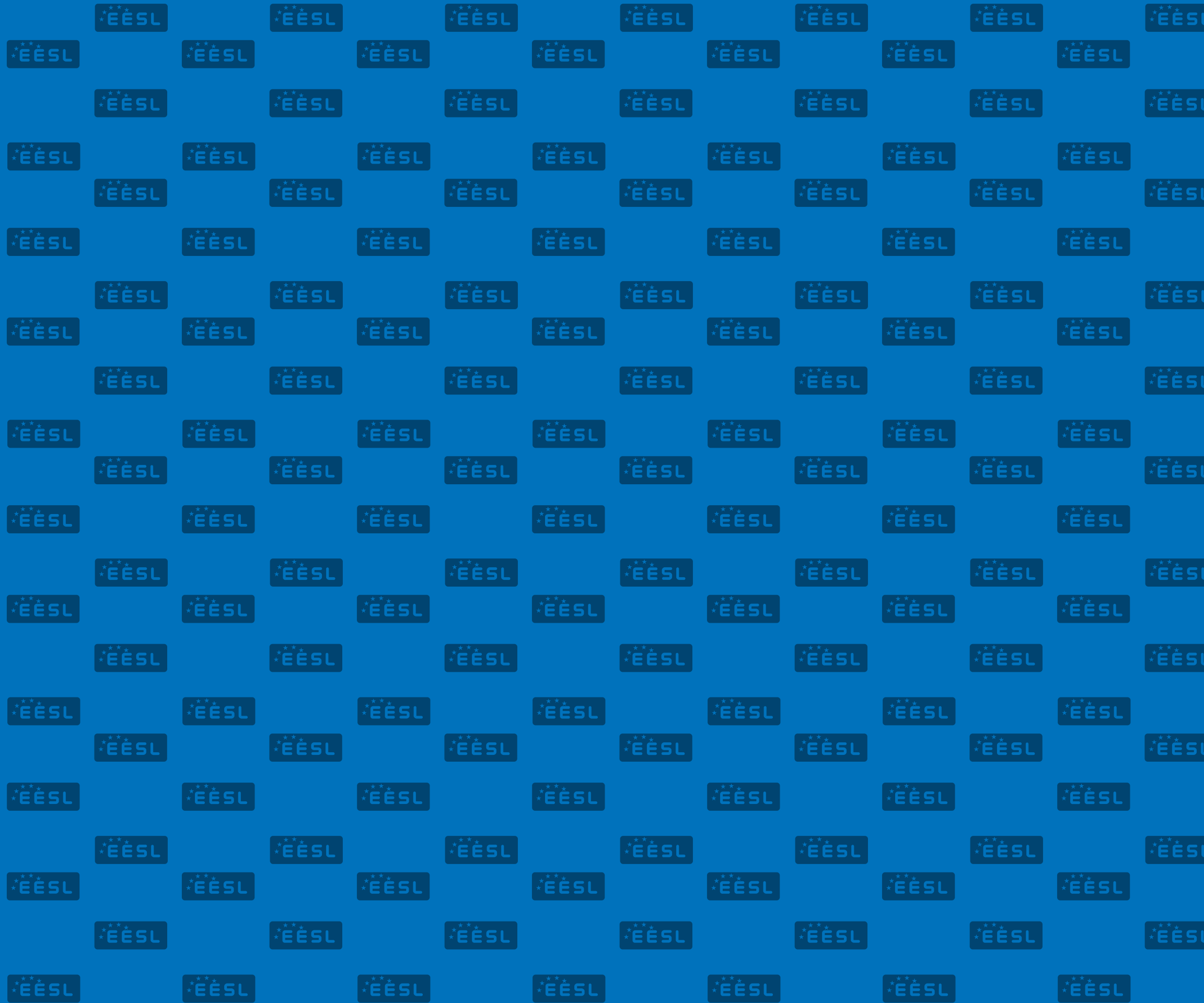


Ujjala

I LED THE WAY!



ENERGY EFFICIENCY SERVICES LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)





Ujala
I LED THE WAY!



ENERGY EFFICIENCY SERVICES LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)



Energy Efficiency Services Limited

(A Joint Venture under the Ministry of Power, Government of India)

4th & 5th Floor, IWAI Building, A-13, Sector 1

Noida, Uttar Pradesh 201 301

Tel: +91-120-4908000

www.eeslindia.org

Published year: 2017

Publisher: **MANAGING DIRECTOR**
Energy Efficiency Services Limited (EESL)

No part of this publication can be reproduced, copied, duplicated, distributed, misrepresented or altered in any way without obtaining express written permission from Energy Efficiency Services Limited (EESL), New Delhi.

© EESL 2017—All Rights Reserved

Credits

Author: **BALAJI CHANDRAMOULI**

Design: **PUJA AHUJA, ANIL AHUJA**

Photography (except where expressly credited): **VIDIT AGGARWAL**

Cover photograph (tailor-master Anwar Husain in New Delhi): **ANIL AHUJA**

EESL Coordinator: **SAUMYA TIWARI**

Printed by: **Lustra Print Process Pvt. Ltd**



VISION

EESL seeks to unlock market for energy efficiency in India estimated at \$11.4 billion amounting to about 15 per cent of present consumption. It seeks to create market access, particularly in public facilities like municipalities, buildings, agriculture, industry etc., implementing innovative business models, besides nurturing private sector Energy Service Companies (ESCOs) in an effort to ensure replication.

MISSION

Energy Efficiency Services Limited (EESL) is promoted by Ministry of Power, Government of India, as a Joint Venture company of four Central Power Sector Undertakings viz., NTPC Ltd, Power Finance Corporation Ltd. (PFC), Rural Electrification Corporation Limited (REC) and Power Grid Corporation Limited (PGCIL). EESL was set up to create and sustain markets for energy efficiency in the country.

EESL works closely with Bureau of Energy Efficiency (BEE) and is leading the market related activities of the National Mission for Enhanced Energy Efficiency (NMEEE), one of the 8 national missions under Prime Minister's National Action Plan on Climate Change.

AGAINST ALL ODDS: EESL'S JOURNEY

THE story of EESL could well have been that of a still born child. In early 2013, one of its key promoters, Power Grid Corporation Limited (PGCIL), wrote to the government that its investments were going nowhere. The company had been set up in late 2009 and over the next three years, it had hardly done any business.

The course of destiny, however, led the company up a different path. With the Union government lending a strong shoulder and restructuring EESL's management, the company embarked on a steep growth trajectory.

Over the last four years, between 2013 and 2017, the company's revenues have grown 46 times, while profits have vaulted over 50 times. The promoter's fears have been well assuaged. The story, however, is not just about mere cold profits. It is about a business that has been built on the edifice of profound and deep rooted social responsibility. Hence, notwithstanding stellar financial performance, the EESL story is best introduced by throwing light on the far reaching social impact achieved by its various initiatives.

In the first section, Panaroma, we present stories from across the country. They tell us about the change that EESL has brought about in the lives of people from different walks of life.

In the second section, Impacting Business, we elaborate on how various institutions have benefitted by doing business with EESL. For one, it is helping financially fragile power utilities turnaround. On the other side, EESL has created a market for entrepreneurs to set up factories in the country to manufacture LED bulbs.

The third section, Building An Organisation, gets to the heart of it all. It explains how EESL achieved its goals. What were the challenges and how did it overcome it? How has its strategy evolved in the last four years? And, finally, what lies ahead?



UJALA
Green Energy
Clean Energy

About 17 crore LED bulbs distributed

Energy saved/day	Cost saving/day	CO ₂ Reduction/day
6.02 crore KWh	Rs. 24.10 crore	48,813 tonne

(As on 12-10-2016)

Source: www.ujala.gov.in | [f](#) [t](#) [v](#) [g](#) /BJP4India [+](#)BJP www.bjp.org

The advertisement features a green and yellow color scheme. At the top, the UJALA logo is displayed. Below it, the text 'UJALA Green Energy Clean Energy' is written in large, bold letters. To the right, a portrait of Prime Minister Narendra Modi is shown. The central part of the ad highlights the distribution of approximately 17 crore LED bulbs. Three white cards with blue icons (a lightning bolt, a money bag, and a factory) present the following statistics: 6.02 crore KWh of energy saved per day, a cost saving of Rs. 24.10 crore per day, and a CO₂ reduction of 48,813 tonnes per day. Below these cards, there are images of three LED bulbs and a hand holding a globe with a village scene. The date '(As on 12-10-2016)' is noted. At the bottom, the source is given as www.ujala.gov.in, and social media links for Facebook, Twitter, YouTube, and Google+ are provided, along with the BJP's website www.bjp.org.

“I urge you all to use LED bulbs, save money, save energy and take part in helping our nation.”

SHRI NARENDRA MODI
Prime Minister of India

Lighting up the Future

*E*nergy Efficiency Services Ltd.'s journey over the last four years is a powerful narrative. It is a story of team work besides the team's ability to stay credible, agile and seize opportunities.

During the early days when we cast our net far and wide with pilot projects to spread the word about energy efficiency, the team left no stone unturned to reach out to key stakeholders in the country's power sector. They were convinced about what they were selling.

The nature of challenge changed in early January 2015, when Prime Minister Shri Narendra Modi announced that EESL's bulb replacement project would be a national program. It was now about ensuring delivery on a scale unseen before. As much as that, it was also about creating a healthy market for energy efficiency. Today, if the sector is witnessing a 20-odd per cent growth year-on-year, the EESL team can, for a large part, take credit for it. The knock-on benefit to the economy has been significant. Factories have come up, jobs created.

All this would not have been possible without the unflinching support of EESL's owner, Government of India. They have facilitated and ensured resources for EESL to implement its ambitious projects. Both the political class and the civil servants have gone out of their way to help EESL in its endeavours. And, they continue to do so.

I am overwhelmed by their generosity and would take this opportunity to express my gratitude to them. They have enabled EESL to not only deliver on its commitments but also help it grow as an institution. Today, EESL's institutional capabilities, its systems and processes, have enabled it to diversify not only across the spectrum of energy consuming devices but also to take flight and look for opportunities overseas.

Our overseas ventures have done well and are growing. This is a gentle reminder of our roots.

I would like to thank the public sector promoter companies and their managements for supporting EESL's efforts since inception.

