

# INNOVATING ENERGY

## Smart Cities: A vital component of India's efforts for a sustainable future.



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## Editor's Note

**Arun Kumar Mishra**

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Dear Reader,

India's efforts in energy conservation have been commended globally and the world is acknowledging the leadership India is demonstrating in energy efficiency through its simple, transformative, and cost-effective solutions. India's Smart Cities Mission is one such solution which aims to promote cities that provide core infrastructure and give a quality life to its citizens, while enabling a clean and sustainable environment and application of 'Smart' Solutions."

Smart Cities require an integration of all energy uses, as well as a robust, reliable, and secure communication infrastructure to track and collaborate in time and space across the energy value chain. Smart meters play a key role in enabling this transformation. Smart meters are the first step towards the creation of a smart grid, as they enable a two-way communication between the DISCOM and its consumer. A smart grid provides the requisite infrastructure for enabling new energy business models for smart cities. Electric mobility is another major aspect of smart, efficient, and low-carbon transportation that will be crucial for Smart City aspirations. While the Indian Government has announced financial support for EVs and the charging infrastructure which is the hitherto-missing link, now being addressed. There are other key aspects to the smart cities mission – such as scalable sustainable cooling solutions and smart LED lighting infrastructure. This edition of EESL's newsletter, themed '**Smart Cities: A vital component of India's efforts for a sustainable future**' seeks to deep dive into all of these aspects of smart cities.

In '**Digitalisation along with smart metering programme is a critical solution for turning around the utilities**' we delve into how a digitalisation drive, supported by large scale adoption of smart metering can enable transformation for the power utilities in the country. In the article '**Robust EV charging infrastructure will drive India's progress towards sustainable mobility**', we shine the spotlight on how the combined efforts of the government, the private sector, and start-ups can help India in figuring out a holistic approach for ushering its people into an era of sustainable, electric mobility. '**Smart LED Lighting: The time is right for widespread adoption**' talks about improved energy efficiency in existing buildings and the need for swift implementation of the smart LED lighting in India. "**District cooling systems: A viable solution to make cooling more sustainable**" explores the potential of District Cooling as a modern and efficient way to provide air-conditioning to clusters of buildings in cities and on campuses having high cooling density.

EESL always recommends of deploying EVs for public transport and availability of public charging stations as crucial identity pointer for Smart Cities. In similar view, encouraging use of Energy Efficient Equipment will be a formative step for facilitating at least 20% of generation from local renewable sources of energy will complete the energy ask for smart city. Another step for achieving environmental sustainability is promoting Energy Efficient and Green Buildings – up to the momentum of at least 80% – in order to meet or exceed our NDC targets. We also believe that India's startup ecosystem is an integral part of its socio-economic development. Therefore, EESL has proposed availability of adequate social infrastructure in the form of incubation centers, the objective of which will be to support and encourage effective functioning of startups.

The smart cities of the future have to be extensively interconnected and technologically enabled for end user collaboration. Smart, IoT backed solutions, across sectors such as cooling, power generation, transportation and lighting will be integral for smart cities. The amalgamation of technology and energy has potential to drive India's smart city mission as shining example of sustainable development, when supported by congruence of all stakeholder's goal.



## **Digitalisation along with smart metering programme is a critical solution for turning around the utilities**

**Anil Rawal**  
MD & CEO  
IntelliSmart

Digitalisation provides viable solution for improving Discom efficiency in at least four ways: next level of operational control through informed decision making and remote operations; improving network efficiency through better forecasting and planning of resources; delivering new level of experience to consumers; and extending the operational lifetime of assets. As per IEA estimates, overall savings from these digitally enabled measures could be in the order of USD 80 billion per year over 2016-40, globally. Such digital technologies that drive efficiencies at Discom level include but are not limited to smart grid, Advanced Metering Infrastructure (AMI), substation automation, Internet of Things (IOT) based interventions, advanced data analytics through Artificial Intelligence/Machine Learning for better operational and commercial efficiencies.

Conventionally, some private entities/utilities have been entrusted with the responsibility of undertaking digitalisation for improving performance of area under their control. However, since privatisation has seen limited success in the past, the digitalisation also has not moved much in India. Hence, need of the hour is to enable digitalisation as a supplementary initiative along with smart metering across all utilities in the sector.

### **Smart Metering forms the backbone of digitalisation**

The smart combination of IT and operational technology has enabled fast-paced implementation under smart meters program of RDSS. Smart meters combine the benefits of real time 2-way data communication for better decision making with remote operations through connect/disconnect capabilities. Realising the plethora of advanced capabilities that smart meters provide, Power Ministry targeted to install 250 million smart meters across the country. The DBFOOT model provides value proposition to the Discoms and consumers by ensuring benefits of scalability, reliability, efficient control, and economies of scale resulting in cost-effective implementation.

While large scale bidding is underway, the Power Ministry's vision needs to be realised by the Discoms in its true spirit as many states that have recently launched tenders have chosen to make serious deviations from the SBDs. Such deviations include but are not limited to restriction to participation by large-scale developers, structuring of contracts with one-sided provisions such as complete absence of Discom Event of Default clause, absence of provision of appropriate payment security mechanism, no assurance on timely payments, Discoms' failure to make payment or non-maintenance of payment security not provisioned as Event of Termination, irrational termination payments, etc. Furthermore, there are many Discoms that still prefer capex mode with small-scale projects risking digital islanding through small pockets of differential smart metering solutions. This jeopardises all efforts of implementing seamless smart metering solutions. Hence there is an imminent need to guide the Discoms for implementing smart metering solutions in BOOT model under the aegis of SBDs.

## Need to co-opt the data analytics and artificial intelligence with the RDSS programme

Smart meters provide humongous quantum of invaluable data related to various insights about consumption patterns to the utilities. The deeper analysis of the data through applications of Artificial Intelligence and Machine Language can draw various operational and consumer-oriented conclusions, having potential for enhanced revenue profiles for utilities and various value-added services for consumers. Data Analytics can enable flexible and efficient consumption of electricity, improved visibility of network use, and enhanced control of power systems.

The other critical application of Data Analytics is in predictive and reactive theft detection of electricity by errant consumers. The application of data analytics includes more efficient and cost-effective network asset management, billing insights and demand forecasting. Digitalisation and Data Analytics are complimentary to each other and collectively offer significant upside to the utilities while implementing smart metering program under RDSS programme. For realizing the gains of digitalisation, a parallel programme needs be run along with RDSS on data analytics and artificial intelligence applications. This apparently is under active consideration by the government and can hoped to be implemented soon. Smart metering along with digitalisation drive would be a complete package of transformation for the power utilities in the country.

