Limited and has a net worth of over INR 8.3 billion (As per Audited Financial Results for the year ended 31.03.2019).

OUR PHILOSOPHY	
We help our customers get more with the same energy consumption	We enable more by creating incentives for all stakeholders

EESL has designed an innovative business model that is transparent, scalable, flexible, and can seamlessly embrace different and emerging technologies in a manner that incentivises all stakeholders. The transparency and flexibility of the business model precludes the need for public funds as an enabler, while delivering outcomes in a time-bound manner. The business model has the potency to unlock demand in sectors where none has subsisted before. By deploying this business model, EESL drives large scale initiatives, creating a market for transformative, innovative solutions.

EESL'S BUSINESS MODEL'S KEY PILLARS ARE

INNOVATION **TRANSFORMATION** **TRANSPARENCY**

MORE INNOVATION

Innovation that generates a win-win proposition for all is the core of EESL's business model

EESL's innovative business model enables easy adoption of energy efficient solutions for all

The model overcomes barriers by introducing transformative solutions

EESL makes the entire upfront investment

EESL's Pay-As-You-Save model enables repayment and promising performance in terms of energy services

EESL stimulates demand aggregation of transformative solutions. Bulk procurement helps EESL leverage economies of scale hence reducing prices for stakeholders

MORE TRANSFORMATION

Through large-scale transformation initiatives, EESL is redefining the new normal

Large scale transformative solutions have created a 'new normal' for market dynamics and consumption patterns

EESL facilitates the development of the ancillary support system, thus developing the entire ecosystem

The rapid adoption of transformative solution drives social benefits that impact all strata of society – individuals, institutions, utilities and governments

MORE TRANSPARENCY

Transparency of EESL's business model ensures value for all stakeholders

EESL's easy-to-comprehend business model ensures high adoption of modified solutions, creating value for everyone

EESL's business model is flexible and versatile of technologies, platforms and solutions. From LED bulbs and solar photovoltaic to electric vehicles (EVs), the business model can be replicated for a variety of applications

Transparent access to impact metrics via multiple, real-time dashboards

Guaranteed energy savings as measurable outcome provided before initiating energy efficiency programmes across sectors

Tangible, enduring benefits for all sections of the value chain

National E-Mobility Programme

Tomorrow's vehicles

Moving in an efficient direction

Cutting distances. Cutting emissions.

Making India's passenger mobility shared, electric, and connected can cut its energy demand by 64 percent, and carbon emissions by 37 percent by 2030, according to a May 2017 NITI Aayog report. India had, as of June 2016, 4 lakh electric two-wheelers, 1 lakh e-rickshaws and a few thousand electric cars. There is therefore both need and demand for EVs in India. In line with the Government of India's vision of 30% e-mobility by 2030, the National E-Mobility Programme was launched on March 7, 2018.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To promote e-mobility in India	Replacing 500,000 vehicles to create the ecosystem needed for market transformation by government leadership	Delivering e-vehicles to government offices on the same terms and conditions as petrol or diesel cars

DEMAND AGGREGATION

Bulk procurement - leverage economies of scale
Innovative and simple business models
Transparent operations, outcomes in public domain

Our Strategy

EESL has aggregated demand by procuring electric vehicles in bulk, thereby achieving economies of scale. These electric vehicles will replace the existing government fleet of petrol and diesel vehicles. After procurement, these EVs are leased out to the government organisations at rentals that are equal to the present rentals for petrol and diesel cars hired by these organisations. Organisations can also buy the e-vehicles directly from EESL. First tender for procuring 10,000 e-vehicles has already been concluded.

EESL's strategy is to create an innovative business model that addresses the barriers that have, in the past, triggered energy efficiency market failures and create incentives for all value chain stakeholders.

The table below highlights the barriers, how they have been addressed by EESL, and outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
CONSUMERS	High cost of ownership due to small and disaggregated quantities Lack of charging infrastructure Lack of awareness and understanding of benefits Range anxiety Low adoption due to low market availability of products	Demand aggregation and procurement of 10,000 electric cars concluded Economies of scale to bring down prices Setting up a network of charging stations Creating awareness about electric vehicles in the market	25% reduction in the price of electric vehicles Enhanced attractiveness Increased EV demand and market presence Growth in EV manufacturers Improved quality of life New players entering EV manufacturing Development of e-mobility infrastructure
UTILITY/ DISCOMs	Development of e-mobility infrastructure Regulatory hurdles Lack of consumer demand	Installing charging stations for new commercial consumers E-mobility mission formed to take up regulatory hurdles Standardised technical specifications formulated	International competitive bidding (ICB) tender floated by EESL Participation by international players
INDUSTRY (EV ECOSYSTEM)	Lower demand High financial risk Lack of awareness	Payment guarantee Awareness activities Aggregated demand for bulk procurement	Promoting Indian manufacturing Increased global share of Electric Vehicles A complete Make in India initiative Direct and indirect job creation
POLICY MAKERS & REGULATORS	Lower demand therefore recognizing EV as new set of electricity consumer No funds to be allocated for promoting e-mobility	Aggregated demand for bulk procurement Bulk procurement activity has catalysed the EV industry	Positive effect in enabling domestic manufacturing Enhanced attractiveness Increase demand and market presence of EV Growth in original equipment manufacturers

The impact of deploying 5 lakhs EVs will be:

Annual fuel savings (in million litres of fuel)
832

Reduction in tailpipe emissions annually (in million tonnes CO_2)
2.23

EV Charging Infrastructure

Creating infrastructure to drive change

Enabling faster adoption of E-Mobility

With our government's vision to make the country go electric in the next twenty years, we not only need to ramp up the efforts in manufacturing the cars but also ensure that there are adequate charging stations. Several states in India have released draft/final policies for promoting the adoption of EVs. Installation of public charging stations (PCS) would help in taking considerable strides in the creation of a sustainable EV ecosystem in India. EESL, in association with United States Agency for International Development (USAID) under the bilateral programme with the Ministry of Power is developing and implementing a scalable business model for public charging stations to boost the EV fleet in the country.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To build a robust EV charging infrastructure in India	EESL procures, installs, operate and maintain the chargers over their lifetime. It ties up with landowners such as municipalities and metro operators to install PCS	The mechanism of leasing land along with bulk procurement of chargers and use of low-cost financing leads to a win-win proposition for all stakeholders

DEMAND AGGREGATION

EESL aggregates demand of EVs and chargers from various state-run organizations and procure them in bulk
Innovative and simple business models
Transparent operations, outcomes in public domain

Our Strategy

EESL procures, installs, operate and maintain the chargers over their lifetime. It ties up with landowners such as municipalities and metro operators to install PCS. EESL provides a land rental per unit of power consumption from PCS, which serves as an additional revenue source for municipalities/ metro operators.

