



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

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# INNOVATING ENERGY

**Energy solutions for the future: What 2021 holds for EESL**

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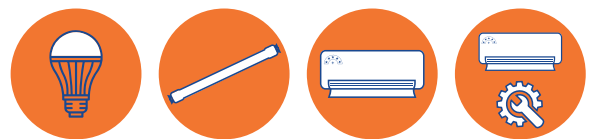
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### Bringing energy efficiency to doorsteps



Our energy efficient appliances are now available on Government e Marketplace (GeM)



## Editor's Note

### Venkatesh Dwivedi

Director (Projects & Business Development)

Energy Efficiency Services Limited

Dear reader,

2021 is poised to be a critical year in our global climate action efforts. With the highly awaited COP26 around the corner, especially in light of the US rejoining the Paris Agreement, along with a number of nations declaring their net zero emissions pledge, we are the cusp of a tectonic shift. This year becomes even more significant due to uncertainties brought about by the pandemic in 2020, which continues to affect policymaking and decision making till date. The pandemic caused the nations across the world to carefully balance their healthcare emergency response and recovery process, with sustainable development.

2021 is thus, a year of immense significance. It is also a year, which has put the need for innovative green solutions in the spotlight. As the challenges in our energy system have become increasingly complex, the solutions too have to keep pace. This edition of our newsletter focuses on this very aspect, and is aptly titled **Energy solutions for the future: What 2021 holds for EESL?**

In "Trigeneration: A clean & reliable energy source with significant untapped potential", we explore the considerable potential for trigeneration technology, which is able to provide simultaneous heating, cooling, and power. We take a look at how large buildings, industries and data centers can benefit immensely with the application of this unique technology. The article "What 2021 heralds for India's e-mobility story" takes a deep dive into how the electric mobility might shape up in 2021, from a policy, implementation and consumer awareness standpoint. "6 years of lighting up India: Deconstructing UJALA & SLNP" captures the success of two of the most successful initiatives in the energy efficiency sector, and examines the learnings that can be used from their success to reinforce future energy interventions. And finally, in the 'In Focus' section, we have captured some of our new partnerships and collaborations, across geographies, along with the formulation of our new subsidiary Convergence Energy Services Ltd (CESL) and its recent projects in Goa.

This newsletter is an attempt to gaze into the crystal ball of the energy sector and explore how 2021 will shape up for the sector and for EESL. It provides us with a glimpse into some upcoming technologies and also traces the growth of key verticals such as e-mobility and tri-generation. With the promise of change that 2021 brings with itself, I foresee a paradigm shift in global climate action efforts and a move towards green recovery.



## 6 years of lighting up India: Deconstructing UJALA & SLNP

### Soumya Prasad Garnaik

Executive Director and Business Unit Head (Lighting)

Energy Efficiency Services Limited

UJALA and Street Lighting National Programme are perhaps two of the most successful large scale energy efficiency programmes in the country. In their six years of existence, they have enabled an array of benefits, across the energy value chain. It is however pivotal for us to look back and reflect on their success, and then replicate them for other interventions. The lessons from the past can serve as the foundation for success in the future.

Launched by Hon'ble Prime Minister, Shri Narendra Modi on 5th January, 2015, UJALA (Unnat Jyoti by Affordable LEDs for All) has emerged as the world's largest zero subsidy domestic lighting programme and has completely transformed the market for LED lighting. Under this programme, EESL has sold over 36.69 crore LED bulbs across India. This has resulted in estimated energy savings of 47.65 billion kWh per year with avoided peak demand of 9,540 MW and estimated GHG emission reduction of 38.59 million tonnes CO<sub>2</sub> per year. Additionally, over 72 lakh LED tube lights and over 23 lakh energy efficient fans have also been sold at affordable price under this programme. UJALA has been vital in making the use of the most efficient lighting technology at affordable rates for the domestic consumers the new normal, and has benefitted them by way of reduced energy bills. UJALA has also enabled a wave of awareness for consumers around the utility of using efficient appliances, leading to marked shift in their buying preferences from low first cost-based purchases to lifecycle cost. Launched with the aim to address India's high cost of electrification and high emissions from inefficient lighting, UJALA's success can easily be traced back to our strategic approach to energy efficiency and our unique bulk procurement model. It has single handedly created a market for energy efficient LED bulbs in India, bringing down the procurement price of the LED bulbs from INR 310 to INR 38. Furthermore, with the rise in demand for LED bulbs, driven chiefly by our strategy of aggregating demand across the country, the domestic lighting industry has received a significant impetus.

