

**ANNUAL ENERGY AUDIT REPORT**  
**OF TP SOUTHERN ODISHA DISTRIBUTION LIMITED**  
**(TPSODL)**  
**[DC Registration No. - DIS00420D]**



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## TABLE OF CONTENTS

ABBREVIATIONS .....	3
ACKNOWLEDGEMENT .....	4
AUDIT TEAM DETAILS.....	5
CERTIFICATE .....	6
1.0 EXECUTIVE SUMMARY .....	7
2.0 SUMMARY OF CRITICAL ANALYSIS AND MAJOR OBSERVATIONS AND RECOMMENDATION: .....	13
3.0 BACKGROUND .....	19
4.0 INTRODUCTION ABOUT DISCOMS (DC) .....	20
4.1 SUMMARY PROFILE OF TPSODL.....	26
5.0 DISCUSSION AND ANALYSIS.....	27
5.1 BILLING & ARREAR STATUS OF TPSODL .....	34
5.2 METERED/UNMETERED ENERGY SALE OF TPSODL.....	35
5.3 LOSSES IN DISTRIBUTION NETWORK.....	36
5.3.1 CALCULATION OF T&D LOSS.....	37
5.3.2 CALCULATION OF AT&C LOSS.....	39
6.0 DEMAND SIDE MANAGEMENT (DSM), ENERGY EFFICIENCY & CONSERVATION: .....	45
7.0 FIELD STUDY .....	49
8.0 DETAILS OF VARIOUS SYSTEM IMPROVEMENT & LOSS REDUCTION PROJECT UNDERTAKEN BY TPSODL.....	54
8.1 CAPEX PROGRAMME.....	54
9.0 CONCLUSION .....	65
10.0 LIST OF ANNEXURE FOR MEA OF TPSODL.....	66

## ABBREVIATIONS

AMI	:	Advanced Metering Infrastructure
AMR	:	Automated Meter Reading
ARR	:	Annual Revenue Requirement
AT & C	:	Aggregate Technical and Commercial
BEE	:	Bureau of Energy Efficiency
CAPEX	:	Capital Expenditure
CERC	:	Central Electricity Regulatory Commission
CGPs	:	Captive Generating Plants
CKT	:	Circuit Kilometer
CTU	:	Central Transmission Utilities
CT	:	Current Transformer
DC	:	Designated Consumer
DISCOM	:	Electricity Distribution Company
DT	:	Distribution Transformer
EA	:	Energy Auditor
EHT	:	Extra High Tension
EHV	:	Extra High Voltage
EM	:	Energy Manager
FY	:	Financial Year
HT	:	High Tension
HVDS	:	High Voltage Distribution System
KVA	:	Kilo Volt Ampere
LT	:	Low Tension
MoP	:	Ministry of Power
MU	:	Million Unit
MW	:	Mega Watt
NO	:	Nodal Officer
OA	:	Open Access
OERC	:	Odisha Electricity Regulatory Commission
OPTCL	:	Odisha Power Transmission Corporation Limited
POC	:	Point of Connection
PT	:	Potential Transformer
PVC	:	Polyvinyl chloride
PX	:	Power Exchange
RE	:	Renewable Energy
RLDC	:	Regional Load Dispatch Centre
SDA	:	State Designated Agency
SLD	:	Single Line Diagram
SLDC	:	State Load Dispatch Centre
T&D	:	Transmission and Distribution
TPSODL	:	Tata Power Southern Odisha Distribution Limited
XLPE	:	Cross-linked polyethylene

### ACKNOWLEDGEMENT

Power Tech Consultants (PTC) places on record its sincere thanks to management of TP SOUTHERN Odisha Distribution Limited (TPSODL) for entrusting the task of conducting Energy Audit of TPSODL.

PTC acknowledges with gratitude the wholehearted support and cooperation extended by Mr. Arvind Singh, CEO, Mr. Saumitro Banerjee (Head – MMG, Energy Audit), Mr. Binod Bihari Nayak, AGM (Com & RA), Mr. Nohgesh Bhardwaj, HoD, AMR, EA, Mr. Ratan Kuber (Lead Engineer – Energy Audit), Mr. Dusmanta Kumar Rout (HoG – IT), Mr. Deepak Jain (Financial Controller) and Officials of Project, Regulatory Affairs and Commercial Department while carrying out the study at TPSODL.

PTC sincerely thanks to all the officials and staff members of TPSODL who have rendered their all possible cooperation and assistance to the study team during the entire period of the Audit.

M/s. Power Tech Consultants

*Bibhu Charan Swain*  
Authorised Signatory



**Signature**

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### AUDIT TEAM DETAILS

The following team members of M/s. Power Tech Consultants were involved in the Annual Energy Audit of TPSODL for FY 2021-22.

Sl. No.	Organization	Team Member	Designation	Role
1	Power Tech Consultants	Mr. Bibhu Charan Swain	Sr. Consultant Accredited Energy Auditor Regd. No. -AEA-0121	Project Head, Review of Data and Report
2		Mr. Sangram Keshari Routray	Sector Expert	Review of Data and Report
3		Mr. Subhranshu Sekhar Rath	General Manager	Inspection, Review of Data & Report
4		Mr. Dambarudhar Kar	Sr. Manager	Inspection, Field Visit, Review of Data & Report
5		Mr. Suresh Gurjar	Manager (Project)	Field Visit, Document verification & Report writing
6		Mr. Nirjhar Biswal	Assistant Manager (Project)	Field Visit, Collection & Verification of Data, Report Writing
7		Mr. Suraj Kumar Bhujabala	Assistant Manager (Project)	Field Visit, Collection & Verification of Data, Report Writing
8		Mr. Subash Mallick	Project Associate	Field Visit, Collection & Verification of Data
9		Mr. Suman Sourav Nayak	Project Associate	Field Visit, Collection & Verification of Data, Report Writing
10		Ms. Subhasmita Priyadarsani Bhukta	Project Associate	Verification of Data, Report Writing

**CERTIFICATE**

We certify the following

- The data collection has been carried out diligently and truthfully.
- All data measuring devices used by the auditor are in good working condition, have been calibrated and have valid certificates from the authorized approved agencies and tampering of such devices has not occurred.
- All reasonable professional skill, care and diligence had been taken in preparing the energy audit report and the contents thereof are a true representation of the facts.
- Adequate training provided to personnel involved in daily operations for implementation of recommendations.
- The energy audit has been carried out in accordance with the BEE (Manner and Intervals for Conduct of Energy Audit in electricity distribution companies) Regulations, 2021.

**M/s. Power Tech Consultants**

*Bibhu Charan Swain*  
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**Signature**

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## 1.0 EXECUTIVE SUMMARY

TP Southern Odisha Distribution Limited (TPSODL) is a joint venture between Tata Power and the Government of Odisha with the majority stake being held by Tata Power Company (51%).

TPSODL has been carrying out the business of distribution and retail supply of electricity in the eight districts of Odisha namely Ganjam, Gajapati, Boudh, Kandhamala, Rayagada, Koraput, Nabarangpur and Malkangiri over an area of supply 48,751 sq km. TPSODL serves a population of 94.38 lacs with a Customer Base of 23.41 lacs. The Company is operating through 6 circles namely City Circle, Berhampur Circle, Aska Circle, Bhanjanagar Circle, Rayagada Circle and Jeypore Circle which is further subdivided in 19 Divisions and 51 Sub-division which manages the commercial and O&M activities in order to serve its consumers. The business of TPSODL utility is governed by the provisions of license issued by Hon'ble Odisha Electricity Regulatory Commission (OERC).

TPSODL receives electrical power at 33kV level from 28 numbers of transmission stations (TS) out of which 4 nos. TS are rated at 220/132/33kV, 2 nos. at 220/33kV and 22 nos. at 132/33kV located within and in the vicinity of TPSODL operational area. TPSODL distributes the power at 33kV / 11kV / 440V / 230V depending on the demand of the consumers.

### Fact sheet of TPSODL:

The Fact sheet of TPSODL is furnished below.

<b>Supply Area</b>	48,751Sq. Km
<b>Maximum Demand</b>	600 MVA
<b>Power Transformer Installed Capacity</b>	2986 MVA
<b>No. of distribution Substations</b>	54451
<b>Distribution Transformer (DT) Installed Capacity</b>	2250 MVA
<b>HT Mains-33 kV</b>	3636 K.M
<b>HT Mains-11 kV</b>	40368 K.M
<b>LT Mains</b>	37302 K.M
<b>No of 33 kV Feeders</b>	110
<b>No of 11 kV Feeders</b>	794
<b>No of 33/11 kV Sub Station</b>	224
<b>No of Power Transformer</b>	481



The Energy and Performance Fact Sheet of TPSODL for the last 2 financial years is furnished below:

PARTICULARS	FY 19-20	FY 20-21
Total Sale (MU)	2620	2769
T & D Loss (%)	24.47%	23.07%
Billing Efficiency (%)	75.53%	76.93%
Billing To Consumers (Rs. in Crs.)	1279	1318
Collection Received (Rs. in Crs.)	1079	1198
Collection Efficiency (%)	84.34%	90.95%
AT& C Loss (%)	36.29%	30.03%

#### Metering Status of TPSODL:

As per the data submitted by TPSODL to OERC the following table is furnished:

CATEGORY WISE % OF METERING COMPLETED						
Category	FY 2019-20			FY 2020-21		
	Total	No. of Metering Completed	% of Metering Completed	Total	No. of Metering Completed	% of Metering Completed
33 kV Feeders	105	74	70.48%	110	83	75.45%
11 kV Feeders	695	290	41.73%	794	616	77.58%
Distribution Transformers	51,915	0	0.00%	54,451	854	1.57%
Consumers	2279096	2148081	94.25%	2340713	2247898	96.03%

#### Abstract of Energy Bill Served by GRIDCO to TPSODL:

Sl.No.	Month	Actual SMD (kVA)	Total Amount Billed (Rs)	Total Energy Billed (MU)	Total Energy Sale (MU)	LOSS (%)	TPSODL Total Energy Billed (MU)	LOSS (%)
1	Apr-20	527989	13410966321	280	241	13.92%	280	13.93%
2	May-20	558347	13582812288	318	244	23.38%	318	23.27%
3	Jun-20	557167	13827386644	296	238	19.48%	298	20.13%
4	Jul-20	565229	13994436546	318	222	30.23%	318	30.19%
5	Aug-20	578964	14235468186	318	216	32.09%	318	32.08%
6	Sep-20	594576	14398510356	323	232	28.08%	320	27.50%



7	Oct-20	578872	14700626643	301	227	24.64%	301	24.58%
8	Nov-20	576087	14844008376	275	218	20.72%	275	20.73%
9	Dec-20	568745	533018712	270	212	21.43%	270	21.48%
10	Jan-21	588669	2026526056	297	226	23.80%	297	23.91%
11	Feb-21	578008	1942914192	269	226	16.13%	269	15.99%
12	Mar-21	599689	1279773653	336	266	20.88%	336	20.83%
TOTAL		572695.2	118776447973	3601	2768	23.14%	3600	23.11%

**Critical Observation:** There is difference in the total input energy to the DISCOM in Primary data (Energy Billed by GRIDCO to TPSODL) and in Secondary data (TPSODL reported energy input data to Hon'ble OERC). TPSODL has acquired licensee of the Utility on 1<sup>st</sup> April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL has reported that there might be an error which has occurred before the transition date. TPSODL is advised to rely on both primary and secondary set of data while reporting the major energy data like, total input energy and total billed energy in future.

#### ENERGY CONSERVATION MEASURES:

FORM-2							
DETAILS OF ENERGY CONSERVATION MEASURES RECOMMENDED IN THE ENERGY AUDIT REPORT [2022-23]							
Sl. No.	Energy Saving Measures	Investment ( In Crores)	Targeted Annual Energy Savings in MU	Targeted Financial Savings in Rupees Crore	Payback Period	Date of Completion of measure / likely completion	Remarks
A	Establishment of Meter Testing Lab	2.47					
B	Loss Reduction						
	Replacement of burnt, Faulty and Electromechanical meters and meter installation at no Meter cases System (ABT/AMR) – IEMS	8.68					
	LT Bare to ABC conversion	7.01					
	<b>Total (B)</b>	<b>15.69</b>					
C	Network Reliability						
	33 KV Network refurbishment	5.04					
	Installation of 33 KV AB Switch	2.23	98.78	25.19	6.18	FY 2022-23	As per the annual reduction in T&D loss target of Hon'ble OERC and detailed note attached

	PSS Refurbishment	6.25					
	11 KV Network refurbishment	6.92					
	Installation of 11 KV AB Switch	3.05					
	DSS Refurbishment	4.08					
	Installation of LV protection at DSS	5.08					
	Installation of Auto reclosure /Sectionalizers ,RMUs, &FPIs	3.95					
	Trolley Mounted Pad Substations	0.22					
	Package Distribution Substations	0.65					
	<b>Total (C)</b>	<b>37.47</b>					
D	<b>Load Growth</b>						
	Network augmentation / addition to meet load growth/11 KV line, PTR,DTR,LT line	8.74					
	<b>Total (D)</b>	<b>8.74</b>					
E	<b>Technology &amp; Civil Infrastructure</b>						
	Installation of Smart Meters along with back end IT Infrastructure	14.07					
	Augmentation of IPDS Software licenses pan TPSODL	12.24					
	IT Infrastructure (H/W & Field office infra for augmentation of IPDS application licenses)	19.26					
	Communication Network Infra	5.38					

SCADA Implementation	14.71					
GIS Implementation	5.46					
Civil Infrastructure	10					
Civil Work for Meter Test Bench	2					
Civil work for Call centre & PSCC	2					
Upgradation of DT workshop	1					
Security system in Central Store	2.25					
Assets for Offices	2.95					
<b>Total (E)</b>	<b>91.32</b>					
<b>Grand Total</b>	<b>155.69</b>	<b>98.78</b>	<b>25.19</b>	<b>6.18</b>		

#### CALCULATION OF PAYBACK PERIOD:

Approved sale of TPSODL as approved by commission FY 2022-23= 3292.7 MU

Calculated T&D Loss of TPSODL for FY 2020-21= 23%

Assumed Target T&D Loss for FY 2020-21=20%

So, Targeted Annual Energy Savings in MU =  $3292.7 \times (23\% - 20\%) = 98.78$  MU

Approved Bulk Supply Price of GRIDCO for FY 2022-23= 2.27 per Unit

Approved Transmission Tariff of OPTCL for FY 2022-23= 0.28 per Unit

Hence financial saving of TPSODL due to T&D loss reduction=  $(2.27 + 0.28) \times 98.78 / 10 = 25.19$  Cr

Total investment approved by Hon'ble OERC for T&D Loss=155.69 Cr

Simple Payback period =  $\text{TOTAL INVESTMENT} / \text{SAVINGS} = 155.69 / 25.19 = 6.18$  Years

The present annual energy audit is conducted in compliance with BEE (Manner and Intervals for Conduct of Energy Audit in electricity distribution companies), Regulations 2021 by Power Tech Consultants.

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### SYSTEM ADEQUACY & NETWORK PLANNING FOR LOAD GROWTH OF TPSODL:

The following tables represent the data for consumer, consumption for previous year, first half of the current year and project figures for 2021-22.

PREVIOUS YEAR			FIRST SIX MONTHS OF CURRENT YR		
( 2019-20)			( 2020-21)		
No of consumers as on 1st April of the Previous Year	Connected Load/Contract Demand (KW)	Consumption (MU)	No of consumers as on 1st April of the Current Year	Connected Load/Contract Demand (KW)	Consumption (MU)
2068557	2368412.4	2619.974	2279223	2646636.81	1393.836

CURRENT YEAR (PROJECTED)			ENSUING YEAR (PROPOSED)			
2020-21			(2021-22)			
Contract Demand (KW)	Consumption (MU)	Annual Percentage Rise (%)	No of consumers as on 1st April of the Ensuing Year	Connected Load/Contract Demand (KW)	Consumption (MU)	Annual Percentage Rise (%)
2796946.24	2804.814	7.06%	2569254	2978380.93	3042.844	8%

The existing network of TPSODL is already overloaded or approaching the overload limit. It is anticipated that some of the Power Transformers, Distribution Transformers, 11kV & 33kV Lines may be overloaded in next 2 to 3 years with the consumer growth of around 8% per annum.

Network planning for FY 2021-22 for load growth is as under:

Category	Activity	Amount (in Cr.)
Load Growth	Network augmentation / addition to meet load growth/11 KV line, PTR,DTR,LT line	26.52
	Meter Installation for all new connection	12.71
Total		39.23

The details of upgradation/new installation of assets done in previous as well as current year:

Sl.No	Subject	Unit	Previous Yr.	Current Yr.(H1)
			19-20	20-21
A. LT Less Transformers(HVDS)				
I	Installation of LT less transformers	Nos	415	26
B. Re-conductoring				
I	33 kV	Ckt.Kms	38.81	22.75
li	11 kV	Ckt.Kms	72.12	117.23
lii	LT	Ckt.Kms	89.2	35.96
C. Up gradation of transformers				
I	33/11 kV	Nos	21	13
li	33/0.4 kV	Nos	0	0
lii	11/0.4 kV	Nos	120	16
D. Installation of new transformers				
I	33/11 kV	Nos	0	1
li	33/0.4 kV	Nos	0	0
lii	11/0.4 kV	Nos	254	302

## 2.0 SUMMARY OF CRITICAL ANALYSIS AND MAJOR OBSERVATIONS AND RECOMMENDATION:

The observations and critical comments with regards of the energy data as furnished in the Pro-forma by TPSODL is furnished as under.

- As per the ledger data there are 385 no's of 11KV consumers, however as per the Performance Review Report submitted by TPSODL to Hon'ble OERC, the total no of 11KV consumers is 401. It is recommended that TPSODL may review and correct the same while submitting their future Performance Review Report to Hon'ble OERC.
- There are around 854 conventionally metered Distribution Transformer (DTR). However the meter readings are not taken and meters are not communicating. It is recommended that DTR metering should be made functional and meter reading should be taken on monthly basis.
- The 11/0.415 kV DTR is considered under LT system as per the current practice followed by TPSODL.
- In Cell D-25-26-27 of the "Infrastructure Detail" sheet of the Pro-forma in the line length of AB cable, there should be provision for separate entry for line length of AB cable, Underground Cable, 66kV, 33kV. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.
- The Cell C-28 of "Infrastructure Details" sheet of the Pro-forma may be read and considered as Energy Purchase Particular. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.
- There is no separate segregation of input energy and sale to consumers at 33kV and 11kV levels as per the prevailing practice of TPSODL. However in the "Infrastructure Details" sheet of the Pro-forma [Ref Row 4(ii) and 4(iii)], there is a requirement to fill the data of 11kV and 33kV voltage wise energy input and energy sale. TPSODL has clubbed both the 33kV and 11kV energy input and energy sale and provided the data in 11kV row. It is



recommended that in future TPSODL is required to segregate the 11kV and 33kV Input Energy and Energy Sale.

7. In the Pro-Forma it is recommended that after Row-76 of “Infrastructure Details” sheet of the Pro-forma there has to be another row having provision to incorporate the energy supplied to 33/11 KV , 33/0.415 Substation.
8. In Energy Accounting Summary of “Infrastructure Details” sheet of the Pro-forma [Ref Row 5(ii) and 5(iii)], TPSODL has reported HT Input by reverse calculating the difference of total sale and HT sale and assuming 8% loss in the HT System, which is not the correct approach. Since majority of the 33kV Feeders are metered at GSS end and all the 33kV consumers are supplied with meters and majority of the outgoing 11KV Feeders in the PSS are being metered, therefore TPSODL is in a position to capture the Total Input Energy and Energy Sale at 33KV System. In view of the same it is recommended TPSODL should take a corrective approach to capture 33kV and 11kV Input Energy and Energy Sale as per the meter data and should not consider the normative approach of 8% distribution loss in HT Systems.
9. 33kV meters are installed at Grid Substation (GSS) interface points and at each consumer points. 137 nos of 33kV meters are installed at the input point to the 33/11 kV substation (PSS).
10. TPSODL informed that they have not completed 100% metering of the 11KV Feeder and accordingly submitted the received energy at the 11kV Feeder where they have installed the meter. Further TPSODL submitted that they have not installed meters at DTR and wherever the earlier meters were installed in DT level, the data were not captured in regular interval due to lack of metering and billing personnel . At DTR level the metering data is not available. TPSODL is required to audit the DTR's and provide the metering data. TPSODL has also informed that the consumers are not properly mapped or indexed to each 11KV/33KV Feeders. In view of the same TPSODL couldn't submit the data at Cell K-3 (Received at Feeder), Cell L-3(Feeder consumption), Cell M-3(Final net export at feeder level) in the “Details of Feeder Levels” sheet of the Pro-forma due to which T&D loss and AT&C loss of feeder wise losses could not be computed.
11. The energy generated from Solar Rooftops is being metered but the meters readings are not properly captured by TPSODL in financial years 2020-21. Therefore, the Capacity Utilization Factor (CUF) of 19% has been considered to calculate the Solar Energy generated from the Solar Rooftop from each solar plant and accordingly Injected Energy has been derived.
12. In the Cell S-11 & S-12 of “Form Input Energy” sheet of the Pro-forma the remarks couldn't be entered as the cell is protected. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.
13. In the Cell R-23-24 of “Form Input Energy” sheet of the Pro-forma the length of AB cable and length of underground cable may be considered as length of LT-AB cable and length of LT underground cable.
14. In cell no P-28 of “Form input energy” sheet of the pro-forma the (period from-- to --) may be considered as 1st April 2020-31st Mar 2021. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.
15. In the cell D-29 of “Form Input Energy” sheet of the pro-forma, the voltage level unit should be in kV, instead of kVA. Again in Cell E-29 & F-29 “Form Input Energy” sheet of the pro-forma the unit of division & subdivision (KVA) may be edited. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.