—Saurabh Kumar, MD, EESL



Prime Minister Narendra Modi inaugurating the LED upgrade of lighting systems in the Indian Parliament complex

06

PANORAMA

Insight into how EESL has impacted the lives of people

- Celebrating the Eternal City 12
- "I can do what I want to" 14
- An Innkeeper's Journey 16
- The Kushiguda LED Activist 18
- Quenching Thirst, Creating Opportunities 20
- When Darkness Hurt 22

25

IMPACT

Doing business with EESL has helped institutions and markets grow

- Grim Prospects 26
- Disruption Agent 30
- Catalysing 'Make in India' 32
- Enabling Growth, Diversity 34

CONTENTS

41

BUILDING AN ORGANISATION

- We Want our Money Back 42
- Getting a Foot in 44
- Soaring High 51
- Evolution 54
- National Ujala Dashboard 56

1

Panorama.

REAL life stories.
How did EESL make a
difference?





**THE CITY OF
VARANASI
LED THE WAY!**

Street lights in the heritage rich city of Varanasi have been replaced.

Savings:

8.7 Million Units
(KWh) per annum

CELEBRATING THE ETERNAL CITY

The city of Varanasi or Kashi holds a very important place in Indian mythology. Puranas, the ancient Hindu scriptures, define the place as one that is eternal. For, in it, Shiva, the Lord of destruction and change, notes, "Because I never forsake it nor do I let it go, this place is therefore known as Avimukta." Avimukta, a Sanskrit word, refers to one that is not let loose. Shiva's description is an important distinction. The scriptures have it that the Universe undergoes periodic destruction, or Pralaya. The ancient city of Kashi, thus escapes this cleansing, protected by the might of the Lord, thereby establishing its eternity.

So, unlike other places of pilgrimage, Varanasi beckons people to come and stay back forever. EESL celebrates this spirit of endurance and immortality. It has replaced the city's street lights and sold over 1.3 million domestic LED bulbs in the city.







Mercy Susan likes to read before going to sleep on her bunk bed at the orphanage

“I CAN DO WHAT I WANT TO”

Mercy Susan, 15, is a multifaceted girl. She enjoys playing the piano as much as she practises yoga and karate. Not that she is lacking in academic curiosity either. Now in her Tenth grade, she enjoys Mathematics and Science. “I like Maths since I enjoy solving problems,” says Mercy with a gentle smile. The answer resonates at a deeper level; Mercy is an orphan. She came to Chaitanya Mahila Mandali, an orphanage in Secunderabad, Andhra Pradesh, around four years back. She shares her room with over fifty children of varying ages. That, however, has hardly dimmed her spirit or ambition in life. Her thirst for knowledge is indomitable. “I enjoy reading since I learn new things and I feel happier about it”, quips Mercy.

Mercy dreams big, and with a big heart. “I want to become an IAS officer because he takes care of the district,” she says. At this tender age, she has some of the key ingredients for success—focus and hard work. Mercy is quick to open a book and read when she gets a chance. However, the incandescent bulbs in her dormitory weren’t very bright.

EESL, as part of its broader mission to help and support the weaker sections of society, supplied the orphanage with LED bulbs to replace the existing incandescent lot. “With the other bulb I used to study 2-3 hours, with the new ones, I put in 3-4 hours.” says Mercy. The brighter light has a larger impact. “It gives me hope, I can do what I want to,” she says gleefully.

EESL salutes this spirit. The story of Mercy resonates across the country. Children left to the care of the State and other social institutions believe in themselves and their country. At EESL, one of the key aspects of our business model is that as much as it earns profits, it also seeks to maximise social impact.

AN INNKEEPER'S JOURNEY

National Highway 1, or NH1 as it is popularly known, is not just any other vehicle pathway connecting a slew of cities. It bears immense historical significance; resting on the imprint rolled out by the famous 16th century Moghul ruler who came from humble origins, Sher Shah Suri. The Afghan-origin ruler made the travellers comfortable by erecting roadside inns and lodgings. Five centuries later, cut to the present day, such arrangements are made good by entrepreneurs who face many challenges. For one, there is stiff competition along this busy 456 km trunk highway that connects the national Capital city Delhi to the border city of Atari in Punjab, winding its way through Haryana.

Owners of these roadside restaurants or Dhabas pay electricity bills far in excess of what it costs the utility to supply. And yet, the utilities don't make money. The reason is not far to see. For example, in Haryana, the agriculture sector, which accounts for 26 per cent of energy sold by the utilities rakes in a mere 2 per cent of revenues for them.

Sometime in August last year, Anil Kumar, 35, a resident of Panipat, Haryana, decided to open a restaurant along the highway. Competition was stiff; he had seen a few restaurants in the vicinity close down. Yet, he decided to take the plunge. And, for good reason. He owned a parcel of land along the highway, 79 miles from Delhi. Taking a cue, he christened it '79 Milestone'. Besides, as he

put it with an ambitious attempt at brevity, "*kheti baadi 'agitate' ka kaam hai...*" (farming is stressful, given the nature of the business).

But then, the highway food business was not going to be easy. Anil had to keep his costs down as much as attract customers to his eatery.

So, when he started his business on 17th August 2016, he turned to the LED bulbs sold by EESL to light up his restaurant. They were less expensive than those available in the market and besides, helped reduce his electricity bills compared to the others. Importantly, the bright bulbs also help draw highway travellers to his restaurant and this improves his business turnover. His trust in the State has gone up: "*Sarkaar ko aisey aur bhi scheme laney chahihey* (the government should come up with schemes like this)," says Kumar, who is all too pleased with the gains.

The story of Sunil Kumar is not in isolation. Commercial enterprises across the country, however small, end up paying high power bills. It is one of the many challenges they face. Their journey is a template witnessed across the country -that of the indomitable human spirit rising to the challenges that the business environment throws up.

EESL salutes the resilience of the Indian entrepreneur. It is a privilege to enjoin his journey to succeed.



ANIL AHUJA



(Topmost) National Highway 1: A lifeline for roadside inns

(Above) LED lights illuminating a Dhaba's courtyard

Left: Anil Kumar and his brother Sunil Kumar, owners of 79, Milestone, lift a Roti (bread) from a Earthen oven



(Top) Top: Rajni Talla reflects on her association with EESL as being part of their sales force



Far left: On the move, the Self Help Group goes from door to door selling LED bulbs



(Left) the Group workers soliciting a potential buyer

THE KUSHAIGUDA LED ACTIVIST

Rajni Talla, is more than just a homemaker. A resident of Kushaiguda, a suburb of Hyderabad city, she teaches Mathematics and Science in a local school. Rajni earns a modest \$77 per month, a little more than half the country's capita income. Her husband is the main breadwinner; he has a white-collar job at a local healthcare company and earns works \$230.8 per month, or closer to twice the per capita figure. That leaves them comfortable only if her ambitions are modest. And, they aren't. As much as she wants to provide her two sons, Sanketh Goud, 9, and Manish Goud, 7, with good high school education (which is expensive), she also wants to save adequately for the future.

The State did come up with opportunities. Since a key ingredient for enterprise is seed capital, the local municipal corporation helps provide interest-free loans for Self-help groups (SHG). Rajni joined one of them. The deal was simple. They could get loans for \$15,386 and use the money to set up a small shop where they could, say, sell vegetables, put up a photocopy machine or simply go door to door and sell sarees. The ventures were profitable, but yielded no more than \$31-\$46 every month.

EESL stepped in and decided to use the Self Help Group channel to sell its LED bulbs. Explains Rajni, "We purchase the bulbs and sell it down. We sell it to our family mem-



"We purchase the bulbs and sell it down. We sell it to our family members and then to outsiders. The money is a lot better than other vocations. I am hopeful of making upto \$108 per month."

RAJNI TALLA
Teacher and Social Worker

bers and then to outsiders." The money is a lot better than the other vocations. "I am hopeful of making upto \$108 per month," reckons Rajni. The gains are more than just monetary. "it is not just about work for us. We feel we are helping the government. This gives us confidence that we can do any kind of work", says Rajni, with a beaming smile.

EESL's unique sales strategy, that of enrolling Self-help groups (SHGs), is in line with its larger philosophy of doing inclusive business—business practices that help benefit low income communities. Towards this end, EESL holds training sessions for the SHG members during which they are acquainted with products and their benefits. Armed with this information, they visit neighbourhood houses and sell the products.

This initiative of EESL has had a knock-on effect. It builds trust and confidence between the State and the citizen. "When schemes are given, and they (the government) fulfil the promise made, our expectations are met", says Rajni.

Rajni's life has indeed improved after EESL has entered her life. It is not just about more money in the kitty. Back home after a long day's work, she is a lot happier. The reason: EESL's LED bulbs. "After coming home, more light means pleasantness... we are not irritable at home and more positive at work," reflects Rajni.

EESL looks to support empowerment of women as part of its inclusive growth strategy.

QUENCHING THIRST, CREATING OPPORTUNITIES

NS Mahesh, 38, is a farmer, who tills lands in Nedaghatta village, three hours' drive from Bangalore city. Traditionally, his family has been cultivating Paddy and Ragi (finger Millet) in his three-acre land holding. The soil is rich and the weather right to grow these water-intensive crops. Moreover, Mahesh doesn't have electricity bills to pay—the State gives free supply.

However, this hardly sums up his situation; Mahesh has a litany of woes to deal with. For one, electricity supply is restricted—four in the day and three at night. Moreover, a breakdown of supply, especially during the critical window period of the sowing season, could be potentially hazardous—the electricity supply utility could take upto a few days to set the fault right. There is little that he can do about this.

Then again, the electric pump that raises water from below the earth for irrigation malfunctions a few times every year. This means expensive repairs. Mahesh is at the mercy of the local repair shops. Not only that, they also guide him on the choice of pumps—he can't afford the expensive ones that are more reliable since his budget depends on the earnings from the fields.

Adding to his woes is the difficulty in procuring labour to help manage the fields. The State government provides, amongst other benefits, free grains like what and rice to socially and economically backward sections of the society. This reduces the incentive to work on a regular basis.

EESL stepped in to help Mahesh. As part of a pilot scheme, they installed an energy efficient 5 HP agriculture pump in his farm. The pump uses less electricity and generates greater suction power, thereby lifting more water to the surface than the earlier machine. Ofcourse, this eliminated his hefty annual re-

pair bills. But there was something more significant in store. Higher and reliable water supply or higher water security meant he could focus on other farming choices that yielded higher returns than the traditional Paddy and Ragi.

Mahesh could now diversify in greater measure into non-traditional crops that have a higher demand, for example, survey trees that supply to the construction industry. This requires less labour and fetches a higher price in the market. Mahesh planted Survey trees on four acres of land that was earlier dedicated to paddy.

