ODISHA ELECTRICITY REGULATORY COMMISSION
BIDYUT NIYAMAK BHAWAN
PLOT NO.4, CHUNOKOLI, SHAILASHREE VIHAR,
BHUBANESWAR - 751021
****

Present : Shri U. N. Behera, Chairperson
Shri S. K. Parhi, Member
Shri G. Mohapatra, Member

Case No. 32/2020

M/s. TPCODL ..... Petitioner
Vrs.
GRIDCO Ltd. & Others ..... Respondents

In the matter of: **Application for approval of implementation of Geographic Information System(GIS) for FY 2020-21 to FY 2022-23 and Smart Metering Implementation from FY 2020-21 to FY 2023-24**

For Petitioner: Shri Shenbagam Manthiram, CEO, Shri Vidyadhar Wagle, Head Regulations, Shri Praveen Verma, Chief of Operation & Services and Shri Manoj Kumar Singh, Sr.GM, TPCODL.

For Respondents: Shri Ananda Kumar Mohapatra, Shri Bijaya Kumar Das, OPTCL, Shri R. P. Mahapatra, Shri Lalit Mishra, GRIDCO Ltd.

Nobody is present on behalf of Shri Ramesh Chandra Satpathy, Shri Dhobei Sahoo, M/s. UCCI Ltd., Ms. Manisha Das, Shri Pravakar Dora, Shri Lalatendu Dikhit and M/s. Grinity Power Tech Pvt. Ltd., Odisha Bidyut Karmacharti Mahasangh and M/s. Karma Re-rollers Pvt. Ltd.

O R D E R

Date of Hearing: 12.01.2021 **Date of Order: 04.09.2021**

1. TP Central Odisha Distribution Limited (TPCODL), the present petitioner has submitted this proposal for capital expenditure of Rs.52.79 cr. for implementation of complete Geographical Information System (GIS) and Rs.252.23 cr. for implementation of smart metering over next 3 years.

2. Earlier on the prayers of the petitioner for approval of capital expenditure to the tune of Rs.344.44 cr. for FY 2020-21 to carry out various activities in its area of operation, the Commission vide its order dt.08.09.2020 had approved a CAPEX of Rs.280.63 Crores for FY 2020-21. The Commission, among others, in that CAPEX proposal had approved

Rs.2 cr. for implementation of 1st phase of GIS Road Map and Rs.15.36 cr. for installation of smart meters in Distribution Transformers (DT) for energy accounting. The petitioner has now come up with the proposal seeking a revision for increasing the quantum of expenditure on the above two account as below:

a) Geographical Information System (GIS) : Rs.52.79 cr. for the implementation period from FY 2020-21 to FY 2023-24 containing Rs.9.42 cr. for FY 2020-21.

b) Smart Metering installation against earlier approval of DT meter installation: Rs.252 cr. for the period of 2020-21 to FY 2023-24 containing Rs.50 cr. For FY 2020-21.

3. The petitioner has submitted that GIS implementation for its entire system shall immensely help in getting the exact infrastructure information and help in increasing operational efficiency including providing reliable supply. In the three years implementation plan of the GIS for the entire area, the expenditure for FY 20-21 amounting to Rs. 9.42 Cr (in place of Rs.2 Crores proposed and approved in the Case No. 32 of 2020) will be utilized for setting up basic infrastructure, GIS mapping of 33/11 kV S/s and their entire network, Consumer Indexing & asset painting of Bhubaneswar Circle I (33kV, 11kV Network, DT, LT Network & consumers) etc. The proposal over the three years are as follows:

Year	Scope of work	Amount of CAPEX (Rs.cr.)
FY 21	• Setting up Basic Infrastructures • 33/11/KV s/s and its network – Entire TPCODL area • Consumer Indexing & asset painting of Bhubaneswar Circle I (33 KV, 11 KV Network, DT, LT Network and consumers.)	9.42
FY 22	• Data Sustenance, Data sharing, Equalisation & Integration of 3 circles with other modules like Energy Audit, Network Analysis & Planning, Plant Maintenance, Asset Maintenance, New connection, Disconnection, Customer Care Center & Customisation. • Up-gradation of server configurations and GIS Application licenses • 11 KV network – entire TPCODL Area • Consumer Indexing & Asset Painting of Bhubaneswar Circle II and Cuttack Circle (11 KV network, DT, LT network & Consumers.	26.78