16. In Cell Q-30 to Q-139 of "Form input energy" sheet of the pro-forma, TPSODL informs that they don't have the CT/PT ratio of the meter installed at the injection point and hence the data are not available and left blank. It is recommended that TPSODL may obtain the same from OPTCL and may fill the data in future.
17. Station consumption at OPTCL Grid Substation is considered as Export for adjustment purpose in the BSP Bill of GRIDCO and hence same are mentioned accordingly in the "Form Input Energy" sheet of the pro-forma.
18. It is observed that the EHT/HT consumption is low as compared to LT Consumption. It is recommended that TPSODL should pray before Hon'ble Commission for tariff rationalisation measures to be adopted for HT / EHT Consumers. TPSODL may be required to incentivise the Industrial Consumption by taking up better tariff rationalisation measures in future tariff hearing process, as increase in HT / EHT consumption will help in reducing the T&D loss and AT & C loss.
19. It is found that the % of defective meters are more in consumer category like Kutri Jyoti, Agro, Allied Agro, Agricultural, Street Lighting and Specified Public purpose. It is recommended to give special emphasize on Kutri Jyoti, Agro, Allied Agro, Agricultural, Street Lighting and specified Public purpose category consumer for replacement of defective meters with correct one. In the next tariff hearing process TPSODL may propose to the Hon'ble Commission DBT based subsidy for these consumers in which the subsidy linked with the above category consumer can be transferred through Direct Benefit Transfer (DBT) Scheme based on the correct meter reading. In case meter is tampered and found to be defective, then the transfer of subsidy may be stopped till the meter is replaced with correct meter.
20. It is found that the state and central government are implementing a no. of electrification project in which meters are becoming defective and stopped working after few months of installations. Currently very few meters manufacturers have been approved by TPSODL. It is recommended that TPSODL should empanel a nos. of quality meter manufacturers from where the contractor should procure meters and install in Government sponsored project and the meter manufacturer should issue guarantee certificate of each meter for a period of 5 years in favour of the local DISCOM where the project is being implemented so that in case of any defective meter is found by the DISCOM, then same can be replaced by the meter manufacturers directly. TPSODL should inform both State and Central Government implementing agency regarding % increase in defective meters happening in their sponsored scheme so that they can take appropriate remedial measures.

**The various loss reduction recommendations are furnished below.**

1. It is recommended that TPSODL should pray before the Hon'ble Commission for tariff rationalisation measures to be adopted for HT / EHT Consumers so that HT / EHT Industries will be incentivised to procure power from DISCOM without depending much on Open Access. TPSODL may be required to incentivise the Industrial Consumption by taking up better tariff rationalisation measures in future tariff hearing process, as increase in HT / EHT consumption will help in reducing the T&D loss and AT & C loss.
2. It is recommended that TPSODL should initiate dialogue with Urban Local Bodies and the Agricultural Department regarding higher % defective meters found in street lights and agricultural sectors. It is recommended that the TPSODL should involve Government Machinery and political people for awareness creation and to reduce meter tampering and theft of electricity. TPSODL should initiate dialogue with the Agricultural Department



regarding higher % of agricultural connections having no meters and take early action for providing connections with meters.

3. It is recommended that the TPSODL should involve the Government Machinery and Agricultural Department for awareness creation for metered power supply connection and to reduce meter tampering. It is proposed that the subsidy meant for Agriculture Category Consumer should be Aadhar linked and should be transferred through Direct Benefit Transfer (DBT) Scheme based on the correct meter reading. In case there is no meter or meter is tampered and found to be defective, then the transfer of electricity tariff subsidy as well as other Agriculture Subsidy of the Agriculture Department may be stopped till the defective meter is replaced with the correct meter.
4. It is proposed that TPSODL should promote Energy Efficient Lighting System (LED Bulbs, Tube lights and Energy Efficient Fans) in association with BEE / EESL / Private ESCO in its utility area. The availability of LED Bulbs, Tube Lights, BLDC Fans, IE3 Meters which are supposed to be distributed to consumers through BEE / EESL / Private ESCO as part of the Utility based Demand Side Management Program are not available in plenty. TPSODL may discuss with BEE / EESL / Private ESCO to open more outlets and increase the LED Lights, Super Efficient AC and Fans Distribution.
5. **Promoting the use of renewable energy (Solar) through facilitation:** Hon'ble Commission has notified Net Metering Scheme for Solar Roof Top Project in the consumer premises. TPSODL should popularize the scheme for LT consumers and provide prompt support and cooperation to the consumer for net metering agreement and solar project interconnection with DISCOM systems. Once Solar Interconnection happens at the LT systems, this will improve the voltage profile and reduce LT loss. Also the RPO of GRIDCO / DISCOM can be compiled which may reduce the BSP in future and will lead to financial savings for DISCOM.
6. At present Hon'ble OERC has implemented kVAh billing for the HT/ EHT/ Commercial / MSME and Industrial consumers. In view of the kVAh billing, the consumer which are having low power factor are paying higher energy bills, still the awareness about kVAh billing is not there and consumers are operating with low Power Factors. TPSODL may carry out special drives for awareness and sensitisation about kVAh billing. This may lead to more numbers of APFC installation and improvement in Power Factor and will lower the burden on the existing infrastructure. TPSODL may sign MoU with ESCO / AFPC installer under the Utility based Demand Side Management program so that APFC installer will assess the data base of Consumers with low power factor, take necessary action for installation of APFC Panels in consultation with Consumers directly.
7. Exploring opportunities in industrial segments (using efficient motors, pumps, compressors, capacitor bank, etc). TPSODL can coordinate and inform BEE / EESL / Private ESCO to provide the Industrial LED lighting Solution, IE3 Motors in RESCO / PMC level as per the provision of DSM Regulations. This will facilitate Demand Side Management in a long way.
8. TPSODL should conduct more nos. of Consumer awareness programs on saving electricity, electricity wastage, power theft, using electricity during off peak hour, using star rated equipment.

## ACTION PLAN OF THE DISCOM:

### Action plan of the DISCOM to complete communicable metering of Feeders, DTs and Consumers:

In line with the BEE regulations, TPSODL has planned to install Smart Meters integrated with AMI from FY22-23. Following is the Roadmap of metering installation for Feeders and DTRs:

Road Map for Metering of Feeders and DTRs					
Voltage Level	Meter Point	Total Points (Nos.)	FY 22-23	FY 23-24	FY 24-25
33 KV	33 KV GSS Feeders	116	116	-	-
	33 KV PSS Feeders	254	-	254	-
	33 KV Tapping Points	250	-	-	250
11 KV	11 KV Feeders	881	881	-	-
	11 KV Tapping Points	900	-	-	900
11KV/33KV	Inter Section/Subdivision Boundary Points	175	-	175	-
	Inter Division Boundary Points	60	-	60	-
DT	DTabove 25 KVA	16534	-	16000	534

## FEEDERS

### For GSS 33KV outgoing Feeders (116Nos) and PSS 11KV outgoing Feeders (881 Nos):

TPSODL has already planned to install Smart Meter Integrated with AMI in all 33KV GSS Outgoing and 11KV PSS Outgoing Feeders by March 2023. TPSODL has issued PO to various reputed vendors to implement the same.

### For PSS 33KV Incoming Feeders (254 Nos.):

TPSODL has planned to installed Smart Meter Integrated with AMI in all 33KV PSS Incoming Feeders by March 2024. This plan is already been proposed in our CAPEX Plan to OERC.

## TAPPING POINTS AND BOUNDARY METERS

### Inter Section/Sub-Division Boundary Points (175 Nos.):

TPSODL has planned to install Smart Meter Integrated with AMI by March 2024. This plan is already been proposed in our CAPEX Plan to OERC.

### Inter Division Boundary Points (60 Nos.):

TPSODL has planned to install Smart Meter Integrated with AMI by March 2024. This plan is already been proposed in our CAPEX Plan to OERC.

### For 33KV Tapping Points (250 Nos.) and 11KV Tapping Points (900 Nos.):

TPSODL has planned to install Smart Meter Integrated with AMI by March 2025.

## DISTRIBUTION TRANSFORMERS

### **Above 25KVA (16534 Nos.)**

TPSODL is already in planned to installed Smart Meter Integrated with AMI in all DTRs above 25KVA i.e., 16000 Nos. by Dec 2023,TPSODL also has issued PO to various reputed vendors to implement the same and rest 534 Nos Meters by Dec 2024.

### **Feeders Metering Status:**

All below mentioned feeder's meters are functional meters and are not integrated with AMI.

Circle	33 KV Outgoing Meter at GSS End			33kV Incoming Meter at PSS end			11 KV Outgoing Meter at PSS end		
	NO. OF FEEDER	Metered Feeders	Unmetered Feeders	NO. OF FEEDER	Metered Feeders	Unmetered Feeders	NO. OF FEEDER	Metered Feeders	Unmetered Feeders
CITY	11	11	0	20	14	6	78	63	15
BERHAMPUR	18	15	3	31	22	9	114	91	23
ASKA	13	13	0	22	20	2	78	72	6
BHANJANAGAR	16	15	1	47	31	16	171	142	29
JEYPORE	38	23	15	76	12	64	273	150	123
RAYAGADA	20	18	2	58	35	23	167	146	21
<b>TOTAL</b>	<b>116</b>	<b>95</b>	<b>21</b>	<b>254</b>	<b>134</b>	<b>120</b>	<b>881</b>	<b>664</b>	<b>217</b>

TPSODL would need feeder and DTR metering to ensure the complete distribution network is metered at all receiving, sending end as well as Tapping and Boundary Points. This would enable TPSODL to generate energy audit reports feeder-wise for all the feeders. These reports will provide detailed information about electricity consumption by different categories of consumers & the transmission and distribution losses in various sub-divisions, divisions, and circles.

Currently, we have functionals meters for 33KV Outgoing meter at GSS End, 33KV Incoming meter at PSS end and 11KV Outgoing meter at PSS end.

According to the BEE notification, TPSODL has taken the steps to replacement all existing non-smart meters with Smart meters integrated with AMI for accurate and timely Energy Accounting and reporting.

### **DTRs Metering Status:**

Circle Name	Metering Numbers
ASKA	18
BERHAMPUR	63
BERHAMPUR CITY	818
RAYAGADA	1

### **3.0 BACKGROUND**

Energy Conservation has become a top most priority in today's scenario in order to have a sustainable growth, productivity, enhancement & environmental protection. Considering the vast potential of energy savings and benefits of energy efficiency as per the report prepared by National Development Council (NDC) Committee on power, Govt. of India enacted the Energy Conservation Act 2001. The aim of EC Act 2001 is to provide the much-needed legal framework and other institutional arrangements so that various energy efficiency improvement drives can be easily launched at the state and national level. In order to implement the various provisions under the EC Act 2001, the Government of India established the Bureau of Energy Efficiency (BEE) on 1st March 2002 for development of policies and strategies with a thrust on self regulation and market principles, with the primary objective of reducing energy intensity of the Indian Economy and to enact and enforce energy efficiency through various regulatory and promotional measures.

#### **Role of BEE**

BEE coordinates with designated consumers, designated agencies and other organizations and recognize, identify and utilize the existing resources and infrastructure, in performing the functions assigned to it under the Energy Conservation Act. The Energy Conservation Act provides for regulatory and promotional functions.

The Major Promotional Functions of BEE include:

- Create awareness and disseminate information on energy efficiency and conservation
- Arrange and organize training of personnel and specialists in the techniques for efficient use of energy and its conservation
- Strengthen consultancy services in the field of energy conservation
- Promote research and development
- Develop testing and certification procedures and promote testing facilities
- Formulate and facilitate implementation of pilot projects and demonstration projects
- Promote use of energy efficient processes, equipment, devices and system
- Take steps to encourage preferential treatment for use of energy efficient equipment or appliances
- Promote innovative financing of energy efficiency projects
- Give financial assistance to institutions for promoting efficient use of energy and its conservation
- Prepare educational curriculum on efficient use of energy and its conservation
- Implement international co-operation programmes relating to efficient use of energy and its conservation

#### **Perform Achieve and Trade (PAT) Scheme**

National Mission of Enhanced Energy Efficiency (NMEEE) is one of the eight national missions of the NAPCC released by the Prime Minister on 30th June 2008. BEE has been entrusted with the task of preparing the implementation plan for NMEEE. PAT scheme is formulated under National Mission for Enhanced Energy Efficiency (NMEEE) which is one of eight plans in the National Action Plan on Climate Change (NAPCC).

PAT is a regulatory instrument framed by BEE and Ministry of Power to reduce specific energy consumption in energy intensive industries and reduce T & D loss in DISCOMs with an associated market based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded in power exchange.

## Purpose of Audit and Accounting Report

DISCOMs are currently focusing on Energy Conservation and Energy Efficiency to a larger extent for reducing the T & D Loss and improving the performance. Efficient Energy management, Usage of Energy Efficient Technologies and adopting best-practices for reduction T & D Loss would help Utility to improve their billings, collection, energy sale and profitability.

As per the PAT scheme of BEE, TPSODL being a DISCOM having annual AT & C losses more than 1000 Million kWh i.e. 86000 Metric Tonne of Oil Equivalent (mtoe) is a Designated Consumer as per EC Act 2001.

The main focus of the audit is to establish T & D Loss for the year 2020-21, collection of technical information like annual energy consumption, nos. of connections, nos. of disconnections, connected load and % of total connected load, energy billed, net input energy, power factor, total supply hour, scheduled outage, scheduled supply hours, unscheduled outage, available supply hours and evaluation of T & D loss, AT & C loss and Billing Efficiency of utility, finding out deviations from the baseline T & D loss, evaluations of energy management systems, exploring future energy conservation measures, energy saving potentials and providing recommendation for the same.

In line with Section 14(g) of the Energy Conservation(EC) Act, the Central Government has notified targets (in the form of Specific Energy Consumption) for Designated Consumers (DCs) on 26th October 2021 under the PAT cycle-VII. The baseline Distribution loss of TPSODL has been fixed as 29.76% for base line year 2018-19 to with base line net input energy 3638.95 MU. TPSODL has been directed to reduce its T&D Loss to 26.90% in Target Year 2024-25.

BEE (Manner and Intervals for Conduct of Energy Audit in electricity distribution companies), Regulations 2021 has been notified on 6th October 2021 and as per Regulation 3 of the said Regulations, it is required that the TPSODL to conduct the annual energy audit by an Accredited Energy Auditor and submit the report to BEE and SDA.

The management of TPSODL evinced keen interest in availing the services of PTC for conducting Annual Energy Audit of the TPSODL. The proposal for conducting energy audit of the DISCOM was accepted by the management of TPSODL vide their work order no 4800000385 dated 15.09.2021. Accordingly, PTC has been entrusted with the work of conducting the annual energy audit and submission of reports for the same. The field study, measurement and audit activities by PTC was conducted at site from 18th May 2022 to 19<sup>th</sup> May 2022 & 25 May 2022 and the report has been prepared based on the field study data, available technical data as well as information / inputs received from TPSODL.

## 4.0 INTRODUCTION ABOUT DISCOMS (DC)

TP Southern Odisha Distribution Limited (TPSODL) is a joint venture between Tata Power and the Government of Odisha with the majority stake being held by Tata Power Company (51%) and Govt. of Odisha (49%) on the Public-Private Partnership (PPP) model. TPSODL took over the license to distribute electricity in the southern part of Odisha, which was earlier served by erstwhile SOUTHCO, through a competitive bidding process. TPSODL was vested in the Utility of SOUTHCO for distributing and retail supply of electricity in the southern part of Odisha, through a Vesting Order issued by the Hon'ble Odisha Electricity Regulatory Commission (OERC).

The business of TPSODL is governed by the provisions of license issued by Hon'ble Odisha Electricity Regulatory Commission (OERC) for distribution and retail supply of electricity in South Odisha.



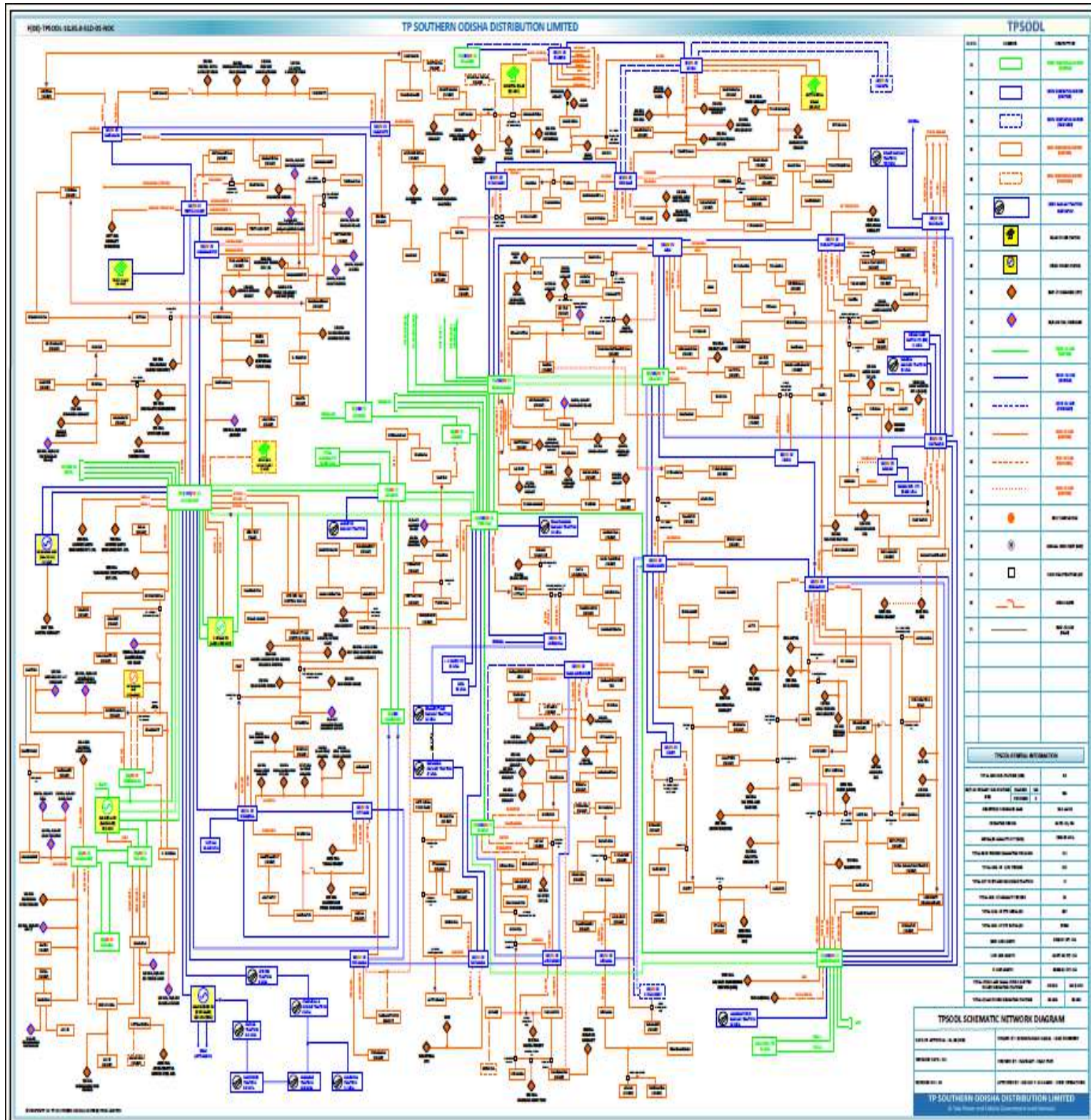
TPSODL procures power from GRIDCO which is a state owned company, engaged in the business of purchase of electricity in bulk from various generators located inside Odisha and the state share of power from Central generators for supply in all power distribution utilities, including TPSODL.

The licensed area of operation of the Company is 48,751 Sq. Km. and covers eight revenue districts of south Odisha namely Ganjam, Gajapati, Boudh, Kandhamala, Rayagada, Koraput, Nabarangpur and Malkangiri. TPSODL serves a population of 94.38 lacs with a Customer Base of 23.41 lacs. The Company is operating through 6 circles namely City Circle, Berhampur Circle, Aska Circle, Bhanjanagar Circle, Rayagada Circle and Jeypore Circle which is further subdivided in 19 Divisions and 51 Sub-division and 136 sections which manage the commercial and O&M activities in order to serve its consumers.



AREA MAP OF TPSODL





SLD OF TPSODL SYSTEM



The details of administrative set up TPSODL are furnished below.

