Is the smart meter programme under UDAY really smart?

BY IANS | UPDATED: SEP 19, 2018, 09.01 PM IST

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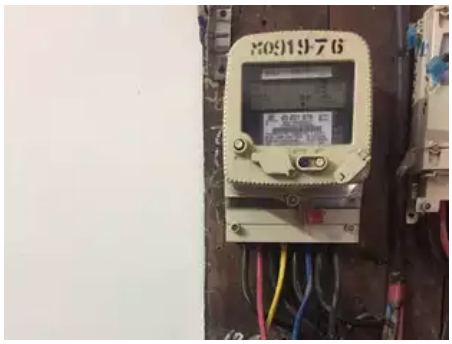
By Rishu Garg



A tampered power meter

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The key to the success of a smart meter implementation programme is its ability to provide reliable electricity consumption data, to be used for plugging operational inefficiencies in the system.

This needs smart planning and a smarter execution. However, the poor progress of the smart metering initiative under Ujwal Discom Assurance Yojana (UDAY) raises serious concerns regarding planning and execution of the programme.

The Indian government launched the UDAY scheme in November 2015 to address the ailing operational and financial health of distribution companies (Discoms). It mandated the installation of smart meters -- for consumption above 500 units per month (by December 2017) and above 200 units per month (by December 2019).

The scheme aimed at improved data tracking and monitoring in order to reduce aggregate technical and commercial (AT&C) losses. But despite several initiatives and mandates, the uptake has been substantially low.

Take Karnataka for instance: Out of 137,456 consumers targeted under the 500 units/month category, only 610 have installed smart meters (0.4 per cent). Similarly, in the 200 units/month category of consumers, only 1,876 of 2,91,650 consumers (0.6 per cent) have installed smart meters.

Discoms attribute reasons such as high cost of implementation, lack of skilled manpower and data integration and inter-operability issues to the slow uptake. However, a closer look at the scheme reveals that challenges lie in the implementation plan itself.

The scheme plans implementation of smart meters on a consumption basis; thus, smart meters are dispersed geographically posing considerable operational, logistical and project management challenges for both Discoms and the implementing agency.

Most importantly, this does not allow actual auditing of energy consumption as the data is dispersed across multiple feeders and cannot help Discoms in interpreting consumption in that area.

For instance, in Tamil Nadu, only five per cent of the total consumers (scattered over the entire state) consume 500 units/month or above. Similarly, consumers with 200 units/month consumption are also spread across the state. This causes problems for data integration, especially considering that AT&C losses are calculated at the feeder level and consolidated at the section office level.

The absence of consolidated data at the feeder level affects the efficiency and accuracy of billing and collection. Therefore, metering these consumers would not support the desired objective of reduction the losses.

One possible solution to accelerate the pace of smart meter installation is by picking up an entire 11 kV feeder, as a pilot study, instead of implementing it on a consumer category basis. The Indian Smart Grid Forum (ISGF) also promotes the idea of deployment of smart meters for all consumers associated with a feeder.

This would benefit the discom, which would now be able to audit energy consumption real-time, for an entire feeder. The energy auditing would support the tracking of AT&C loss in real-time. Once the losses are measured correctly, Discoms could identify measures to reduce them.

In Karnataka, CESC has implemented the smart metering pilot project for 14 feeders where all the consumers associated with the particular feeder are installed with smart meters. CESC has experienced benefits such as reduction in peak load consumption, automated meter reading & billing, and reduction in AT&C losses.

Similarly, the Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL) in Vishakhapatnam is conducting a pilot

study by installing smart meters for an 11 kV feeder with 27 distribution transformers, and 1,608 consumers.

In order to ensure that Discoms reap maximum benefit from the pilot, a field survey to identify the most suitable feeders may be required. This should take into consideration feeders with high AT&C losses, suitable consumer mix and suitable communication technologies to gather smart meter data.

It should also take into consideration the volume of energy input to the feeder, as any reduction in AT&C losses for such feeders will have a bigger impact on the Discom's revenue.

In addition to tracking losses, smart meters can also be used to monitor other parameters such as power availability, voltage fluctuations, reliability of restoration, and load redistribution depending on results monitored. A proper technical evaluation of features of smart meters, both pre and post implementation, is important.

An impact assessment of the pilot project, following implementation, will reveal the gaps therein and assess whether the project can achieve the desired objectives. These need to be taken into consideration and addressed before a large-scale roll out of the project.

Consolidating data at the feeder level will not only reduce the cost of implementation but also allow Discoms to understand specific challenges to loss reduction in an area. More importantly, it will help Discoms witness the improvement in energy efficiency that smart metering can bring and thus motivate implementation of the scheme.

(Rishu Garg is a Senior Research Engineer in the Energy Domain (Power) at the Bengaluru-based Center for Study of Science, Technology and Policy [CSTEP], a research-based policy think tank. The views expressed are those of CSTEP.)