The economics was compelling:

Says Mahesh, “In the case of Paddy, we earn around \$308 per acre. Since it is a bi-annual crop, we end up with \$615. Right now, due to high demand from construction industry, earnings from Survey trees which is a three-to-four-year crop is over one lakh per annum. Besides, it requires only water and no labour.”

In effect, EESL helps farmers like Mahesh manage their crop risk better. Going forward, EESL is talking to utilities to install solar powered agriculture pumps. No doubt, the high upfront investment proves to be a challenge. However, it can prove to be huge opportunity at many levels. Here's why:

Utilities struggle to keep up with the political mandate of keeping farm tariff at well below what it costs to serve the farmer. So, during the day, when overall demand is high, the supply is restricted to a few hours. Now, with solar pumps, the farmer will be no longer lean on the utility for supply during the day. On the other hand, when demand softens after sunset, the utilities can sell power to the farmers. Not only that, even during daylight, the farmer will not need all the electricity that the solar panels can produce. In turn, he can sell the spare electrons to the utility and make money.

EESL believes in pursuing such 'win-win' sustainable solutions.





(Left page) N S Mahesh: A farmer in Mandya district, Karnataka

(This page) Farmer Mahesh's mother Hanumamma cuts grass in the farm to feed her livestock





Sugandha, with her father
Dharmender in their one room
tenement in South West Delhi

WHEN DARKNESS HURT

Sugandha, a three-and-half year old child, has felt pain a lot more than most children in her age group. Sometime in mid-August this year, she fell from a height of fifteen feet to the ground. Fortunately, she survived with no major injuries.

It was an incident that was waiting to happen.

For, Sugandha lives with her family in a small bare walled single room tenement in Ber Sarai, an unplanned colony that still reflects its rural pedigree in the otherwise tony south west district of the Capital city of Delhi. The lanes and by lanes are as if stacked on either side with match box sized houses of irregular sizes and dimensions. These offer cheap accommodation. And, Dharmender Rajghar, Sugandha's father, can ill afford to pay any more rent; he is a daily wage-earning carpenter.

Poverty raises its ugly head in other spheres too. Dharmender's residence does not have a washroom abutting the living space. The toilet is located on the first floor, which otherwise is an open terrace. There is a steep discount on privacy. But that is not what Dharmender worried about. There was a bigger hazard - the terrace did not have a parapet wall, nor was it fenced. So, he would ensure that when Sugandha was accompanied by her elder brother Saurabh when she visited the toilet at night.

But one night, his fears came true. Saurabh failed to notice Sugandha emerge from the toilet and slip away into the darkness of the terrace. And, there was no barrier to save here from a fall to the ground. Ironically, his choice of residence helped in this hour of need. Several from his village in Uttar Pradesh were residing



EESL's street bulbs turn a dark terrace into a play area

in the same locality. Together, they rushed the child to a nearby hospital.

This time, he was lucky. But that hardly comforted him. After all, it could happen again. But there was little he could do; shifting residence was unaffordable. A few days later, EESL eased his burden.

Around the time Sugandha fell, EESL was rolling out its scheduled replacement of street lights in South Delhi Municipal Corporation. The replacement was a lot brighter. “Yeh naya light jyada roshni deta hain aur terrace pey andhera

kum hai (the new lights provide more illumination and the terrace is less dark),” says Dharmender. He feels a lot more comforted.

EESL is currently in talks with several cities and their municipalities to undertake replacement of street lights.

The commitment by EESL to offer higher illumination is backed by a maintenance service that sharply reduces the down-time of these lights. As a result, the streets are a lot safer. Every way.



2

Impact

Doing business with EESL
has helped institutions
and markets grow



Women and children at a primary healthcare centre funded by a state government. EESL is working with state power utilities to lower their financial burden. This enables them to reduce their dependence on the State and hence release more funds for healthcare and other welfare measures.



Photograph courtesy: WORLD HEALTH ORGANISATION

GRIM PROSPECTS

THE financial health of the power distribution utilities vastly impacts the overall economy of a country. In the absence of efficient competitively priced electricity supply, consumers resort to alternate sources that are inefficient and expensive. The woes don't end there. Once the problem acquires a chronic nature, the financial burden on its owner, the State government, becomes sizeable. This hurts the latter's ability to undertake other welfare measures.

The Indian power sector is steeped in this very morass. The more electricity the utilities sell, more money they lose. Against an averaging cost of supply of 8.3 cents per unit of electricity, the utilities earn 7.4 cents per unit. In other words, let alone profits, even the cost recovery is short by around 11.5 per cent. This lopsided equation snowballs into a staggering loss for the utilities. On a nation-wide basis, during 2015-16, it was as high as \$9.74 billion (if we keep out past losses), or close to the annual capital expenditure program of the country's most populous state Uttar Pradesh.

To address this chronic vexed issue, the Union government has, over time, rolled out several reform measures to help the utilities' eliminate the revenue gap and restore profitability. The most recent of these was an ambitious program by the NDA government in late 2015. For one, it seeks to scoop out the accumulated losses, which stands at a humungous \$63.68 billion, a little over a quarter of the country's GDP, off the utilities' books. On the other side, there are several initiatives afoot to improve its operational and financial efficiency.

While the utilities are undergoing such extensive surgery and rehabilitation,

in a manner of speaking, the need of the hour is to provide measures that impose no additional financial burden on the utility and are yet able to improve the financial position.

EESL lends a helping hand

In this context, EESL's flagship program 'Ujala' provides immense succour to the utilities. The program seeks to replace 770 million bulbs across the country with LED ones that consume less electricity and provide more light. All this by 2019. Thus far, in a short span of four years, it has replaced around 268 million bulbs across the length and breadth of the country. As a result, utilities now buy less electricity to light up these bulbs. The savings are not small. It is as much as \$338 million per annum or 3.5 per cent of the total annual losses recorded by the utilities. Besides bulbs under the Ujala program, EESL has sold energy efficient LED tubelights and fans as well, which too have contributed to avoidance in power purchase by the utilities.

EESL's efficiency devices program also provides an indirect benefit. It reduces the peak power demand in the country and to that extent lowers the price of electricity in the market. The gains are significant—in July 2017, it was as much as 7,000 MW, or 4 per cent of the peak demand. In fact, owing to EESL's intervention, the unmet peak power demand has been curtailed at 1.5 per cent; in its absence the deficit would have bumped up to 6.5 per cent. This, again, translated into financial terms, is no small sum.

In other words, EESL's program enables the utilities to lean less on the government to make good its losses, in one manner or the other. In turn, this enables the state governments to fund welfare and development schemes like health care and education in greater measure.



“EESL is doing good work for the power sector in Uttar Pradesh. They have a credible and efficient procurement process that discovers a competitive price.”

ALOK KUMAR
Principal Secretary (Energy),
Govt. of Uttar Pradesh

THE STRUGGLE FOR UPKEEP

The story of municipal governance in India precedes its independence in 1947. During British rule, there was disenchantment over the poor services provided by the State to the common man. This aroused nationalist sentiments that fought for basic amenities like education and healthcare. And so, the first municipality came up in 1688 in Chennai. Of course, it wasn't a case of softening. It was more about alignment of interests. Municipal-level management facilitated ease of governance. This helped prevent epidemics that would otherwise burden the British administration. There was one more reason. Collecting taxes would become a lot more palatable. Taxation would then be viewed as an instrument to ensure public good flowed back to the people through the municipality. Of course, the latter was feeble in its endeavour and hardly quelled the clamour for freedom.

However, even after India gained freedom, the underlying challenge for municipalities to raise money and provide basic civic amenities to its citizens didn't go away. They remain short on money. In such a scenario, conservation and efficiency plays a big part in reducing bills and freeing up financial resources to serve the common man. EESL has reached out to several municipalities to help reduce their power bills in lighting up the street lights. Not only that, EESL also maintains the lights for a seven-year period, attending to consumer complaints through an online monitoring system. This releases the managerial burden on the otherwise stressed municipality services. Importantly, the replacement is being done through an innovative financial arrangement. The municipality does not make any upfront payment to EESL. Rather, it pays EESL from the savings made through replacement of the sodium vapour street



LED street lamp makes the city of Jodhpur abutting its famous Mehrangarh fort shine through in resplendent glory.

lamps with LED ones.

This scheme, called the Street Light National Project (SNLP) was flagged off with a big bang by Prime Minister Narendra Modi on 5th January 2015. A few days later, on 9th January, South Delhi Municipal Corporation (SDMC) signed up with EESL to get its street lights replaced.

SDMC is no small municipality. It is spread over 657 sq. km and services a population of 5.6 million citizens (that's like putting together the population of Chicago, Houston and Seattle). With the replacement of close to 200,000 lamps (that's fourth-fifths the number of street lamps in New York city), the power consumption has reduced by over half, from 24 MW to 12 MW.

The financial gains are impressive. This is especially so since the power distribution utility charges a high tariff for street lights as compared to other consumer segments. So, without having to pay a single rupee, SDMC stands to gain close to \$19 million over a seven years period. This, after paying an annuity charge of close to \$7 million per annum. This includes not only replacement of the lamps but also their maintenance by EESL for a seven-year period.

How did EESL achieve this efficiency?

Of course, LED technology enables a 50 per cent reduction in consumption. However, this comes at a cost. EESL has, through an efficient process of bulk procurement, brought down the price of the lamps. This, however, only partly explains the gains. Another area where EESL has achieved significant efficiency is in maintaining the lamps. For instance, in the case of SDMC, there has been a dramatic 70 per cent reduction in the municipality's annual maintenance costs. To achieve this, EESL embraced technology. It set up a Centralised Control and Monitoring

System (CCMS) that would enable remote operation of the lights. Hence faults are easier and faster to diagnose. Significantly, the lower maintenance costs do not come at the cost of service quality. In fact, the service is a lot better, with a guaranteed uptime of 95 per cent. Further, a 24X7 helpline and web-based Application ensures that a complaint is, at worst, only a few clicks away. And, it is attended to within 48 hours.

To validate the service quality, EESL has undertaken social audits. The evaluation reveals that citizens are a lot more satisfied thanks to more brightness from the LED lamps. Moreover, they also feel a sense of enhanced safety and security owing to the brighter light emitted by the LEDs lamps.

The project has now taken wings and has spread across the country. This alone (without the annual maintenance) saves the utilities as much as around \$55 million per annum or 8 per cent of the annual budget of a prosperous municipality like South Delhi Municipal Corporation. All this at a stage when EESL has barely completed a little over 10 per cent of its target 35 million LED lamp replacement, to be achieved by 2019.

