

EXAMPLE 1 ENERGY EFFICIENCY SERVICES LIMITED A JV of PSUs under the Ministry of Power

INNOVATING ENERGY SEPTEMBER 2020 | EDITION 21

Smart Meters: Catalysing transformation of Indian power sector

Inside Stories



Editor's Note

Venkatesh Dwivedi Director (Projects & BD) **Energy Efficiency Services Limited**



Policy roadmap for implementation of Smart Metering

Arun Kumar Mishra Director Project Management Unit (NPMU) of National Smart Grid Mission (NSGM)



Efficient implementation of Smart Meters for an 'Atmanirbhar' India

Jitendra K Agarwal Joint Managing Director **Genus Power Infrastructures Ltd.**



Smart Meter benefits to **DISCOMs and CONSUMERS**



Launch of India's first EV charging plaza



Convergence of Clean Energy Transitions

Saurabh Kumar **Executive Vice Chairperson Energy Efficiency Services Limited**





Venkatesh Dwivedi Director (Projects & BD) Energy Efficiency Services Limited

Dear Reader,

The economic prosperity of a nation hinges on the health of its energy ecosystem. A robust and thriving power sector is thus a prerequisite for rapid growth and development. India's power sector has traditionally been mired in inefficiency, partly due to the high losses for its distribution companies (DISCOMs). These losses can be traced back to a myriad of maladies, with power thefts, transmission losses, billing inefficiency and unpaid dues being some of the major concerns. Smart Meters have emerged as a powerful tool in India's arsenal, in reforming the power sector. It is injecting transparency and accountability into the sector, driven by the power of digitalization.

This newsletter seeks to explore role of smart metering in transforming the power sector, its implementation, and the future roadmap. In this edition, we trace the journey of smart metering and look at the impact it has had till date. "Efficient implementation of Smart Meters for an 'Atmanirbhar' India" builds a compelling case for smart metering and presents its gamut of benefits, across the energy value chain. It also showcases the role of smart metering in ramping up indigenous manufacturing in the sector. "Policy roadmap for the implementation of Smart Metering" delves into India's policy and regulatory landscape by tracing the various steps undertaken by the government to stimulate the adoption of this innovative technology.

Smart metering is essential and imminent. It is currently the single most important technological innovation for the power sector, as it lays the foundation for the creation of a new energy ecosystem. Building a smart grid and subsequently smart cities can begin only when smart metering has permeated into India's power sector. We have thus, managed to identify the tools for the metamorphosis of the power sector. The need of the hour now is to increase their adoption, with speed and scale.



Policy roadmap for implementation of Smart Metering

Arun Kumar Mishra

Project Management Unit (NPMU) of National Smart Grid Mission (NSGM)

Smart metering has emerged as a potent tool for the creation of a new energy paradigm. It is also at the heart of building a Smart Grid in the country. Smart grid is essential for the transformation of India's DISCOMs and currently has an array of driving forces behind its creation. According to the ISGAN survey, the tailwinds behind smart grid are system efficiency improvement, reliability improvement, renewable targets, enabling new products services and markets, enabling consumer choices and participation and reducing O&M costs.



The survey also highlights the technology options for the achievement of above objectives, with the smart metering infrastructure being the most pivotal one. Keeping in view the immense impact of smart metering initiatives on grid transformation, the Government of India has extended policy support and guidelines for advanced metering infrastructure roll out. It has also issued an advisory for shifting to smart/prepaid meters within next three years.



The government, through the National Smart Grid Mission (NSGM) has thus began implementation of smart metering on a mission mode, and has undertaken the following steps:

- Conducting a workshop for deliberation on business models to roll out AMI
- Standardisation of AMI requirements
- Creation of a standard bidding document for AMISP roll-out in op-ex mode

These steps have been undertaken in a bid to stimulate DISCOMs to implement AMI on their own. The Ministry of Power has also supported DISCOMs through IPDS and NSGM projects, by providing funding up to 30% by the way of grants, to enable them in rolling out smart metering projects. On the technology front NSGM (Erstwhile ISGTF) has provided 50% capital subsidy for assessing the product and process maturity, as a part of smart grid pilot projects (2012 to 2015). The recent assessment of the pilot project has thrown impressive numbers as far as reduction in AT&C loss is concerned, as seen below.



The regulators have also been receptive to the idea of AMI systems and have encouraged smart metering implementation, both as a special project or as a part of multi-year tariff petition. The Model Smart Grid Regulations issued by the Forum of Regulators also lists AMI as the first component for Smart Grids. Furthermore, the Pay-As-You-Save (PAYS) model has been accepted more widely and DISCOMS such as UPPCL have adopted smart metering with speed and scale, implementing the single largest AMI roll-out in the country. Another benefit of smart metering adoption is that the DISCOMs that leverage consumer insights through data analytics of AMI, then bring on board regulators who are always looking for reliability and efficiency improvements.

Another key development in the sector, is the move towards enhancing the rights of consumers, which was highlighted in the draft rules published under **Draft Electricity (Rights of Consumers) Rules, 2020 for comments**. There is a need for transparency in the sector at the consumer end and it can only be provided by a robust AMI system. This was demonstrated perfectly by MPMKVVCL in Indore, as it rewarded the MSME responsible for maintaining a good power factor and penalising those that are burdening DISCOM infrastructure.

We are still in a nascent phase of the transformation of the power sector and are poised to witness rapid growth and considerable potential impact. I remain confident that EESL will continue to lead the way during this metamorphosis.



Efficient implementation of Smart Meters for an 'Atmanirbhar' India

Jitendra K Agarwal Joint Managing Director Genus Power Infrastructures Ltd.