With its bulk procurement model, EESL is able to receive Electric Vehicles and Chargers at a significantly discounted rate vis-à-vis the actual market value.

The following table highlights the barriers, EESL's mitigation strategy and the expected outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
CONSUMERS	Availability Affordability Lack of awareness & understanding of the benefits	A network of charging stations is being deployed across country. The locations (with high foot falls) are identified in partnership with utilities Awareness about electric vehicle & charging station made available in market Economies of scale to bring down prices	Increased demand/market presence of EV Development of charging infrastructure across the country Improved the air quality
UTILITY/ DISCOMs	Development of e-mobility infrastructure Regulatory and implementation hurdles Lack of demand by consumers for EVs	EESL's model enables charging stations to be additional revenue source for utilities/DISCOMs E-mobility mission formed to take up regulatory & implementation hurdles	First of its kind implementation at large scale in India In-depth study for distribution sector for no challenges at a later stage Strong business case for DISCOMs with the sale of power
INDUSTRY (CHARGING ECOSYSTEM)	Lower demand High financial risk Lack of awareness	Payment guarantee with EESL Awareness activities by EESL Aggregated demand for bulk procurement	Evolved charging infrastructure industry in India Globally competitive
POLICY MAKERS & REGULATORS	Lower demand therefore recognizing charging station as new set of electricity consumer is major barrier	Government incentives Aggregated demand for bulk procurement	Conducive policy environment encouraging more stakeholders to participate

The deployment of charging stations will result in:

- **Meeting the state objectives for creating an EV ecosystem**
- **Potential increase in additional revenues to utilities**
- **Reduced air pollution**
- **Increased adoption of electric vehicles**

Smart Meter National Programme (SMNP)

A Smart Solution

Smart Metering. Smart Thinking.

Dramatically reduced commercial losses.

The Smart Meter National Programme (SMNP) aims to replace 250 million conventional meters with smart meters in India. These meters, connected through a web-based monitoring system, will help reduce the commercial losses of utilities, enhance revenues, and serve as a valuable tool in power sector reforms.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To promote smart grids in India	Attract utilities in the programme to aggregate demand	No upfront cost; improved billing efficiency; repayments through enhanced revenue

DEMAND AGGREGATION

250 mn smart meters to be installed
Bulk procurement - leverage economies of scale; Innovative and simple business model
Transparent operations, outcomes in public domain

Our Strategy

EESL's business model for the installation of smart meters will include revamping the current manual system of revenue collection, which is responsible for low billing and poor collection efficiencies. The strategy is to create an innovative business model that addresses the barriers that have so far triggered market failures. Our aim is to create incentives for all stakeholders in the value chain. The meters will be procured in bulk by EESL and leased out to DISCOMs at rentals that are equal to or less than the enhanced revenues generated from increased billing efficiency and avoided meter reading costs.

This roll-out is proposed under the Build, Own, Operate, and Transfer (BOOT) model on cost plus approach, which means that all Capex/Opex is undertaken by EESL and the states and their respective utilities are not required to invest upfront. On its investment, EESL will earn a nominal Internal Rate of Return (IRR) through a mutually agreed automated payback structure during the concession period, along with payment security mechanism from State Governments/ DISCOMs.

The following table highlights the barriers, EESL's mitigation strategy and the expected outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
CONSUMERS	High cost of ownership due to small and disaggregated quantities Lack of capacity and awareness about the benefits	Aggregate demand – 15 million smart meters & 10 million prepaid meters procured Economies of scale to bring down prices Turnkey solution – all utility requirements part of EESL solution	Reduction in price of smart meters Enhanced attractiveness Increased demand Growth in manufacturers Over 0.5 million smart meters installed
UTILITY/ DISCOMs	No framework to execute as the initiative is first in the country Different communication technologies	Standardised solutions to include incentives for utility has been evolved GPRS technology finalised for easy integration and lower capital cost	Enhanced billing efficiency Amplify collection efficiency
INDUSTRY	High financial risk	Payment guarantee with EESL Aggregated demand for bulk procurement	Promoting Indian manufacturing Direct and indirect job creation
POLICY MAKERS & REGULATORS	India's commitment towards energy efficiency on global platforms	Attractiveness increased to enhance coverage	Biggest non- subsidy domestic smart grid project Positive spin off in enabling domestic manufacturing
RISK MITIGATION	Initial investment for smart meters and network Recovery from DISCOM First ever large-scale project, never done before	Cellular technology with established network Longer payback period of 10 years, giving enough cushion to DISCOMs Exhaustive meetings with vendors/ manufacturers prior to floating of Request for Proposals (RfP)	Backend network solution hurdles solved Risk reduced towards payment recovery

The replacement of 250 million meters will result in:

Potential increase in revenues to utilities (INR billion)
1,381

Billing efficiency improvements (%)
75 to 100

Street Lighting National Programme (SLNP)

Guaranteed savings

Paving the way for a brighter future

Replacing conventional street lights with LEDs.

Launched by the Hon'ble Prime Minister on 5th January 2015, the Street Lighting National Programme (SLNP) aims to replace conventional street lights in India with LED street lights. The new lights will be smart and connected through a web-based monitoring system to enable remote operations and additional operational savings.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To promote efficient and smart LED-based public lighting in India	Attract States/ Municipal Bodies and Urban Local Bodies towards the programme	No upfront cost; 50 percent energy savings; repayments through savings

DEMAND AGGREGATION

Bulk procurement - Leverage economies of scale
Innovative and simple business models
Transparent operations, outcomes in public domain

Our Strategy

EESL replaces conventional street lights with LEDs at its own costs (without any need for investment by municipalities). The consequent reduction in energy and maintenance cost is used to repay EESL over a period of time. EESL's contract with municipalities is typically of seven years' duration wherein EESL not only guarantees a minimum energy saving (typically of 50 percent) but also provides free replacements and maintenance of lights for the project duration at no additional cost to the municipality. The EESL business model and thought leadership has enabled a new paradigm that does not require municipal bodies to invest for retrofitting to smart and energy-efficient LED street lights. The business model has overcome barriers that had hitherto prevented replacement of street lights. So far, EESL has already replaced around 10 million street lights in over 1,050 urban local bodies (ULBs) across India.