DISRUPTION AGENT

Amit Gupta. Director, Eco Lite Technologies.

IN December 2013, the street price of a seven-watt LED bulb was around \$9.15. No doubt, these lamps were superior in every manner to the dominant Compact Fluorescent Lamps in the market- they consumed less electricity and lasted a lot longer since they didn't heat up. However, this wasn't good enough reason for the consumer to shift



“We are happy with EESL’s performance at SDMC. They had procured the street lights efficiently and implemented the project on time. Besides, their maintenance systems are reliable and cost effective.”

PUNEET GOEL
Commissioner, South Delhi
Municipal Corporation



Amit Gupta, Director, Eco Lite Technologies. His firm won the first EESL tender for LED bulbs (in January 2014). Eco Lite quoted a price that was close to half the then prevailing market price.

from CFLs since they were three times more expensive. The savings didn't justify the switch. Consequently, there wasn't enough incentive for the then prevailing domestic manufacturing industry to move away from CFLs—the margins were good. This reflected in the market share of LED lamps in the domestic lighting industry; in revenue terms, during January-December 2013, it was a mere 13.5 per cent.

And then came disruption.

In January 2014, EESL put out a tender in the market to procure seven lakh LED bulbs. This was significant volume since procurement from manufacturers was limited by the reach of the wholesale traders across the country. To that extent, the balance of pricing power was vested with the manufacturer.

The industry's response to the bid threw up a surprise. No, it didn't come from the popular or well-established players who had been manufacturing lamps for a long time. Rather, the sharpest response came from Eco Lite Technologies, a new entrant in the lighting business. Amit Gupta, director, Eco Lite Technologies, decided to diversify his family business that was steeped in textile trade. He went ahead and bought automatic machines that would assemble the LED lamp parts at his Gurgaon factory.

Gupta bid a price of \$4.77 per bulb, close to half the then prevailing street price. "I decided to aggressively bid since, unlike other players, I was not in the CFL business. Importantly, the volumes were very large and hence I could provide a more competitive price, closer to the cost of the materials used," reminisces Gupta.

Laying the foundation

EESL could go ahead with tender only because it had sewed up buyers for purchase of this large volume. It was no less than an entire Union Territory. The energy service company had tied with Puducherry to sell LED bulbs to its residents

through an innovative scheme. The proposition was compelling: against a market price of close to \$9.15 per bulb, EESL make it available to the consumer at a price of 15 cents per bulb. The rest would be paid by Puducherry electricity department over a ten-year period, relying on the energy savings accrued owing to use of LED bulbs.

This crucial tender sent a strong signal to the market. For one, it demonstrated EESL's capacity to pick up large volumes in one go. Importantly, it imparted confidence to entrepreneurs to set up new capacity in anticipation of large orders from EESL—that EESL could procure and sell it to down to retail consumers. This, in turn, led to intense competition and a consequent tumble in EESL's procurement price. In a matter of less than three years after floating its first bid in early January 2014, LED bulb prices crashed by 90 per cent. For, in October 2016, EESL stepped into the market and procured 50 million units of LED bulbs at an all-time low price of 58 cents per unit.

EESL's effort to cradle the LED market has been successful.

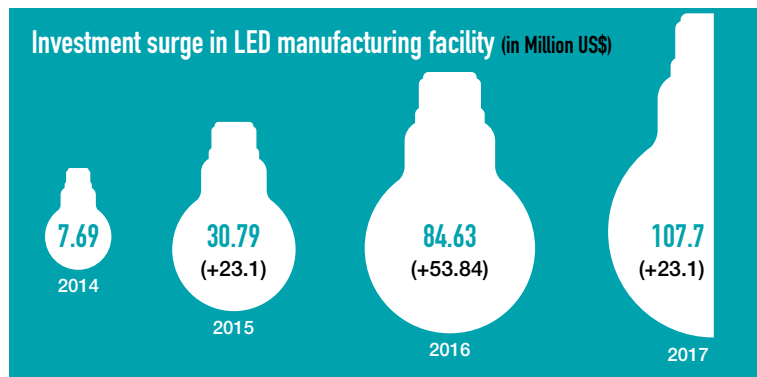
As it goes about its job as a market aggregator and demand driver, EESL's creates opportunities and incentives for entrepreneurs like Amit Gupta to seize business opportunities and help shape the market in a healthy manner.

CATALYSING 'MAKE IN INDIA'

WHEN Sunil Vachani, one of the top players in the LED lamp manufacturing business, decided to produce components for LED lamps, he turned to the domestic Capital market to fund the project. It was the first time that a company in the lighting business in India had decided to raise money from the Capital markets. The equity issue, floated in mid-September, 2017, was an overwhelming success. As much



The Bombay Stock Exchange (BSE) is Asia's stock exchange. As EESL goes about creating a market for energy efficiency devices, companies can access the Capital markets at stock exchanges like BSE and raise money. This helps them participate and, in turn, grow the energy efficiency markets.



as it recognised his firm, Dixon Technologies, as an efficient manufacturer/assembler, it was essentially a vote for the larger sentiment, that of the fast-paced growth of the domestic LED market, which was expanding at 20-25 per annum.

And, Vachani had good reason to thank EESL for this.

The LED market had witnessed a stellar growth rate in the recent years, to be more precise, since EESL began its procurements in early 2014. Prior to this, the growth rate was modest, with Compact Florescent Lamps leading the pack (refer chart). For the domestic manufacturing industry, EESL sent out strong signals in its procurement process. For one, the volumes were significantly large. Secondly, they would be sold in quick time, thanks to the innovative way in which EESL carved out large markets hitherto unexplored. And finally, EESL insisted that its procurements had to be manufactured in India.

This framework fired up the domestic LED lamp manufacturing base. Those who were manufacturing CFLs made an aggressive yet smooth transition to the LED business. Not only that, there was room for new capacity to be set up. As a result, domestic industry production vaulted from 5 million units in 2013 to 600 million units in 2017. The LED industry turnover which was \$277 million in 2013 leapfrogged to \$1.54 billion in 2017. In the larger canvas of the overall lighting industry that consists of other lighting forms as well like CFLs, incan-

descent and florescent bulbs, the contrast is a lot sharper. In 2013, LED constituted a mere 13.5 per cent of the \$2.1 billion lighting industry. In 2017, it constitutes close to half the \$3.38 billion industry turnover.

Against this backdrop, imports over the last three years have been negligible: a mere 5 per cent of the installed LED lamp manufacturing capacity. This validates EESL's efforts in shaping the LED lamp market in a manner that the government's 'Make in India' initiative succeeds.

A key indicator that the domestic manufacture of LED lamps has taken roots in a healthy manner is demonstrated by the growing manufacturing base for LED lamp components. Broadly, a lamp has eight components and over the last three years the capability to produce a good number of them has gone up. Except for silicon wafers, domestic capability has picked up in the rest of the spheres—casing, controls, adhesives, MCPCB, heat sink, driver circuit, LED package and optical lens.

In effect, EESL has enabled companies to grow their business in the direction of backward integration in a profitable manner.

ENABLING GROWTH, DIVERSITY

Diversity

In October 2016, global electronics major Philips won the single largest procurement made by EESL, that of 50 million nine-watt bulbs. When sold to consumers, it would have a powerful impact—saving as much as 740 million units of electricity every year, roughly the volume of electricity that a state like Himachal Pradesh consumes in a month. In financial terms, it would be of the order of \$50 million per annum. For this volume of absorption to happen in the domestic market in quick time, the price had to be competitive.





Rakesh Goel, chairman H.Q. Lamps Manufacturing Co. Pvt. Ltd at his LED manufacturing facility in Haridwar, Uttarakhand. He prefers to use semi-automatic machines since labour costs are competitive.



An engineer working on a LED bulb at global lighting major Phillips' R&D center in Noida, Uttar Pradesh

Philips quoted an all-time low price of 58 cents per bulb.

This was no accident. The global lighting major, steeped in cutting edge lighting technology, runs a large Research and Development (R&D) center in India. It follows a ‘asset light’ business model where manufacturing is outsourced to firms to whom it imparts technology. The result is a prescription that ensures value engineering, quality, reliability and competitive pricing, where core competency optimises delivery.

However, does this leave room for Indian entrepreneurs who reach out for technology and innovation on a small scale? Do they stand a chance to compete and win orders from EESL?

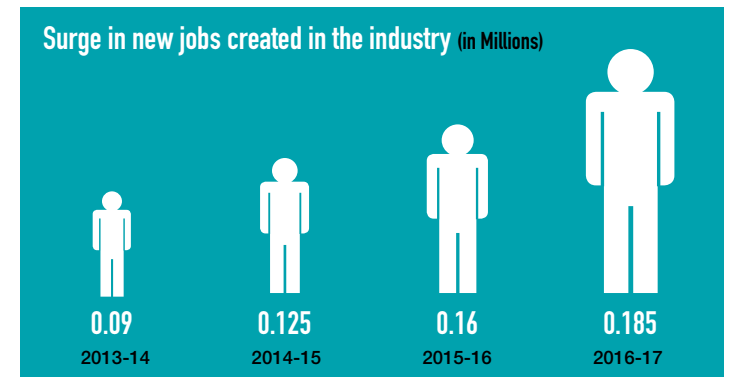
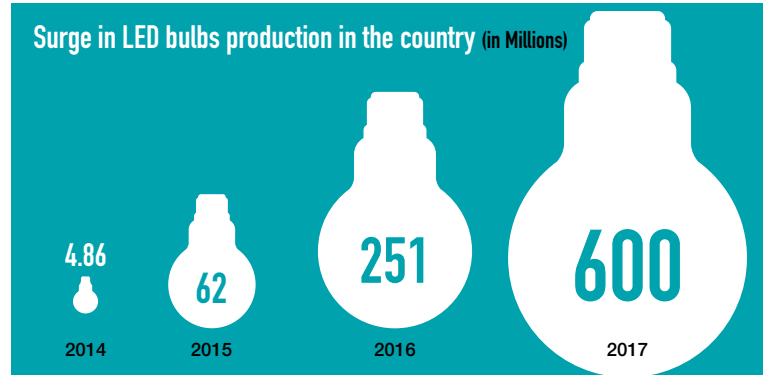
Yes, they do.