**Name and Address of Designated Consumer:**

**TP SOUTHERN Odisha Distribution Limited (TPSODL)**

Corporate Office: Courtpeta, Berhampur, Ganjam, Odisha- 760004

Phone: 9777333245, Email: [energyaudit@tpsouthernodisha.com](mailto:energyaudit@tpsouthernodisha.com)

Website: [www.tpsodl.com](http://www.tpsodl.com)

**Name and Contact Details of Energy Manager and Authorized signatory of DC**

**Authorized Signatory:**

Mr. Arvind Singh, Chief Executive Officer

E-mail: [ceo.office@tpsouthernodisha.com](mailto:ceo.office@tpsouthernodisha.com)

**Nodal Officer:**

Mr. Saumitro Banerjee, Head – MMG, Energy Audit

Phone: 9810281982

Email: [saumitro.banerjee@tpsouthernodisha.com](mailto:saumitro.banerjee@tpsouthernodisha.com)

**Designated Energy Manager:**

Mr. Ratan Kuber, Lead Engineer

Regd. No-EA-32475/21

Phone: 9777333245

E-mail: [energyaudit@tpsouthernodisha.com](mailto:energyaudit@tpsouthernodisha.com)

**IT Manager:**

Mr. Dusmanta Kumar Rout, HoG – IT

Phone: 9337229715

Email: [dusmanta.rout@tpsouthernodisha.com](mailto:dusmanta.rout@tpsouthernodisha.com)

**Financial Manager**

Mr. Deepak Jain, Financial Controller

Phone: 9958181337

Email: [deepak.jain@tpsouthernodisha.com](mailto:deepak.jain@tpsouthernodisha.com)

### Consumer Base of TPSODL:

The details of total numbers of Consumers in TPSODL area is furnished below:

Consumer Category	Total Number of connections (Nos.)
Residential	2200508
Agricultural	26661
Commercial/Industrial-LT	91560
Commercial/Industrial-HT	500
Others	21484
Total	2340713

The details of organisational set up of TPSODL are furnished below:

DETAILS	As on 31st March 2020	As on 31st March 2021
No. of Circles	6	6
No. of Divisions	19	19
No. of Subdivisions	51	51
No. of Sections	136	136

Circle Name	Division Name	Sub-Division Name	SDO CODE
CITY CIRCLE	BED-I, Berhampur	Medical Sub-Division, Berhampur	3411
		Industrial Sub-Division, Berhampur	3414
		Gopalpur Sub- Division , Berhampur	3412
	BED-II, Berhampur	SSD No-I, Berhampur	3421
		SSD No-III, Berhampur	3422
	BED-III, Berhampur	SSD No-IV, Berhampur	3432
		Kanisi S/D	3431
BERHAMPUR CIRCLE	GNED, Chatrapur	Chatrapur S/D	2111
		Rambha S/D	2112
		Khallikote S/D	2113
	PSED , Purushottampur	Kodala S/D	2143
		Purushottampur S/D	2141
		Polasara S/D	2142
	HED, Hinjilicut	Sheragada S/D	2152
		Hinjilicut S/D	2151
ASKA CIRCLE	AED-I, Aska	Aska S/D	3511
		Nuagam S/D	3513
	AED-II, K.S.NAGAR	K.S.NAGAR	3522
		BUGUDA	3523
	GSED, Digapahandi	Digapahandi S/D	3531
		Chikiti S/D	3532
BHANJANAGAR CIRCLE	BNED, Bhanjanagar	No.1,Bhanjanagar Sub-Division	2911
		No.2,Bhanjanagar S/D	2915
		Bellaguntha S/D	2912
		Sorada S/D	2913
	PED , Phulbani	Phulbani S/D	2921
		Balliguda S/D	2922
		G.Udayagiri S/D	2923
	BoED ,Boudh	BOUDH S/D	2931
		MANMUNDA S/D	2932
		Rayagada S/D	3111
RAYAGADA CIRCLE	RED, Rayagada	Therubali S/D	3112
		Bissam Cuttack S/D	3113
		Paralakhemundi S/D	3121
	PKED,Paralakhemundi	Kasinagar S/D	3122
		Upalada S/D	3124
		R.Udayagiri S/D	3125
		Mohana S/D	3123
		Gunupur S/D	3131
	GED, Gunupur	Gumuda S/D	3132
JEYPORE CIRCLE	JED, JEYPORE	JESD-1 JEYPORE	7111
		JESD-2 JEYPORE	7114
		SDO, BORIGUMMA	7115
	KED, KORAPUT	Koraput S / D	7141
		Sunabeda S / D	7142
		Laxmipur S / D	7143
	MED, MALKANGIRI	Malkangiri S / D	7131
		Balimela S / D	7132
	NED, NABARANGPUR	Nabarangpur S / D	7121
		Umarkote S / D	7123
		Papadahandi S / D	7124

#### 4.1 SUMMARY PROFILE OF TPSODL

TPSODL receives electrical power at 33kV level from 28 numbers of Transmission Stations (TS) out of which 4 nos. TS are rated at 220/132/33kV, 2 nos. at 220/33kV and 22 nos. at 132/33kV located within and in the vicinity of TPSODL operational area. TPSODL distributes the power at 33kV / 11kV / 440V / 230V depending on the demand of the consumers.

At present, there are 110 numbers of 33 kV feeders with a combined circuit length of approximately 3636 Ckt. KMs supplying power to 224 numbers of 33/11kV Primary Substations. The 33kV supply is stepped down to 11kV level through 459 numbers of 33/11kV power transformers with an installed capacity of 2986 MVA at these primary substations. Nearly 794 numbers of 11 kV feeders emanates from the 33/11 kV primary substations having cumulative length of approximately 40487 Ckt. KMs and supply power to HT consumers connected at 11 kV level and LT customers connected to 11/0.415 kV & 11/0.230 kV distribution substations. 53658 numbers of distribution transformers are installed in all six circles with an installed capacity of 2250 MVA. The length of the LT network is approximately 36637 Ckt. KMs. These LT feeders supply power to three phase and single phase consumers.

The Detail of Network Systems of TPSODL is furnished below:

Network System	As on 31st March 2020	As on 31st March 2021
Length of 33 KV Line (km.)	3,550	3,665
Length of 11 KV Line (km.)	39,713	40,368
Length of LT KV Line (km.)	35,971	37,302
Length of LT AB Cable (km.)	26,140	27,703

#### Metering Status of TPSODL:

CATEGORY WISE % OF METERING COMPLETED						
Category	FY 2019-20			FY 2020-21		
	Total	No. of Metering Completed	% of Metering Completed	Total	No. of Metering Completed	% of Metering Completed
33 kV Feeders	105	74	70.48%	110	83	75.45%
11 kV Feeders	695	290	41.73%	794	616	77.58%
Distribution Transformers	51,915	0	0.00%	54,451	854	1.57%
Consumers	2279096	2148081	94.25%	2340713	2247898	96.03%

The Detail of Assets under TPSODL is furnished below:

ASSETS	As on 31st March 2020	As on 31st March 2021
No. of 33 KV feeders (Including GRIDCO interface)	105	110
No. of 11 KV feeders	695	794
No. of 33 / 11 kv POWER Transformers	442	481
No. of Distribution Transformers (11/0.4 & 33/ 0.4 kV)	51,915	54,451

Voltage wise Energy Accounting Summary:

Energy Accounting Summary					
Sl.No.	Voltage level	Input (in MU)	Sale (in MU)	Loss (in MU)	Loss %
i	LT	2,726	2,148	577	21.18485203
ii	11 Kv	435	182	253	58.13638036
iii	33 kv				
iv	> 33 kv	438	438.43	0	0

## 5.0 DISCUSSION AND ANALYSIS

The main objective of Energy Audit is to establish the following.

- Energy Input to the System
- Energy utilized / sold (Energy Sales) to the consumer
- Energy losses in the System.
- To assess the Efficiency of the System
- To identify the area of high T&D losses
- To assess the extent of Theft & Pilferage
- To take appropriate steps for making the system technically more efficient and financially sustainable

Energy audit distinctly addresses the problems of energy losses. Hence any savings in energy usage and reduction of losses directly leads to the profitability of the utility.

### Energy Accounts of Previous Year:

TPSODL has purchased around 3469 MU of Energy from GRIDCO in FY 2019-20 and has billed around 2620 MU of energy to its various consumers and thus has a T&D Loss of around 24% & AT&C Loss of around 36% in FY 2019-20.

As per the performance review report of TPSODL submitted to Hon'ble OERC the energy accounts of FY 2019-20 is submitted as under:

PARTICULARS	FY 2019-20
Input Energy(MU)	3469
Total Sale (MU)	2620
T & D Loss (%)	24%
Billing Efficiency (%)	76%
Billing To Consumers (Rs. in Cr)	1279
Collection Received (Rs. in Cr)	1079
Collection Efficiency (%)	84%
AT& C Loss (%)	36%

#### Energy Accounts and performance of TPSODL in Current Year:

TPSODL has purchased around 3599 MU of Energy from GRIDCO in FY 2020-21 and has billed around 2769 MU of energy to its various consumers and thus has a T&D Loss of around 23% & AT&C Loss of around 30% in FY 2020-21.

As per the performance review report of TPSODL submitted to Hon'ble OERC the energy accounts of FY 2020-21 is submitted as under.

PARTICULARS	FY 2020-21
Input Energy(MU)	3599
Total Sale (MU)	2769
T & D Loss (%)	23%
Billing Efficiency (%)	77%
Billing To Consumers (Rs. in Cr)	1318
Collection Received (Rs. in Cr)	1198
Collection Efficiency (%)	91%
AT& C Loss (%)	30%

### Category wise performance of consumers under TPSODL:

Category	Input energy (MU)	Billed energy (MU)			T&D loss (MU)	T&D loss (%)
		Metered energy	Unmetered/assessment energy	Total energy		
Residential	3599.295	1623.394	1.614518566	1625.008	830.3624	23%
Agricultural		96.95545	0	96.95545		
Commercial /Industrial-LT		314.3065	0.054423592	314.3609		
Commercial /Industrial-HT		620.4924	0	620.4924		
Others		112.0966	0.019227365	112.1158		
<b>Total</b>	<b>3599.295</b>	<b>2767.244</b>	<b>1.688169523</b>	<b>2768.933</b>	<b>830.3624</b>	<b>23%</b>

Details of category wise nos. of consumers and their annual energy consumption, Contract Demand for the last financial year are given below:

TPSODL is licensed to distribute electricity to consumers and collect revenue. The different categories of consumers in TPSODL are as per the following.

- EHT
- HT
- Domestic
- Kutir Jyoti
- L.T. General (Com)
- Agriculture
- Agro
- Allied-Agro
- Street Lighting
- PWW
- Small Industry
- Medium Industry
- Specified Pub. Purpose (P.I.)



### Category wise no. of consumer under TPSODL

Category	FY 2020-21	
	Live Cons. (Nos.)	% of Total Live Consumers
EHT	16	0.001%
HT	484	0.021%
Domestic	1930906	82.492%
Kutir Jyoti	269612	11.518%
L.T. General (Com)	87168	3.724%
Agriculture	26661	1.139%
Agro	17	0.001%
Allied-Agro	69	0.003%
Street Lighting	4796	0.205%
PWW	4576	0.195%
Small Industry	2506	0.107%
Medium Industry	1807	0.077%
Specified Pub. Purpose (P.I.)	12112	0.517%
Total	2340713	100.000%

#### OBSERVATIONS & RECOMMENDATIONS:

- From the above table it is found that the total consumers in TPSODL FY 2020-21 are 2340713.
- Among all categories, the percentage of Domestic category consumers is around 82% in FY 2020-21.
- Whereas percentage of nos. of HT consumers around 0.002 % in FY 2020-21 and percentage of nos. of EHT consumers around 0.0006 % in FY 2020-21 to the fact that no substantial nos. of HT/ EHT new consumers have come up in the region.

**Division Wise Category wise Connected Contract Demand under TPSODL:**

CONTRACTED_LOAD		
DIVISION	CAT_CODE	Total
AED, ASKA-I	ALLIED AGRICULTURE ACTIVITIES	937
	BULK SUPPLY DOMESTIC	225
	IRRIGATION PUMPING AND AGRICULTURE	1565
	LARGE INDUSTRY	512
	PUBLIC WATER WORKS & SEWERAGE PUMPING	934
	SPECIFIED PUBLIC PURPOSE	125
AED, ASKA-I Total		4298
AED, ASKA-II	LARGE INDUSTRY	1345
AED, ASKA-II Total		1345
BERHAMPUR-I	ALLIED AGRICULTURE ACTIVITIES	1994
	BULK SUPPLY DOMESTIC	721
	GENERAL PURPOSE >= 110 KVA	6541.1
	LARGE INDUSTRY	2141
	PUBLIC WATER WORKS AND SEWERAGE>= 110 KVA	189
	RAILWAY TRACTION	16000
	SPECIFIED PUBLIC PURPOSE	8586.77
BERHAMPUR-I Total		36172.87
BERHAMPUR-II	GENERAL PURPOSE >= 110 KVA	1710
	LARGE INDUSTRY	632
	PUBLIC WATER WORKS AND SEWERAGE>= 110 KVA	152
	SPECIFIED PUBLIC PURPOSE	133
BERHAMPUR-II Total		2627
BERHAMPUR-III	ALLIED AGRICULTURE ACTIVITIES	2438
	ALLIED AGRO-INDUSTRIAL ACTIVITIES	214
	GENERAL PURPOSE >= 110 KVA	2790.55
	LARGE INDUSTRY	6978.59
	PUBLIC WATER WORKS & SEWERAGE PUMPING	928
BERHAMPUR-III Total		13632.14
BNED, BHANJANAGAR	IRRIGATION PUMPING AND AGRICULTURE	9136
	LARGE INDUSTRY	1521.63
BNED, BHANJANAGAR Total		10657.63
BoED, BOUDH	GENERAL PURPOSE >= 110 KVA	123
	LARGE INDUSTRY	4091
	PUBLIC WATER WORKS AND SEWERAGE>= 110 KVA	225
	SPECIFIED PUBLIC PURPOSE	272
BoED, BOUDH Total		4711
GANJAM NORTH	ALLIED AGRICULTURE ACTIVITIES	2390
	ALLIED AGRO-INDUSTRIAL ACTIVITIES	358
	BULK SUPPLY DOMESTIC	178
	GENERAL PURPOSE >= 110 KVA	6820
	LARGE INDUSTRY	25724

	POWER INTENSIVE INDUSTRY	28888
	PUBLIC WATER WORKS & SEWERAGE PUMPING	1200
	RAILWAY TRACTION	13000
GANJAM NORTH Total		78558
GED, GUNUPUR	ALLIED AGRICULTURE ACTIVITIES	122
	GENERAL PURPOSE >= 110 KVA	517
	IRRIGATION PUMPING AND AGRICULTURE	917
	LARGE INDUSTRY	845
	SPECIFIED PUBLIC PURPOSE	547.78
GED, GUNUPUR Total		2948.78
GSED, DIGAPAHANDI	ALLIED AGRICULTURE ACTIVITIES	240
	IRRIGATION PUMPING AND AGRICULTURE	969
	LARGE INDUSTRY	2673
	SPECIFIED PUBLIC PURPOSE	116.66
GSED, DIGAPAHANDI Total		3998.66
HED, HINJILICUT	ALLIED AGRICULTURE ACTIVITIES	200
	GENERAL PURPOSE >= 110 KVA	170
	LARGE INDUSTRY	3361
	SPECIFIED PUBLIC PURPOSE	911
HED, HINJILICUT Total		4642
JED, JEYPORE	ALLIED AGRO-INDUSTRIAL ACTIVITIES	324
	BULK SUPPLY DOMESTIC	1040.4
	GENERAL PURPOSE >= 110 KVA	1967.66
	GENERAL PURPOSE>=110 KVA	233
	IRRIGATION PUMPING AND AGRICULTURE	1155
	LARGE INDUSTRY	9759.89
	PUBLIC WATER WORKS & SEWERAGE PUMPING	562.4
	RAILWAY TRACTION	22000
	SPECIFIED PUBLIC PURPOSE	178
JED, JEYPORE Total		37220.35
KED, KORAPUT	BULK SUPPLY DOMESTIC	417
	GENERAL PURPOSE >= 110 KVA	1649.11
	LARGE INDUSTRY	23673.21
	PUBLIC WATER WORKS & SEWERAGE PUMPING	1690.94
	RAILWAY TRACTION	21200
	SPECIFIED PUBLIC PURPOSE	2630.11
KED, KORAPUT Total		51260.37
MED, MALKANAGIRI	GENERAL PURPOSE >= 110 KVA	698
	IRRIGATION PUMPING AND AGRICULTURE	1547
	LARGE INDUSTRY	6911.44
	PUBLIC WATER WORKS & SEWERAGE PUMPING	133
	SPECIFIED PUBLIC PURPOSE	429.89
MED, MALKANAGIRI Total		9719.33
NED, NABARANGAPUR	ALLIED AGRO-INDUSTRIAL ACTIVITIES	250
	GENERAL PURPOSE >= 110 KVA	781
	IRRIGATION PUMPING AND AGRICULTURE	1977
	LARGE INDUSTRY	4652
	PUBLIC WATER WORKS & SEWERAGE PUMPING	124
	SPECIFIED PUBLIC PURPOSE	193
NED, NABARANGAPUR Total		7977
PED, PHULBANI	LARGE INDUSTRY	841
	PUBLIC WATER WORKS AND SEWERAGE>= 110 KVA	150

	SPECIFIED PUBLIC PURPOSE	468.78
PED, PHULBANI Total		1459.78
PKED, PARLAKHEMUNDI	IRRIGATION PUMPING AND AGRICULTURE	4523
	LARGE INDUSTRY	2504
	PUBLIC WATER WORKS & SEWERAGE PUMPING	124
	PUBLIC WATER WORKS AND SEWERAGE >= 110 KVA	110
	SPECIFIED PUBLIC PURPOSE	850
PKED, PARLAKHEMUNDI Total		8111
PSED, PURUSOTTAMPUR	ALLIED AGRICULTURE ACTIVITIES	480
	IRRIGATION PUMPING AND AGRICULTURE	3260
	LARGE INDUSTRY	1217
	PUBLIC WATER WORKS & SEWERAGE PUMPING	167
PSED, PURUSOTTAMPUR Total		5124
RED, RAYAGADA	BULK SUPPLY DOMESTIC	1315
	EMERGENCY SUPPLY TO CGP	33333
	GENERAL PURPOSE >= 110 KVA	1498
	LARGE INDUSTRY	14938
	PUBLIC WATER WORKS & SEWERAGE PUMPING	250
	RAILWAY TRACTION	31000
	SPECIFIED PUBLIC PURPOSE	1691
RED, RAYAGADA Total		84025
Grand Total		368487.91

Details of category wise nos. of metered connections & unmetered connections and total number of connection for the last financial year is given below:

Category	No of connection metered (Nos.)	No of connection Un-metered (Nos.)	Total Number of connections (Nos.)
Residential	2107734	92774	2200508
Agricultural	26661	0	26661
Commercial/Industrial-LT	91529	31	91560
Commercial/Industrial-HT	500	0	500
Others	21473	11	21484
<b>TOTAL</b>	<b>2247897</b>	<b>92816</b>	<b>2340713</b>

Details of Consumer Metering Position are furnished below:

Consumer Metering Position	As on 31st March 2020	As on 31st March 2021
Total number of meters	2,148,081	2,247,898
No. of working meters	1,902,494	2,062,263
Percentage of working meters ( % )	89%	92%

## 5.1 BILLING & ARREAR STATUS OF TPSODL

Total Energy Billed, Amount billed, Gross Amount Collected by the DISCOM for FY 2020-21 is furnished below:

ANNUAL BILLED AMOUNT IN CRORES			
Financial Year	Total Energy Billed	Amount Billed	Gross Amount Collected
	Million kWh	Rs. Cr	Rs. Cr
<b>FY 2020-21</b>	2769	1318	1198

### Abstract of Energy Bill Served by GRIDCO to TPSODL:

Sl. No.	Month	Actual SMD (kVA)	Total Amount Billed (Rs)	Total Energy Billed (MU)	Total Energy Sale (MU)	LOSS (%)	TPSODL Total Energy Billed (MU)	LOSS (%)
1	Apr-20	527989	13410966321	280	241	13.92%	280	13.93%
2	May-20	558347	13582812288	318	244	23.38%	318	23.27%
3	Jun-20	557167	13827386644	296	238	19.48%	298	20.13%
4	Jul-20	565229	13994436546	318	222	30.23%	318	30.19%
5	Aug-20	578964	14235468186	318	216	32.09%	318	32.08%
6	Sep-20	594576	14398510356	323	232	28.08%	320	27.50%
7	Oct-20	578872	14700626643	301	227	24.64%	301	24.58%
8	Nov-20	576087	14844008376	275	218	20.72%	275	20.73%
9	Dec-20	568745	533018712	270	212	21.43%	270	21.48%
10	Jan-21	588669	2026526056	297	226	23.80%	297	23.91%
11	Feb-21	578008	1942914192	269	226	16.13%	269	15.99%
12	Mar-21	599689	1279773653	336	266	20.88%	336	20.83%
<b>TOTAL</b>		<b>572695.2</b>	<b>118776447973</b>	<b>3601</b>	<b>2768</b>	<b>23.14%</b>	<b>3600</b>	<b>23.11%</b>

**Critical Observation:** There is difference in the total input energy to the DISCOM in Primary data (Energy Billed by GRIDCO to TPSODL) and in Secondary data (TPSODL reported energy input data to Hon'ble OERC). TPSODL has acquired licensee of the Utility on 1<sup>st</sup> April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL has reported that there might be an error which has occurred before the transition date. TPSODL is advised to rely on both primary and secondary set of data while reporting the major energy data like, total input energy and total billed energy in future.

Arrears Status for FY 2020-21 is furnished below:

DIVISION WISE TOTAL CONSUMER AND ARREAR OF SOUTHCO AS ON MAR'21							
SRL.NO.	DIVISION NAME	LIVE		PDC		TOTAL	
		CONS. NO.	ARREAR	CONS. NO.	ARREAR	CONS. NO.	ARREAR
1	GANJAM NORTH	111133	743913323.2	17637	450470784.8	128770	1194384108
2	PURUSOTTAMPUR	121604	831089232.3	8714	163187192.3	130318	994276424.6
3	HINJLIKATU	93815	614189110.2	7591	114192646.6	101406	728381756.8
3	BHANJA NAGAR	142867	417352156.2	18676	392670895.9	161543	810023052.1
4	PHULBANI	173316	780365600.1	18044	148769447.3	191360	929135047.4
5	BOUDH	112862	1170012448	8644	140465291.1	121506	1310477739
6	RAYAGADA	168596	985614259.3	26106	267116713.9	194702	1252730973
7	PARLAKHEMUNDI	139635	529038566.1	21618	208225404.5	161253	737263970.6
8	GUNUPUR	77920	189348070.7	14397	116438729.4	92317	305786800
9	BERHAMPUR-I	80311	385279275.5	7875	195910806.7	88186	581190082.2
10	BERHAMPUR-II	62677	238999132.9	6573	245766593.5	69250	484765726.4
11	BERHAMPUR-III	75998	92467478.54	13579	254397465.5	89577	346864944
12	ASKA-1	65598	288583178	9197	222231189.5	74795	510814367.5
13	ASKA-2	67536	520515992.2	5033	122191381.1	72569	642707373.3
14	DIGPAHANDI	110300	430483800.7	15606	304281437.6	125906	734765238.3
15	JEYPORE	162159	942340049.7	29217	342655677.2	191376	1284995727
16	NAWARANGPUR	282499	2190178876	28342	259510771.9	310841	2449689648
17	MALKANGIRI	143834	1621019483	11651	119339897.1	155485	1740359380
18	KORAPUT	147553	681826776.7	21464	175047284	169017	856874060.7
	<b>TOTAL</b>	<b>2340213</b>	<b>13652616809</b>	<b>289964</b>	<b>4242869610</b>	<b>2630177</b>	<b>17895486419</b>

## 5.2 METERED/UNMETERED ENERGY SALE OF TPSODL

Annual energy consumption of the consumers in TPSODL for FY 2020-21 is given below.