The following table highlights the mitigation strategy that helped overcome barriers:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
CONSUMERS/ MUNICIPAL BODIES	High investment cost of LED street lights High cost and ownership for installation and maintenance work Lack of monitoring mechanism and warranties against technical defects Lack of capacity and understanding the benefits Low adoption due to less availability of products in the market	Aggregate demand from ULBs. Economies of scale to bring down prices The procurement of streetlights including installation, maintenance over a 7-year period warranty for replacement in case of technical defects Centralised Control and Monitoring System (CCMS) to enable remote operation and monitoring of the street lights Awareness about LED street lights in market Turnkey solution with flexible options – all utility requirements part of EESL's solution	More than 10 million conventional street lights are replaced by LED street lights 35% reduction in price of LED streetlights Reduction in lighting load Increased safety and security of citizen, particularly, women and children and also reduces accident rates No mercury content, environment friendly light Enhanced attractiveness with automated complaint management system Increased demand Growth in manufacturers Improved quality of life
UTILITY/ DISCOMS	Management of high peak demand	Reduction in peak load without any upfront investments	Peak demand reduced Increase in energy security
INDUSTRY	Lower demand High financial risk Lack of awareness Lack of skilled manpower	Payment guarantee with EESL Awareness activities by EESL Aggregated demand for bulk procurement	Promoting Indian manufacturing Increased global share of LED market Direct and indirect job creation

The replacement of conventional street lights will result in:

Peak demand reduction (MW)
1500

Annual energy savings (million kWh)
9,000

Reduction in CO_2 emission annually (million tons)
6.2

Unnat Jyoti by Affordable LEDs for All (UJALA)

Progress for All

Affordable LEDs and appliances.

Launched by the Hon'ble Prime Minister on 5th January 2015, Unnat Jyoti by Affordable LEDs for All (UJALA) aims to replace all the inefficient bulbs in India with LED bulbs. UJALA aims to provide the masses with affordable energy efficient appliances which are cheaper than retail market prices, without compromising on quality.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To provide people with affordable and high-quality energy efficient appliances	Demand aggregation; mass awareness; last mile access with various Govt. programmes	100 percent investment by EESL; up to 90 percent energy savings on lighting

DEMAND AGGREGATION

Bulk procurement - Leverage economies of scale
Transparent operations, outcomes in public domain

Our Strategy

EESL's model obviates the need for DISCOMs to invest in the upfront cost of energy efficient appliances; EESL procures the appliances and provides them to consumers at prices which are way below the market price.

The EESL business model has enabled affordable and scalable lighting solutions by understanding the barriers and designing innovative solutions. In 2014, LEDs had only a share of 0.1% of the annual residential lighting market in India. The Indian LED market value grew 10 times in just five years and annual domestic production increased from approximately 3 million LED bulbs in 2013 to 62 million in 2015 (ELCOMA). It is now the second largest LED market in the world, worth 21.4 billion INR in revenues in 2015 (Frost & Sullivan). UJALA has played an important role in this rapid growth.

The EESL business model and thought leadership has enabled a new paradigm that does not require public funds, and is both attractive and scalable, as indicated in the following table:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
CONSUMERS	High cost of ownership due to small and disaggregated quantities Non-availability of warranty Lack of capacity and understanding of the benefits Low adoption due to less availability of products in market	Aggregate demand – over 350 million LED bulbs procured Awareness about LED made available in market 1-year warranty to consumers Economies of scale EMI payment options to ensure easy accessibility Turnkey solution – all utility requirements part of EESL solution	350 million LED bulbs distributed 88% reduction in price of LED bulbs Enhanced attractiveness Increased demand Growth in manufacturers Improved quality of life
UTILITY/ DISCOMs	Management of high peak demand	Standardised solution to include incentive for utility evolved Energy Efficient appliances provided to consumers with attractive business propositions	Over 9 thousand MW peak demand reduced
INDUSTRY	Lower demand High financial risk Lack of awareness	Payment guarantee with EESL Awareness activities by EESL Aggregated demand for bulk procurement	Promoting Indian manufacturing Increased global share of LED market Direct and indirect job creation
POLICY MAKERS & REGULATORS	India's commitment towards energy efficiency on global platform	Attractiveness increases to enhance coverage	Biggest non-subsidy domestic LED distribution scheme Positive spin off in enabling domestic manufacturing
RISK MITIGATION	Collection risk Performance risk Technical risk	Collection through utility bills– lowers risks; allows disconnection in case of default Performance & technical risk through bank guarantees and holding payments	Attractiveness to equity holders Lower interest cost on debt due to sound risk mitigation

Replacement of 770 million incandescent bulb with LED bulbs will result in:

Avoided capacity generation (MW)
20,000

Energy saving annually (billion kWh)
100

Annual monitory savings of INR 400 billion

CO_2 emission reduction per year (million tonnes)
79

Agriculture Demand Side Management (AgDSM) Programme

Another Green Revolution

Spreading greenery and smiles

Replacing 21 million agricultural pumps with energy efficient ones.

Agricultural Demand Side Management (AgDSM) Programme aims to replace 21 million inefficient pump sets in India with Bureau of Energy Efficiency (BEE) 5-star rated pump sets with no upfront cost to farmers and recover the cost by leveraging the reduction of state government subsidy over a period of 5-10 years.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To encourage replacement of inefficient pump sets with BEE 5-star rated pumps	Attract farmers to generate demand; involve state government to reduce subsidy burden; attract DISCOMs	No upfront cost to farmer and DISCOM; recovery through annual energy savings; reduction in load shedding, agriculture subsidy

DEMAND AGGREGATION

Bulk procurement - Leverage economies of scale
Transparent operations, outcomes in public domain
Innovative and simple business model

Our Strategy

EESL's business model encourages replacement of inefficient agricultural pump sets across India. The roll out has been done under the PAYS model, wherein EESL makes the entire upfront investments and the cost is recovered over an agreed period from the accrued savings. EESL not only replaces the pump sets but also maintains them for the project duration creating further incentives for the farmers.

EESL aims to reduce power purchase costs for DISCOMs while reducing the subsidy burden on the government. The mitigating strategy to overcome barriers is highlighted further.