FY 23	• Data sustenance of all 5 circles • Consumer Indexing and Asset Painting o0f Dhenkanal and Paradeep Circle (DT, LT Network and Consumers) • Uniform Address Pattern • Integration with SCADA, DMS and OMS	16.59
	Total	**52.79**

4. In summary, the petitioner has submitted that the following activities will be carried out for complete implementation of GIS.

i) Entire TPCODL will be mapped in GIS in phased manner covering Land base, Network and Consumer Indexing and its Pole painting.

ii) Energy Audit of entire Circle at 33 kV and 11 kV Level to identify the key areas of Losses.

iii) Feeder Wise load Flow Analysis of all the DTs for Load Balancing.

iv) Mapping of all DT & its Connected Consumers and pole painting at LT Level to identify the untraceable consumers missed from billing fold.

v) Spatial patrolling interface for cable network with Route tracking and Route Tracking and field data collection app.

vi) To locate all lines / cables which will help the line man / engineers to attend the faults speedily and reduce the outage time.

vii) GIS and SAP-PS integrated workflow platform for new distribution project designs leading to accurate estimation and proper expenditure.

viii) Monitoring the complete progress of the project, from planning to commissioning, on the GIS integrated platform.

ix) Planned outage information for customer on Customer Portal.

x) Integration with different applications will be done to automate the different process, which will save time and effort of employees. Integration touch points can be detailed out as per users' requirements.

5. The petitioner further has submitted that this project had been partly implemented under "RAPDRP Part A" project. Only 1.6% area of TPCODL has been covered and approximately 4.38 lakhs consumers have been mapped in 12 isolated towns as against

the customer base of about 27 lakh consumers. Further, the following activities have not been covered after implementation of RAPDRP Part A.

i) Software License AMC

ii) Data sustenance of 12 Towns.- 428 Sq. Km from year 2018

iii) Mobile Application for Capturing of Data

iv) Sustenance Process & Integration with Mobile Application

v) 98% of TPCODL area (Rural, Part of Urban & Smaller Towns)

vi) Utility Specific Integration

6. The petitioner has submitted that the following benefits shall be achieved due to complete GIS implementation in its area of operation but has not quantified the benefits to be accrued in view of such GIS installation.

i) Master Repository of Asset & Network with its topology shall facilitate faster restoration and optimize the outage duration for increased availability, future better/prudent asset utilization.

ii) It will facilitate service level wise energy accounting with clear areas of attention for action in terms of loss reduction. It shall also help in uniform distribution of load across the LT & HT network geographically.

iii) Consumer indexing geographically shall help maintenance team to pin point the location and equipment of fault resulting into faster response time.

iv) This shall help in reducing the cycle time for adding of new consumer through process based workflow starting from feasibility (network proximity and load flow), estimation, project execution, commissioning and release of supply.

v) This shall improve billing and collection efficiency.

7. As regards to Smart Metering, the Petitioner submitted that Smart meter is an advanced energy meter that measures the energy consumption of a consumer and provides added and timely information to the utility company compared to a regular energy meter. Smart meter can read real-time energy consumption information including the values of voltage, phase angle, frequency and tamper events and communicates bi-directionally on real time basis. Smart meters can communicate and execute control commands remotely as well as

locally. It has integrated two way communication modules to facilitate data communication.