### Annual Metered/ Unmetered Energy Consumption (in MU) under TPSODL

ANNUAL METERED/UNMETERED ENERGY CONSUMPTION IN MU				
Financial Year	Estimated unaccounted energy/theft	Metered Energy Sales	Unmetered Energy Sales	Annual Energy Consumption
FY 2020-21	830.07	2767	1.68	2768.93

### % of Metered, Unmetered & Unaccounted Energy Consumption

% OF METERED/UNMETERED & UNACCOUNTED ENERGY CONSUMPTION				
Financial Year	Total Annual Energy Consumption	Estimated unaccounted energy/theft in %	Metered Energy Sales in %	Unmetered Energy Sales in %
FY 2020-21	2768.93	23.06	76.88	0.04

## OBSERVATIONS & RECOMMENDATIONS:

- It is found that Metered Energy sale is 76.88 % for FY 2020-21.
- It is found that Unmetered Energy sale is 0.04 % for FY 2020-21.
- It is found that unaccounted theft was 23.06 % for FY 2020-21
- Though the unaccounted energy and theft has reduced but still it is at a level of 23.06 % which is very high. It is recommended to decrease the unaccounted / theft energy through strict vigilance measures and awareness campaigns. Also meters are to be supplied to avoid unmetered energy consumption in future.

## 5.3 LOSSES IN DISTRIBUTION NETWORK

The losses in a distribution network are classified into three categories i.e. Transmission & Distribution (T&D) Loss, Technical Loss and Commercial loss.

1. T&D loss is the difference between Energy Supplied to a network and the total Energy Billed. It includes both Technical & Commercial loss

T&D Loss = Input Energy to the System - Energy Billed to the Consumer

Distribution (T&D) Loss = Input Energy Supplied to DISCOM system (-) Energy Billed to consumer by DISCOM

% Distribution (T&D) Loss =  $[\text{Input Energy} - \text{Energy Billed}] \times 100 \div [\text{Input Energy}]$

2. Technical loss or line loss occurs mainly due to the heating effects, loose bindings, earthing problem, unbalancing, inadequate size of conductors, shifting of load centre, low power factor/reactive losses etc. This loss is difficult to calculate and the most accurate method is the load flow study using network analysis software.

The Technical losses in the system comprises of the following:

- 33 kV & 11 kV Line Losses
  - Distribution Transformer Losses (Iron & Copper losses)
  - L.T. Line Losses
  - Miscellaneous Technical Losses
  - Losses due to Loose Jump Connections in the line
  - Losses due to Short Circuits & Earth Faults
  - Losses in Service Mains of Installations.
  - Losses incurred in CT'S & Current Coils of Energy Meters.
3. Commercial Loss is the difference between T & D loss and Technical loss.  
Commercial Loss = Distribution Loss (-) Technical Loss

The commercial losses comprises of the following

- Mistakes in the billing.



- Meters not recording (MNR)
- Meters not recording correctly
- Meters by passed due to defects/ intentionally
- Meters not read & billed.
- Theft and pilferage.

### 5.3.1 CALCULATION OF T&D LOSS

Distribution Loss or T&D loss is the difference between energy supplied to a network and the total energy billed. It includes both technical and commercial losses.

#### Sample Calculation:

A typical calculation for T&D Loss for FY 2020-21 is furnished below.

The total demand of TPSODL for FY 2020-21 = 600 MVA

The total Energy Input to TPSODL for FY 2020-21 =3599 MU

BST Bill (P/U) =2.16

$$\begin{aligned}\text{BST Bill of GRIDCO of TPSODL for FY 2020-21} &= \text{Energy input (MU)} \times \text{BST Bill (P/U)/10} + 0.0713 \\ &= 3599 \times (2.16/10) + 0.0713 \\ &= 777.384 + 0.0713 = 777.455 \text{ Cr}\end{aligned}$$

Total Energy sale to all consumer i.e. EHT, HT and LT for FY 2020-21 =2768 MU

Energy sale to EHT consumer = 438 MU

Energy sale to HT consumer = 182 MU

Energy sale to LT consumer =2148 MU

For HT Category of T & D Loss is assumed at 8%

$$\begin{aligned}\text{T \& D Loss in LT Category} &= 1 - (\text{Energy sale to LT consumer in MU} / ((\text{Total Energy input in MU} - \text{Energy sale to EHT consumer in MU}) - ((\text{Energy input in MU} - \text{Energy sale to EHT consumer in MU}) \times 8\%) - \text{Energy sale to HT consumer in MU})) \\ &= 1 - (2148 \text{ MU} / ((3599 \text{ MU} - 438 \text{ MU}) - ((3599 \text{ MU} - 438 \text{ MU}) \times 8\%) - 182 \text{ MU})) \\ &= 21.21\%\end{aligned}$$

$$\begin{aligned}\text{T \& D Loss in HT \& LT Category} &= 1 - (((\text{Energy sale to HT consumer in MU} + \text{Energy sale to LT consumer in MU}) / (\text{Total Energy input in MU} - \text{Energy sale to EHT consumer in MU}))) \\ &= 1 - (((182 \text{ MU} + 2148 \text{ MU}) / (3599 \text{ MU} - 438 \text{ MU}))) \\ &= 1 - (2330/3161) = 1 - 0.737 = 0.262 = 26.2\%\end{aligned}$$

Overall T & D Loss of TPSODL for FY 2020-21= 1- Total Energy sale to consumer including EHT, HT and LT in MU/ Total Energy input in MU  
=1-(2768 MU/3599 MU)  
=1-0.769 =0.23

Based on the above methodology T&D loss for FY 2020-21 is calculated & furnished below:

PARTICULARS	FY 2020-21
<b>BULK SUPPLY</b>	
Demand (MVA)	600
Energy input (MU)	3599
<b>SALE TO CONSUMERS (MU)</b>	
EHT	438
HT	182
LT	2148
<b>TOTAL SALE (MU)</b>	2769
<b>T &amp; D LOSS (%)</b>	
HT & LT T&D Loss	26
<b>OVERALL T &amp; D LOSS (%)</b>	23

Month wise T & D loss FY 2020-21 is furnished below:

Table3.1: T&D LOSS FOR FY 2020-21

Particulars	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	TOTAL
<b>BULK SUPPLY</b>													
Demand(MVA)	528	558	557	557	579	595	579	576	569	589	578	600	600
Energy Input(MU)	280	318	298	318	318	320	301	275	270	297	269	336	3599
<b>SALES TO CONSUMERS(MU)</b>													
EHT	23	31	33	33	34	35	35	37	38	49	43	46	438
HT	15	16	15	15	14	16	14	13	15	16	15	20	182
LT	203	197	190	174	168	181	179	168	160	161	168	200	2148
<b>Total Sale(MU)</b>	241	244	238	222	216	232	227	218	212	226	226	266	2769
<b>T&amp;D Loss (%)</b>													
HT&LT	15	26	22	33	36	31	28	24	25	29	19	24	26
<b>Overall (%)</b>	14	23	20	30	32	28	25	21	21	24	16	21	23

### 5.3.2 CALCULATION OF AT&C LOSS

#### AGGREGATE TECHNICAL & COMMERCIAL (AT&C) LOSS:

Aggregate Technical & Commercial Loss (AT&C Loss) is defined as the summation of all technical as well as commercial power loss that occurs due to electrical power flow through sub-transmission and distribution network.

Technical Loss is defined as the summation of Power Loss through 33 kV, 11 kV line and LT Line Loss including Transformer Loss and others.

Commercial Loss is defined as the summation of Power Loss occurring due to Theft/ Pilferage, Deficient meter, Inefficiency in Billing & Unrealized Revenue due to Collection Inefficiency.

#### COMPUTATION OF AT& C LOSS

Aggregate Technical & Commercial Loss (AT&C) is computed from the actual meter readings of the meter installed at various locations in the system.

### Sample Calculation:

A typical calculation AT & C loss for FY 2020-21 is furnished below.

The total demand of TPSODL for FY 2020-21 = 600

The total Energy Input to TPSODL for FY 2020-21= 3599 MU

The total Energy sale by TPSODL for FY 2020-21 =2769 MU

Overall Billing Efficiency (%) for FY 2020-21 = Total Sale in MU/ Total input in MU  

$$= 2769/3599 = 76.93 \%$$

Overall Collection Efficiency (%) for FY 2020-21

= Total Collection Received (Rs. in Cr.) / Total Billing to Consumers (Rs. in Cr.)  

$$= \text{Rs } (1198 / 1318) \text{ Cr} = 90.89 \%$$

AT & C Loss (%) for FY 2020-21

AT & C Loss (%) = 1-{Collection Efficiency (%) x Billing Efficiency (%)}

Overall AT & C Loss (%) for FY 2020-21 = 1-(90.89 % x 76.93 %)  

$$= 30.08 \%$$

**AT & C Loss for FY 2020-21 is furnished below:**

Particulars	FY 2020-21
<b>Total Sale (MU)</b>	2769
<b>T &amp; D Loss (%)</b>	23
<b>Billing Efficiency (%)</b>	77
<b>Billing To Consumers (Rs. in Crs.)</b>	1318
<b>Collection Received (Rs. in Crs.)</b>	1198
<b>Collection Efficiency (%)</b>	91
<b>AT &amp; C Loss (%)</b>	30

Month wise AT & C loss for last financial year is furnished below:

**Table3. 4: AT&C LOSS FOR FY 2020-21**

Particulars	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	TOTAL
TOTAL SALE	241	244	238	222	216	232	227	218	212	226	226	266	2769
BILLING EFFICIENCY (%)													
OVERALL (%)	86	77	80	70	68	72	75	79	79	76	84	79	77
BILLING TO CONSUMERS(Rs in crs)													
Total	110	108	113	108	103	109	110	106	105	114	111	123	1318
COLLECTION RECIEVED (Rs in crs)													
Total	97	89	74	88	90	93	100	89	94	102	196	88	1198
COLLECTION EFFICIENCY (%)													
Overall (%)	88	82	65	82	88	85	91	84	89	89	177	72	91
AT&C Loss													
Overall (%)	24	37	48	43	40	38	32	33	30	32	48	43	30

## Sample Study

- Calculation of Technical loss of 33KV feeder line loss (33KV to 11KV)
- Calculation of 11 kV & LT loss
- Calculation of DT loss

The above tables related to calculation of 33kv quarterly energy audit report, 11kv quarterly energy audit report, average t & d loss of DTs under TPSODL (2020-21) was not made available.

TPSODL has acquired licensee of the Utility on 1<sup>st</sup> April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL being a new DISCOM has reported that the above 33kV & 11kV Feeder losses & DT losses couldn't not be obtained due to the defected meter present in the current system. TPSODL is working on replacement of current defected meters present in the system and will be able to obtain the above losses further.

However we have recommended a sample format in the annexure for conducting future energy audit in 33kV, 11 kV feeders& DT. TPSODL may adopt the same in future.

## RECOMMENDATION

- We propose to adopt the following methodology for carrying out future energy audits by TPSODL.
- 33 kV System Loss should be estimated as the difference of sending end energy from the 220 / 132 / 33 kV Grid Sub-Station and receiving end energy of Primary Substation including energy sent out to Bulk consumers at 33 kV level.
- 33 kV Loss should be computed considering one month consumption by taking meter reading of all the incoming 33 kV feeders of Primary Sub-Station including bulk 33 kV consumer and related 33 kV outgoing feeders of Grid Sub-Station.
- 33 kV line loss =  $\Sigma(33 \text{ kV O/G Feeder meter reading at GRID SUB-STATION} - \Sigma(33 \text{ kV I/C meter reading at PRIMARY SUBSTATION} + 33 \text{ kV I/C meter reading at HT Bulk}))$
- Computation of 33/11 kV transformer loss:  $\Sigma 33 \text{ kV I/C meter reading at primary Substation} - \Sigma 11 \text{ kV O/G meter reading at primary Substation}$

### ➤ COMPUTATION OF 11 kV LOSS:

Energy Loss of 11 kV feeders should be arrived at by the difference between the sending end energy i.e. 11 kV outgoing feeders of PRIMARY SUB-STATION and Energy recorded at LV side of DTR including Bulk consumer connected in the same 11 kV feeder.

11 kV Loss should be computed considering one month's energy consumption by taking the meter reading of the 11 kV feeder of Primary Substation and all the DTR meter reading connected in the same 11 kV feeder and bulk consumer connected in the same 11 kV feeder.

Thus the total 11 kV loss for this circle found out as

11 kV line loss =  $\Sigma(11 \text{ kV O/G Feeder meter reading at PRIMARY SUBSTATION} - \Sigma \text{ All DTRs' meter reading connected to that 11 kV feeder}) - \Sigma 11 \text{ kV I/C meter reading at HT Bulk.}$

#### ➤ COMPUTATION OF LT LOSS:

Energy Loss of LT feeders should be arrived at by the difference between the sending end energy i.e. Distribution Transformer (DTR) and Energy recorded at consumer meters of LT consumers connected in the same DTR.

LT Loss should be computed considering one month's energy consumption by taking meter reading of DTR and the entire Consumers' meter reading connected to the same DTR.

Thus the total LT line loss for these circles is found out as

LT line loss =  $\Sigma (11/0.44 \text{ KV DTR meter reading} - \Sigma \text{ All consumers' meter reading connected to that DTR})$

#### ➤ COMPUTATION OF COMMERCIAL LOSS:

Commercial Loss may be found out as

= AT&C Loss – Technical Loss

=  $\{(1 - \text{Billing Efficiency} \times \text{Collection Efficiency}) \times 100\} - (33 \text{ kV loss} + 33/11 \text{ kV transformer loss}) + (11 \text{ kV Line Loss} + \text{LT Line Loss})$

The Billing efficiency, Collection Efficiency, Energy Billed and Energy to be collected from the TPSODL.

Technical Loss i.e.; 33 kV, 11 kV and LT Line Losses to be computed as mentioned above.

Hence Total amount of Commercial Loss has been arrived by deducting all other components from AT&C Loss.

#### RECOMMENDATION

a) Energy loss due to theft/ pilferage:

During Field Survey it was observed that there is some energy lost due to theft/ pilferage in the Power system. It needs to be prevented by checking periodically.

b) Defective meters :

Considerable percentage of defective meters is one of the reasons for provisional billing and consequential commercial losses in the DISCOM. Some energy meters installed at the consumer premises are found to be defective.

In other cases, it was found that the consumers deliberately conceal the information regarding defective meters. With the assistance of the local linemen/ meter reader, the consumer takes the benefit of provisional billings, resulting in commercial loss. It needs to prevent by strict vigilance measures and quality meter replacement programme.



## ➤ COMPUTATION OF LOSS DUE TO UNREALIZED REVENUE

Unrealized revenue is the revenue which is not realized due to non-payment by the consumers. Hence Energy loss due to unrealized revenue is the amount of energy loss converted from equivalent revenue loss.

Hence the total loss due to unrealized revenue found out as

Loss due to Unrealized Revenue=  $\Sigma$  (Energy Billed – Collections in MU)

## RECOMMENDATION

### Technical loss recommendation

- ☐ Reduction in Transmission losses:
- ☐ Improvement in power factor
- ☐ Reconduct ring of transmission line
- ☐ Conversion of single circuit to double circuit

### Reduction of Transformer losses:

- ☐ Improvement of die electric strength of transformer oil
- ☐ Improvement of Power factor
- ☐ Thermography of primary/ secondary cable/ bus terminations
- ☐ Reduction of contact resistance of terminations
- ☐ Regular checking and replacement of silica Gel

### Reduction of Bus losses

- ☐ Visual inspection of bus for detection any loose connections or oxidation
- ☐ Thermography of bus section for thermal imaging to detect any hot spots/ joints
- ☐ Reduction in contact resistance by proper termination after cleaning & tightening of contacts
- ☐ Replacement of bus by that of higher cross section & of material of higher conductivity (copper in place of Aluminium) if necessary.

## 6.0 DEMAND SIDE MANAGEMENT (DSM), ENERGY EFFICIENCY & CONSERVATION:

**Demand Side Management (DSM)** is applied to energy efficiency measures that would modify or reduce end-user's energy demand. It is basically the selection, planning and implementation of measures intended to have an influence on the demand either caused directly or indirectly by the utility's programs.

Hon'ble OERC has framed Odisha Electricity Regulatory Commission (Demand Side Management) Regulations, 2011, based on which DISCOM has to prepare the action plan and take measures for implementation of DSM Regulations.

TPSODL has established a Distribution System Operations Control Centre i.e. (DSOCC) (ABT Cell) in its Head Office for management of load at 33KV and 11KV feeder level, so that it can adhere to allotted drawl schedule of SLDC.

Following DSM measures and energy conservation options are proposed to be implemented in TPSODL.

- It is proposed that TPSODL should promote Energy Efficient Lighting System (LED Bulbs, Tube lights and Energy Efficient Fans) in association with BEE / EESL / Private ESCO in its utility area. The availability of LED Bulbs, Tube Lights, BLDC Fans, IE3 Meters which are supposed to be distributed to consumers through BEE / EESL / Private ESCO as part of the Utility based Demand Side Management Program are not available in plenty. TPSODL may discuss with BEE / EESL / Private ESCO to open more outlets and increase the LED Lights, Super Efficient AC and Fans Distribution.
- **Promoting the use of renewable energy (Solar) through facilitation:** Hon'ble Commission has notified Net Metering Scheme for Solar Roof Top Project in the consumer premises. TPSODL should popularize the scheme for LT consumers and provide prompt support and cooperation to the consumer for net metering agreement and solar project interconnection with DISCOM systems. Once Solar Interconnection happens at the LT systems, this will improve the voltage profile and reduce LT loss. Also the RPO of GRIDCO / DISCOM can be compiled which may reduce the BSP in future and will lead to financial savings for DISCOM.
- At present Hon'ble OERC has implemented kVAh billing for the HT/ EHT/ Commercial / MSME and Industrial consumers. In view of the kVAh billing, the consumer which are having low power factor are paying higher energy bills, still the awareness about kVAh billing is not there and consumers are operating with low Power Factors. TPSODL may carry out special drives for awareness and sensitisation about kVAh billing. This may lead to more numbers of APFC installation and improvement in Power Factor and will lower the burden on the existing infrastructure. TPSODL may sign MoU with ESCO / AFPC installer under the Utility based Demand Side Management program so that APFC installer will assess the data base of Consumers with low power factor, take necessary action for installation of APFC Panels in consultation with Consumers directly.
- Exploring opportunities in industrial segments (using efficient motors, pumps, compressors, capacitor bank, etc). TPSODL can coordinate and inform BEE / EESL / Private ESCO to provide the Industrial LED lighting Solution, IE3 Motors in RESCO / PMC level as per the provision of DSM Regulations. This will facilitate Demand Side Management in a long way.
- TPSODL should conduct more nos. of Consumer awareness programs on saving electricity, electricity wastage, power theft, using electricity during off peak hour, using star rated equipment.