The table below highlights the barriers, how they have been addressed by EESL, and the outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
STATE LEVEL	Often the state electricity tariff policies for agricultural sectors do not reflect the marginal cost of electricity No notification by SERCs/ DISCOMs mandating purchase of energy efficient pump-sets for availing new electricity connection under agricultural tariff No policy to encourage energy efficient purchase behaviour	Offering PMC and cost-plus annuity based financial model, wherein entire energy saving benefit vests with the state Creating demand through built-in incentives for farmers using energy efficient pump sets	So far, over 70 thousand pump sets have been installed in Uttar Pradesh and Andhra Pradesh
END USER/ FARMER	Failure of past programme discourages the end users to participate in new schemes. Limited to no knowledge of energy efficient pump sets/ technologies Perceived risk in adopting new technology No incentive due to subsidised electricity tariff Unavailability of local technology/ service provider for energy efficient products	Pump sets being provided free of cost, with free repair and maintenance services for five years Smart control panel for maintenance, enabling farmers to switch on/off remotely	More and more farmers were interested in the scheme and were keen to adopt it
INDUSTRY	Lower demand of BEE 5 star-rated pump sets High financial risk Lack of awareness	Payment guarantee with EESL Awareness activities by EESL Aggregated demand for bulk procurement	Promoting Indian manufacturing A complete Make-In-India initiative Direct and indirect job creation
POLICY MAKERS & REGULATORS	Lack of regulatory incentives for DISCOMs to initiate DSM investments	Dissemination of EESL best practices	Innovative regulatory frame-work to incentivise investments in the sector

Impact: Through implementation of this programme in India, EESL has enabled more than 30% energy savings. This not only resulted in reduced state subsidies but also increased overall efficiency of the power sector.

The replacement of 21 million pump sets will result in:

Total annual energy saving potential (in billion kWh)
54

Potential saving of subsidy (INR billion)
271.9

Potential GHG reduction (million tonnes CO_2 annually)
40

Building Energy Efficiency Programme (BEEP)

Building the nation

Making buildings energy efficient

Investments in building efficiency systems that pay for themselves.

EESL's Building Energy Efficiency Programme (BEEP) enable stakeholders to overcome technical and financial barriers in converting commercial buildings into energy efficient premises.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
Accelerate energy efficiency in buildings	Attract building owners in government and public sector with customisable approach	Customised approach for different stakeholders; recovery from energy savings

DEMAND AGGREGATION

Bulk procurement - Leverage economies of scale
Transparent operations, outcomes in public domain

Our Strategy

EESL adopts different approach to implement this programme in different sectors

- Energy Service Company (ESCO) Model: Under this model, the entire upfront investment is made by EESL and recovery of investments is done through monetised shared energy savings.
- Project Management Consultancy Model: The upfront investment is made by the client and EESL assists in installing and maintaining the equipment.

Under its business model, EESL has evolved a simple and transparent approach to scale up implementation and overcome barriers.

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
CONSUMERS	High cost of intervention due to small and disaggregated quantities Lack of awareness and understanding of the benefits Low adoption due to less availability of products in the market Lack of funds / budgetary allocation for implementation of energy efficiency measures in the entire premises in one go	Aggregate demand by signing agreement for 15,000 buildings including railway stations Economies of scale to bring down prices for appliances such as super energy efficient AC, Energy Efficient fans & LED tube lights Awareness about building efficiency generated in market Organising regular workshops at both national & international level for energy efficient buildings Turnkey solutions, which include energy audit of the buildings – all utility requirements part of EESL solution Ministry of Finance issued instructions for single sourcing from EESL	Enhanced attractiveness Increased demand Growth in manufacturers Improved quality of life 10,000 buildings (including railway stations and airports) already retrofitted
UTILITY/ DISCOMs	Management of high peak demand	Standardised solution to include incentive for utility evolved Energy efficient appliances provided to consumers with attractive business propositions	Over 31,000 kW peak demand avoided
INDUSTRY	Lower demand High financial risk Lack of awareness Buildings belonging to a corporate / organisation are spread across the country	Payment guarantee with EESL Awareness activities by EESL Aggregated demand for bulk procurement EESL provides the option of centralised agreement signing at corporate level, while implementation is decentralised through its regional offices spread across India	Promoting Indian manufacturing Increased global share of energy efficient appliances market Direct and indirect job creation EESL offers warranty for 3 to 5 years (depending on the contract period) and takes complete responsibility for replacement / repair

Retrofitting 20,000 buildings with energy efficient appliances will result in:

Annual energy savings (million units)
164

Reduction in CO_2 emission (tonnes annually)
1,34,658

Super-Efficient Air-Conditioning Programme

Cooling made efficient and affordable

Efficient cooling, sustained environment

EESL introduces the first-of-its-kind, Super-Efficient Air Conditioners. These 1.5 TR inverter split super-efficient ACs are 20 percent more efficient than BEE 5-Star ACs, and 50 percent more efficient than BEE 3-star ACs, available in the market. These ACs are available at an attractive price of INR 41,300 including GST, which is less than the 5-Star ACs and comparable to the 3-Star AC, available in the market.

India needs cooling that is much more sustainable and affordable than the options currently available in the market. The super-efficient air conditioners aim to provide a viable avenue for combating the rising threat of global warming. These super-efficient ACs are an effective way to address India's ambitious climate goals and will be a key driver for the Indian Cooling Action Plan.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To provide consumers with sustainable and affordable cooling	Attract DISCOMs in the programme to aggregate demand and launch of e-commerce website (**eeslmart.in**), in order to engage with consumers directly enhancing their entire experience and enabling access to state-of-the-art technology	Bulk procurement leading to affordable rate, direct engagement with consumer through **eeslmart.in**

DEMAND AGGREGATION

50,000 super-efficient ACs in the pilot phase
Partnership with DISCOMs
Engagement with utilities, institutions, commercial/industrial establishments

Our Strategy

In the first phase, 50,000 ACs are available for consumers of BSES Rajdhani Power Limited (BRPL), BSES Yamuna Power Limited (BYPL) and Tata Power Delhi Distribution Limited (Tata Power-DDL), on a first come, first served basis in Delhi. The ACs are also available to consumers in Jaipur, Mumbai, Bangalore, Hyderabad, Kolkata and Chennai.

