

## **Recommendation of the Task Force**

In pursuance to the decision of the OERC, the task force after studying the latest developments on smart metering projects in operation elsewhere in India and analysing the ground realities in the DISCOMs of Odisha recommends the way forward for implementing smart metering in the following paragraphs.

### **7.1 Criteria for Identification of area in DISCOM for SMART METERING SYSTEM implementation**

In rural areas because of remoteness of the place, it is difficult to enforce discipline among the consumers, resulting in high AT&C loss. Besides they suffer from low RPU coupled with weak communication network. However, the communication network which is the backbone of any smart metering system is more reliable in compact Urban/Semi Urban areas. Further a high RPU combined with moderate AT&C loss in a compact Urban/Semi Urban area is preferable as it is likely to be more effective and administratively convenient to enforce, yielding a positive result within a short span of time. This can set as a model for introduction of smart metering in other areas. Therefore it is proposed to implement this in Urban and Semi Urban areas and be prioritised in the following order.

- (i) High RPU with Moderate AT&C loss.
- (ii) Moderate RPU with Moderate AT&C loss.
- (iii) Low RPU with High AT&C loss.

Hence, the Task Force recommends the selection of few divisions/sub-divisions in a predominantly Urban/Semi Urban area. The list of such areas satisfying the above level of priority is attached herewith as Annexure-V.

### **7.2 Study of Smart Metering Projects elsewhere in INDIA**

The task force visited 4 different places where Smart Metering Projects have been recently implemented and are in successful operation. The statement of field visit report in tabular form on such smart metering projects is at Annexure- VI. The number of consumers catered ranged from 34 thousand to 5 Lakh. The inputs from this study have been suitably used to prepare this report.

### 7.3 **Business Model**

The Smart metering infrastructure is a very complex system and quite new having varied components like Smart meter, Communication System, HES, MDAS etc.. Each component has its own intricacies. There are multiple suppliers and multiple service providers for the entire system. In order to have a smooth functioning of the system we need one System Integrator (SI) unlike an EPC contractor, who will not only look after installation of the system, but also takes care of operation & maintenance of the same for at least 8 years to derive potential benefit from the system.

The DISCOMS are not financially sound to implement Smart metering project on their own which involves high amount of Capex. Therefore, the System Integrator has to bring in requisite finance also to support the Capex. Thus the business model has to be on Build, Own, Operate and Transfer (BOOT) basis wherein the System Integrator takes the responsibility of the project during Implementation, Operation & maintenance period and transfer the same after expiry of definite period of the project. The SI shall get back its investment by way of collection of monthly rentals over the period.

Presently a sum of Rs. 40 is being recovered per month from the consumers towards Meter Rent. It is suggested that existing rate of recovery towards meter rent from the consumer may continue in future during the pendency of the above project so that, there will not be any resistance from the consumers on account of meter rent. The additional amount may be borne by the DISCOMs which will be compensated by the savings made through reduction in AT&C loss.

There is a possibility that Govt. will show interest in Smart Metering Project in the Utilities following the completion of the "Power for All" programme. Govt of India is expected to provide some Capital grant for implementation of Smart Metering project with certain additional grant from State Govt.. Under National Smart Grid Mission (NSGM) Scheme Central Govt. is providing 30% grant for implementation of Smart Grid in selected cities, Rourkela being one of the beneficiaries. An attempt may be made to

obtain as much capital grant as possible for the project. The capital grant will be factored and the monthly rental will be reduced accordingly.

The Tender for the System Integrator will be so designed that the successful bidder will be selected based on lowest rate quoted for monthly bill. While quoting the rates the bidder shall consider Capex, Opex, Financing Cost and Overheads, after factoring capital grant available from the Govt., if any. This mode of payment to the System Integrator will be simple and with single monthly charge per effective billing. This will help bringing down the AT & C Loss and improvement in financial condition of the DISCOMs.

An illustrative calculation of recovery per effective bill considering two alternatives: (i) 100% CAPEX by SI (ii.) 70% CAPEX by SI+ 30% grant, is given below.

Sl no	particulars	100% CAPEX by the SI	70% CAPEX by the SI + 30 % grant
1	No of Consumer	1 Lakh	1 Lakh
2	Total estimated CAPEX	Rs.5158 lakh	Rs.3611 lakh
3	Total OPEX	Rs.287 lakh	Rs.287 lakh
4	Finance charge @ 10% over Capex	Rs.2484lakh	Rs.1739 lakh
5	PMC fees @ 2.5% of Capex	Rs.129 lakh	Rs.129 lakh
6	Total	Rs.8058 Lakh	Rs.5766 Lakh
7	Effective rate per bill Over 8 years of billing	$\frac{8058}{(8 \times 12 \times 1,00,000)}$ =84 Rupees	$\frac{5766}{(8 \times 12 \times 1,00,000)}$ =60 Rupees
8	Payback period	$\frac{5158}{84 \times 12 \text{ month}}$ = 5.12 Yeras	$\frac{5158}{60 \times 12 \text{ month}}$ = 5.0 Yeras

The estimated savings on reduction of AT&C loss and on improvement in operations of the DISCOMs works out to about Rs. 13 crore as given in Annexure-III which will further bring down the payback period.