Only a few months before the October event, HQ Lamps Ltd, an Indian firm won a contract to supply nine-watt bulbs to EESL. It had no foreign collaborators and would prefer to use semi-automatic equipment at its factory in Haridwar, Uttaranchal. Says Amit Goel, Director, HQ Lamps Ltd, “we prefer to use semi-automatic equipment since they cost less and works well with the competitive labour costs”. Technology is, no doubt, important and Goel says that the overseas chip manufacturers have helped in the overall design as well as cost reduction measures. Goel doesn’t fear competition. As much as HQ Lamps sells under its brand, it also manufactures for other major Indian companies, accounting for 94 per cent of its sales. “We aggregate demand, which helps us produce large volumes that, in turn, lowers the fixed costs,” says Goel. Over the last three years, Goel has raised the capacity three-fold to 10 million bulbs per an-



“EESL has played an important role in driving conversion from older technology bulbs—CFL or incandescent—to LED. EESL enjoys immense credibility in the market amongst both industry and consumers.”

SUMIT JOSHI
Vice Chairman and Managing Director,
Philips Lighting India



num. The trigger, no doubt, is EESL’s entry into the marketplace to procure bulbs. Says Goel, “There is no doubt, EESL taught the market how to sell LED bulbs. If it was left to the market, the price reduction would not have happened”. Importantly, Goel points out that in the pre-EESL period, there was little or no price competition. That reflects in near stagnant prices of LEDs as well as the less efficient Compact florescent bulbs that notched up the highest growth till EESL entered the market.

What is evident from this narrative is that EESL has, through its mass procurement initiatives, shaped the LED lamp market in a well-formed manner. For one, there is diversity. As much as well-known global brands thrive, local Small and Medium Enterprises (SME) are not left out. That’s to say, branded firms as well as the original equipment suppliers to these firms participate in EESL

tenders and win orders. This, even though their business models are disparate. While one relies on automation, the other harnesses domestic labour. For the local firms, access to technology is delayed. As a result, the former generates white-collar jobs while the latter creates employment, and a higher number, in the blue-collar segment. According to industry estimates, in the last four years, the lighting industry has created over half a million new jobs on the back of an aggregate investment of \$ 108 million.

Secular market

The frailties of a sharply growing market are many. For one, there is room for cartelisation. This would hurt consumers. On the other hand, there could be destructive competition. This, on the other hand, would imperil the smaller players in the lighting business. To minimise these hues, EESL adopted an innovative procurement strategy, where the order pie was broken up to ensure that maximum number of players got a share of it. Ofcourse, they had to match the price quoted by the lowest bidder. This procurement model has ensured a wider dispersion of demand across LED manufacturers.

This has lent to greater predictability for the industry. Companies who were invested in the CFL business have made a sharp switchover to the LED business. Says Kanik Gupta, director, Compact Lamps, one of the largest manufacturers of LED lamps in the country, “In early 2014, we were manufacturing six million pieces of CFL and a mere 0.5 million pieces of LED lamps per annum. Now, in late 2017, it is quite the opposite. We produce 8 million LED lamps and 2 million CFL lamps per annum.”

The sympathetic effect of EESL’s actions in the marketplace has been significant. The average street price of an equivalent non-EESL bulbs (those sold directly in the market as opposed to bulbs procured by EESL) fell by a third to around \$3.07 per bulb during the last four years. This, in turn, has spurred demand for LED bulbs in the country. This knock-on effect has led to an irreversible investment cycle. EESL’s catalytic role in the country’s LED market is reflected by the fact that in the last three years, the share of non-EESL branded LEDs has risen from a negligible fraction to close to 50 per cent of total LED sales in the country.



GETTY IMAGES

LIGHTING UP THE STATE

North Block, South Block and Rashtrapati Bhawan, the imposing British-era red and buff sandstone buildings house the corridors of power that govern India. For instance, the Prime Minister's office is situated in South Block. As much as the vast expanse of these grand structures is rather daunting for the common man, Prime Minister Modi allays these fears with his refrain, "Minimum Government Maximum governance".

These 20th century buildings have been decked up with LED lights as if to promote the concept of "Maximum Light, Minimum Electricity".

EESL enjoins this philosophy as it crusades for LED bulb adoption across the country. The savings made are large since lighting accounts for around 20 per cent of energy consumed.

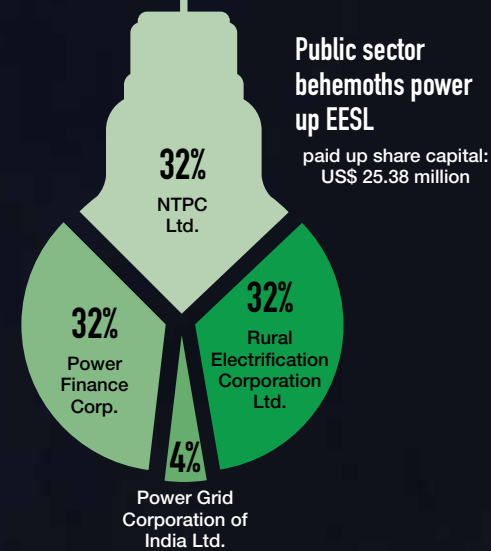


3

*Building an
Organisation*







WE WANT OUR MONEY BACK...

In late April 2013, Power Grid Corporation of India Ltd (PGCIL), one of the main promoters of Energy Efficiency Services Ltd (EESL) wrote to the company chairman stating that it wanted its money back. They had good reason to ask for it. The transmission utility's investment of close to \$4 million, made three years before, in 2010, had not been put to use by EESL; it was idling in the bank. PGCIL's provocation to recall its investment was, evidently, on firm ground.

Time was running out.

The company had been in operation since December 2009 and, over the next three years, it hadn't found much work. There was good reason. The concept of energy efficiency had yet to catch on in India. As a result, its work was restricted to preparing project reports for various companies, power utilities and municipalities seeking to undertake efficiency measures.

Firefighting ensued. The then chairman of EESL sought to assuage PGCIL. He assured them that business would improve over the next three years as larger energy efficiency projects would come up. Consequently, PGCIL's investment would earn handsome returns, he argued.

It was not just PGCIL. One more promoter, NTPC Ltd, a power generation utility, wanted to scale down investments in the company. It seemed as if the company was coming apart. Two of the four promoters who had invested an equal amount in the company weren't keen on carrying on. Amidst this rather turbulent

environment, government restructured EESL and appointed a full time managing director for the company (The earlier head, a CEO was working on a part time basis). A former Indian Revenue Service official, the MD had quit his job as a Program Officer at United Nations Environment Programme (UNEP) at Bangkok, Thailand, to join EESL in New Delhi. When he joined office on May 9, 2013, the first call he received was hardly inspiring. A senior official from the Ministry of Power, which controlled the promoter public sector companies, called to tell him that two of the four promoters weren't keen on carrying on. "Why did you appoint me here?" he shot back. As much it conveyed the prevailing sentiment, the ministry's writ held forth; the promoters stayed invested, little knowing what lay ahead.

Their trust in the MD, however, was not belied. Over the next three years, EESL's revenues rocketed from \$4 million in 2013-14 to a staggering \$188.8 million in 2016-17. Profits vaulted from \$0.15 million in 2013-14 to \$7.8 million in 2016-17.

How did this happen? The next chapter elaborates.

GETTING A FOOT IN

Dealing with Legacy

"This was a business where the consumer was not convinced of the gains from energy efficiency measures. The immediate consumers were State-owned power distribution utilities," observes Neelima Jain, the first program manager of Unnat Jyoti by Affordable LEDs for All (UJALA), a LED bulb distribution scheme that flourished to become EESL's flagship program.

The scepticism, for a good part, was born of the legacy that energy efficiency programs in India suffered from. "There was a vacant space marred by historical failures of pilot projects," reminisces Neelima.

To explain this, a short recount will be in order.

One of the most popular energy efficiency schemes was the Bachat Lamp Yojana (BLY). Launched in early 2009, power utilities across as many as 17 states across the country signing up for it. The scheme aimed to distribute energy efficient Compact Fluorescent Lamps (the more efficient LEDs had just then entered the market and were frightfully expensive) at the average price of a conventional





EESL's vision seeks to provide every part of the country with energy efficient devices at competitive prices

household incandescent bulb i.e. 23 cents. The success of this scheme hinged on a larger theme, that of global carbon trade rooted in a United Nations system known as Clean Development Mechanism (CDM). Soon after its launch, BLY got its CDM registration in June 2010.

Under the CDM mechanism, developers of projects that avoided emission of greenhouses gases like carbon dioxide, ended up earning UN-issued carbon credits. In theory, this could be bought by countries and companies that sought to reduce their emission. For the CDM to succeed, in effect, large developed countries had to sign up with the United Nations' plan. This failed to happen, resulting in the collapse of the carbon trade market.

There was one more issue. While dealing with the state power distribution utilities, going by global precedents, energy savings was determined using historical data. This proved to be a contentious issue as the data suffered from infirmities.