Street Lighting National Programme (SLNP), on the other hand, has become a torchbearer for large scale energy efficiency programmes in the country. With SLNP, EESL has installed about 1.14 crore smart and energy efficient LED streetlights across India. This has resulted in an estimated energy savings of 7.67 billion kWh per year with avoided peak demand of 1,280 MW and estimated GHG emission reduction of 5.29 million tonnes CO<sub>2</sub> per year. Moreover, there have been an estimated annual monetary savings of INR 5,210 crore in electricity bills of municipalities. India's streetlights are a key cog of the country's infrastructure and road safety. The success of SLNP can be attributed to a myriad of factors, first of which was EESL's unique strategy of partnering with states, municipal bodies and ULBs, to replace conventional streetlights with LEDs at our own cost with no upfront investment by the municipalities. This has made LED adoption increasingly compelling and attractive. The success of SLNP have also been possible through the close collaboration and support from the Government, Urban Local Bodies (ULBs) and the industry. An increase in awareness on the importance and the potential of energy efficiency has further propelled us on this journey.

Both UJALA & SLNP attest to our diligent endeavours in forging a sustainable and energy efficient India. Both of these programmes have been the signs of positive social, economic and ecological change, improving the quality of life of our citizens, generating prosperity in local communities and providing increased energy access to all.



## Trigeneration: A clean & reliable energy source with significant untapped potential

### Jayesh Goswami

**General Manager**

EPSL Trigeneration Pvt Ltd

India's requirement for commercial and residential space is on the rise. With the uptick in population and rapid industrialisation, more and more urban centers have to be built. This in turn means a surge in energy demand from buildings, which is set to increase by more than 800 percent in 2047, as compared to 2012. This demand, if not met sustainably, can play havoc with our ecosystem and climate change efforts. There is a clear need for low carbon and affordable energy solutions that have the potential to be scaled seamlessly. Trigeneration is one such solution that has recently been garnering attention.

Trigeneration is a technology where heating, cooling, and power are generated simultaneously. It is a proven and reliable technology and has been in use in India for quite some time. However, it hasn't proliferated at scale due to relatively large capital investment required and the cost of fuel linkage. However, the outlook for this technology seems optimistic, largely as swift growth is envisaged in all sectors in the near future. This means the demand for Trigeneration will also witness a surge. We are seeing a development of process industries, big commercial establishments, hotels and hospitals. Each of these require power, heating and cooling, which can be met easily and sustainably through Trigeneration. However, India's trigeneration market is still in its nascent phase and has significant untapped potential.

We have already witnessed an effort from the government towards innovative technological interventions, which can optimise energy use. However, Trigeneration's potential can be realised optimally only through a concerted policy push by the government. Some potential steps can be taken by making representations to the Ministry of Power and Ministry of Petroleum & Natural Gas for preferential tariffs for cogeneration /trigeneration projects and including provisions of open access for procurement of natural gas. Representations can also be made to Ministry of New and Renewable Energy, Central Electricity Regulatory Commission and Forum of Indian Regulators towards inclusion of natural gas based cogeneration /trigeneration projects as renewable energy projects. State governments can also be approached for exemption of electricity duties generated by such projects.

EESL's service offering for Trigeneration comprises of award-winning capabilities of Edina Power Services Ltd., which is a leading Combined Heat & Power (CHP) integrator in UK and Ireland. EESL is performing demand aggregation to uplift the Trigeneration concept in India, through direct and indirect contact with various industries and government bodies. Edina on the other hand, provides over 30 years of capabilities in the deployment of onsite gas-fired power plants in Europe, along with support for selecting the right technology for application development and implementation. EESL and Edina, together are offering a comprehensive solution, which provides a seamless way of utilising natural gas, without the barriers of prohibitive capital investment, by making use of the ESCO model. Without the need for upfront investment, end users can easily unlock business competition and drive growth, leading to innovation, greater efficiency and smarter ways of working.



## What 2021 heralds for India's e-mobility story

### **Polash Das**

**Manager - Technical**

Energy Efficiency Services Limited

Electric mobility, or e-mobility, was first introduced in India in the year 2011. Its importance has been becoming increasingly apparent, especially in the context of efforts directed at mitigating climate change and the targets outlined under the Paris Agreement. There is growing awareness among consumers about the environmental impact of economic and industrial activities and of, course, transportation. Vehicular emissions are recognized as a significant contributor to greenhouse gas emissions and other air pollutants. Moreover, the fuels used to power internal-combustion-engine (ICE) vehicles are fast depleting huge amounts of the planet's non-replenishable natural resources. Electric vehicles (EVs) are widely acknowledged as one of the solutions for addressing these issues.