These ACs are sold through the portal, **eeslmart.in**, which marks EESL's foray into e-commerce, in order to enhance the entire consumer experience and enable access to state-of-the-art technology with just a click on the mouse or a tap on their smartphones. Along with significant savings, EESL is also offering a hassle-free service experience, comprising of complaint redressal support during the life of the programme, attractive EMI options through selective banks, and a buyback option for customers looking to upgrade their AC.

The following table highlights the barriers, EESL's mitigation strategy and the expected outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
CONSUMERS	High cost of ownership due to new technology Lack of awareness about the product and its benefits	Competitive bidding to identify the best bidder, leader in the sector Economies of scale to bring down prices Partnership with utilities to enable consumers avail the Super Efficient AC Launch of **eeslmart.in** to enhance customer experience 1-year warranty on AC. There are two free services also included for initial first year.	Enhanced attractiveness for the product Increased demand
UTILITY/ DISCOMs	Management of high peak demand	Reduction in peak load due to cooling without any investment by the DISCOM	Peak demand reduction Increased energy security
INDUSTRY	Lack of awareness Lack of clarity about demand	Awareness activities by EESL Partnership with DISCOMs, institutions, commercial establishments	More players joining the programme Leapfrog the current energy efficiency levels in the Indian air conditioner market Increased adoption of low GWP refrigerants, as envisaged in the Indian Cooling Action Plan (ICAP)
POLICY MAKERS & REGULATORS	India's commitment towards energy efficiency on global platforms	Attractiveness increases to enhance coverage Promoting specifications in line with the India Cooling Action Plan	First of its kind super-efficient AC in India Positive spin off in enabling domestic manufacturing

It is expected that deploying 50,000 ACs will result in:

Savings of 145.5 million kWh (i.e. about INR 120 crore per annum) of electricity per year

Mitigating around 1,20,000 t CO_2 annually

Small Solar Power Plant Programme

Harnessing the Sun

Small Solar. Big impact.

Small solar plants for solarization of agricultural feeders.

Leveraging the potential of solar energy in India and the need for access to clean, reliable day time electricity for farmers, EESL and electricity distribution companies (DISCOMs) have started a first of its kind joint initiative for solarizing the agriculture feeders of DISCOMs by means of setting up decentralized solar power plants at vacant/un-used/open lands of Distribution Companies (DISCOMs) / Generating Companies (GENCO) / Transmission Corporation (TRANSCO) substations, Govt. lands.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To enable access to reliable and clean daytime electricity to the farmers by creating and strengthening synergy with Utilities	Creating and strengthening synergy with Utilities to aggregate demand and upscale	No upfront cost to Utilities; Repayment to EESL on monthly basis for the total energy generated; Operation & Maintenance of the plants for the project period by EESL

DEMAND AGGREGATION

Transparent operations, outcomes in public domain, innovative and simple business model

Our Strategy

EESL's business model encourages synergy with Utilities to jointly establish the small solar power plants on vacant/un-used/open lands of Utilities in India for enabling the Solarization of Agriculture Feeders. The roll out will be done under the Renewable Energy Service Company (RESCO) model, wherein EESL will bear entire upfront investments for setting up decentralized solar power plants covering Design, Finance, Engineering Procurement Construction (EPC) including Operation & Maintenance (O&M) services for project period and the cost will be recovered on monthly basis from the total energy generated by means of signing long term Power Purchase Agreement (PPA) with Utilities. EESL envisages phase wise implementation of this Programme.

Phase-I: EESL intends to provide turnkey engineering, procurement and construction services for setting up decentralized solar power plants with capacity ranging from 0.5 MW to 2 MW so that farmers have access to reliable daytime electricity. This phase involves identification of solar potential in vacant/un-used/open lands of DISCOMs/GENCO/TRANSCO substations, Government, signing of PPA and other work contracts as applicable, engineering, procurement, supply, installation, construction, testing, commissioning and O&M including associated civil, mechanical and electrical works for grid connected decentralized solar power plants.

The table below highlights the barriers, how they have been addressed by EESL, and the outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
UTILITY/ DISCOMs	Investment Existing pressure due to lower tariff & poor revenue collection in agriculture sales New idea and solution must first provide reliable, adequate daytime electricity supply to farmers at reasonable tariff Reduced Transmission & Distribution losses	Entire upfront investment by EESL for setting up the projects EESL will carry out designing, procurement, installation, construction, testing and commissioning for the projects Long term PPA, Operation & Maintenance for 25 years DISCOM can continue to distribute the electricity to farmers on existing feeders Deployment is possible under the existing regulatory framework Cost-effective and rapidly scalable approach; imminently feasible across the nation	Reduced Transmission & Distribution losses Lower cost of electricity Infusing solar energy to the grid at attractive PPA tariff Fulfilling of the Solar Renewable Purchase Obligation (RPO) of the DISCOMs Reduced peak energy demand Energy available at day time for agricultural feeders Farmer-centric yet fiscally prudent pathway for the power sector Effective utilization of the vacant/unused land at DISCOM substations Maharashtra is already experiencing the benefits and is planning to scale up
STATE	Tariff towards electricity to agriculture is covered through high cross-subsidy and through direct subsidy from State Govt.	Zero subsidy solar revolution Can be installed in un-served as well as underserved regions depending on the solar irradiance potential of that region	Environmental friendly Lower burden of electricity generation Lower cost of electricity State's contribution towards increasing use of solar energy Farmer-centric yet fiscally prudent pathway for the power sector Job opportunity for local youth towards construction, operation and maintenance Lower subsidy burden
FARMERS	Supply of reliable daytime electricity to farmers Lifestyle (Generally farmer gets electricity during night hours)	Abundant solar energy is converted to electricity Quick set up	Access to reliable and adequate daytime electricity supply Better lifestyle of farmers

Impact of implementation of 200 MW Solarisation of Agriculture Feeder Programme will result in:

Annual energy savings (million units)
300

Reduction in CO_2 emission (million tonnes annually)
0.25

National Motor Replacement Programme (NMRP)

Gearing towards greater efficiency

Innovative financing for replacement of motors by IE3 motors.