8. The Commission had earlier approved the CAPEX proposal of smart metering for Energy Auditing of 4000 nos. of Distribution Transformers amounting to Rs.15.36 cr. against the proposal of TPCODL in its order dated 08.09.2020. The Petitioner has now proposed to install smart meters for all the consumers having monthly consumption greater than 300 Units which are estimated to be in range of about 2.5 lakhs. Out of these, 2.38 Lakh consumers would be in the "Smart Metering Scope". Further even the Distribution Transformers in the area are about 11778 out of which about 8000 would be covered under the "Smart Metering scope". As there is an increase in the scope of work, TPCODL has prayed for revision of capital expenditure under this head for FY 2020-21 from Rs.15.36 cr. to Rs.50 cr. and also seeking the approval of Rs.252 cr. for the capital expenditure over the next 3 years i.e upto FY 2023-24. The breakup of the expenditure are mentioned below:

Sl. No.	**Type of Smart Meters**	**Count of Meters (Nos.)**	**Cost of meter (including installation) per unit (Rs.)**	**Total cost of Deployment (Rs. in Cr.)**
1	Back End System Cost for 2.5 lakh meters	2.5 lakh end points(+20% margin)		50.00
2	Single phase	68400	4500	30.78
3	Whole current poly phase	170000	8000	136.00
4	LTCT+8000 DT's	11000	12000	13.20
5	HTCT	600	8000	0.48
6	SAP integration cost & AMI License fee			10.00
7	Cost of Tools and PPE			2.57
8	Cost incurred towards employee training & development of training yards for practice of BA employees			2.00
9	Contingency cost @3%			7.20
10	**Grand Total**	**250000**		**252.23**

9. In short, TPCODL has stated that it intends to install Smart Meters in the consumer premises with consumption >=300 units/per month, DTs of rating >=100 KVA and all new 3 phase connections. The scope of Smart Meter installation is 2,38,260 nos. for consumers and 8000 nos. for DTs. This 8000 nos. DT metering figure is excluding the

DT smart meters approved earlier in the Commission's order dt.08.09.2020 for the Bhubaneswar Circle-I. TPCODL has expressed that the following benefits shall be achieved as a result of smart metering installation.

A. From Consumers point of view

i) Smart metering provides rapid access to all customer transaction and payment records.

ii) Day to day bill will be available and thus effective load management by using appliances at off peak hours which will also result in lesser bill to consumer.

iii) Any tampering with meter is immediately reported to central control. It will reduce theft so tariff rates will go down.

iv) Due to remote reading, no need for site visits and hence increases customer's privacy.

v) Provides easy pre-payment facility.

vi) LCD display can be programmed to display various facilities including amount of credit left on prepayment system.

vii) The smart meter is an enabler for energy management: empowering consumers to save and manage their energy consumption.

B. From Distribution Utilities point of view

i) Provides power consumption profile data for individual and facilitates energy management, load research.

ii) Provides a low voltage network monitoring system to allow supply outages to be quickly identified resulting in better reliability and improved service levels.

iii) It enables remote meter reading. This eliminates need for site visit to read the meter and reduces the human labour. Timely and accurate meter readings will result into correct billing avoiding consumer complaints.

iv) Any tampering of system is immediately reported. This will reduce losses.

v) Provides a mechanism for the implementation of Demand-Side Management initiatives. This improves energy efficiency and reduces emissions.

vi) Smart Metering will eliminate costs like meter readings, quality checks, billing complaints, payment collection in case of prepayment meters, connection and disconnection wherever applicable.

vii) Remote programming of meter possible (in case of change in tariff, TOD structure, demand interval, billing parameters etc.)

viii) Helps in revenue protection:

ix) Real time feeder-wise, DT-wise energy audit is possible to capture any abnormal deviation.

x) Analytics software will help to detect any metering abnormality immediately. This will ensure reduction in revenue loss, minimum assessment period and thereby minimum consumer complaints.

xi) More effective grid management:

xii) Cases of feeder/DT overloading will be managed effectively and immediately.

10. The petitioner has submitted that it expects a total annual savings of Rs.12.86 Cr. under various heads as mentioned below on installation of Smart Meters excluding savings of the distribution loss.