The Indian Government has been trying, over the years, to enable an environment conducive to the adoption of EVs and the proliferation of e-mobility by introducing policies and financial incentives for automobile companies, component manufacturers, consumers, and other stakeholders. The growth of the EV industry will depend, to a large extent, on the establishment of EV charging infrastructure across the country. Once that is in place, we can expect to see consumer demand and increased participation by the industry in strengthening the EV ecosystem. Meanwhile, there are many reasons why EVs are increasingly becoming a realistic and viable option. There are several EV models by various automobile companies in the market already and many more in the pipeline. The driving range of EVs is already comparable to that of ICE vehicles. Even prices are reaching parity, if we factor the various subsidies, financial assistances, and total cost of ownership. Additionally, there are some other factors that will drive the EV story to greater heights in 2021 and beyond.

### **EV technology is improving with every passing day**

The concept of EVs is very technology-driven. Among consumers, the first movers in adopting EVs will probably be the ones who are tech savvy. EV technology will determine not only driving experience but also the user-friendliness of the charging stations. Efforts are on to increase the charge density of EV batteries by experimenting with various types of battery compositions. Reduction in the EV battery charging time and the presence of a nationwide EV charging network with easy accessibility of charging stations will go a long way towards improving EV adoption in the country.

### **Financing options and incentives for EV purchase**

The price parity, or cost savings, that consumers enjoy with EVs as compared to ICE vehicles will play a big role in encouraging EV adoption. The availability and accessibility of affordable, convenient financing options will be another key aspect. Many state governments are offering financial incentives to consumers switching to EVs; these include cash subsidies and reduced taxes/charges. While such efforts will help in boosting EV adoption initially, the government cannot be expected to bear the burden of subsidies forever. Sustaining the EV momentum will therefore require active participation by the private sector. Financial institutions should come forward with more affordable, convenient, and accessible options for financing. Businesses should rethink their operational models to use EVs in their fleets for last-mile connectivity. There is also a need for industry players to lead the way or collaborate for establishing a robust network of charging stations and strengthening the EV ecosystem.

## **Government policies are encouraging and incentivizing the EV play**

The Indian government is committed to realizing the EV vision. The FAME (Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles) scheme by the Central government was an important step in this direction. Additionally, various state governments are formulating their own policies for EVs and for charging infrastructure. Government's intervention and policy support will continue to provide the base for evolution and the growth of India's EV story.

## **Start-ups and entrepreneurs as game-changers**

The EV space is quite different from the conventional ICE vehicle business, which is dominated by established players. There is great scope for innovative business and product ideas and attracting investments in the EV space; the success of ride-hailing companies or battery technology companies is proof of this fact. In 2021 and beyond, fundraising activities are likely to pick up more Indian startups and entrepreneurs foray into different segments of the EV space. Ideas and innovations for EV battery technologies, charging stations, and other aspects will shape-up the future of the industry.

As our thinking shifts from fossil-fuel-based mobility to e-mobility, the vision of a brighter, healthier world comes more clearly into view. The future is green, and this decade is set to be revolutionary for mobility in India.



## In Focus

### **EESL signs MoU with Coal India Limited to implement energy efficiency and resource conservation measures for de-carbonisation of its plants**

Energy Efficiency Services Limited (EESL), a joint venture of Public Sector Undertakings (PSUs) under the Ministry of Power has signed a Memorandum of Understanding (MoU) with Coal India Limited (CIL) for a strategic partnership for energy efficiency and resource conservation for de-carbonisation of CIL and its subsidiaries.

The MoU comes on the back of a decision by CIL to undertake energy efficiency measures across all CIL facilities. Under this association, EESL will carry out studies to identify opportunities for CIL to adopt clean energy and energy efficient practices, implement its energy efficiency projects with innovative financial models in a customised approach, monitor the impact of implemented energy efficiency projects and also support CIL and its subsidiaries in training and capacity- building of its plant workers.