Keys to the Demand Gateway

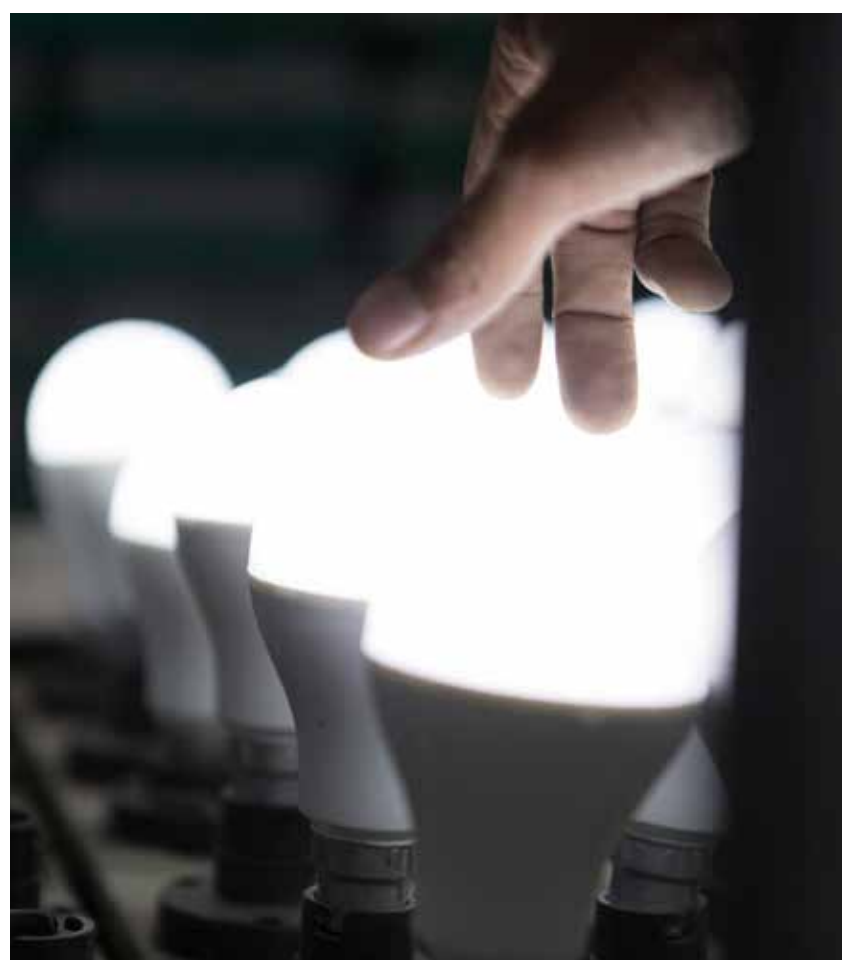
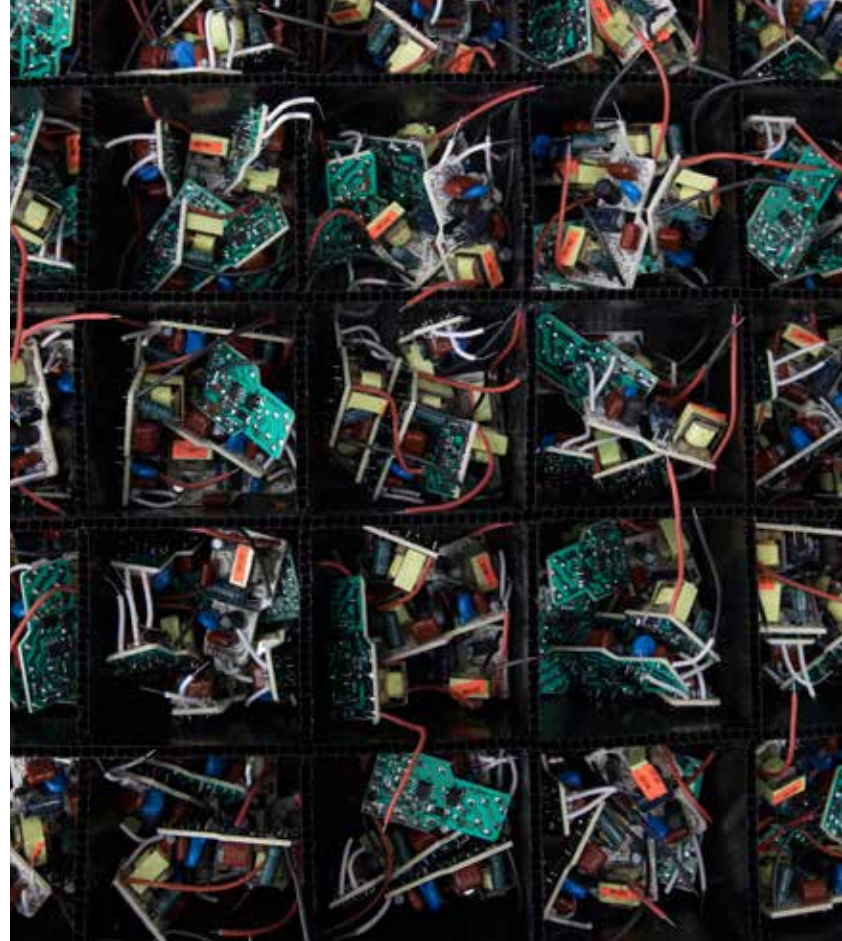
After the MD took over in early May 2013, EESL's early strategy was born of this learning. The financial transaction underlying the sale of energy efficient lamps was reviewed. Given the financial fragility of the State-owned distribution utilities, it was now a 'pay as you save' approach. Secondly, given the hazy nature of data, the savings would be measured from the present and not based on historical data. And finally, the entire financial framework would be put through the State electricity regulator's scrutiny to ensure that the electricity consumer's interest was upheld. This process would inspire confidence in a key stakeholder, the utility managers, who would finally sell down the lamps to end consumers.

For several months, the new management at EESL knocked on the doors of power utilities across the country with their strategy even as they simultaneously commissioned pilot projects to demonstrate their credentials. The projects were aimed at demonstrating the savings that could be generated by changing household lamps, street lights and irrigation pumps in the farm sector.

A break through

It was only towards the end of the year (2013) that EESL managed to get some business. EESL signed up with the Union Territory (UT) of Puducherry to





supply 750,000 LED bulbs at a cost of around \$3.5 million. The deal was not without its challenges.

Puducherry insisted on a ten-year payback period, based on the savings made by the energy efficiency of the LED bulbs—they could do with lower purchase of electricity. This, however, meant that the bulbs warranty had to last an entire decade. EESL, on the other hand, could at best procure bulbs with an eight-year warranty from the manufacturer. The question before the management was: should they stick their neck out and take a risk that they had no control over? While the Public-Sector promoters were not too keen, the MD forged ahead and signed the deal. His argument was simple: “if we don’t take measured risk, we won’t be able to grow our business.”

In early 2014, Puducherry’s Chief Minister announced it with much fanfare; each consumer could take home three LED bulbs for \$0.15 apiece. Against this, the open market price was a frightful \$9.15 per bulb. Not only that. Going forward, the consumer would save on the power bills.

To achieve this, EESL negotiated with the Puducherry Electricity Department on the lines of the globally renowned Standard Options Program (SOP). The SOP shapes a utility’s power procurement plan in a manner that ensures primacy of energy efficiency. With widespread use of LED lamps, the utility can pay out of the savings made on several fronts - lower Transmission and Distribution losses, lower subsidy outgo for consumer segments they pay less than what it costs to serve them.

Importantly, EESL concluded the deal in a manner that left the Puducherry government much satisfied. They did not insist on sharing the savings that accrued from reduction in peak demand. For at such times, the utility is forced to buy expensive power from the market.

This was only one aspect of EESL’s approach. The other was the price at which it procured the bulbs. EESL got them at \$4.77 apiece through an open competitive tendering process. This was sold to Puducherry Electricity Department for \$5.20 per bulb, 43 per cent cheaper than the then prevailing open market price of \$9.15 per bulb. A higher procurement price would have pushed back the repayment period, making it difficult for EESL to consummate the deal.

The scheme, not surprisingly, was a runaway success.

It was a modest, yet powerful beginning for EESL. Importantly, the compel-

ling proposition for the consumer was shorn of government subsidy. It was a win-win deal for all stakeholders—the consumer, the electricity supply utility, the State and finally EESL.

The Puducherry deal was a harbinger for larger deals. Not just because of what it achieved but also the fact that its arrangement with Puducherry was solemnised at the altar of the State electricity regulator. This established its credibility not only in Puducherry but across the country.

Rising to the Occasion

Shortly after the Puducherry deal was signed and implementation began in February 2014, EESL’s MD got a call from a senior official in Andhra Pradesh government. He told him that Chief Minister Chandrababu Naidu was curious to know more about the Puducherry project. Shortly thereafter, four senior officials from one of the State’s utilities descended on the former French colony. And thus, EESL bagged its second project sometime in early August 2014.

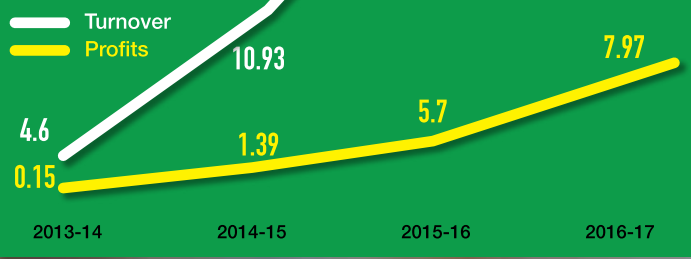
This was close to three times the size of the first project, involving supply of 2 million LED lamps to two districts in Andhra Pradesh. This time again, the good news didn’t come without its set of challenges.

Time was short; the chief minister had set the inauguration date for 2nd October. The EESL team had to work to a tight schedule. And, the news from industry was worrisome. “The industry had a meeting with the MD and his team on August 20. They were sceptical of delivery of such large volumes”, recalls Venkatesh Dwivedi, Chief General Manager (technical), EESL. It was however, made clear that the delivery date was not negotiable. As the discussion progressed, several players argued that there was room to improve the bidding conditions to enable delivery of this volume. “They pointed out that earlier bid in Puducherry had insisted on sourcing the LED chip, a critical component, from

(Opposite page—clockwise from top left) Prime Minister Shri Narendra Modi inaugurating the ‘Ujala’ LED bulb replacement program alongside the Street Light National Program (SLNP) In New Delhi on January 5, 2015; a view of the newly installed streetlights at Puducherry; a view of the newly installed streetlights at Puducherry; LED Street lights at Vishakhapatnam; a resident of Puducherry walks upto a kiosk in the city in early 2015 to buy three LED bulb for \$0.15 cents apiece, where the open market price is over \$9. The bulbs are being supplied through an arrangement between the Puducherry Electricity Department and EESL



Hitting the Roof: EESL Growth since inception
(in Millions US\$)



top global brands. No doubt this was aimed at ensuring quality, it also made the process restrictive. We listened to them and replaced the condition with performance specifications”, says Dwivedi.

This approach induced enormous confidence in the manufacturers as it shored up not only EESL’s credibility but also its willingness to listen. The bulbs were delivered, the launch-inauguration went off successfully and the bulb distribution commenced. However, a few days later, the local EESL manager called to say that the schemed rollout had to be put on hold. The reason was serious and one that had no solution: a cyclone was going to hit the coast of Andhra Pradesh shortly. This was no ordinary storm. When it finally hit the coast on October 16, cyclone Hudhud ravaged the State, causing loss of life and property. The cyclone hit the coastal city of Vishakapatnam at over 100 miles an hour, uprooting electric poles and bringing the city to a standstill.

Chief minister Naidu rushed to the city and oversaw the rescue and rehabilitation operations. The need of the hour was to restore power supply and light up the city streets. For this, Naidu turned to EESL. It was a disaster relief mission and EESL rose to the occasion. It was no small task. As many as 91,000 poles had to be erected and lamps installed in quick time. In six weeks’ time, 65,000 street lights were up and running, enabling the city to limp back to normalcy. The rest were set up over the next few weeks.

Amidst this challenge, EESL did not forget Naidu’s other request. He had asked EESL to ensure that the street lights along the road connecting the airport to the city were lit up when he came visiting it again a fortnight later, on November 9th.