Head	**Cost per Unit**	**Count**	**Cost savings per annum with DPR-2 Deployed Rs. Cr.**	**Assumption**
Saving Meter Reading and collection cost	20	2,38,000	5.71	Total Population of Smart Meters installed.
Savings in manual Data Downloading cost	100	24,000	0.24	It is considered that 10% cases will be downloaded annually due to non-communication
Savings Meter Disconnection Cost	300	6426	2.31	1.3% disconnection order are generated of total population
Savings @ commercial loss -Theft detection	18500	5 MW	4.6	1. Average recovery per KW is Rs.10000. 2. 20 MW is the load booked per year. 3. 50% of the revenue is considered from the cases under

				consideration. 4. 18500 is average amount recoverable against 1 KW theft in LT Ind, GP & Domestic category.
Total savings(Annual) excluding savings of Distribution Loss			12.86 cr.	

11. One of the respondent Shri Anand Kumar Mahapatra submitted the following :

(i) The Commission may approve the entire project amounting to Rs.52.79 Cr. for GIS and Rs.252.00 Cr. for Smart Metering implementation proposed by the petitioner.

(ii) The petitioner may submit their planning for installation of Smart Meters in transformers having capacity less than 100 KVA since the said transformers have the same importance as given to the transformers having capacity more than 100 KVA.

(iii) The Commission may approve the proposal since the GIS and Smart Metering both are complementary, creates synergetic efforts and also creates conducive moments for the projects to grow in recorded pace.

12. Another respondent Shri R. P. Mohapatra said that the benefits of the implementation of the earlier approval dt.08.09.2020 may be reviewed by the Commission. Thereafter only, the application for additional investments may be considered. As regards to Smart Metering, Shri Mohapatra cited various provisions of the Supply Code and prayed to reject the present proposal in view of the following:

(i) The manner of installation of Smart Meter has not been notified by the Commission. The installation of Smart Meters should be on all Odisha basis over a period of time.

(ii) The cost of Smart Meters are to be recovered by the petitioner only through meter rent for Smart Meters which may be determined by the Commission while notifying the installation of smart Meters in Odisha Distribution System.

(iii) The amount of Rs.13.65 Cr approved by the Commission in order dt.08.09.2020 for “Meter replacement” under Major Category “Loss Reduction” may also be disallowed as it is the responsibility of the licensee to replace

defective/lost/technically unsuitable meters according to the Regulations of the Commission.

13. Shri Mohapatra further, stated that no useful purpose for energy audit shall be served by providing smart meters for distribution transformers with more than 100 KVA capacity, since the consumers have not been provided with the smart meters. Therefore, he prayed that earlier approval on dt.08.09.2020 amounting to Rs.15.36 cr. for DT smart metering installation may be disallowed.

14. In its rejoinder, the Petitioner submits as follows:

(i) During the earlier petition dt.06.07.2020, the detailed project report or road map could not be presented in full shape due to COVID situation. Now, that the situation has eased, the DPR in complete has been submitted with this petition.

(ii) The petitioner citing the provisions in OERC (Terms & Conditions for Determination of Wheeling Tariff and Retail Supply Tariff) Regulations, 2014 and orders of the ERCs (JSERC, BERC, MERC) has indicated that the meter rent recovered from the consumer is not adequate. It has prayed that the cost of smart meters need to be socialized instead of being recovered from individual consumer through meter rent. As regards, DT smart metering, TPCODL has argued that the usefulness of area specific audit, DT phase balancing, network planning and new connection planning may be considered as the outcome of DT smart metering. Further, it has requested for approval of DT metering for 8000 nos. in place of total 71,000 DTs.

(iii) The petitioner has further submitted that meter rent deducted from the ARR as the Non Tariff Income reduces the burden on the Consumer. Recovery of cost of the capital investment through meter rent and not through tariff will be unfair to them and may not have fund to the extent of capital investment.

(iv) Further, there is no separate category of rent for recovery of expenditure on account of smart meter installation and meter rent allowed to be recovered for five years will not be adequate for this purpose.