### **Convergence Energy Services Limited commissions 1 MW of Goa's first solar project**

- Achieves first milestone of its 100 MW integrated project
- Goa has also set on the path of self-reliance as nearly all of Goa's current power requirement till now was met by other states

Convergence Energy Services Limited (CESL), a wholly owned subsidiary of Energy Efficiency Services Limited (EESL), commissioned 1 MW of Goa's first solar energy project. This is CESL's and Goa's first milestone in this 100 MW project.

The project was inaugurated by the Honorable Minister Shri Nilesh Cabral last year on the Liberation Day of Goa on 19 December 2020. The project integrates the delivery of clean, renewable, decentralised energy from solar feeders with energy efficient pump sets and LED lamps for rural homes.

Of Goa's total 600 MW power demand, 100 MW from solar energy is a big move towards energy independent and Green Goa. The commissioning of this project also sets the state on the path of self-reliance as nearly all of Goa's current power requirement was met by other states.



## Chief Minister of Goa inaugurates first public EV charging station installed by Convergence Energy Services Limited (CESL)

The Chief Minister of Goa, Dr. Pramod Sawant inaugurated the first public Electric Vehicle (EV) charging unit as part of the Green Goa Initiative. The EV charger has been installed by Convergence Energy Services Limited (CESL), a wholly owned subsidiary of Energy Efficiency Service Limited (EESL) at the Assembly Complex of Goa Legislative Secretariat. It is a 142 KW fast charger and is first among the 12 public EV chargers to be set up by CESL. The Chief Minister also flagged off two Electric Vehicles — a Hyundai Kona and a Tata Tigor from Goa Legislature Secretariat, Assembly Complex, Porvorim.

So far, three high-capacity combo EV chargers of 122-150kW, Type 2 AC standards have been installed that can charge long range EVs like Hyundai Kona, Tata Nexon, and Maurice Garage (MG) EV variants. Adjoining to these EV chargers, Bharat Standard DC001 EV chargers are planned for recharging moderate range EVs such as Tata Tigor and Mahindra e-Verito. This shall be completed by February 2021. The establishment of EV charging units is part of the agreement signed between EESL and Goa Energy Development Agency (GEDA) on November 6, 2020





## EESL signs agreements with Bihar utilities to install smart prepaid meters in the state

- 2.34 million smart meters are projected to be installed in the state
- Marks the commercial launch of smart prepaid system for Bihar utilities

Energy Efficiency Services Limited (EESL), a joint venture under Ministry of Power, Government of India signed agreements with South Bihar Power Distribution Company Limited (SBPDCL) and North Bihar Power Distribution Company Ltd (NBPDC) for the installation of 2.34 million smart prepaid meters in Bihar, under its Smart Meter National Programme. This is the first time that smart prepaid meters are being installed at this scale, and are set to have a transformative impact on the state's energy landscape. The agreement was signed in the august presence of Hon'ble Energy Minister, Government of Bihar, Shri Bijendra Prasad Yadav.

## EESL collaborates with Ras Al Khaimah Municipality to drive energy efficiency and renewable energy programmes in the Emirates

A ceremony was held at Rixos Bab Al Bahr, Al Marjan Island, while observing social distancing measures, to sign a Memorandum of Understanding (MoU) between Energy Efficiency Services Limited (EESL) – a joint venture of Public Sector Undertakings (PSUs) under the Ministry of Power, Government of India – and Ras Al Khaimah Municipality for a strategic collaboration for energy efficiency and clean energy projects. The MoU was signed by H.E. Munther Mohammed bin Shekar, Director General of Ras Al Khaimah Municipality and Mr. Saurabh Kumar, Executive Vice Chairperson, EESL Group.



EESL Energy Solutions LLC, a JV of EESL and Hansa Energy Solutions LLC is a key step towards tapping the immense potential for #EnergyEfficiency in the Middle East & Africa. We're glad to announce the inauguration of its office in Dubai, UAE.





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

# Bringing energy efficiency to doorsteps

Our energy efficient appliances are now available on Government e Marketplace (GeM) (**gem.gov.in**)

Government e Marketplace (GeM) facilitates online procurement of common use goods & services procured by government organisations.



## **UJALA LED Bulb**

Energy Efficient 9 Watt LED Bulb with 2 years free replacement warranty



## **UJALA LED Tubelight**

Energy Efficient 20 Watt LED Tubelight with 2 years free replacement warranty



## **Super-Efficient 1.5 Ton, Split 5-star Inverter AC**

with 5 years compressor and one-year comprehensive warranty



## **Installation & Commissioning**

of Super-Efficient 1.5 Ton, Split 5-star Inverter AC



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