EESL has designed the National Motor Replacement Programme (NMRP) to encourage replacement of inefficient motors by IE-3 motors in the Indian industry through its innovative financing model. The programme aims to create an enabling environment to stimulate supply for premium efficiency motors adhering to minimum IE-3 standard through awareness creation, capacity building of manufacturers and developing success stories for convincing decision makers. It is estimated that 40,000 number of IE3 motors, mostly in the sizes 0.75 kW to 75 kW (3 Phase, LT motors) can potentially be targeted for replacement through the second phase of the programme.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
To enable easier adoption of premium efficiency IE-3 motors by the industry	Under the programme, EESL will target large, medium and small-scale industries	No Upfront Investment | Repayment from monetised energy savings through Equated Quarterly Instalment (EQI) or Upfront

DEMAND AGGREGATION

Transparent operations, outcomes in public domain, innovative and simple business model

Our Strategy

Under the programme, EESL provides an entire gamut of energy-efficiency services catering to the entire life-cycle of electric motors. This makes it easier for customers to adopt the Programme. We undertake bulk procurement of motors through open tenders that results into significant reduction of prices making the IE-3 motors more affordable. Based on the requirements of the customer, EESL will ensure timely delivery of motors to the facility.

Financing Models

ESCO/Shared Saving model – EESL invests the entire cost towards procurement of motors. Customer repays through Equated Quarterly Instalment (EQI) for 3 years from monetised energy saving.

PMC/Supply Contract model – The client pays the entire cost of the motors after the delivery at plant location.

The table below highlights the barriers, how they have been addressed by EESL, and the outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
END CONSUMERS SMEs/ MSMEs	Lack of awareness High upfront cost Low availability of premium efficiency motors Lack of financing options Apprehensions about deemed savings	Demand aggregation and bulk procurement leading to affordable IE-3 motors for consumers Providing upfront financing, obliging warranty till project duration Multiple options for financing the project, minimizing the financial risk of the customer	Lower electricity consumption leading to reduced electricity bills Access to superior 'green' product Affordable prices Large scale EE implementation Reduction in GHG emission Extended warranty
MOTOR MANUFACTURERS /OEMs	Low demand	Create attractive market through demand aggregation and bulk procurement leading to cost-competitiveness of Indian manufacturers, leveraging existing network of EESL Open tendering with defined technical specifications	A firm demand for energy efficient motors Market expansion Technology maturity Brand Building
UTILITIES/ DISCOMs	Management of high peak demand	Energy efficient motors provided to the consumers	Reduced demand for electricity and reduced peak load (Industrial Demand side Management) Create market transformation through EE product Reduction in GHG emission
INDIA/ STATE	India has been behind its global peers in terms of adoption of Minimum Energy Performance Standards	With effect from 1st January 2018, the Department of Industrial Policy Promotion (DIPP) has issued a Quality Control order requiring all imported and domestically manufactured motors to conform to the revised IS:12615 standard, which specifies IE2 as the minimum efficiency class	Reduced power shortages. Energy savings Meet climate change goal Employment opportunities in technical services, financial services, manufacturing, sales, installation, after sales services, recycling etc. Technological maturity

NMRP

Lower Purchase Cost of IE3 motor	High quality motor of reputed brands	Extended Warranty	Value Addition Support	Repayment in form of Upfront/EQIs

The programme helps build a cleaner environment and has an energy saving potential of more than 1 lakh MWh/yr and emission reduction potential of more than 95,000 CO_2 emission reduction per year.

Trigeneration

The Future of Energy

Trigeneration: The 360° solution.

Trigeneration for combined cooling, heating and power.

Integrated turnkey solution and servicing model for Trigeneration (or Combined Cooling, Heating and Power (CCHP) and Combined Heat & Power (CHP) technology on a zero-Capex model. Under this model, metered heating, cooling and power will be supplied for up to 10 years or as agreed with the client based on the CCHP Purchase Agreement (CCHP-PA) or CHP-PA. EESL will incur the upfront capital costs and associated risks while providing annual turnkey plant installation that include an acoustic containerised gas engine, Vapour Absorption Machine (VAM) among others and will provide Operation and Maintenance (O&M) service. EESL will recover the costs through savings during the term of the PPA. The plant will provide access to power, cooling and heating supply at a relatively lower cost on energy, compared to the existing amount spent on energy.

The implementation of the plant will be done by the EESL's recent acquisition Edina Power Services Limited (based at United Kingdom). Edina will offer its services by collecting and assessing the site energy demand and supply scenario; accordingly, the system will be designed and customized based on the client's needs.

Enabling More

VISION	STRATEGY	INNOVATIVE BUSINESS MODEL
EESL aims to become a global market leader through implementing innovative business models and taking calculated risks on behalf of clients	The project will be implemented and integrated as a turnkey solution. The installation, operation and maintenance will be managed and monitored by EESL	Pay As You Save (PAYS) model. The Capex invested by EESL will be recovered from the savings

DEMAND AGGREGATION

Transparent operations, outcomes in public domain, innovative and simple business model

Our Strategy

Under the Pay As You Save model, EESL shall monitor and measure generated and supplied power, hot water/steam and/or chilled water for a period upto 10 years based on the Power Purchase Agreement (PPA). The upfront capital cost and risks will be borne by EESL and it will also provide turnkey solution to the client. The client is required to adhere to the agreed terms and use the energy generated by the Trigeneration or Cogeneration plant.

EESL has conducted energy audits in identified sectors namely industry, hotel, hospital and airport among others to assess the feasibility of Trigeneration and Cogeneration systems. Memorandum of Understanding (MoU) were signed with Mahindra & Mahindra and Government of Maharashtra in their respective facilities as a result of these energy audits.