15. The Petitioner further states that as per para 42(b) of the vesting order, the petitioner has committed capital expenditure of Rs.1541 crores for the period FY 2021 to FY 2025 as follows :

(Value in Rs. Crore)

FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total
201	393	310	338	299	1541

The Commission in para 42 (c) of the vesting order has stated as follows:

> *"To allow flexibility in the capital expenditure planning, the Commission stipulates that, in the capital expenditure plan to be submitted by TPCODL as per the license conditions, the capital expenditure commitment for each year of the period FY 2021 to FY 2025 must be such that capital expenditure proposed upto a year shall be at least equal to the cumulative capital expenditure committed upto that year in the Bid submitted by TPCL. For avoidance of doubt, the minimum cumulative capital expenditure to be proposed by TPCODL for the period FY 2021 to FY 2025 must be as provided in the table below:*

Upto 31-Mar-2021	*Upto 31-Mar- 2022*	*Upto 31-Mar-2023*	*Upto 31-Mar-2024*	*Upto 31-Mar-2025*
201	*594*	*904*	*1,242*	*1,541*

Similarly, as per the Licence Condition 11 and 32 the Investment above Rs.5 core is to be made by the distribution licensee in the licensed business area of operation with the approval of the Commission.

16. Heard the parties at length. As per the provisions of CEA (installation and operation of Meters) Regulations read with the OERC Distribution (Conditions of Supply) Code, 2019, Consumer meters shall generally be owned by the licensee/supplier. The meters shall be replaced by the licensee/supplier on the request of the consumer. The meters may also be replaced as per the Regulations or on the directions of the Commission.

The relevant provisions of Act and Regulations are mentioned below:

Section 45.3 of Electricity Act, 2003:

(3) The charges for electricity supplied by a distribution licensee may include

(a) a fixed charge in addition to the charge for the actual electricity supplied;

(b) a rent or other charges in respect of any electric meter or electrical plant provided by the distribution licensee.

Section 55(1) of Electricity Act, 2003:

(1) No licensee shall supply electricity, after the expiry of two years from the appointed date, except through installation of a correct meter in accordance with the regulations to be made in this behalf by the Authority:

Provided that the licensee may require the consumer to give him security for the price of a meter and enter into an agreement for the hire thereof, unless the consumer elects to purchase a meter:

Provided further that the State Commission may, by notification, extend the said period of two years for a class or classes of persons or for such area as may be specified in that notification.

Regulation 102 of the OERC Distribution (Conditions of Supply) Code, 2019:

(i) The licensee/supplier shall supply the meter (unless the consumer elects to supply the same), cut-out/ MCB / CB / load limiter to consumers at the time of providing new service connection or at any other time as required and charge meter rent as per the tariff order of the Commission.

Regulation 20 of CEA (Installation & Operation of Meters) Regulations, 2006:

"The distribution licensee shall make out a plan for introduction and adoption of new technologies such as pre-paid meters, time of the day meters (TOD), automatic remote meter reading system through appropriate communication system with the approval of the Appropriate Commission or as per the regulations or directions of the Appropriate Commission or pursuant to the reforms programme of the Appropriate Government".

17. In view of the above statutory provisions the licensee may supply the meter (unless the consumer elects to supply the same) at the time of providing new service connection or at any time as required under Regulations and charge meter rent as per the tariff order of the Commission. Also, the cost of the meter (if supplied by the licensee) shall be recovered through the meter rent. The meter rent is collectible when the licensee supplies a meter to a consumer where as meter rent is not payable when it is supplied by the consumer. When the full cost of meter is recovered there would be no necessity to collect meter rent. The Commission in its tariff order has been fixing the meter rent and the number of months required for recovery of the full cost of meter from the consumers.

18. The main objective of the investment plan is to develop and maintain an efficient, coordinated and economical distribution system in its area of operation. TPCODL shall supply electricity to consumers in accordance with the provisions of the Act, Rules, Regulations, Orders framed thereunder and the direction of the Commission. The Commission further considers the following major aspects while finalizing the investment plan proposed by TPCODL.

(i) Whether the scheme is required to meet the statutory standards set in the Act, Regulations etc.

(ii) Whether the investment is cost efficient?

(iii) Whether the proposal shall have any tariff impact on the consumers?