EESL ensured this. No doubt it was symbolic in nature, a step towards restoring connectivity to the city. However, what it did was to enable helped EESL gain the trust of the political class in its ability to deliver energy efficiency products and services on time.

It was a sign of things to come.

On 5th January 2015, Prime Minister Shri Narendra Modi announced and flagged off a national program Ujala, an acronym for Unnat Jeevan by Affordable LED and appliances for All. Under this scheme, Shri Narendra Modi announced that EESL will target to replace 770 million energy inefficient

incandescent bulbs by 2019.

With this, EESL’s journey began on the fast lane.

SOARING HIGH

“This will not work. I cannot deliver”. This refrain was hardly to be expected from EESL MD, that too on the eve of an announcement by Prime Minister Mr Narendra Modi that recognised the energy efficiency firm’s capabilities. However, the MD knew that as much as his firm had done a good job over the previous several months, it wasn’t equipped to deliver on the forthcoming announcement. So, he met the Union power secretary and pleaded helplessness. Power secretary P.K. Sinha assured him that he would strengthen EESL, a commitment, he kept.

The next day, on 5th January 2015, Prime Minister Shri Narendra Modi announced ‘Ujala’ (Unnat Jeevan by Affordable LEDS and appliances for All), a national program for EESL to replace 770 million incandescent bulbs by 2019. It heralded EESL’s arrival on the national platform with a mandate that set it on steep growth path. This was not an easy task.

In its current form, EESL was doing 3 million bulbs per annum. Now, with the PM’s directive, the target had ratcheted to 90 million bulbs per annum, a thirty-fold increase. P K Sinha kept his word. He met the four promoter companies’ chairmen and asked them to put more money into the company; thereafter, the Share capital was raised from \$ 14 million to \$25.4 million. At his behest, they also loaned senior management personnel to EESL. This fortification helped. EESL got down to work, implementing the Ujala mandate.

Ambition begat ambition. The Ujala program ramp did not happen in isolation. EESL also worked on its street lighting program, the Street Light National Program (SNLP). This was inaugurated by Prime Minister Mr Narendra Modi alongside the Ujala program on 5th January 2015. Under this program, EESL went about replacing street lights in cities across the country with efficient LED substitutes.

EESL’s forays went beyond lighting solutions. It turned its attention to the farm sector. The company successfully implemented a few projects in Karnataka and Andhra Pradesh, where replaced inefficient pump sets that lift water from the ground. The scheme known as the AgDSM (Agricultural Demand Side Management) program, left the farmer and the power utility a lot happier. Not only

did the utility save on power bills (since it gives it free to farmers), the farmer got a more efficient and resilient machine that worked even when the quality of supply was poor.

At the end of the year, 2015-16, the diversifications didn't come at the cost of Ujala, the flagship program. The company ended the year selling 90 million bulbs. The accomplishment demonstration that EESL could shift gears in quick time and achieve what was clearly an ambitious target.

This reflected in EESL's financial performance. Turnover vaulted eleven times over the previous year's figure to \$123.5 million, while profits rose four times to \$5.7 million.

Keeping Momentum

Having set a scorching pace for itself, it was now about maintaining momentum. The bulb program was on an even keel. During the next year, 2016-17, EESL now exerted itself on selling other energy efficiency devices.

Diversification

The Ujala national program also began selling energy efficient fans and LED tube lights. Again, owing to the high volume and the efficient procurement process, EESL could sell it well below that available in the market place. As against an open market price of \$6.15-\$9.2 for a 20 W LED tube light, EESL sold the same for close to half that price at \$3.3. The fans, on the other hand, were 30 per cent more efficient and were priced competitively at \$18.46 apiece.

During the year, the Street Light National Program (SNLP) moved at a faster pace. Work in two states Andhra Pradesh and Rajasthan were completed while progress was being made in eight others states, namely, Himachal Pradesh, Punjab, Tripura, Chhattisgarh, Jharkhand, Gujarat, Maharashtra and Telangana. In six other states, Uttar Pradesh, Bihar, Jammu and Kashmir, Assam Odisha and Uttarakhand, EESL had signed up and was about to commence work.

Seeding business

A natural progression from chasing devices was towards buildings. EESL recognised that it was important to assess the efficiency of buildings as a whole since they housed a plethora of energy consuming devices. During the year, EESL signed up with organisations with country-wide offices. These include The Central Public Works Department, Indian Railways and Maharashtra State public works department. It also began conversations with public sector banks to enhance the efficiency of their ATMs.

There is more to life than devices. EESL realised the essential nature of work done by a municipal corporation—especially water supply and sewage disposal—to improve the life of its residents. As part of its Municipal Energy Efficiency Program (MEEP), EESL signed up with several states to improve their public water works and sewage systems with no upfront costs to boot.

On the farm front, EESL made significant progress. It signed up with the Andhra Pradesh government and its electricity supply utilities for supply of 100,000 energy efficient agriculture pumps (AgDSM program). It also concluded pilot projects in Maharashtra and Rajasthan. In a significant move, it developed a solar-based agriculture pumps for Gujarat and Andhra Pradesh (solar AgDSM program).

EESL believes that these are key growth areas and over time, they will yield large business prospects.

Improving welfare schemes

With a view to catalyse government-led education schemes, EESL tied up with Indian Institute of Technology-Mumbai, to develop solar lamps and sell then under schemes set out by the Ministry of New and Renewable Energy (MNRE). This has led to employment opportunities for women as much as provided LED lamps to children in villages across the country. EESL's role has been that of procuring and supplying material for the lamps.

EESL was appointed as the implementing agency for 'Ajay' (Atal Jyoti Yojana), an important government scheme that seeks to illuminate rural, semi-urban and urban areas in

“The LED industry is projected to grow dramatically on the back of the initiatives being taken by the government. It is expected to be approximately 60% of the overall lighting industry by 2020.”

ELECTRIC LAMP AND COMPONENT MANUFACTURERS' ASSOCIATION OF INDIA (ELCOMA)

INTERNATIONAL ENERGY ASSOCIATION STUDY: HOW UJALA AND EESL'S STRATEGY HAS IMPACTED THE INDIAN MARKET



01

India Is Now the
World's Fastest
Growing LED Market

The Indian **LED market value grew by 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.

UJALA has played an important role in this rapid growth.

02

Domestic LED Market
is on the Rise

In 2014, LEDs had only a share of 0.1% of the annual residential lighting market in India.

In 2015, the **LED share of the market jumped to a remarkable 15%**.

03

Economies of
Scale at Work

EESL's LED bulk procurement has also contributed to the **reduction in LED retail market prices from approximately \$12.3 per LED bulb in 2012 to \$3.07 per LED bulb in 2016**—leading to one of the fastest LED price reductions in the world.

This has helped improve acceptance and availability of LEDs in the Indian market.

04

High Quality is
now Priority

EESL's specifications, including the three year warranty requirement, have **ensured that the LED bulbs procured meet high quality standards with current failures at only 0.3%**.

This is helping build market confidence in the product.

the states of Uttar Pradesh, Assam, Bihar, Jharkhand and Odisha, where grid connectivity is less than 50 per cent.

Going Overseas

The skills gained during the steep learning curve over the previous year propelled EESL to look for opportunities overseas. The results during the year were impressive. EESL signed up Memorandum of Understanding (MoU) with several neighbouring countries. These include Bangladesh, Sri Lanka, Nepal, Thailand and Vietnam. The scope of work involved around supply of LED bulbs and LED street lamps, as an extension of the Ujala scheme overseas.

This widening of horizon with a balanced momentum yielded excellent financial results during the year 2016-2017. The company notched up revenues of \$188.8 million, a growth of 52.8 per cent over the previous year. Profits, meanwhile surged 40 per cent to around \$8 million.

New challenges

Meters: As power distribution utilities gravitate towards reform measures, they look for efficiency in every element of their commercial network. A major consumer whose consumption monitoring leaves much to desired is the farmer. EESL has designed a program called the Smart Meter National Program. Under this, the meters 'talk' to the utility manager, without an intermediary. The meters are embedded with a communication chip that relays real time data. This helps the utility straightaway identify the leakages in supply. In October 2017, EESL procured meters at around half the open market price. This procurement came on the back of two deals—



“EESL tender provided us the opportunity to participate in boosting e-mobility in the country, (and) at the same time accelerate our efforts to offer a full range of electric vehicles to the Indian consumers.”

GUENTER BUTSCHEK
MD & CEO, Tata Motors

one to supply three million meters to Uttar Pradesh and another million to Haryana.

Cars: A month before, in September 2017, EESL successfully planted its flag in yet another domain—automotive vehicles. It successfully floated a tender to procure as many as 10,000 electric vehicles (In two phases). This underpins yet another government plan to nudge consumers to shift to electric cars. EESL procured the vehicles at 25 per cent below the market.

“EESL tender provided us the opportunity to participate in boosting e-mobility in the country, (and) at the same time accelerate our efforts to offer a full range of electric vehicles to the Indian consumers,” observed Guenter Butschek, managing director and chief executive officer of Tata Motors, the firm that won the bid.

For EESL, the game has just begun; the vehicle bid is a stepping stone to opportunities in the eco-system for electric cars for example, battery storage and charging stations.

EVOLUTION

Unnat Jeevan by Affordable LEDs and appliances for All—Ujala, EESL’s LED bulb replacement project—is more than just its flagship program. The first word of the expanded acronym reveals an important character of EESL important. Unnat in the national language connotes innovation. From selling LED bulbs only four years back, in 2013, the company now, in late 2017, is selling e-mobility vehicles. The common strand running through this journey is that of innovation, innovative strategies.

The initial strategy

In 2013, when EESL got into selling LED bulbs, it realised that the state of the market—fragmented and miniscule.

So, it engaged with utilities and found a large consumer in the Puducherry Electricity Department. On the back of this, EESL procured bulbs at half the then prevailing market price. The model was carried over to Andhra, where it sold over 2 million bulbs. While utility sale anchored its business, it also set up kiosks to sell directly to consumers. However, this was small in number. EESL was comfortable with the fact that procurement prices were dropping on the back of large volume deals with utilities. From \$4.77 per bulb in January 2014, the price had come down to around \$1.54 in January 2015, when Prime Minister Narendra Modi upended the scope of bulb scheme and declaring it a national project.

With this, EESL's mandate had undergone a drastic upward revision. Now, it had to sell 90 million bulbs in a year.