The table below highlights the barriers, how they have been addressed by EESL, and the outcomes:

TARGET GROUP	BARRIERS	MITIGATION STRATEGY	OUTCOME
END CONSUMERS: INDUSTRIES, HOTELS, HOSPITALS, SHOPPING MALLS, AIRPORTS, REAL ESTATES, DATA CENTERS	Lack of awareness High upfront cost Significant reliance on natural gas Large space for deployment Apprehensions about deemed savings Unwilling to pay for audit	EESL will bear the upfront capital costs and risks Annual turnkey product installation for containerised gas engines and VAM Operations and maintenance services Recovering costs through savings in end users' operating expenses Multiple rounds of Stakeholder consultations are carried out with multilateral agencies, end users and various industries and industry bodies Pilot projects and Programme monitoring	24×7 power, hot water/steam and/or chilled water supply at a nominal cost compared to the prevalent energy tariffs Increased Overall efficiency Reduction of greenhouse gas emissions by up to 30 per cent Reliable and good quality uninterrupted supply of power, hot water/steam and/or chilled water Less dependence on grid power availability Reduction in diesel gas engine operation during power shutdowns
INDIA/STATE	India has been behind its global peers in terms of adoption of Minimum Energy Performance Standards Natural Gas Cost due to volatility in crude oil prices and forex exchange Availability of Natural Gas Subsidized electricity prices	Encouraging policy framework Gas supply is expected to increase as the gas network in India is expanding in line with the targets, and the country is expected to generate domestic produced gas from new identified basins, reducing the volatility in gas costing and availability	Energy savings Meeting climate change goal Employment opportunities in technical services, financial services, manufacturing, sales, installation, after sales services, recycling etc. Technology maturity Overall operating efficiency of an industry by almost 75 percent, Curb its greenhouse gas emissions by up to 30 per cent Reduced requirement of power plants by installing decentralized power generating units

Trigeneration Market

Trigeneration potential of over 15,000 megawatts exists in India based on a market assessment study. Most promising sectors for trigeneration are data centres, industrial establishments, hospitals, hotels, airports, and shopping malls among others.

Atal Jyoti Yojana (AJAY)

With the aim of providing energy for fulfilling the basic needs of the citizens across India and to ensure quality and reliable power supply at reasonable prices, the Ministry of New and Renewable Energy (MNRE) launched the Atal Jyoti Yojana (AJAY), a sub-scheme under Off- Grid and Decentralised Solar Application Scheme. The initiative seeks to illuminate dark regions in rural, semi urban and urban areas that face less than 50% grid connectivity, through solar power with high mast solar LED streetlights.

EESL has been appointed as the implementation partners for the AJAY programme and will work on illuminating rural, semi-urban, and urban areas that face less than 50% grid connectivity in Uttar Pradesh, Assam, Bihar, Jharkhand, and Odisha with 300,000 high-mast solar LED streetlights. The objective of the programme is to provide 'Solar Street Lighting Systems' for public use, for the purpose of demonstration and replication, which will help in popularising solar energy in a big way.

In the successful Phase-1 of AJAY, the scheme provided the installation of 2,000 solar street lighting systems in each of the parliamentary constituency of Assam, Bihar, Jharkhand, Odisha and Uttar Pradesh. In Phase-II, EESL is expanding the implementation to 3,04,500 Solar Street Lights in the parliamentary constituency of Assam, Bihar, Jharkhand, Odisha, Uttar Pradesh, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, North Eastern states including Sikkim, Islands of Andaman & Nicobar, Lakshadweep and 48 aspirational districts from other states.

Since the start of scheme in September 2016, EESL has installed over 1.47 lakh Solar LED streetlights under phase I & II of the AJAY scheme across the country.

With a total project cost of Rs. 500 crore (with a 75:25 split between MNRE and MPLADs/ULB/Panchayat funding), EESL can bring about a far-reaching transformation in how India's public places are illuminated.

70 Lakh Solar Study Lamp Scheme

India has over 35.6 crore children between the ages of 10 to 24 years and access to adequate education infrastructure is essential to their wholesome growth. While the government is aggressively working towards achieve the goals of its comprehensive pan-India rural electrification mandate, it is critical to find clean, alternative grid-independent lighting for an estimated 8.12 crore students. These students are currently using kerosene for their lighting needs, which causes high levels of indoor pollution and is highly inefficient for the brightness and range of light it provides.

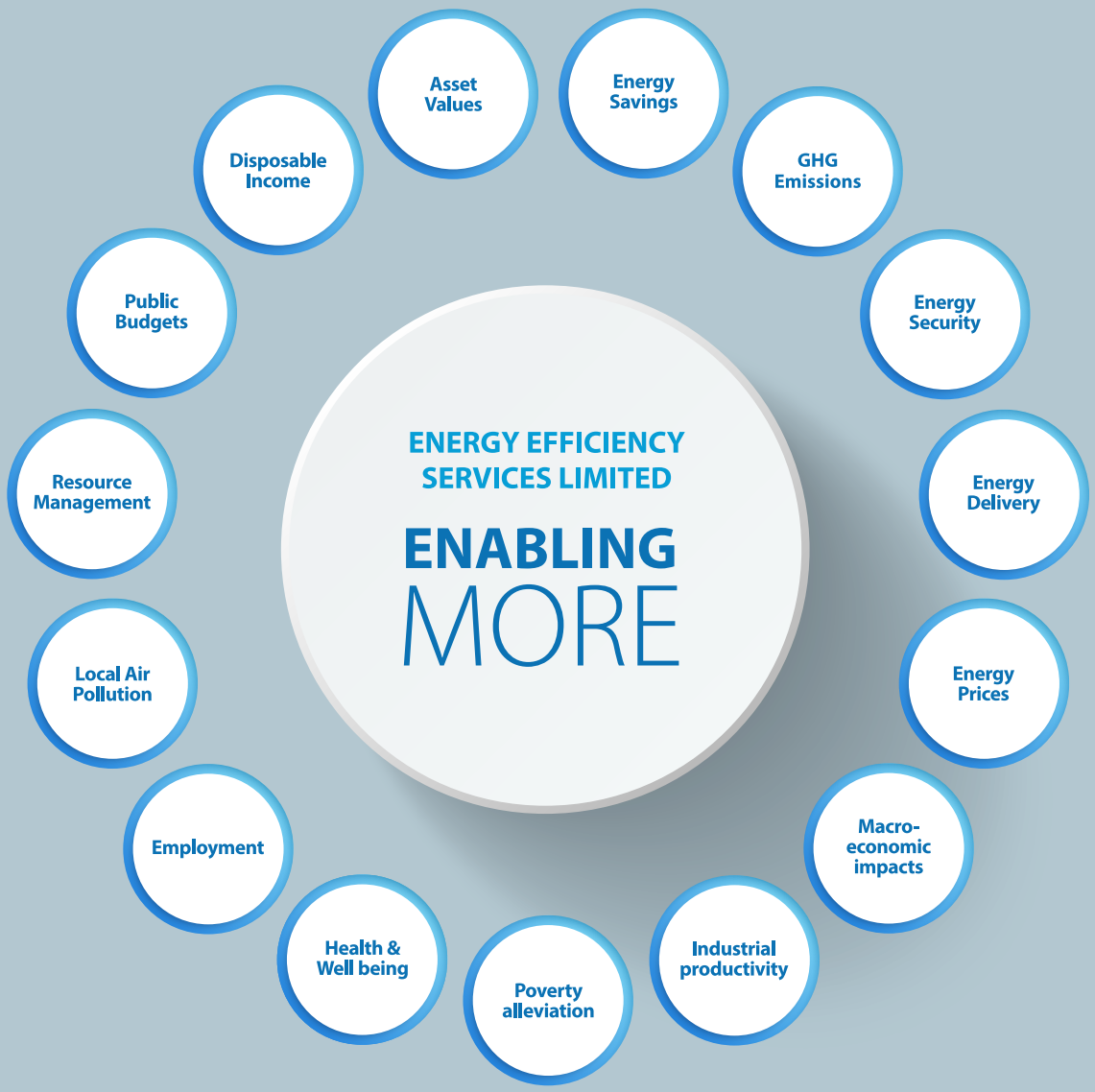
Working towards this goal, EESL is scaling up the Ministry of New and Renewable Energy (MNRE)'s Solar Study Lamp Scheme. EESL is procuring and distributing lamp kits in the identified intervention blocks, to ensure their delivery to India's rural underserved children, as quickly as possible. EESL is distributing solar lamps to school-going children in the states that have household grid connectivity of less than 50 percent (2011 Census). Solar lamps provide a viable solution to households who are traditionally dependent on kerosene lamps as their primary source of lighting. Solar study lamps offer an attractive and scalable solution to India's underserved communities. Indian Government has successfully completed its goal of distributing 10 lakh solar study lamps and is currently implementing its new project to distribute 70 lakh solar study lamps in the states of Assam, Bihar, Jharkhand, Odisha and Uttar Pradesh. As on date, EESL has distributed around 60 lakh solar study lamps in these states.