## **7.4 Communication Technology**

Communication technology for meter to HES is the prime function of Smart Metering Infrastructure. The available communication technology is RF Mesh / Canopy or GPRS. The technologies to be adopted shall be as per suitability. These communication technologies have their own merits and demerits. RF mesh/ Canopy require high amount of CAPEX. On the other hand GPRS require high recurring cost having no significant CAPEX.

Hence the task force proposes to remain technology neutral and to leave the choice of communication technology upon the SI with a condition for complying with all the performance parameters for functional requirement as per Service Level Agreement (SLA). The performance parameter is enclosed herewith as **Annexure- IV**.

## **7.5 Roadmap**

### **7.5.1 Formation of a Dedicated Cell for smart metering Implementation**

COO / AO of the DISCOM shall drive this initiative of implementing Smart Metering Project implementation. A dedicated Cell for Smart Metering (CSM) headed by an officer in the rank of G.M. or above, may be created in each DISCOM for implementing the Smart Metering Project in line with the business model mentioned above. The cell will have personnel from Technical, commercial, MRT and IT wings of the DISCOM and will be responsible for all the stages of the project: (a) Planning, (b) Environment Management (c) Selection of Project Management Consultant, (d) Selection of System Integrator, (e) Project implementation for 2 years and maintenance of the project for 8Years.

The CSM (Cell for Smart Metering) will adopt the business model mentioned above and will coordinate with System Integrator and the PMC for the project and will report periodically to COO/AO of the DISCOM.

### **7.5.2 Selection of Project Management Consultant (PMC)**

Before implementation of the project, the requirement of a competent Project Management Consultant (PMC) is utmost important particularly in such kind of projects. The PMC for the project shall be selected through two part single envelope bidding system. The selection of successful PMC shall be done through QCBS methodology based on their domain knowledge and experience in handling similar projects. The PMC in association with CSM shall survey the Division/ Sub Divisions where Smart Metering project is decided to be implemented. The PMC will prepare the design, drawing, technical specification and prepare the DPR and bidding document for floating the tender for participation by prospective System Integrator. They will also assist DISCOM in selection of the SI and will be involved during implementation of the project.

### **7.5.3 Environment Management:**

This being a new concept, with which neither the employees nor the consumers are familiar, may face resistances in its introduction and needs an effective change management. Keeping this in view, several meetings with different stake holders of the society may be conducted to implant the idea of smart metering and how it is beneficial to the consumers. Parallel activities like seminars, conferences and workshops inviting media representatives may be conducted to spread the positive aspects of such metering. It would be prudent to install the smart meters along with the existing general meters on sample basis in certain locations to create awareness and instil confidence amongst consumers. They may be informed about the additional advantages of smart meters over the existing meters to take them on board before popularising the Smart Meters. A mobile testing van may be engaged for six months from the date of final installation of meter in an area for testing of Smart Meters at consumers place for instilling confidence in the consumers.

### **7.5.4 Implementation period-**

#### **Capex**

To start with, the implementation period covering Selection of PMC, selection of SI and actual implementation is expected to be 24 month ( 2 Years)

**Timeframe:**

Sl. No.	Activity	Time Required in Months
1	Selection of System Implementer / System Integrator	3
2	Planning and Procurement Phase	3
3	Environment Management Phase	4
4	Implementation Phase (450 Meters per day in an average)	8

**TOTAL = 18****For Opex - Operation and Maintenance = 96month (8 Years)****7.5.5 Implementation:**

The installation of Smart Meters and implementation of Smart Metering System shall be done by System Integrator. The installation will include dismantling of old meter, installation of new smart meter, submission of data/ information/ meter reading/ photographs of old & new meters. During their visits to places with large scale Smart Metering System installation, the Task Force learnt that the major problem faced in implementing such projects was the acceptance of the new system by the consumers. Therefore, message should spread that the Smart Meter is similar to existing meter with certain additional functionalities, beneficial to the consumers in long run. **No extra meter rent should be levied on the consumer on this account.** However the system should be implemented phase wise to gain acceptability among the consumers and employees. In the first phase, it should be implemented in Urban/Semi Urban areas with high RPU and moderate AT&C loss so that it will be effective. Later, it may be extended to other areas depending upon the success and experience achieved in the first phase.

The smart features in the Meter Data Management System (MDMS) should be used to detect the abnormal pattern of consumption on an hourly basis and take corrective measures. Moreover, the data from MDMS will help in network planning & analysis, load analysis/forecasting, peak load management, outage management, demand side management etc. The progress of the Implementation of Smart Metering System may be reviewed once in three months by a Monitoring Committee constituted by the Commission.

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