The challenge now lay in attempting a sharp ramp up in operations. There was significant progress during the initial months. Between April to end-November 2015, the company sold 30 million bulbs. No doubt, it was ten times that achieved during the entire previous year. However, at this rate the company didn't look set to reach the annual target of 90 million bulbs.

The EESL team huddled together and reflected on their strategy. They realised that the existing model of selling through the electricity utility had its limitations. It involved a high degree of compliance and monitoring. The utility had to ensure that all the sales were for real and were being used. After all, there was immense scope for hoarding and trading it, since the bulb cost was half the prevailing open market price. This burden dampened the utility's interest in the bulb replacement scheme. And while business was slowly coming in, it would certainly not improve to the point that EESL could meet its annual targets.

So, what did EESL do?

A new (bold) approach

EESL decided to work backwards to assess the daily volume of sale to meet this target. Once this daily goal was set, EESL took the kiosk route—it set up outlets in cities across the country at a frenetic pace to maximise its direct sale to consumers.

On the other side, it was hoping for further reduction in prices—It bet on the fact that as the sale volume rose, and it went for significantly larger procurements, manufacturers would quote lower prices to them. This, since the manufacturers would see a certainty in the procurement volumes and set up higher capacities. In effect, they would move further in the direction of a high volume-low margin business as opposed to a low volume-high margin model.

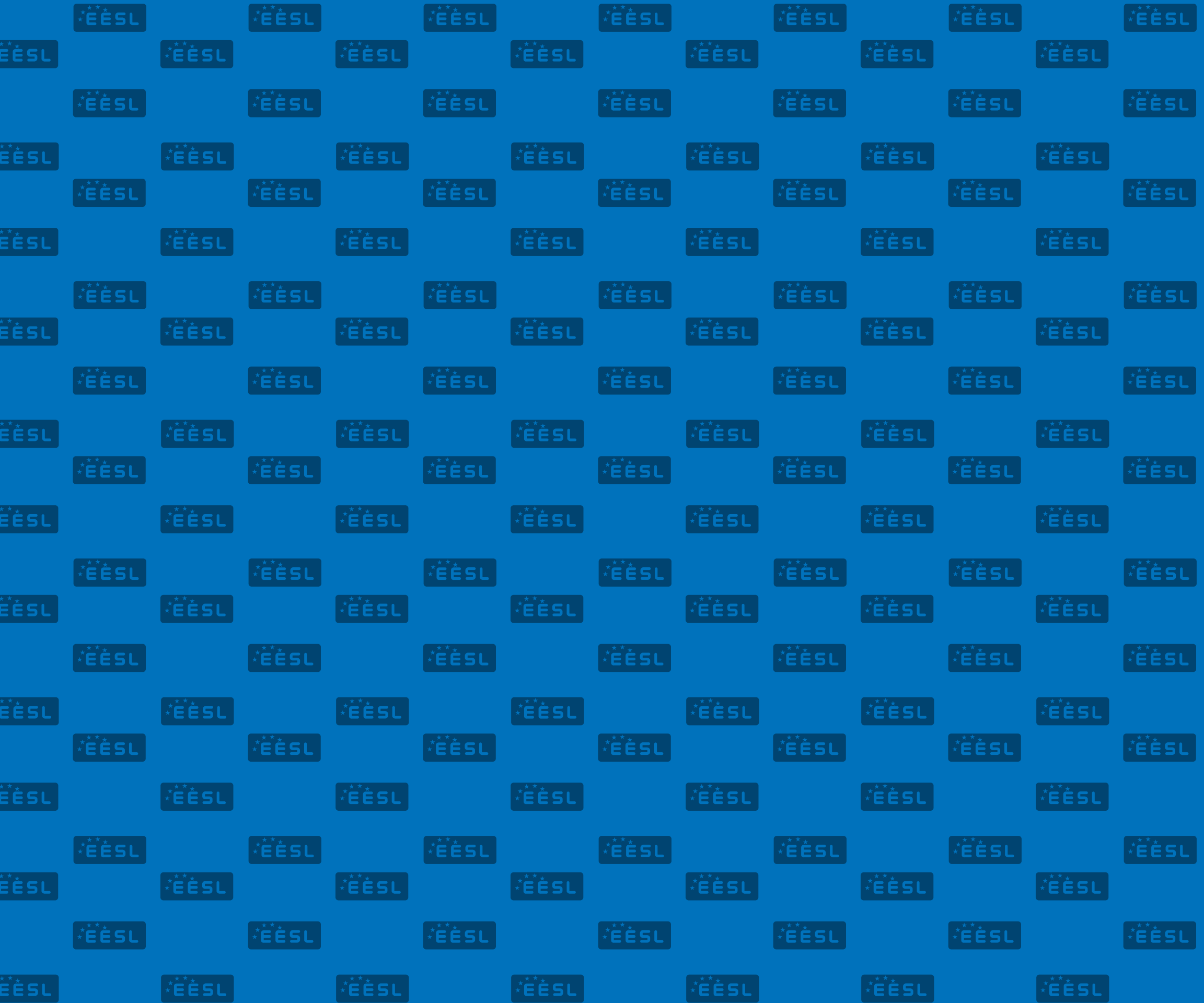
EESL ramped up from a couple of hundred outlets in 2015 to 5000 outlets in two years. In October 2016, EESL got its lowest quote—58 cents a bulb.

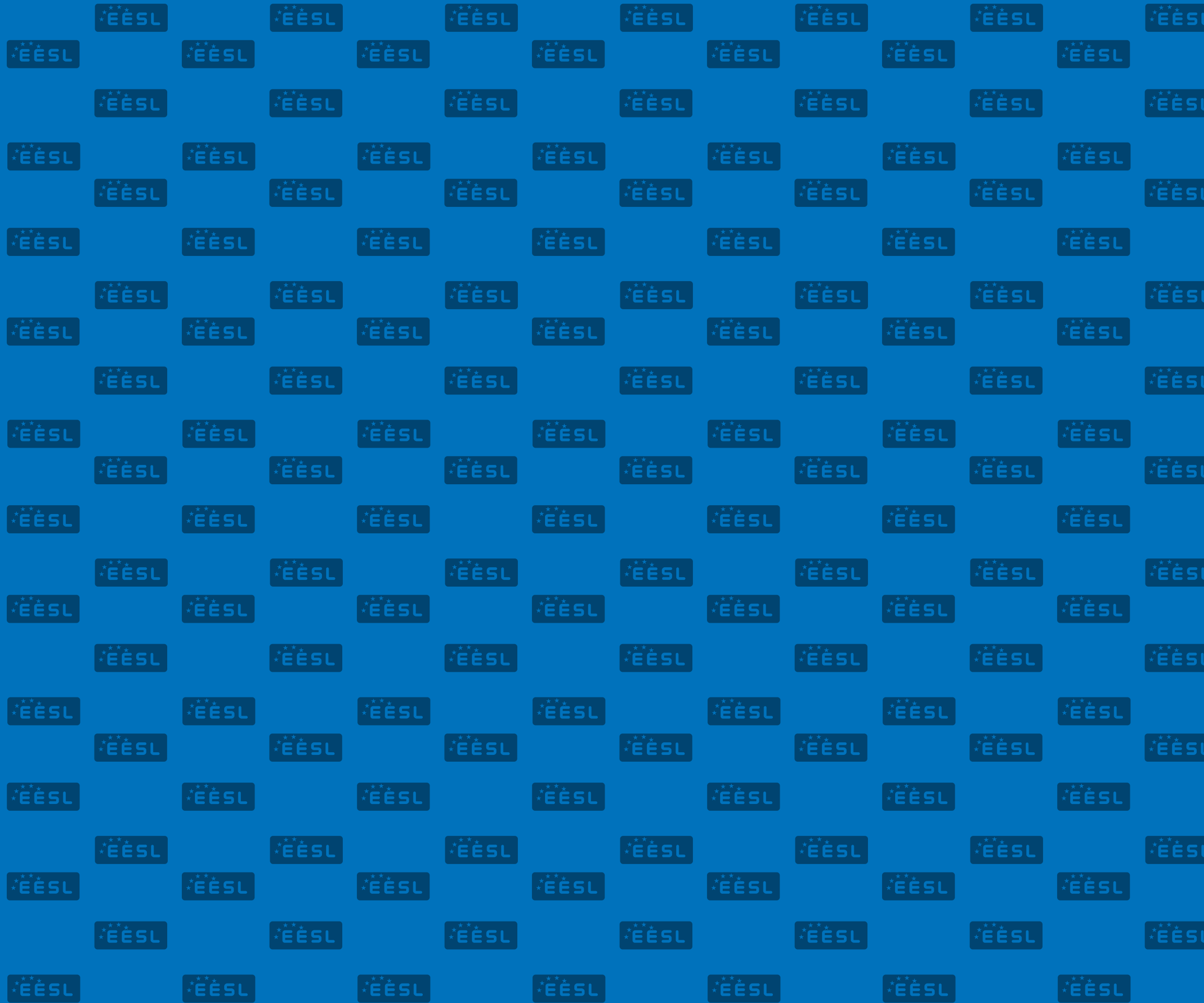
To ensure healthy competition in procurement process, EESL divided the order pie amongst the bidders - so long as the rest matched the lowest price. “Large supplies to consumers across the country had to be complemented with a credible procurement process,” says Rajneesh Rana, Head of Contracts at EESL.

On the institutional side, EESL maintained a highly committed workforce. On the other side, the key person who helped ensure that the hiring didn't falter was A.K. Arora., Advisor (HR), EESL. Arora ensured that EESL picked up the minimum number of permanent employees. The rest were either consultants, or on fixed tenure or outsourced. For instance, in 2013-14, permanent employees represented 21 per cent of the workforce. In 2015-16, this was down to 14 per cent. To keep the non-permanent staff motivated, they are evaluated against stiff targets and if they meet them over a couple of years, they have a chance of getting absorbed.

A wide lens view

At EESL, the process of evolution has left it resilient and robust. The imprint has also fashioned it as a firm that no longer simply sells bulbs or cars. Rather, it sells a service that enables the client to enjoy savings and improved productivity through EESL's innovative strategies that are carefully crafted. Underlying it lies core competencies in demand aggregation, bulk procurement and transparent operations. This facilitates innovative business enablers like pay-as-you-save, risk management, nil upfront investments. All in pursuit of growth. ■







ENERGY EFFICIENCY SERVICES LIMITED

(A Joint Venture under the Ministry of Power, Government of India)

4th & 5th Floor, IWAI Building, A-13, Sector-1

Noida, Uttar Pradesh 201301

Tel: +91-120-4908000

www.eeslindia.org