The Ministry of New and Renewable Energy has appointed IIT-Bombay for the R&D, overall execution, coordination, strategizing, and implementation of the initiative. IIT Bombay also working towards instituting over 2000 service centres, ensuring comprehensive maintenance of the lamps for a duration of 5 years. Women Cluster Level Federations, formed under State Rural Livelihood Mission (SRLM) and/or NGOs working in the intervention states, will also be roped in for conducting activities in the aforementioned states.

Towards the Future

Growing now and growing fast.

Through its innovative business model, EESL is enabling more in the following areas:



- Distributed over 360 million LED bulbs without any subsidy under the largest domestic lighting initiative in the world - Unnat Jyoti by Affordable LEDs for All (UJALA)
- Became the largest street light asset owning company in the world with 10 million conventional street lights replaced with smart LED lights
- Retrofitted 10,282 buildings under the Building Energy Efficiency Programme (BEEP)
- Agricultural Demand Side Management (AgDSM) Programme - Installed over 73,500 pumps in the state of Andhra Pradesh and Uttar Pradesh
- Small solar power plants with the capacity ranging from 0.5 MW to 2 MW are installed on open/unused/vacant lands of electrical sub stations in Maharashtra. A MoU has been signed with MSEDCL for a 200 MW project
- Ushering in E-mobility with 1,510 electric vehicles deployed/under registration for Government departments
- 0.6 million smart meters installed in the state of Andhra Pradesh, Uttar Pradesh, Haryana, Bihar and NDMC-Delhi

Conquering global markets

International Operations.

UNITED KINGDOM (UK)

- EESL, has acquired Edina, a leading supplier, installer and maintenance provider for combined heat and power (CHP), gas, and diesel power generation solutions in the UK. The £55 million (INR 493 crore) acquisition is the first-of-its-kind venture by an entity under the Ministry of Power, Government of India and is effected through its UK subsidiary, EESL EnergyPro Assets Limited (EPAL). Till date, EDINA has a total installed capacity of more than 550 MWe of Trigeneration system across UK, Ireland market.
- UJALA (UK Joins Affordable LEDs for All) scheme have also been launched in the UK.
- Aim is to tap into UK's £6 billion (INR 53,782 crore) energy efficiency market. EESL, through its subsidiaries in UK, is working towards rolling out projects in areas such as Smart Meters, CHP, Building Energy Efficiency, Battery Energy Storage and District Heating.

SAUDI ARABIA

- Signed MoU with National Energy Service Company(NESCO) of Saudi Arabia for providing Consultancy services.
- Sharing technical knowledge and experience with NESCO for rolling out LED Street Light projects in Saudi Arabia. Princess Al-Jawhara Street, Riyadh became the first lane to be lit with LEDs under this project.

MALAYSIA

- EESL has signed an agreement with Green Growth Asia for supply of 3 million LED bulbs in the state of Melaka in Malaysia ($ 3.9m). UJALA Programme launched in the Melaka state by Hon'ble Chief Minister of Melaka, Malaysia.

BANGLADESH

- Signed an MoU with Sustainable and Renewable Energy Development Authority (SREDA), Bangladesh for the purpose of technical cooperation and implementing energy efficiency projects.
- 519 LED Street Lights with 24 Centralized Controlling & Monitoring System (CCMS) panels installed under LED Street Light project at Tungipara Municipal Corporation in March 2017.
- Supplied 52,500 units of 9W LED Bulbs in the month of March 2017 to Tungipara Municipal Corporation under UJALA programme.

MALDIVES

- Signed a strategic MoU with Government of Maldives for implementation of Energy Efficiency initiatives. EESL is installing 2,500 LED street lights along with Centralised Control and Monitoring System (CCMS) and will also distribute 2 lakh LED bulbs in the country. Association with the Maldives tourism industry is being explored to push investment in Energy Efficiency.

ABOUT LECLANCHE INDEPENDENT ELECTRICITY SYSTEM OPERATOR (IESO) PROJECT:

- Deltro (a Canadian energy storage project developer focused on grid storage, renewables and behind the meter applications) and Leclanche have entered into a limited partnership, Maple Leaf Energy Storage LPI ("Maple Leaf"), to develop a series of six Energy Storage Projects in Ontario, Canada totalling 53 MWh in energy capacity (the "Projects").
- This project is one of the largest battery energy storage systems (BESS) in the world, with battery capacity of approx. 53MWh. The capex for the first two projects is approx. USD 24.7 million. EESL is one of equity investors in the initial round of funding the first two of the 6 projects and has invested USD 2 million in the project.

www.eeslindia.org

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