## 6.1 ANALYSIS OF BLOCK WISE DRAWAL PATTERN

### Cost Benefit Analysis for proposed DSM Measures:

Cost Benefit Analysis for Replacement of 75 W Household Fans with 32 W BLDC Fans			
Sl. No.	Particulars	Unit	TPSODL
1	Total Nos. Consumers	Nos.	2386112
2	Total Nos. Of Residential, Commercial and Industrial consumers in LT Systems	Nos.	2331677
3	Proposed Nos. Fan to be replaced in the Utility based DSM Project	Nos.	118041
4	Wattage of Existing Fan	Watt	75
5	Wattage of BLDC Fan	Watt	32
6	Present Total load before Replacement	MW	9
7	Future Load after Replacement with BLDC Fan	MW	4
8	Reduction in Demand due to BLDC Fan Program	MW	5
9	Run hour /Day	Hour	10
10	Annual Energy Saving assuming 300 Running Days in a year	MU	15.23
11	Energy Charge of the LT Consumers	Rs./kWh	5.30
12	Annual Financial Savings for Consumer @ Rs 5.30/unit	Crore Rs.	8.07
13	Bulk Supply Price of GRIDCO	Rs./kWh	2.35
14	OPTCL Transmission Charges	Rs./kWh	0.28
15	Power Purchase Cost of DISCOM	Rs./kWh	2.63
16	AT&C Loss of DISCOM	%	25.75%
17	Annual deemed Monetary Savings for DISCOM considering Power Purchase Cost and AT & C Loss	Rs./kWh	0.68
18	LT Realisation	Rs./kWh	2.89
19	Monetary Profit to DISCOM due to DSM Project in prospects to DISCOM	Rs./kWh	-0.26
20	Deemed Monetary Savings for DISCOM considering Overall DSM Prospective	Rs./kWh	0.42
21	Total Annual deemed Monetary Savings for DISCOM considering Overall DSM Prospective	Crore Rs.	0.635
22	Total Investment Required	Crore Rs.	41.31
23	Simple Payback Period	Year	5.12

Cost Benefit Analysis for Replacement of Existing AC with 5 Star Super Efficient AC			
Sl. No.	Particulars	Unit	TPSODL
1	Total Nos. Consumers	Nos.	2386112
2	Total Nos. Of Residential, Commercial and Industrial consumers in LT Systems	Nos.	2331677
3	Proposed Nos. AC to be replaced in the Utility based DSM Project considering potentials of 45000 AC replacement as per load survey	Nos.	11804
4	Wattage of Existing AC	Watt	1625
5	Wattage of Super Efficient AC	Watt	962
6	Present Total load before Replacement	MW	19.18
7	Future Load after Replacement with Super Efficient AC	MW	11.36
8	Reduction in Demand due to Super Efficient AC Program	MW	7.83
9	Run hour /Day	Hour	6
10	Annual Energy Saving assuming 300 Running Days in a year	MU	14.09
11	Energy Charge of the LT Consumers	Rs./kWh	5.30
12	Annual Financial Savings for Consumer @ Rs 5.30/unit	Crore Rs.	7.47
13	Bulk Supply Price of GRIDCO	Rs./kWh	2.35
14	OPTCL Transmission Charges	Rs./kWh	0.28
15	Power Purchase Cost of DISCOM	Rs./kWh	2.63
16	AT&C Loss of DISCOM	%	25.75%
17	Annual deemed Monetary Savings for DISCOM considering Power Purchase Cost and AT & C Loss	Rs./kWh	0.68
18	LT Realisation	Rs./kWh	2.27
19	Monetary Profit to DISCOM due to DSM Project in prospects to DISCOM	Rs./kWh	0.36
20	Deemed Monetary Savings for DISCOM considering Overall DSM Prospective	Rs./kWh	1.04
21	Total Annual deemed Monetary Savings for DISCOM considering Overall DSM Prospective	Crore Rs.	1.461
22	Total Investment Required	Crore Rs.	48.75
23	Simple Payback Period	Year	6.53

Cost Benefit Analysis for Replacement of Existing Motors with IE3 Motors			
Sl. No.	Particulars	Unit	TPSODL
1	Total Nos. Of Commercial and Industrial consumer in LT/HT Systems	Nos.	99019
2	Total Connected Load of Commercial and Industrial Consumer	MW	693.52
3	Total Energy Consumption of Commercial and Industrial Consumer	MU	1122.58
4	Motor Load in the Industry assuming Motor Load to be 60% of the Connected Load	MW	416.11
5	Existing Motor Load proposed to be replaced with IE3 Motors Considering life cycle period of 10 years	MW	41.61
6	No. Of Motors to be installed considering penetration level of different capacity of Motors in MSME whose Weighted Average is calculated to be 16.13 kW per Motors	Nos.	2580
7	% Saving in Energy due to Installation of IE3 Motors	%	5%
8	Cost of IE3 Motors assuming 4275 per kW	Rs./kW	4275.00
9	Run hour /Day	Hour	12
10	Annual Energy Saving considering 300 running days and 12 hours operation	MU	7.49
11	Energy Charge of the Commercial / Industrial Consumers	Rs./kWh	6.20
12	Annual Financial Savings for Consumer @ Rs 6.20/unit	Crore Rs.	4.64
13	Bulk Supply Price of GRIDCO	Rs./kWh	2.35
14	OPTCL Transmission Charges	Rs./kWh	0.28
15	Power Purchase Cost of DISCOM	Rs./kWh	2.63
16	AT&C Loss of DISCOM	%	25.75%
17	Total Investment Required	Crore Rs.	17.79
18	Simple Payback Period	Year	3.83

## 6.2 Energy Efficiency in Demand Side Management

The purpose of Energy Efficiency and Demand Side Management should be to reduce the load during peak period and enhance load during the non-peak period.

DSM activity should be also carried out to protect the Environment and to win the trust of consumers. The DSM can be carried out at three levels:

- A) DISCOM level
- B) Consumer Level
- C) Using technology like energy storage

- The DSM activities are to be initiated by DISCOM however need to be carried out by consumers. DISCOM can only manage a few DSM activities like voltage regulation and power factor regulation.
- It is proposed that enough data are required to be generated by carrying out consumer load Research and third party experts should be engaged.

- DSM programmes need skill about energy conservation and art of Communication with a consumer. It is better to engage Energy Manager/ Energy Auditors in a DSM cell. Awareness program on DSM should be conducted. Based on the analysis of data and third party survey report and action plan to be prepared for submission to Hon'ble OERC.
- At the consumer level, the involvement of consumers is must for the success of demand side management. Awareness, Incentives, penalties and legislation are four main tools to involve consumers. The DSM scheme should be formulated based on these four tools.
- Awareness is the key to the success of the DSM programme. However at present no such awareness program on DSM is being conducted by DISCOM and it is proposed to implement the same.

### 6.3 Energy Accounting:

In order to segregate the losses further in technical & commercial category, it is necessary to have energy meters at key locations in the distribution system. At present the meters are installed up to 11 kV feeders outgoing from each substation. It is proposed that DTR metering should be taken up in mission mode to check the theft and commercial loss.

## 7.0 FIELD STUDY

Sl. No.	Date	Place	Activity
1	18.05.2022 25.05.2022	TPSODL Corporate Office	Arrival on Site, Opening meeting, Discussed audit methodology & substation visit agenda discussion
2	19.05.2022	Narendrapur 220/132/33 kV OPTCL GRID.	Field Visit, Inspection, Collection & Verification of data
3	19.05.2022	Bidyutpuri colony 33/11 KV PSS.	Field Visit, Inspection, Collection & Verification of data

### Visit to Narendrapur 220/132/33 kV OPTCL GRID.

#### OBSERVATIONS:

- Six nos. of 33 KV Feeders are emanating from the structure.
- The six feeders are in the name of Medical Feeder, Ambapua Feeder, MKCG Express Feeder, MES Feeder, Bhanjavihar Feeder and Narendrapur Feeder.
- The 11 kV & 33 kV Control Panels are in working condition.
- Earthing was in good condition.



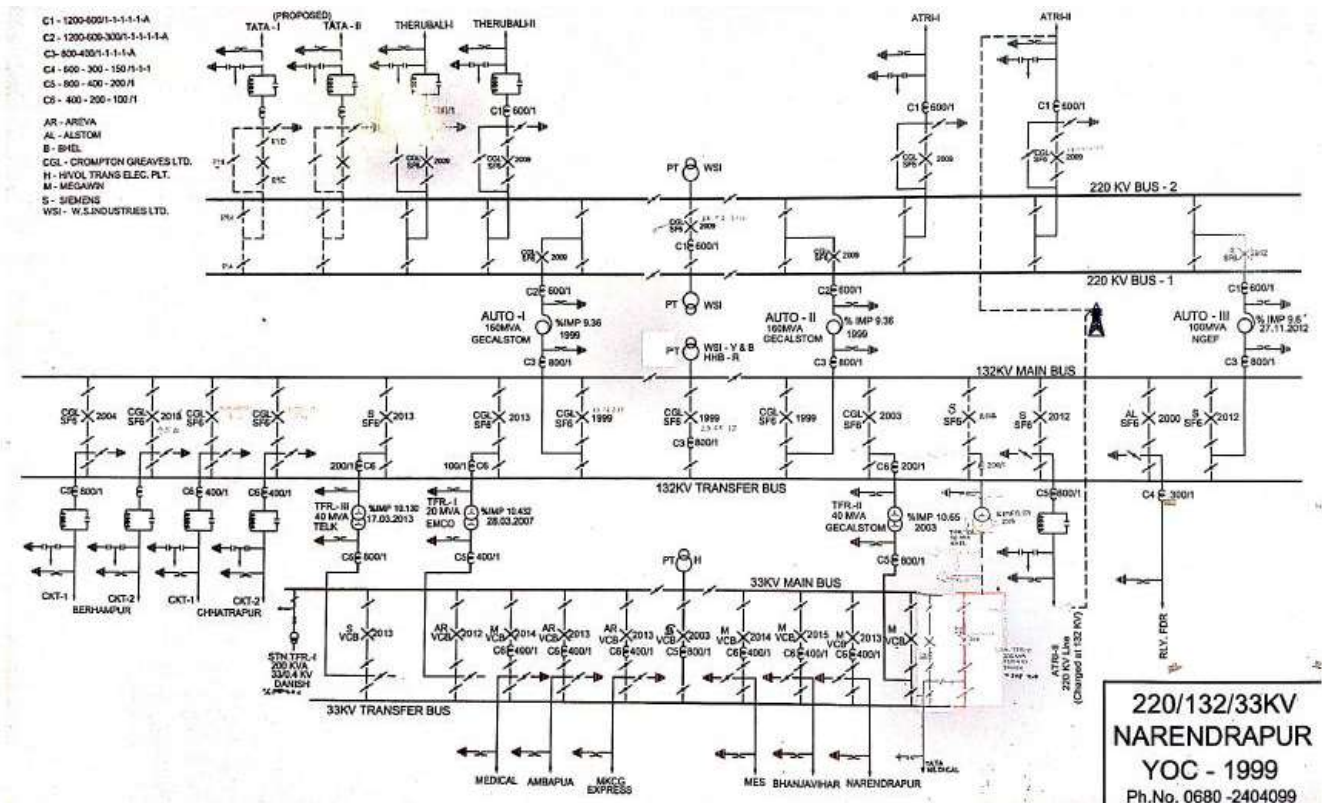


**Narendrapur OPTCL GRID**



**33Kv Control Panels**





SLD of the Substation

## Visit to Bidyutpuri colony 33/11 KV PSS.

### OBSERVATIONS:

- One 33kV supply is connected from Alkapuri Feeder.
- Four numbers of 11 KV feeders are emanating from the PSS.
- The names of the 11 KV feeders are Nilachala Nagar Feeder, Khoda Singi Feeder, Gajapati Nagar Feeder, and Ajodhya Nagar Feeder.
- There are 2 transformers of 5 MVA.

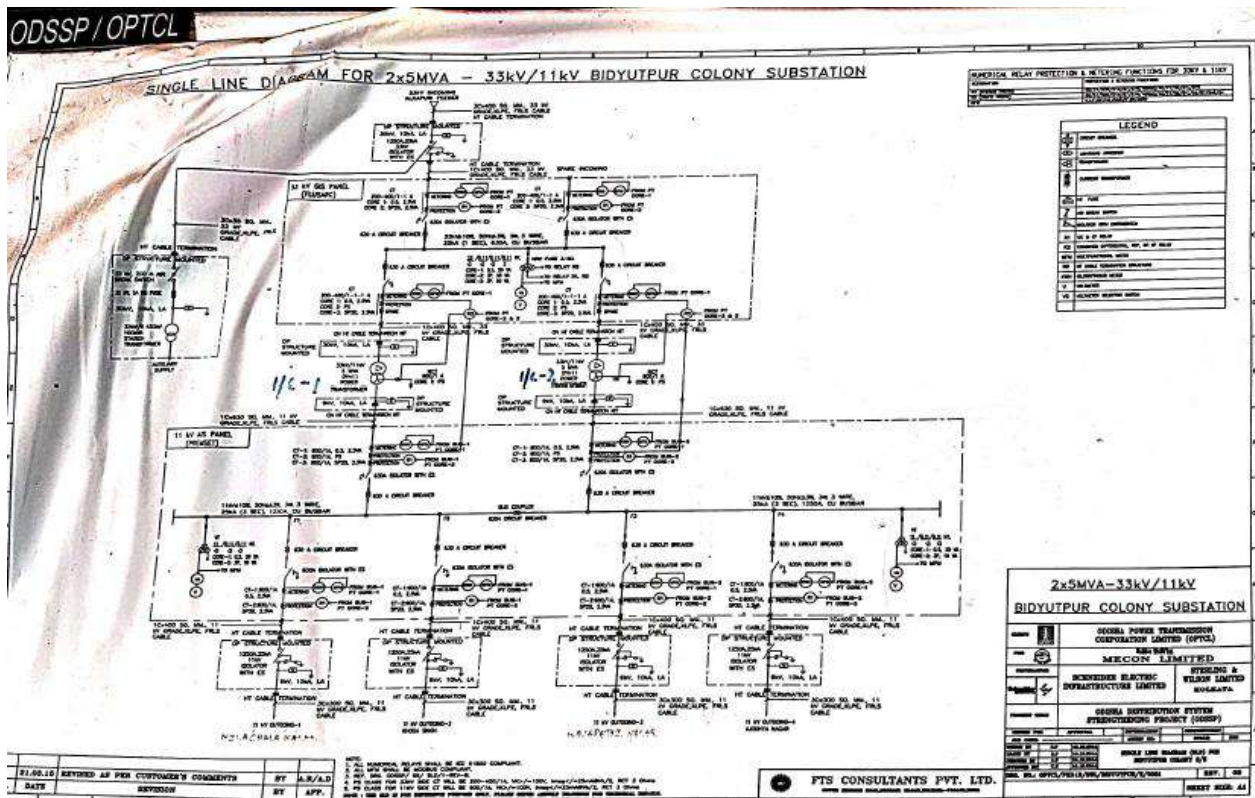


Visit to Bidyutpuri 33/11 kV PSS



Power Transformer at the PSS





SLD for Bidyutpur 33/11 kV PSS

DATE - 16/05/2022 Monday

DATE - 17/05/2022 Tuesday

TIME	33kV I/C - (A)	33kV I/C - (V)	11kV I/C - (A)	11kV I/C - (V)	REMARKS
7AM	30	32.63	92	92	
8AM	52	33.03	95	95	
9AM	31	32.67	92	92	
10AM	30	32.64	90	90	
11AM	24	31.63	100	100	
12PM	24	31.66	101	101	
1PM	44	31.70	132	132	
2PM	48	31.43	144	144	
3PM	57	31.11	155	155	
4PM	47	31.87	140	140	
5PM	45	31.42	145	145	
6PM	42	32.65	129	129	
7PM	27	32.42	114	114	
8PM	38	32.35	114	114	
9PM	42	32.57	129	129	
10PM	54	31.88	163	163	
11PM	60	31.68	180	180	
12PM	58	31.90	162	162	
1PM	67	32.30	192	192	
2PM	49	32.59	132	132	
3PM	40	32.41	121	121	
4PM	37	32.34	113	113	
5PM	25	32.16	103	103	
6AM	33	32.55	99	99	

A. SHIFT: Anil Kumar Bishnoi, S. R. Bishnoi, Rakesh Chandra

B. SHIFT: S. R. Bishnoi, Rakesh Chandra, Anil Kumar Bishnoi

C. SHIFT: Rakesh Chandra, Anil Kumar Bishnoi, S. R. Bishnoi

Log Book Reading Taken

## 8.0 DETAILS OF VARIOUS SYSTEM IMPROVEMENT & LOSS REDUCTION PROJECT UNDERTAKEN BY TPSODL

### 8.1 CAPEX PROGRAMME

To address the challenges and reduction of AT & C loss and quality power supply to consumers, TPSODL proposed to take up a detailed Capex investment plan in the FY 2021-22 under the different heads. TPSODL has submitted that it has inherited the power distribution network in dilapidated state at some places, which is not compliant with the requisite statutory standards and poses threat to consumers, staff etc. Further, underrated/ undersized/ worn out conductors, poor earthing, presence of either faulty equipments or non-availability of equipments/ switchgears/ protection devices are creating potential safety hazards to the employees, consumers, children, animals, public, etc.

TPSODL has identified several challenges related to Safety, 33kV/11kV/0.415kV/0.230kV network, Metering infrastructure, Customer Services and Technology usage. The scope includes renovation/modernization of existing and new 33/11KV S/S, re-conduct ring of 33KV & 11KV lines, implementation of HVDS system and AB conduct ring, installation of theft proof energy meters etc. The capital investments have been proposed under the following broad cost centers that shall be aligned with multiple initiatives and schemes so as to reduce AT & C losses, improve system reliability and augment the network to support continuous load growth. Further, a need is also felt to improve the existing facilities and infrastructure to provide a better consumer experience.

TPSODL has categorised the various activities of the Capital Investment Plan under 5 major broad subheads.

- 1) Statutory Compliance/Safety
- 2) Loss Reduction
- 3) Reliability Improvement
- 4) Load Growth
- 5) Technology & Civil Infrastructure

Out of the above, we have considered CAPEX related to Loss Reduction, Reliability Improvement, and Technology Intervention under the scope present Energy Account Audit as we feel that these major will lead to T&D Loss Reduction and AT&C Loss Reduction.

#### Establishment of Meter Testing Lab

As per the clause no. 102 (d) of OERC Supply code 2019 "The licensee/supplier shall set up appropriate number of accredited testing laboratories or utilize the services of other accredited testing laboratories. The licensee/supplier shall take immediate action to get the accreditations of their existing meter testing laboratories from NABL, if not already done.

Meter testing labs are existing in TPSODL at 3 locations (Behrampur, Aska and Jeypore) to cater to meter testing requirements. Presently, in 3 labs, 3 meter test benches are operational for testing of Single Phase and Three Phase meters. Key challenges in this testing process are:

- Existing 3 meter test benches are not fully functional for testing of meters in Labs.

- Sufficient field testing equipment are not available with TPSODL to perform testing at site for EHT/HT and LTCT meters against statutory compliance and against consumer complaints of fast/slow meters.

Meter testing group is responsible for performing the following testing activities on day to day basis:

- Sample meters are to be tested in NABL accredited lab prior to installation, so as to ensure high quality of the meters. However, existing 7 benches are not fully functional to carry out tests as per NABL requirements due to aging.
- As per Requirement of Statutory testing, meters installed at Grids, HT & LT customers needs to be tested in pre-defined time, based on voltage level, on which meter is serving. Officials have to undertake testing of these meters at site as per IS 15707, with calibrated standard meters, specific for defined voltage levels. In order to perform these testing, sufficient equipment are not available with TPSODL.
- Consumer complaints regarding fast / slow meters after meter installation / during life cycle of meters need to be addressed by testing meters at site as per IS 15707. In order to perform these testing, sufficient equipment are not available with TPSODL.

REQUIREMENT OF METER TESTING BENCH	
Material	Qty.
	(No.)
SINGLE PHASE 20 POSITION BENCH	1
THREE PHASE 20 POSITION BENCH	1
SINGLE PHASE/ THREE PHASE PHANTOM LOAD TEST BENCH	3

REQUIREMENT FOR HT-LT METER TESTING EQUIPMENT	
Testing equipment	Qty.
	(No.)
LT meter- testing equipment(onsite testing)	20
HT meter- testing equipment(onsite testing)	6
HT-CTPT testing equipment	6
TRMS Value Measuring Multimeter With high Accuracy and High Insulation Class	20
TRMS Value Measuring Clamp on Meter With high Accuracy and High Insulation Class	20
CMRI with Bluetooth, Memory 500 MB	20
IR+PI Value Measurement in Step of 500V to 5kV (Megger)	20

These labs will ensure the statutory requirement of meter testing across TPSODL.

## Loss Reduction

During limited site inspections, energy meters were not found at consumer's premises which were energized under Saubhagya scheme, an initiative of GoI. Further, at number of places where energy meters are installed and available at site, the same are not functioning properly. The above issues are resulting into reduction in billing efficiency, high AT&C losses, increased provisional billing, defective bills, and increased consumer complaints leading to customer dissatisfaction. Errors in bills lead to non-payment of bills and thus hamper the collection efficiency.

Therefore with an aim for reduction in T&D loss, following activities are proposed to be implemented:



- Replacement of burnt, Faulty and Electromechanical meters and installation at no meter cases.
- Installation of DT meters for Energy accounting.
- Input Energy Monitoring System (ABT/AMR).
- LT bare to ABC Conversion.

### Replacement of Defective/Mechanical / No Meter

To curb the loss level in TPSODL, it is proposed that in next three years all No Meter, Defective meters shall be replaced with Static Meters. In no meter or defective meter cases, it is estimated that service cable replacement would be required wherever found defective or missing and thus certain percentage of service cable is also considered in plan. For installation of Meters, Meter boxes will also be required to protect the meters from energy theft and environmental hazards.

Type of meter	Reason for replacement	Qty. - (No.)	Total Cost (In Crores) Supply + Installation
Single Phase meters	No Meters	2,129	43.27
	Old Defective Meters***	3,00,000	
	New Defective Expected	77,589	
Three Phase Whole Current meters	Electromechanical Meter	0	1.62
	No Meters	0	
	Defective Meters	4,808	
	New Defective Expected	230	
	Electromechanical Meter	0	
Three Phase LT CT meters	No Meters	0	0.08
	Defective Meters	66	
	New Defective Expected	5	
	Electromechanical Meter	0	
Three Phase HT CT meters(11kV/110V)	No Meters	0	8.89
	Defective Meters	1,422	
	New Defective Expected	15	
	Electromechanical Meter	0	
Three Phase HT CT meters(33kV/110V)	No Meters	0	0.44
	Defective Meters	35	
	New Defective Expected	2	
	Electromechanical Meter	0	
Grand Total		3,86,301	54.29

### LT Bare Line to ABC conversion:

LT Bare Line to ABC conversion would encompass following scope:

1. LT Bare shall be replaced with LT ABC.
2. Erection of mid span pole.
3. Earthing of every 5th Pole and poles which are installed across the road.
4. Erection of Mid span pole wherever the span length is more than 40 Mtrs to reduce the Sag.
5. Installation of Distribution Box and removing of jumbling of service line cables



## Network Reliability

S. No.	Major Category	Activity	DPR Cost (In Crores.)	Annexure
3	Reliability	33 KV Network refurbishment	10.08	Annexure 7
		Installation of 33 KV AB Switch	2.23	Annexure 9
		PSS Refurbishment	12.17	Annexure 8
		11 KV Network refurbishment	11.16	Annexure 7
		Installation of 11 KV AB Switch	5.00	Annexure 9
		DSS Refurbishment	10.00	Annexure 8
		Installation of LV protection at DSS	10.09	Annexure 10
		Installation of Auto reclosure / Sectionalizers , RMUs & FPIs	8.72	Annexure 9
		Trolley Mounted Pad Substations	1.31	Annexure 11
		Package Distribution Substations	1.64	Annexure 11
		<b>Total (3)</b>	<b>72.41</b>	

### Refurbishment of 33 kV & 11 kV Network:

33kV or 11kV feeders are important assets for a distribution utility which connects various substations and provide power to end consumers. To ensure safety of equipment and human beings / animals, refurbishment of 33kV, 11kV and LV lines is urgently required in phase manner starting from critical areas where movement of public / animals is high.