19. As regards the metering of consumers, it has been found from the submission of the licensee that there were 27,33,150 nos. of consumers of TPCODL by the end of September, 2020. Out of those, 1,53,802 nos. are having defective meters and 91,271 nos. of consumers are without meters and rest 24,88,077 nos. are with OK meters. The licensee is committed to achieve 100% correct metering by sourcing the meters available in the stock, from the meters provided through various Government scheme and from the open market.

20. As per the OERC Distribution (Conditions of Supply) Code, 2019 and the orders in force, the cost of meter is to be recovered through meter rent. From the submission of the petitioner, it appears that the monthly meter rent recoverable from three phase consumers having smart meter is comparable with the existing applicable meter rent for those categories of consumers. While for the three phase normal meters the existing meter rent is Rs.150 per month, the meter rent proposed for three phase whole current smart meter is Rs.169.70 Hence, the petitioner may go ahead with smart metering for three phase consumers with the existing meter rent in force. Since there is a provision for recovery of meter rent from the consumers, therefore, the Commission is not inclined to allow the bare cost of Smart Meters under CAPEX for consumers.

21. The present meter rent for single phase LT consumers is Rs.40 per month whereas the Petitioner has proposed a meter rent of Rs.95.40 per month for consumers having smart meter. We find that the proposed single phase smart meter rent is considerably higher than that of the existing rent of normal meters. Therefore, the petitioner may explore the PPP-OPEX models as suggested by State Government for installation of single phase smart meter without disturbing the present meter rent structure so that there is no extra burden on the consumer. In summary the Commission is not inclined to allow any Capex proposal for procurement of smart meters to be installed in the consumer premises which can be very well managed through collection of meter rent.

22. However, we examined the expenditure proposed for backend infrastructure development for installation of smart meters and procurement of smart DT meters. The expenditure proposed in this regard is as follows:

Back End Expenditure	: Rs.50 cr.
Training of Employees & BA	: Rs.2 cr.
Tools & PPE	: Rs.2.57 cr.
Distribution Transformer meters (additional 8000 meters)	: Rs.9.60 cr.
Contingency cost @3%	: Rs.7.2 cr.
Total	**: Rs.71.37 cr.**

We approve this expenditure in-principle to be incurred within FY 2023-24 for procurement of DT smart meters and development of backend infrastructure for installation of smart meter. This expenditure shall be over and above the expenditure we have approved in our order dated 08.09.2020 of Rs.15.36 crore in this regard.

23. The Commission agrees that implementation of GIS will increase operational efficiency and help in extending reliable supply leading to consumer satisfaction and effective asset management. The Commission therefore agrees to the proposal of TPCODL for implementation GIS in their entire area of operation and hereby grants in principle approval of Rs.52.79 crore.

24. To the query of the Commission during the pendency of this proceeding, TPCODL has informed that the CEO had made a presentation before their Board on 27.01.2021 regarding technology road map which includes GIS and rolling out of smart meters. Thereafter, in the subsequent meeting on 27.04.2021 the Board has approved the Budget of Rs.47.6 crores for smart meter implementation and Rs.17.32 crores for implementation of GIS road map for FY 2021-22.

25. Considering the views of the Board and proposal of TPCODL we approve an expenditure of Rs.47.6 crores for FY 2021-22 out of in-principle approval of Rs.71.37 crores for development of smart meter backend infrastructure and procurement cost of DT smart meters upto FY 2023-24. Similarly, as per Board's view and TPCODL proposal we approve Rs.17.32 crores for implementation of GIS road map for FY 2021-22 out of cumulative in-principle approval of Rs.52.79 crores upto FY 2022-23.

26. TPCODL must submit further proposal for our approval after getting their Board's consent in this regard for expenditure in subsequent year within our in-principle approval given in this order.

27. The case is accordingly disposed of.

Sd/-	**Sd/-**	**Sd/-**
(G. Mohapatra)	**(S. K. Parhi)**	**(U. N. Behera)**
Member	**Member**	**Chairperson**