India is home to 1.38 billion people, making up for 18% of the world's population. Energy demand in the country will continue to rise. If we are committed to a cleaner & reliable energy outlook, then we need all industry players from federal, central and state-level government to energy policymakers and utilities, to create a robust policy framework across the energy sector to enable the mass roll out of Smart Meters.

Smart Meters provides an end to end solution in alignment with field and IT infrastructure. It also caters to the requirement of Stakeholder Awareness, Data Analytics, Cyber Security & Consumer Engagement. Deployment of Smart Meters has also been linked with the consumer's consumption pattern and AT&C losses of the utilities, which would in return benefit the utilities with increased revenue generation, which was not possible otherwise in case of conventional static meters.

Smart Meters are a win-win situation for both utility and consumers. It is an integral element in a Smart Grid, resulting in a paradigm shift in how energy is delivered and consumed. With communication advancement, enablement and deployable quotient, its reliability up to the end points have surpassed high quality assessment. Based on technology support, higher SLA in data collection could be promised and delivered. Smart Meters are a game changer where utilities have a control to have a mix of prepaid and postpaid connections with centralized control to change from one mode to another without field visits or change in the infrastructure deployed.

Smart Meters are proving to be prudent solutions, reaping benefits for both consumers and utilities alike. Consumers get greater control over the use of electricity by providing detailed information about their usage and consumption patterns helping them in planning expenses better. It also provides more accurate reading of their electricity consumption to the utility, which in turn can help the consumers to make informed decisions to choose energy savings solutions. For utilities, Smart Meters will provide a simple overview of the entire grid at a click of a few buttons. Utilities with greater clarity and accuracy of data will have a much faster response rate during outages and when resolving faults. It also helps utilities to serve a wider consumer base at much higher KPIs when it comes to energy reliability.

Implementation of Smart Meters is the first step in paving the way for a smart grid, which will act as a backbone towards India's Smart City Mission and cleaner energy path.

Another dimension is to deliver information in the hands of utility operational personnel and consumers via mobile apps. Both utilities and consumers have the information at a periodicity, a possibility that we can't even imagine in the past or in any other form of metering. Consumers are experiencing electricity delivery as a service in a true sense.

Under the able guidance of our Honorable Prime Minister Shri Narendra Modi, complemented with a visionary Ministry of Power, the Indian power sector is going to shift top gear. The aim is to achieve 'Electricity for all' with a quick deployment of 240M Smart Meters in the next three years. I believe that India's energy outlook will continue to remain promising, pushing boundaries to connect the entire country via Smart Grid, where Smart Meters will play a key role. We are confident that locally, the industry is capable of supporting, delivering and servicing Smart Meters, thereby helping the nation to become more 'Atmanirbhar'.

Smart Meter benefits to DISCOMs and CONSUMERS



India's first public charging plaza, set up by EESL & NDMC at Rafi Marg, New Delhi was inaugurated on 20th July 2020. This charging plaza can charge 14 e-cars at the same time.



Convergence of Clean Energy Transitions

Published on August 20, 2020



Saurabh Kumar Executive Vice Chairperson, EESL

The energy sector, in particular the Power sector, is moving towards a transition not witnessed in over a century. The time honoured standard wires and transformers business, with centralised power units through large country level grids, is giving way to a decentralised, intermittent and dispersed system. It is estimated that the energy demand will rise (in 2040) by almost one quarter, due largely to population growth and urbanisation. Further, more than 40% of the energy supplied will be from renewables, as countries pursue decarbonisation, as compared to a global average of around 20-25% as on date.

The concerns of climate change will make coal a less likely option for base load power and issues related to proliferation and safety would not allow nuclear power to fill in the base load gap. In this backdrop, the energy sector transitions that will take place are as under:

- a) Electric mobility will become attractive, particularly to a developing country like India, from the stand part of operational affordability, energy security and savings of foreign exchange due to import substitutions.
- b) Solar power will dominate the new installations
- c) Digitisation of the grid will become pervasive and will allow real time response to demand and supply
- d) Cooling demand, particularly in tropical countries like India, will perhaps be the single biggest driver for demand and in turn will make grid peakier, as has been the case globally.
- e) Natural gas will be a candidate to replace coal for base load as well as for balancing requirements. The impact, due to higher cost, on affordability will be an issue for policy makers to deal with particularly when more than 20 GW of gas based capacity is stranded in India
- f) Battery storage, both at supply (bulk) and demand side will emerge as a technically viable solution for most of the above challenges

The drivers of the new energy sector are fundamentally different from the ones that have shaped the way the sector has evolved over time. The challenges indicated above will necessitate innovations in off-grid solar and wind generation, electric vehicles (EVs), battery storage, etc., making them more accessible and affordable. Digitisation of the sector through smart meters and smart grids, Artificial Intelligence, big data analytics, blockchain and the Internet of Things will enable real time optimisation of supply and demand disruptions to the traditional business models. The energy system will therefore be fundamentally different to that of today, requiring new innovative policies and regulations, along with financing and business models. Traditional ways of managing utilities, grids, systems and controls will be disrupted, with risks and opportunities mounting. Managing such significant, interdependent changes will demand flexibility from energy companies as they adjust to the new normal. Convergence of policies and regulations will be the key drivers for making this transition sustainable, scalable and affordable in our quest for a decarbonised world. This will also stimulate private investment in the sector. Digitisation will help in real time operations and flexibility, emerging as the catalyst for the creation of the new energy sector.

Blog link - https://www.linkedin.com/pulse/convergence-clean-energy-transitions-saurabh-kumar/?trackingId=yckQzNT5KtQ5G6nrpgrKtQ%3D%3D