The Refurbishment job would encompass the following scope.

- Straightening of tilted poles.
- Replacement of damaged poles, insulators and accessories.
- Earthing of every 5th Pole and poles which are installed across the road.
- Erection of Mid span pole wherever the span length is more than 50Mtrs to reduce the Sag.
- Restraining of conductor to increase the vertical clearance by reducing the sag.
- Replacement of the conductor in the sections having multiple joints.
- Installation of cradle guard wire in the feeder crossing the roads. While installing the cradle guard wire, poles across the road shall be converted into double pole structure to increase the height and provide mechanical support to the section. All conductors in the section crossing the road shall be replaced if found to have even a single joint.
- Replacement of weak Jumpers and connections.
- Replacement of binding wire joints with wedge connector to remove hotspots.
- Installation of Danger boards, Anti climbing devices, stay sets etc. to ensure safety & statutory compliance.

### Refurbishment of Primary Substations (PSS):

The Power distribution network & its equipment health is a critical factor for ensuring reliable & quality power supply to the end consumers. To ensure better operation & control of the network & faster restoration of supply in case of interruptions following measures are being taken –

- Replacement of the sick equipment (VCB, CT/PT, CRP, Isolator, etc) in PSS.

- Replacement / provision of AB switches.
- Provision of new / additional earthing as per site requirement.
- Carry out civil works as per site requirement.
- Replacement of damaged support structure at PSS. This includes MS / GI structure, channels etc. Dismantling of existing structure and erection of new structure at the same location has been considered in scope of the work.
- Replacement of Battery and Charger.
- Replacement of all undersize bus bars with standard size to remove hotspot.
- Carry out civil works as per site requirement.
- Detailed technical inspection and testing of the equipment.

#### Installation of Auto reclosers/Sectionalizers, FPI, RMU and AB switches: Auto-reclosures, Sectionalizers, RMU and AB switches:

Auto-reclosers are very efficient in minimizing outages from transient faults on overhead feeders. When installed along with Sectionalizers, they can isolate the faulty sections of the feeder while re- energizing the rest of the feeders. In the first year a total of 12 numbers of auto reclosers and 36 numbers of sectionaliser have been proposed for installation. TPSODL is also planning to install 18 numbers of RMUs to improve reliability. AB switches are proposed at lengthy 33kV & 11kV Feeders to have provision of isolation of section during any planned / unplanned outages. This will help in improving the reliability since currently the entire feeder is forced tripped for such outages.

#### INSTALLATION OF LT PROTECTION

The Tripping on 11kV feeders has an impact on SAIFI and SAIDI and more and more consumers are being affected by the fault, which in turn reduces the reliability of the system. In order to reduce the effect of LT fault on the 11kV System, it is recommended to install the MCCB on Pole Mounting substation for 100 kVA and 250 KVA Distribution Substations and ACB on 500 KVA Substations.

S.No.	Description	UOM	priority based LT Protection requirement in DSS (Nos.)	Quantity Considered in 1st Phase (Nos.)	Amount (in Crores)
1	Supply and Installation of MCCB-100 KVA	EA	3282	500	3.33
2	Supply and Installation of MCCB-250 KVA	EA		400	4.17
3	Supply and Installation of ACB-500 KVA	EA		140	2.59
<b>Total</b>			3282	<b>1040</b>	<b>10.09</b>

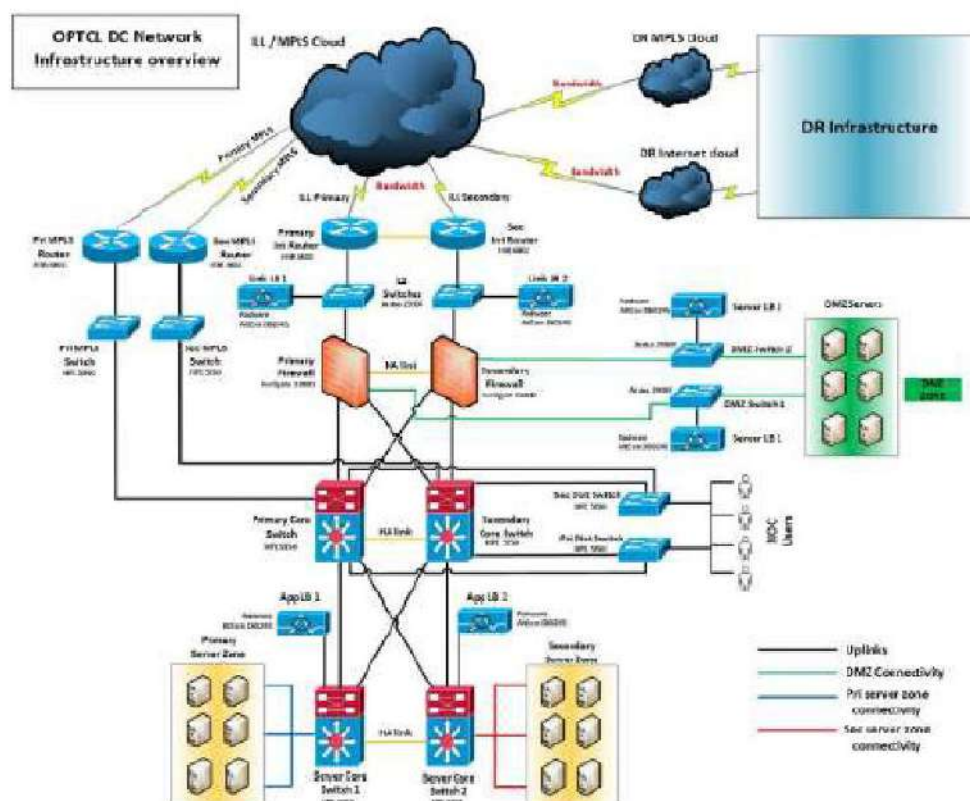
### **Addition/ Augmentation of 33kV& 11Kv line, Power Transformers & DT**

S.No.	Description	UOM	Qty	Amount (in Crores)
1	Augmentation to 8 MVA Power Transformer	EA	4	4.41
2	Augmentation to 315 KVA Distribution Transformer	EA	100	9.92
3	Addition/Augmentation of 11 kV Overhead Line	CKT.KM	43	8.06
4	Addition/Augmentation LT ABC Line	CKT.KM	38	4.13
<b>Total</b>				<b>26.52</b>

## Technology & Civil Infrastructure

### Information technology (IT) Landscape:

The IPDS scheme Fluent Grid is implementing Customer Care Solution, Meter, Billing & Collection, New Connection and other Commercial Process, Energy Audit, MIS, Various ERP Modules. Apart from this TPSODL is planning to rollout Smart Metering MDM and HES system for all consumers above 5 KW.

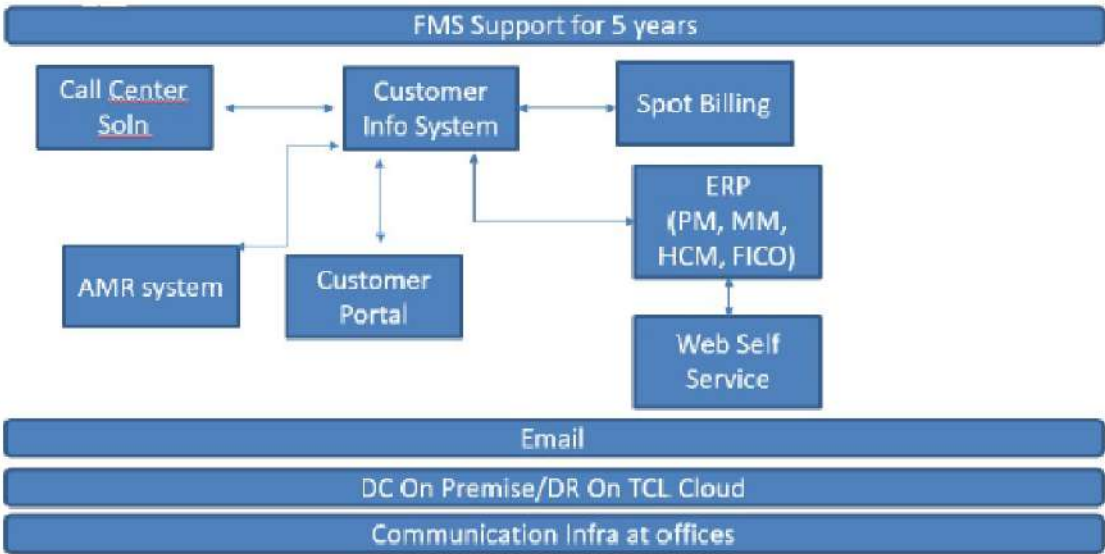


### Key considerations for IT Landscape Transformation:

Sub Category	Activity	DPR Cost (In Crores.)
Smart Metering(AMI)	Installation of Smart Meters along with back end IT Infrastructure	28.28

Augmentation of IPDS Software licenses pan TPSODL
 

- MBC and CIS
- SAP ERP
- Business Intelligence – SAP BW & BO



IPDS Software Landscape

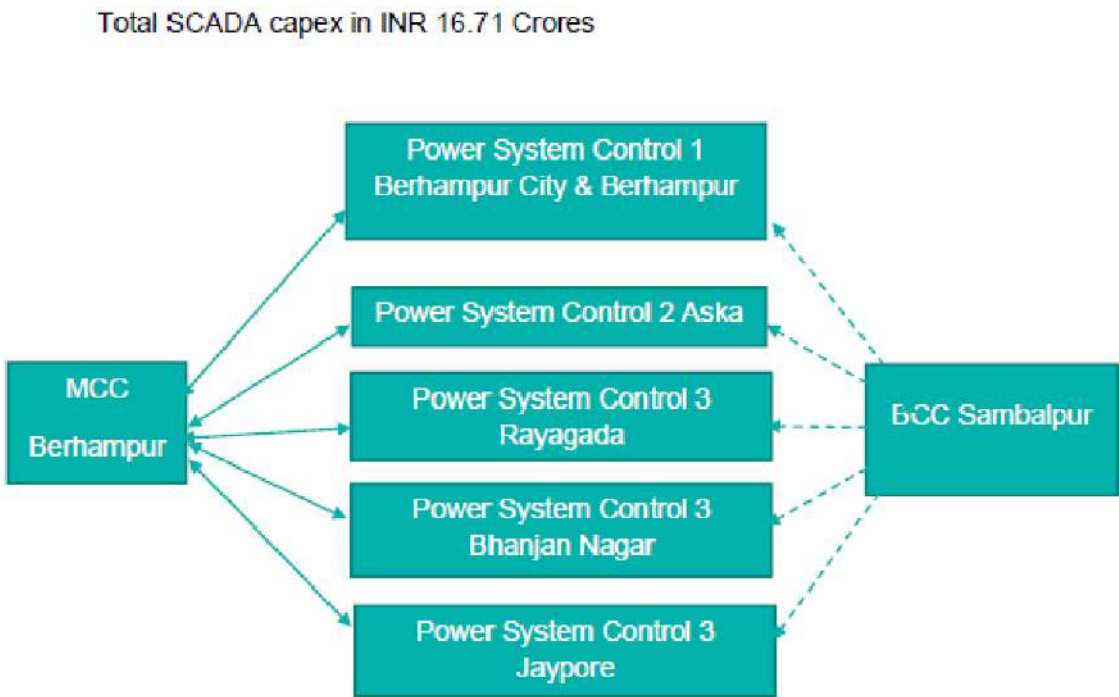
Proposed IT/OT Infrastructure

It is proposed to setup a new/extension of Data Centre in FY 22 for hosting additional Smart Grid applications like SCADA, GIS, Smart Metering. As Technology transformation would also require huge focus on reliability of IT systems, own disaster recovery centres for TPSODL is also planned in Year FY23 & FY24.

Communication Network Infra

Description	FY22
Network Infra	5.38

Operational Technology Landscape-SCADA Implementation



GIS Implementation

TPSODL is also planning to implement GIS system to have better asset management. System once implemented will strengthen various other business processes viz. energy audit process, technical feasibility, dues verification, network planning. In fact GIS will be backbone for implementation of outage management system in coming years. Being a large geography, GIS will be implemented in three phases.

FY 22--Phase I	FY 23--Phase II	FY 24--Phase III
(City & Berhampur Circle)	(Aska & Bhanja Nagar Circle)	(Rayagada & Jeypore Circle)

8.2 ENERGY BILL PAYMENT OPTION AND CUSTOMER CARE

- Payment Gateway** – A centralized proprietary payment gateway is planned to be established which would seamlessly integrate with all collection touch points like website, mobile app, counters, partner agencies, mobile wallets into a single repository where verification and validation of payments would be done and would be posted to the SAP Billing platform to ensure no GIGO and keep the billing system safe and secured from direct external exposure
- Website** - Content management System with dynamic website would be placed with integrations to payment gateway and other key systems.



- **SOUTHCO Connect** – Mobile app which would run on all devices and with ease of use features and enablement for customer satisfaction
- **Suraksha Portal & Behavior based Safety app** – As safety is a key aspect and needs to be woven in the company culture, best practices followed at Tata Power DDL will be implemented.
- **BIRD** – Bill Inward Recipient Desk is an application for submission, approval and processing of vendors invoices online, check status of the invoice and track the same.
- **Flash Application** - Platform to capture and evaluate reliability indices and a backbone to power system control team.
- **Complaint management system & Anubhav Portal** which is end to end feedback capture and CAPA closure with information dissemination to all stakeholders is planned to be implemented to bring transparency and effective response to customer needs.
- **MIS Application:** For offloading Oracle 10G server and MS Access system

#### SUMMARY OF ENERGY CONSERVATION MEASURES

FORM-2							
DETAILS OF ENERGY CONSERVATION MEASURES RECOMMENDED IN THE ENERGY AUDIT REPORT [2022-23]							
Sl. No.	Energy Saving Measures	Investment ( In crores)	Targeted Annual Energy Savings in MU	Targeted Financial Savings in Rupees Crore	Payback Period	Date of Completion of measure / likely completion	Remarks
A	<b>Establishment of Meter Testing Lab</b>	<b>2.47</b>					
B	<b>Loss Reduction</b>						
	Replacement of burnt, Faulty and Electromechanical meters and meter installation at no Meter cases System (ABT/AMR) – IEMS	8.68					
	LT Bare to ABC conversion	7.01					
	<b>Total (B)</b>	<b>15.69</b>					
C	<b>Network Reliability</b>						
	33 KV Network refurbishment	5.04					
	Installation of 33 KV AB	2.23	98.78	25.19	6.18	FY 2022-23	As per the annual reduction in T&D loss target of Hon'ble OERC and detailed note attached



	Switch					
	PSS Refurbishment	6.25				
	11 KV Network refurbishment	6.92				
	Installation of 11 KV AB Switch	3.05				
	DSS Refurbishment	4.08				
	Installation of LV protection at DSS	5.08				
	Installation of Auto reclosure /Sectionalizers ,RMUs, &FPIs	3.95				
	Trolley Mounted Pad Substations	0.22				
	Package Distribution Substations	0.65				
	<b>Total (C)</b>	<b>37.47</b>				
D	<b>Load Growth</b>					
	Network augmentation / addition to meet load growth/11 KV line, PTR,DTR,LT line	8.74				
	<b>Total (D)</b>	<b>8.74</b>				
E	<b>Technology &amp; Civil Infrastructure</b>					
	Installation of Smart Meters along with back end IT Infrastructure	14.07				
	Augmentation of IPDS Software licenses pan TPSODL	12.24				
	IT Infrastructure (H/W & Field office infra for augmentation of IPDS application licenses)	19.26				
	Communication Network	5.38				

	Infra					
	SCADA Implementation	14.71				
	GIS Implementation	5.46				
	Civil Infrastructure	10				
	Civil Work for Meter Test Bench	2				
	Civil work for Call centre & PSCC	2				
	Upgradation of DT workshop	1				
	Security system in Central Store	2.25				
	Assets for Offices	2.95				
	<b>Total (E)</b>	<b>91.32</b>				
	<b>Grand Total</b>	<b>155.69</b>	<b>98.78</b>	<b>25.19</b>	<b>6.18</b>	

#### CALCULATION OF PAYBACK PERIOD:

Approved sale of TPSODL as approved by commission FY 2022-23= 3292.7 MU

Calculated T&D Loss of TPSODL for FY 2020-21= 23%

Assumed Target T&D Loss for FY 2020-21=20%

So, Targeted Annual Energy Savings in MU =  $3292.7 \times (23\% - 20\%) = 98.78$  MU

Approved Bulk Supply Price of GRIDCO for FY 2022-23= 2.27 per Unit

Approved Transmission Tariff of OPTCL for FY 2022-23= 0.28 per Unit

Hence financial saving of TPSODL due to T&D loss reduction=  $(2.27 + 0.28) \times 98.78 / 10 = 25.19$  Cr.

Total investment approved by Hon'ble OERC for T&D Loss=155.69 Cr.

Simple Payback period =  $\text{TOTAL INVESTMENT} / \text{SAVINGS} = 155.69 / 25.19 = 6.18$  Years

## 9.0 CONCLUSION

In line with Section 14(g) of the Energy Conservation(EC) Act, the Central Government has notified targets (in the form of Specific Energy Consumption) for Designated Consumers (DCs) on 26th October 2021 under the PAT cycle-VII. The baseline Distribution loss of TPSODL has been fixed as 29.76% for base line year 2018-19 to with base line net input energy 3638.95 MU. TPSODL has been directed to reduce its T&D Loss to 26.90% in Target Year 2024-25.

TPSODL Management has endeavoured for continual improvement in its drive for achieving energy efficiency by adopting various energy saving measures with most energy efficient technology. Considering the trend in their energy performance, it is expected that TPSODL may get a target for further reduction of its T & D Loss from its present level. Hence, TPSODL should focus to achieve the future target by adopting a strict energy conservation plan and energy efficiency measures.

Overall, the TPSODL management has a very progressive outlook and is open to ideas involving moderate to low investment, to improve the Energy Efficiency. Hence we feel TPSODL management needs to put best effort to achieve Energy Conservation in future.

## 10.0 LIST OF ANNEXURE FOR MEA OF TPSODL

**ANNEXURE (I): INTRODUCTION OF VERIFICATION FIRM:** Details are provided in the MEA report of TPSODL for FY 2020-21

**ANNEXURE (II): MINUTES OF MEETING WITH DISCOM TEAM:** Attached as under



**Power Tech  
Consultants**

### MINUTES OF MEETING BETWEEN TPSODL & POWER TECH CONSULTANTS (PTC) ON 18TH MAY 2022 & 19TH MAY 2022

#### For M/s. Tata Power Southern Odisha Distribution Limited

1. Mr. Saumitro Banerjee
2. Mr. Ratan Kuber
3. Mr. Dusmanta Kumar Rout
4. Mr. Deepak Jain

#### For M/s. Power Tech Consultants

1. Mr. Bibhu Charan Swain, AEA-0121
2. Mr. Subash Mallick, Project Associate

The following points were discussed during the meeting held between TPSODL & Power Tech Consultants (PTC) and the following documents were requested from TPSODL for the Annual Energy Audit work for FY 2020-21:

- Power Tech Consultants (PTC) proposed the appointment of Nodal Officer, Designated energy manager, Information technology manager and finance manager for the purpose of energy audit and TPSODL appointed the same. Further framing of Energy Policy for TPSODL was requested by PTC.
- Power Tech Consultants (PTC) officials appreciated the TPSODL management for their prompt action in the formation of the Energy Cell. PTC briefed TPSODL officials about the documents received from the TPSODL.
- Power Tech Consultants (PTC) sent the additional questionnaire for the DISCOM mandatory energy audit and the requested part data was provided by TPSODL.
- Power Tech Consultants (PTC) requested TPSODL for Form 1, Form 3, OERC Review of Performance from the FY 20-21 and Sector Specific Energy Accounting pro forma sheet and it was provided by TPSODL.
- Power Tech Consultants (PTC) requested TPSODL to provide Performance review as submitted to OERC with the following list of Sheet in Performance Review. LT, LT-HT, Eng.sale. (3, 4, 5), Arr (6), Govt.Arr(7), Govt.Arr2 (8-9), System (10-12), Meter (13), Consumer Mix (14), LT.Per. (15), Division (20-21), TPSODL, B1, B2 & B3, CTY & All Division wise data.

M/s. Power Tech Consultants

*Bibhu Charan Swain*  
Authorised Signatory





Power Tech  
Consultants

**MINUTES OF MEETING BETWEEN TPSODL & POWER TECH CONSULTANTS (PTC) ON  
25<sup>TH</sup> MAY 2022**

**For M/s. Tata Power Southern Odisha Distribution Limited**

1. Mr. Saumitro Banerjee
2. Mr. Ratan Kuber
3. Mr. Dusmanta Kumar Rout
4. Mr. Deepak Jain

**For M/s. Power Tech Consultants**

1. Mr. Bibhu Charan Swain, AEA-0121
2. Mr. Suman Sourav Nayak (Project Associate)

The following points were discussed during the meeting held between TPSODL & Power Tech Consultants (PTC) and the following documents were requested from TPSODL for the Annual Energy Audit work of TPSODL for FY 2020-21:

- TPSODL provided HT-EHT Consumer profile and energy data and Division wise Input energy data.
- Category wise Meter OK, Defective and without meter information for the FY-20-21 was provided by TPSODL.
- 33 kV SLD, List of consumers having captive power plant and generators, List of the consumers having solar connections was received.
- List of sample 11 kV feeders where T&D loss calculated Sample PSS SLD List of 11 kV Feeders was provided by TPSODL.
- List of sample 33 kV feeders where T&D loss calculated Sample PSS SLD List of 11 kV Feeders was provided by TPSODL.
- Power Tech Consultants (PTC) prepared the Draft Annual Energy Audit Report, pro-forma and submitted to TPSODL for review and to provide necessary comments.

M/s. Power Tech Consultants

*Bibhu Charan Swain*  
Authorised Signatory





**ANNEXURE (III): CHECK LIST PREPARED BY AUDITING FIRM:**

<b>QUESTIONNAIRES FOR CONDUCTING MANDATORY ENERGY AUDIT IN TPSODL</b>		
<b>Sl. No.</b>	<b>Particulars</b>	<b>Remarks</b>
1	Name of all the heads of DISCOM and their designations, phone numbers and mail ids, contact details to be collected.	Received
<b>DISCOM DETAILS ( FOR FY 2020-21)</b>		
2	Details of the DISCOM to be collected.	
3	Single Line Diagram of distribution network, Details of assets of DISCOM, Consumer details, and supply area to be collected.	Received
4	Category wise nos. of consumer and their annual energy consumption (Domestic, Industrial, Commercial, Agricultural) to be collected.	Received
5	Category wise nos. of consumer and their annual energy consumption (LT, HT, EHT, Unmetered connections) to be collected.	Received
6	Details of nos. of connections, nos. of disconnections, connected load and % of total connected load, energy billed to be collected.	Received
7	Details of Feeders by consumer class of categories (Domestic, Industrial, Commercial, Agricultural and Municipalities) to be collected.	Received
8	Metered Energy Sales, Unmetered Energy Sales, unaccounted energy / theft, Total Energy Billed, Amount billed, Gross Amount Collected, Arrears Collected, subsidy received from state and central government details to be collected.	Received
9	Average Billing Rate (ABR) Categories wise & Consumption wise ABR with tariff subsidy, Categories wise & Consumption wise ABR without tariff subsidy details to be collected.	Received
10	Collection of data regarding system improvement and loss reduction and their status with project cost, project period for report and Form-III preparation.	Received
11	Collection of Annual Report submitted to Honorable OERC, Month wise Energy Audit Report.	Received
12	Collection of MEA, Form-I, Form-II and Form-III and M & V Audit Report for earlier PAT cycle	Received

**ANNEXURE (IV): BRIEF APPROACH, SCOPE & METHODOLOGY FOR AUDIT:**
**SCOPE OF WORK**

The Scope of Work for the detailed energy audit is as per following:

1. Visit to DISCOM office and discussion with DISCOM officials and management on Energy Audit, Energy Efficiency and Energy Management
2. Verification of details of category wise nos. of consumer and their annual energy consumption (Domestic, Industrial, Commercial, Agricultural and Municipalities)
3. Verification of details of category wise nos. of consumer and their annual energy consumption (LT, HT, EHT, Unmetered connections)
4. Verification of details of nos. of connections, nos. of disconnections, connected load and % of total connected load, energy billed, Net Input energy, Power Factor, Total Supply Hour, Scheduled outage, scheduled supply hours, Unscheduled Outage, Available Supply Hours.
5. Verification of details of Feeders by consumer class of categories (Domestic, Industrial, Commercial, Agricultural and Municipalities)



6. Verification of Metered Energy Sales
7. Verification of Unmetered Energy Sales
8. Estimation of unaccounted energy / theft
9. Verification of Total Energy Billed, Amount billed, Gross Amount Collected, Arrears Collected, subsidy received from state and central government
10. Verification of Average Billing Rate (ABR)
11. Total revenue billed categories wise & Consumption wise
12. Categories wise & Consumption wise ABR with tariff subsidy
13. Categories wise & Consumption wise ABR without tariff subsidy
14. Verification of T & D Loss
15. Verification of collection Efficiency (Categories Wise)
16. Verification of Billing Efficiency (Categories Wise)
17. Verification of Transmission and Distribution Losses
18. Verification of AT & C Losses
19. Analysis of T & D Losses, AT & C Losses
20. T & D loss, AT & C loss reduction targets given by State Electricity Regulatory Commission (SERC) to DISCOMs.
21. T&D Loss and AT&C loss reduction projection by Electricity Distribution Companies.
22. Review of the energy losses data (AT&C & T&D) of the last year with the authenticated documents.
23. Verification of detailed calculation methodology adopted by DISCOMs for calculating AT & C and T&D loss.
24. Compare the performance data with SERC / FOR/ CERC standard data.
25. Study of Loss Reduction measures undertaken by DISCOM.
26. Study of Demand Side Management undertaken by DISCOM
27. Identification of a power sub-station at 66kV/33kV level having input energy injection points and 11kV/440V transformers for verification of the status of energy metering along with their healthiness of incoming / outgoing feeders at 66kV, 33 kV and 11 kV and DTRs at field for sample study.
28. Carrying out field study to ascertain the status of consumer metering, type and healthiness for various categories of consumers, meter calibration frequency bands the time taken for replacement of faulty meters.
29. Verification of energy sales (metered and unmetered) in the distribution network area of identified power sub-station.
30. Computation of losses Above 11 kV level:
31. Computation of grid losses by using grid balancing approach.
32. Verification of the healthiness and life of Power transformer.
33. Computation of energy handled and power transformer losses at each voltage level (like 66/33, 33/11, 66/11) At 11 kV level:
34. Computation feeder wise losses of all 11kV feeders emanating from identified power sub-station Below 11 kV level:
35. Calculation of DT transformation losses.
36. Verification of the healthiness and life of the distribution transformer.
37. Computation LT losses (DT wise) under the distribution network of identified power sub-stations.

38. Evaluation of existing Energy Management policy, Energy Management systems.
39. Providing recommendations to reduce T & D loss, AT & C Losses, furnishing details of energy saving measures, investment to be made and cost benefit analysis of each recommended energy savings measures.
40. Identification of cost effective energy saving opportunities in short, medium & long term.
41. Development of an action plan for time bound implementation activities.
42. Based on the above study the draft detailed energy audit report is prepared and submitted for review of the management. After receipt of necessary observation, the draft report shall be modified and final report shall be submitted to the management.
43. The Detailed Energy Audit and report preparation has been carried out in accordance with provision of "The Bureau of Energy Efficiency (Manner and Intervals of Time for conduct of Energy Audit) Regulations, 2010" and its amendment from time to time and based on revised scope of work as prescribed by BEE.

### **METHODOLOGY**

The following step by step methodology and approach were adopted to carry out the detailed energy audit of TPSODL:

1. The program of visit of the energy audit team to TPSODL for carrying out the energy audit work was informed to management.
2. A pre audit meeting was held with the concerned TPSODL officials. During this kick off meeting, the importance of energy audit for the Designated Consumers (DC) and the procedure to be adopted for audit work was explained.
3. The representative of the TPSODL accompanied the energy audit team to different sections including MIS, MRT, and ABT cell, Energy Audit section for system familiarization and for collection of technical & financial information.
4. All the staff /heads of the departments were requested to co-operate with the energy audit team for data collection
5. Data collection was carried through discussions with the Technical in-charge of TPSODL and from past MIS records.
6. The details of Division, sub division, Sections, Assets list, Details of 220/132/33 KV Network, Details of 11 KV Network, Power sale, details of billing and details of consumer were collected.
7. Details of category wise nos. of consumers and their annual energy consumption (Domestic, Industrial, Commercial, Agricultural and Municipalities) (LT, HT, EHT, Unmetered connections) were collected.
8. Details of nos. of connections, nos. of disconnections, connected load and % of total connected load, energy billed, Net Input energy, Power Factor, Total Supply Hour, Scheduled outage, scheduled supply hours, Unscheduled Outage, Available Supply hours were collected from TPSODL.
9. Details of Feeders by consumer class of categories (Domestic, Industrial, Commercial, Agricultural and Municipalities) were collected from TPSODL.
10. The metered energy sales, unmetered energy sales and estimated unaccounted energy / theft was collected.
11. Measurement was carried out at 33 KV and 11 kV meter point at sample basis to analyze the power loss and unaccounted energy.

12. Details of total Energy Billed, Amount billed, Gross Amount Collected, Arrears Collected, subsidy received from state and central government and verified Average Billing Rate (ABR) was collected.
13. Category wise Billing efficiency and Collection efficiency were calculated for TPSODL for the last financial year.
14. T & D Loss, AT & C Loss were arrived for TPSODL for the last financial year.
15. Studied Demand Side Management and Loss Reduction measures undertaken by TPSODL.
16. Existing Energy Management policy, Energy Management systems was evaluated Energy Conservation options to reduce T & D loss and AT & C Losses were identified and tabulated on the basis of priority.
17. Draft soft copy of the energy audit report consisting of observations and recommendations with adequate financial justification, vendor support data, etc. was prepared and submitted to TPSODL for acceptance.
18. Final energy audit report shall be submitted to Management of TPSODL after acceptance of the draft energy audit report.

**ANNEXURE (V): INFRASTRUCTURE DETAILS:** Details are provided in the MEA report of TPSODL for FY 2020-21

**ANNEXURE (VI): ELECTRICAL DISTRIBUTION SYSTEM:** Details are provided in the MEA report of TPSODL for FY 2020-21

**ANNEXURE (VII): POWER PURCHASE DETAILS:**



**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **SOUTHCO UTILITY**  
April-2020

GRIDCO GSTIN: 21AABCG5398P3Z3

Good's Description: Electricity

HSN Code: 27160000

Ref No: GR/BS/20-21/038

Date: 05-May-20  
Pay By Date: 04-Jun-20

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpetta, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month	278.424589 MU
A.2. Overdrawal/(Underdrawal) Energy for the month	1.552955 MU
A. Total Energy for the month	279.977544 MU
B. SMD approved by OERC	6,60,000 kVA
SMD permitted by OERC	7,26,000 kVA
Actual SMD occurred	5,27,989 kVA
Excess SMD drawal	0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
	(a) Bulk Supply Price @ 186 Paise per kWh of Scheduled Energy (Annex-1) 51,78,69,735.54
	(b) Bulk Supply Price @ 186 Paise per kWh of Overdrawal/(Underdrawal) Energy 28,88,496.30
	(c) Excess Demand Charge @ Rs 250 per kVA 0.00
	<b>Sub Total: (a+b+c) 52,07,58,231.84</b>
2 a)	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____ 0.00
3	<b>Total Current Charges: Items (1+2) 52,07,58,231.84</b>
4	<b>Add Late Payment Surcharge for the month of Apr-2020 (Annex-3) 9,23,43,550.00</b>
5	<b>Add: Previous amount outstanding :-</b>
	(i) Outstanding energy charges (w.e.f 01.04.05) 7,42,35,61,217.00
	(ii) Outstanding LPS (w.e.f 01.04.05) 5,57,82,10,722.00
	<b>Total Previous Outstanding: (i+ii) 13,00,17,71,939.00</b>
6	<b>Less payment received during the month</b>
	(a) Amount received against Jun'19 and Jul' 19 20,39,07,400.00
	(b) Rebate allowed 0.00
	(c) Amount received towards Arrear Dues 0.00
	(d) Other Adjustment (if any) 0.00
	<b>Total Payment and Adjustment: (a+b+c+d) (20,39,07,400.00)</b>
7	<b>Total amount claimed through this bill: item (3 to 6) 13,41,09,66,320.84</b>
	<b>(Rounded off to the nearest Rupee) 13,41,09,66,321.00</b>

(Rupees one thousand three hundred forty one crore nine lakh sixty six thousand three hundred twenty one only)

Checked by

For & on behalf of GRIDCO

*[Signature]*  
DGM(F), PP

*[Signature]*  
DGM (EBC)

*[Signature]*  
CGM (PP)

### Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the rates stipulated in Tariff Order of GRIDCO for FY-2019-20
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 310 & 311 of Order Dt.29/03/2019 in case No.73 of 2018 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 307 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 312 of the Tariff Order.
- Discrepancy, if any, found later on, towards the billing will be taken into account.





**G R I D C O Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **SOUTHC O UTILITY**  
May-2020

GRIDCO GSTIN: 21AABCG5398P3Z3

Good's Description: Electricity

HSN Code: 27160000

Ref No: GR/BS/20-21/ 060

Date: 04-Jun-20  
Pay By Date: 04-Jul-20

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpetta, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month 318.751068 MU  
A.2. Overdrawal/(Underdrawal) Energy for the month (.313695) MU  
A. Total Energy for the month 318.437373 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,58,347 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
	(a) Bulk Supply Price @ 186 Paise per kWh of Scheduled Energy (Annex-1) 59,28,76,986.48
	(b) Bulk Supply Price @ 186 Paise per kWh of Overdrawal/(Underdrawal) Energy (5,83,472.70)
	(c) Excess Demand Charge @ Rs 250 per kVA 0.00
	<b>Sub Total: (a+b+c)</b> 59,22,93,513.78
2	<b>Debit/Credit Bill for the month of Feb-2020 vide Bill No. GR/BS/20-21/046 Dtd.02.06.20</b> (5,208.00)
3	<b>Total Current Charges: Items (1+2)</b> 59,22,88,305.78
4	<b>Add Late Payment Surcharge for the month of May-2020 (Annex-3)</b> 9,82,45,727.00
5	<b>Add: Previous amount outstanding :-</b>
	(i) Outstanding energy charges (w.e.f 01.04.05) 7,74,04,12,049.00
	(ii) Outstanding LPS (w.e.f 01.04.05) 5,67,05,54,272.00
	<b>Total Previous Outstanding: (i+ii)</b> 13,41,09,66,321.00
6	<b>Less payment received during the month</b>
	(a) Amount received against Jul' 19 51,86,88,066.00
	(b) Rebate allowed 0.00
	(c) Amount received towards Arrear Dues 0.00
	(d) Other Adjustment (if any) 0.00
	<b>Total Payment and Adjustment: (a+b+c+d)</b> (51,86,88,066.00)
7	<b>Total amount claimed through this bill: item (3 to 6)</b> 13,58,28,12,287.78
	<b>(Rounded off to the nearest Rupee)</b> 13,58,28,12,288.00

Checked by

For & on behalf of GRIDCO

*[Signature]*  
DGM(F), PP

*[Signature]*  
DGM (EBC)

*[Signature]*  
CGM (PP)

### Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the rates stipulated in Tariff Order of GRIDCO for FY-2019-20
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per provisions of the Tariff Order in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per as per provisions of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per provisions of the Tariff Order.
- Discrepancy, if any, found later on, towards the billing will be taken into account.



**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **SOUTHCO UTILITY**  
June-2020

GRIDCO GSTIN: 21AABCG5398P3Z3

Good's Description: Electricity




HSN Code: 27160000

Ref No: GR/BS/20-21/ 082

Date: 06-Jul-20  
Pay By Date: 05-Aug-20

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpetta, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month 306.339594 MU  
A.2. Overdrawal/(Underdrawal) Energy for the month (10.745638) MU  
A. Total Energy for the month 295.593956 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,57,167 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
	(a) Bulk Supply Price @ 186 Paise per kWh of Scheduled Energy (Annex-1) 56,97,91,644.84
	(b) Bulk Supply Price @ 186 Paise per kWh of Overdrawal/(Underdrawal) Energy (1,99,86,886.68)
	(c) Excess Demand Charge @ Rs 250 per kVA 0.00
	Sub Total: (a+b+c) 54,98,04,758.16
2	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____ 0.00
3	Total Current Charges: Items (1+2) 54,98,04,758.16
4	Add Late Payment Surcharge for the month of Jun-2020 (Annex-3) 9,47,69,598.00
5	Add: Previous amount outstanding :-
	(i) Outstanding energy charges (w.e.f 01.04.05) 7,81,40,12,289.00
	(ii) Outstanding LPS (w.e.f 01.04.05) 5,76,87,99,999.00
	Total Previous Outstanding: (i+ii) 13,58,28,12,288.00
6	Less payment received during the month
	(a) Amount received against Aug' 19 40,00,00,000.00
	(b) Rebate allowed 0.00
	(c) Amount received towards Arrear Dues 0.00
	(d) Other Adjustment (if any) 0.00
	Total Payment and Adjustment: (a+b+c+d) (40,00,00,000.00)
7	Total amount claimed through this bill: item (3 to 6) 13,82,73,86,644.16
	(Rounded off to the nearest Rupee) 13,82,73,86,644.00
	(Rupees one thousand three hundred eighty two crore seventy three lakh eighty six thousand six hundred forty four only)
	Checked by _____ For & on behalf of GRIDCO
	 DGM(F), PP  DGM (EBC)  CGM (PP)-I/C

#### Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the rates stipulated in Tariff Order of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per provisions of the Tariff Order in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per as per provisions of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per provisions of the Tariff Order.
- Discrepancy, if any, found later on, towards the billing will be taken into account.





**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **SOUTHCO UTILITY**  
July-2020

GRIDCO GSTIN: 21AABCG5398P3Z3

Good's Description: Electricity

HSN Code: 27160000

Ref No: GR/BS/20-21/ 090

Date: 05-Aug-20  
Pay By Date: 04-Sep-20

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpet, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month 315.565003 MU  
A.2. Overdrawal/(Underdrawal) Energy for the month 2.634259 MU  
A. Total Energy for the month 318.199262 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,65,229 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
(a)	Bulk Supply Price @ 186 Paise per kWh of Scheduled Energy (Annex-1) 58,69,50,905.58
(b)	Bulk Supply Price @ 186 Paise per kWh of Overdrawal/(Underdrawal) Energy 48,99,721.74
(c)	Excess Demand Charge @ Rs 250 per kVA 0.00
	<b>Sub Total: (a+b+c) 59,18,50,627.32</b>
2	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____ 0.00
3	<b>Total Current Charges: Items (1+2) 59,18,50,627.32</b>
4	<b>Add Late Payment Surcharge for the month of Jul-2020 (Annex-3) 9,98,45,698.00</b>
5	<b>Add: Previous amount outstanding :-</b>
(i)	Outstanding energy charges (w.e.f 01.04.05) 7,96,38,17,047.00
(ii)	Outstanding LPS (w.e.f 01.04.05) 5,86,35,69,597.00
	<b>Total Previous Outstanding: (i+ii) 13,82,73,86,644.00</b>
6	<b>Less payment received during the month</b>
(a)	Amount received against Aug' 19 and Sep'19 52,46,46,423.00
(b)	Rebate allowed 0.00
(c)	Amount received towards Arrear Dues 0.00
(d)	Other Adjustment (if any) 0.00
	<b>Total Payment and Adjustment: (a+b+c+d) (52,46,46,423.00)</b>
7	<b>Total amount claimed through this bill: item (3 to 6) 13,99,44,36,546.32</b>
	<b>(Rounded off to the nearest Rupee) 13,99,44,36,546.00</b>

(Rupees one thousand three hundred ninety nine crore forty four lakh thirty six thousand five hundred forty six only)

Checked by

For & on behalf of GRIDCO

DGM(F), PP

M. S. Sahoo  
DGM (EBC)

Sr. GM(T&BD)

### Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the rates stipulated in Tariff Order of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- Discrepancy, if any, found later on, towards the billing will be taken into account.



**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
**For SOUTHCO UTILITY**  
August-2020

GRIDCO GSTIN: 21AABCG5398P3Z3  
Good's Description: Electricity  
HSN Code: 27160000  
Ref No: GR/BS/20-21/ 129

Date: 07-Sep-20  
Pay By Date: 07-Oct-20

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpetta, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month 319.800443 MU  
A.2. Overdrawal/(Underdrawal) Energy for the month (1.722943) MU  
A. Total Energy for the month 318.077500 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,78,964 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
	(a) Bulk Supply Price @ 186 Paise per kWh of Scheduled Energy (Annex-1) 59,48,28,823.98
	(b) Bulk Supply Price @ 186 Paise per kWh of Overdrawal/(Underdrawal) Energy (32,04,673.98)
	(c) Excess Demand Charge @ Rs 250 per kVA 0.00
	<b>Sub Total: (a+b+c)</b> 59,16,24,150.00
2	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____ 0.00
3	<b>Total Current Charges: Items (1+2)</b> 59,16,24,150.00
4	<b>Add Late Payment Surcharge for the month of Aug-2020 (Annex-3)</b> 10,10,61,145.00
5	<b>Add: Previous amount outstanding :-</b>
	(i) Outstanding energy charges (w.e.f 01.04.05) 8,03,10,21,252.00
	(ii) Outstanding LPS (w.e.f 01.04.05) 5,96,34,15,295.00
	<b>Total Previous Outstanding: (i+ii)</b> 13,99,44,36,547.00
6	<b>Less payment received during the month</b>
	(a) Amount received against Sep' 19 and Oct' 19 45,16,53,656.00
	(b) Rebate allowed 0.00
	(c) Amount received towards Arrear Dues 0.00
	(d) Other Adjustment (if any) 0.00
	<b>Total Payment and Adjustment: (a+b+c+d)</b> (45,16,53,656.00)
7	<b>Total amount claimed through this bill: item (3 to 6)</b> 14,23,54,68,186.00
	<b>(Rounded off to the nearest Rupee)</b> 14,23,54,68,186.00

(Rupees one thousand four hundred twenty three crore fifty four lakh sixty eight thousand one hundred eighty six only)

Checked by

For & on behalf of GRIDCO

*[Signature]*  
DGM(F), PP

*[Signature]*  
DGM (EBC)

*[Signature]*  
Sr. GM (T&BS)

### Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the rates stipulated in Tariff Order of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd. 29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt. 22/04/2020 in case No. 71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- Discrepancy, if any, found later on, towards the billing will be taken into account.





**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **SOUTHCO UTILITY**  
**September-2020**

GRIDCO GSTIN: 21AABCG5398P3Z3  
Good's Description: Electricity  
HSN Code: 27160000  
Ref No: GR/BS/20-21/ 141

Date: 06-Oct-20  
Pay By Date: 05-Nov-20

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpet, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month	319.537450 MU
A.2. Overdrawal/(Underdrawal) Energy for the month	3.064362 MU
A. Total Energy for the month	322.601812 MU
B. SMD approved by OERC	6,80,000 kVA
SMD permitted by OERC	7,48,000 kVA
Actual SMD occurred	5,94,578 kVA
Excess SMD drawal	0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
	(a) Bulk Supply Price @ 186 Paise per kWh of Scheduled Energy (Annex-1) 59,43,39,657.00
	(b) Bulk Supply Price @ 186 Paise per kWh of Overdrawal/(Underdrawal) Energy 56,99,713.32
	(c) Excess Demand Charge @ Rs 250 per kVA 0.00
	Sub Total: (a+b+c) 60,00,39,370.32
2	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____ 0.00
3	Total Current Charges: Items (1+2) 60,00,39,370.32
4	TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 3 4,50,029.53
5	Total Current Charges incl. TCS: Items (3+4) 60,04,89,399.85
6	Add Late Payment Surcharge for the month of Sep-2020 (Annex-3) 9,91,56,141.00
7	TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 6 74,367.11
8	Add: Previous amount outstanding :-
	(i) Outstanding energy charges (w.e.f 01.04.05) 8,17,09,91,746.00
	(ii) Outstanding LPS (w.e.f 01.04.05) 6,06,44,76,440.00
	Total Previous Outstanding: (i+ii) 14,23,54,68,186.00
9	Less payment received during the month
	(a) Amount received against Sep' 19 and Oct' 19 53,66,77,738.00
	(b) Rebate allowed 0.00
	(c) Amount received towards Arrear Dues 0.00
	(d) Other Adjustment (if any) 0.00
	Total Payment and Adjustment: (a+b+c+d) (53,66,77,738.00)
10	Total amount claimed through this bill: item (5 to 9) 14,39,85,10,355.95
	(Rounded off to the nearest Rupee) 14,39,85,10,356.00

(Rupees one thousand four hundred thirty nine crore eighty five lakh ten thousand three hundred fifty six only)

Checked by

For & on behalf of GRIDCO

DGM(F), PP

DGM (EBC)

Sr.GM(T&BS)

### Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the rates stipulated in Tariff Order of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- The TCS u/s 206 C(1H) shall be recovered from the realised amount at the rate prevailing on the date of realisation.
- Discrepancy, if any, found later on, towards the billing will be taken into account.



**G R I D C O Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **SOUTHCO UTILITY**  
October-2020

GRIDCO GSTIN: 21AABCG5398P3Z3  
Good's Description: Electricity  
HSN Code: 27160000  
Ref No: GR/BS/20-21/235

Date: 06-Nov-20  
Pay By Date: 06-Dec-20

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpetta, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month 302.297791 MU  
A.2. Overdrawal/(Underdrawal) Energy for the month (1.057943) MU  
A. Total Energy for the month 301.239848 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,78,872 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1 <b>Current Charges</b>	
(a) Bulk Supply Price @ 197.40 Paise per kWh of Scheduled Energy (Annex-1)	59,67,35,839.43
(b) Bulk Supply Price @ 197.40 Paise per kWh of Overdrawal/(Underdrawal) Energy	(20,88,379.48)
(c) Excess Demand Charge @ Rs 250 per kVA	0.00
Sub Total: (a+b+c)	59,46,47,459.95
2 (a) Debit Bill for the months of Aug'19 to Mar'20 vide Bill No. GR/BS/20-21/159 to 166 Dtd 28.10.2020	4,01,57,313.84
(a) Debit Bill for the months of Apr'20 to Jul'20 vide Bill No. GR/BS/20-21/167 to 170 Dtd 28.10.2020	2,62,76,436.94
3 Total Current Charges: Items (1+2)	66,10,81,210.53
4 <b>TCS Claims during the month</b>	
(a) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on	4,45,986.00
(b) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on Aug'2020 BSP	4,43,718.00
(c) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on previous BSP dues received during Oct'2020	3,47,772.00
Sub Total: (a+b+c)	12,37,476.00
5 Total Current Charges incl. TCS: Items (3+4)	66,23,18,686.53
6 Add Late Payment Surcharge for the month of Oct-2020 (Annex-3)	10,30,41,235.00
7 TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 6	77,280.93
8 Add: Previous amount outstanding :-	
(i) Outstanding energy charges (w.e.f 01.04.05)	8,23,48,03,407.00
(ii) Outstanding LPS (w.e.f 01.04.05)	6,16,36,32,581.00
(iii) Outstanding TCS amount (w.e.f 01.10.2020)	4,50,030.00
Total Previous Outstanding: (i+ii+iii)	14,39,88,86,018.00
9 Less payment received during the month	
(a) Amount received against Nov'19 and Dec'19	46,33,49,065.20
(b) TCS Amount for the amount received against Nov'19 and Dec'19	3,47,512.00
(c) Rebate allowed	0.00
(d) Amount received towards Arrear Dues	0.00
(e) Other Adjustment (if any)	0.00
Total Payment and Adjustment: (a+b+c+d+e)	(46,36,96,577.20)
10 Total amount claimed through this bill: Item (3 to 6)	14,70,06,26,643.26
(Rounded off to the nearest Rupee)	14,70,06,26,643.00

(Rupees one thousand four hundred seventy crore six lakh twenty six thousand six hundred forty three only)

Checked by

*Bernal*  
DGM(F), PP

For & on behalf of GRIDCO

*M.S. Saha*  
DGM (EBC)

*gm*  
Sr. GM (T&BS)

## Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the revised rates stipulated in Tariff Order Dt.23.09.2020 of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- The TCS u/s 206 C(1H) shall be recovered from the realised amount at the rate prevailing on the date of realisation.
- Discrepancy, if any, found later on, towards the billing will be taken into account.





**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **SOUTHCO UTILITY**  
November-2020

GRIDCO GSTIN: 21AABCG5398P3Z3

Good's Description: Electricity

HSN Code: 27160000

Ref No: GR/BS/20-21/ 263

Date: 07-Dec-20  
Pay By Date: 06-Jan-21

The Authorised Officer  
Southern Electricity Supply Company of Odisha Utility  
Courtpetta, Berhampur, Odisha  
GSTIN: 21AAAJA2238A1ZB

A.1. Energy Scheduled by SLDC for the month	270.140899 MU
A.2. Overdrawal(Underdrawal) Energy for the month	4.848070 MU
A. Total Energy for the month	274.988969 MU
B. SMD approved by OERC	6,80,000 kVA
SMD permitted by OERC	7,48,000 kVA
Actual SMD occurred	5,76,087 kVA
Excess SMD drawal	0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
	(a) Bulk Supply Price @ 197.40 Paise per kWh of Scheduled Energy (Annex-1) 53,32,58,134.63
	(b) Bulk Supply Price @ 197.40 Paise per kWh of Overdrawal(Underdrawal) Energy 95,70,090.18
	(c) Excess Demand Charge @ Rs 250 per kVA 0.00
	<b>Sub Total: (a+b+c) 54,28,28,224.81</b>
2	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____ 0.00
3	<b>Total Current Charges: Items (1+2) 54,28,28,224.81</b>
4	<b>TCS Claims during the month</b>
	(a) TCS u/s 206 C (1H) of IT Act, 1961 @0.075% on 1 4,07,121.00
	(B) TCS u/s 206 C (1H) of IT Act, 1961 @0.075% on previous BSP dues received during Nov/2020 3,74,899.00
	<b>Sub Total: (a+b) 7,82,020.00</b>
5	<b>Total Current Charges Incl. TCS: Items (3+4) 54,36,10,244.81</b>
6	<b>Add Late Payment Surcharge for the month of Nov-2020 (Annex-3) 10,08,38,717.00</b>
7	<b>TCS u/s 206 C (1H) of IT Act, 1961 @0.075% on 6 75,629.04</b>
8	<b>Add: Previous amount outstanding :-</b>
	(i) Outstanding energy charges (w.e.f 01.04.05) 8,43,20,35,736.00
	(ii) Outstanding LPS (w.e.f 01.04.05) 6,26,66,73,816.00
	(iii) Outstanding TCS amount (w.e.f 01.10.2020) 10,14,882.00
	<b>Total Previous Outstanding: (i+ii+iii) 14,69,97,24,434.00</b>
9	<b>Less payment received during the month</b>
	(a) Amount received against Dec'19 and Jan'20 49,98,65,750.00
	(b) TCS Amount for the amount received against Dec'19 and Jan'20 3,74,899.00
	(c) Rebate allowed 0.00
	(d) Amount received towards Arrear Dues 0.00
	(e) Other Adjustment (if any) 0.00
	<b>Total Payment and Adjustment: (a+b+c+d+e) (50,02,40,649.00)</b>
10	<b>Total amount claimed through this bill: item (3 to 6) 14,84,40,08,375.84</b>
	<b>(Rounded off to the nearest Rupee) 14,84,40,08,376.00</b>

(Rupees one thousand four hundred eighty four crore forty lakh eight thousand three hundred seventy six only)

Checked by

For & on behalf of GRIDCO

DGM(F), PP

DGM (EBC)

Sr. GM(T&BS)

### Note:

- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the revised rates stipulated in Tariff Order Dt.23.09.2020 of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- The TCS u/s 206 C(1H) shall be recovered from the realised amount at the rate prevailing on the date of realisation.
- Discrepancy, if any, found later on, towards the billing will be taken into account.





**G R I D C O Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **TPSODL**  
December-2020

GRIDCO GSTIN: 21AABCG5398P3Z3

Good's Description: Electricity

HSN Code: 27160000

Ref No: GR/BS/20-21/ 314

Date: 06-Jan-21  
Pay By Date: 05-Feb-21

The Chief Executive Officer  
TP Southern Odisha Distribution Limited  
Courtpetta, Berhampur, Odisha  
GSTIN:

A.1. Energy Scheduled by SLDC for the month	270.633122 MU
A.2. Overdrawal/(Underdrawal) Energy for the month	(.815874) MU
A. Total Energy for the month	269.817248 MU
B. SMD approved by OERC	6,80,000 kVA
SMD permitted by OERC	7,48,000 kVA
Actual SMD occurred	5,68,745 kVA
Excess SMD drawal	0 kVA

Item No		Amount (Rs.)
1	<b>Current Charges</b>	
	(a) Bulk Supply Price @ 197.40 Paise per kWh of Scheduled Energy (Annex-1)	53,42,29,782.83
	(b) Bulk Supply Price @ 197.40 Paise per kWh of Overdrawal/(Underdrawal) Energy	(16,10,535.28)
	(c) Excess Demand Charge @ Rs 250 per kVA	0.00
	Sub Total: (a+b+c)	53,26,19,247.55
2	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd _____	0.00
3	Total Current Charges: Items (1+2)	53,26,19,247.55
4	<b>TCS Claims during the month</b>	
	(a) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 1	3,99,464.00
	Sub Total: (a+b)	3,99,464.00
5	Total Current Charges incl. TCS: Items (3+4)	53,30,18,711.55
6	Add Late Payment Surcharge for the month of Dec-2020 (Annex-3)	
7	TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 6	
8	Add: Previous amount outstanding :-	
	(i) Outstanding energy charges	-
	(ii) Outstanding LPS	-
	(iii) Outstanding TCS amount	-
	Total Previous Outstanding: (i+ii+iii)	
9	Less payment received during the month	
	(a) Amount received	-
	(b) TCS Amount for the amount received	-
	(c) Rebate allowed	-
	(d) Amount received towards Arrear Dues	-
	(e) Other Adjustment (if any)	-
	Total Payment and Adjustment: (a+b+c+d+e)	
10	Total amount claimed through this bill: Item (3 to 6)	53,30,18,711.55
	(Rounded off to the nearest Rupee)	53,30,18,712.00

(Rupees fifty three crore thirty lakh eighteen thousand seven hundred twelve only)

Checked by

*[Signature]*  
DGM(F), PP

For & on behalf of GRIDCO

*[Signature]*  
DGM (EBC)

*[Signature]*  
Sr.GM(T&BS)

### Note:

- The provisional BSP Bill of TPSODL has been prepared in line with the vesting order Dt.28-12-2020 of Hon'ble OERC in Case No.83/2020.
- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the revised rates stipulated in Tariff Order Dt.23.09.2020 of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- The TCS u/s 206 C(1H) shall be recovered from the realised amount at the rate prevailing on the date of realisation.
- The receivable Bill of Supply has been prepared provisionally pending the receipt of GSTIN.
- The outstanding dues for the period from April-20 to December-20 shall be dealt as per Clause 46 of the vesting order dt.28.12.2020.
- The outstanding dues of SOUTHCO Utility alongwith the late payment surcharge(provisional) as on Dt.31.12.2020 is enclosed with the provisional BSP Bill.
- Discrepancy, if any, found later on, towards the billing will be taken into account.



**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **TPSODL**  
January-2021

GRIDCO GSTIN: 21AABCG5398P323

Good's Description: Electricity  
HSN Code: 27160000

Ref No: GR/BS/20-21/ 337

Date: 05-Feb-21  
Pay By Date: 07-Mar-21

The Chief Executive Officer  
TP Southern Odisha Distribution Limited  
Courtpetta, Berhampur, Odisha  
GSTIN: 21AAICT3239P1Z1

A.1. Energy Scheduled by SLDC for the month 294.091355 MU  
A.2. Overdrawal(Underdrawal) Energy for the month 2.484645 MU  
A. Total Energy for the month 296.576000 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,88,669 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1 <b>Current Charges</b>	
(a) Bulk Supply Price @ 197.40 Paise per kWh of Scheduled Energy (Annex-1)	58,05,36,334.77
(b) Bulk Supply Price @ 197.40 Paise per kWh of Overdrawal(Underdrawal) Energy	49,04,689.23
(c) Excess Demand Charge @ Rs 250 per kVA	0.00
Sub Total: (a+b+c)	58,54,41,024.00
2 Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____	0.00
3 Total Current Charges: Items (1+2)	58,54,41,024.00
4 TCS Claims during the month	
(a) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 1	4,39,081.00
Sub Total: (a+b)	4,39,081.00
5 Total Current Charges incl. TCS: Items (3+4)	58,58,80,105.00
6 Add Late Payment Surcharge for the month of Jan-2021 (Annex-3)	
7 TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 6	
8 Add: Previous amount outstanding :-	
(i) Outstanding energy charges	1,52,14,12,060.00
(ii) Outstanding LPS	
(iii) Outstanding TCS amount	16,33,292.00
Total Previous Outstanding: (i+ii+iii)	1,52,30,45,352.00
9 Less payment received during the month	
(a) Amount received	8,23,37,648.00
(b) TCS Amount for the amount received	61,753.00
(c) Rebate allowed	
(d) Amount received towards Arrear Dues	
(e) Other Adjustment (if any)	
Total Payment and Adjustment: (a+b+c+d+e)	(8,23,99,401.00)
10 Total amount claimed through this bill: item (3 to 6) (Rounded off to the nearest Rupee)	2,02,65,26,056.00
	2,02,65,26,056.00

(Rupees two hundred two crore sixty five lakh twenty six thousand fifty six only)

Checked by

For & on behalf of GRIDCO

*[Signature]*  
DSM(F), PP

*[Signature]*  
M.S. Sahoo  
DGM (EBC)

*[Signature]*  
Sr.GM(T&BS)

### Note:

- The provisional BSP Bill of TPSODL has been prepared in line with the vesting order Dt.28-12-2020 of Hon'ble OERC in Case No.83/2020.
- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the revised rates stipulated in Tariff Order Dt.23.09.2020 of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP) in the Meeting Dtd.29.08.2018, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- The TCS u/s 206 C(1H) shall be recovered from the realised amount at the rate prevailing on the date of realisation.
- The receivable Bill of Supply has been prepared provisionally pending the receipt of GSTIN.
- The outstanding dues for the period from April-20 to December-20 shall be dealt as per Clause 46 of the vesting order dt.28.12.2020.
- The outstanding dues of SOUTHCO Utility for the period from April'20 to Dec'20 has been considered as per Clause 46 of the vesting order.
- Discrepancy, if any, found later on, towards the billing will be taken into account.





**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **TPSODL**  
**February-2021**

GRIDCO GSTIN: 21AABCG5398P3Z3  
Good's Description: Electricity  
HSN Code: 27160000  
Ref No: GR/BS/20-21/ 361

Date: 04-Mar-21  
Pay By Date: 03-Apr-21

The Chief Executive Officer  
TP Southern Odisha Distribution Limited  
Courtpet, Berhampur, Odisha  
GSTIN: 21AAICT3239P1Z1

A. Total Energy for the month 289,468,317 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,78,008 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1	<b>Current Charges</b>
	(a) Bulk Supply Price @ 197.40 Paise per kWh of Total Energy 53,19,30,457.76
	(b) Excess Demand Charge @ Rs 250 per kVA 0.00
	Sub Total: (a+b) 53,19,30,457.76
2	Debit/Credit Bill for the month of _____ vide Bill No. _____ Dtd. _____ 0.00
3	Total Current Charges: Items (1+2) 53,19,30,457.76
4	<b>TCS Claims during the month</b>
	(a) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 1 3,98,948.00
	Sub Total: (a+b) 3,98,948.00
5	Total Current Charges incl. TCS: Items (3+4) 53,23,29,405.76
6	Add Late Payment Surcharge for the month of Feb-2021 (Annex-3)
7	TCS u/s 206 C (1H) of IT Act, 1961 @ 0.075% on 6
8	Add: Previous amount outstanding :-
	(i) Outstanding energy charges 2,02,45,15,436.00
	(ii) Outstanding LPS
	(iii) Outstanding TCS amount 16,11,063.00
	Total Previous Outstanding: (i+ii+iii) 2,02,61,26,499.00
9	Less payment received during the month
	(a) Amount received against Dec'20 52,72,93,056.00
	(b) TCS Amount for the amount received 4,61,310.00
	(c) Rebate allowed 53,26,192.00
	(d) Amount received towards 2nd Installment upto Dec'20 8,24,61,155.00
	(e) Other Adjustment (if any)
	Total Payment and Adjustment: (a+b+c+d+e) (61,55,41,713.00)
10	Total amount claimed through this bill: item (3 to 6) 1,94,29,14,191.76
	(Rounded off to the nearest Rupee) 1,94,29,14,192.00

(Rupees one hundred ninety four crore twenty nine lakh fourteen thousand one hundred ninety two only)

Checked by

For & on behalf of GRIDCO

DGM(F), PP

DGM (EBC)

Sr. GM(T&BS)

### Note:

- The provisional BSP Bill of TPSODL has been prepared in line with the vesting order Dt.28-12-2020 of Hon'ble OERC in Case No.83/2020.
- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dtd. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the revised rates stipulated in Tariff Order Dt.23.09.2020 of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
- Statutory levy/duty/tax/cess/toll etc. imposed under any law from time to time shall be charged over and above the bulk supply price fixed by the Commission as per Clause No. 356 of the Tariff Order.
- The TCS u/s 206 C(1H) shall be recovered from the realised amount at the rate prevailing on the date of realisation.
- The receivable Bill of Supply has been prepared provisionally pending the receipt of GSTIN.
- The outstanding dues for the period from April-20 to December-20 shall be dealt as per Clause 46 of the vesting order dt.28.12.2020.
- The outstanding dues of SOUTHCO Utility for the period from April'20 to Dec'20 has been considered as per Clause 46 of the vesting order.
- The BSP Bill has been prepared on the basis of the actual Energy. The Energy Scheduled to TPSODL will be provided separately when the same will be made available by SLDC.
- Discrepancy, if any, found later on, towards the billing will be taken into account.



**GRIDCO Limited**  
Registered Office: Janpath  
Bhubaneswar 751022  
CIN: L40109OR1995SGC003960  
Bill of Supply (Provisional)  
For **TPSODL**  
March-2021

GRIDCO GSTIN: 21AABCG5398P3Z3

Good's Description: Electricity

HSN Code: 27160000

Ref No: GR/BS/21-22/ 804

Date: 06-Apr-21  
Pay By Date: 06-May-21

The Chief Executive Officer  
TP Southern Odisha Distribution Limited  
Courtplota, Berhampur, Odisha  
GSTIN: 21AAICT3239P121

A. Total Energy for the month 336.215532 MU  
B. SMD approved by OERC 6,80,000 kVA  
SMD permitted by OERC 7,48,000 kVA  
Actual SMD occurred 5,99,689 kVA  
Excess SMD drawal 0 kVA

Item No	Amount (Rs.)
1 <b>Current Charges</b>	
(a) Bulk Supply Price @ 197.40 Paise per kWh of Total Energy	66,36,89,460.17
(b) Excess Demand Charge @ Rs 250 per kVA	0.00
<b>Sub Total: (a+b)</b>	66,36,89,460.17
2 4th Installment of outstanding BSP Dues for the period from April'20 to Dec'20 as per CI.46 of vesting order dt.28.12.2020	8,23,99,401.00
3 <b>Total Current Charges: Items (1+2)</b>	74,60,88,861.17
4 <b>TCS Claims during the month</b>	
(a) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.1% on 1	6,63,689.00
(b) TCS u/s 206 C (1H) of IT Act, 1961 @ 0.1% on 2	82,399.00
<b>Sub Total: (a+b)</b>	7,46,088.00
5 <b>Total Current Charges incl. TCS: Items (3+4)</b>	74,68,34,949.17
6 <b>Add Late Payment Surcharge for the month of Mar-2021 (Annex-3)</b>	
7 TCS u/s 206 C (1H) of IT Act, 1961 @ 0.1% on 6	
8 <b>Add: Previous amount outstanding :-</b>	
(i) Outstanding energy charges	1,19,97,70,880.00
(ii) Outstanding LPS	
(iii) Outstanding TCS amount	15,09,130.00
<b>Total Previous Outstanding: (i+ii+iii)</b>	1,20,12,80,010.00
9 <b>Less payment received during the month</b>	
(a) Amount received against Jan'21	57,95,86,614.00
(b) TCS Amount for the amount received	5,00,881.00
(c) Rebate allowed	58,54,410.00
(d) Amount received towards 3rd Installment upto Dec'20	8,23,99,401.00
(e) Other Adjustment (if any)	
<b>Total Payment and Adjustment: (a+b+c+d+e)</b>	(66,83,41,306.00)
10 <b>Total amount claimed through this bill: Item (3 to 6)</b>	1,27,97,73,653.17
<b>(Rounded off to the nearest Rupee)</b>	1,27,97,73,653.00

(Rupees one hundred twenty seven crore ninety seven lakh seventy three thousand six hundred fifty three only)

Checked by

*[Signature]*  
DGM(F), PP

For & on behalf of GRIDCO

*[Signature]*  
DGM (EBC)

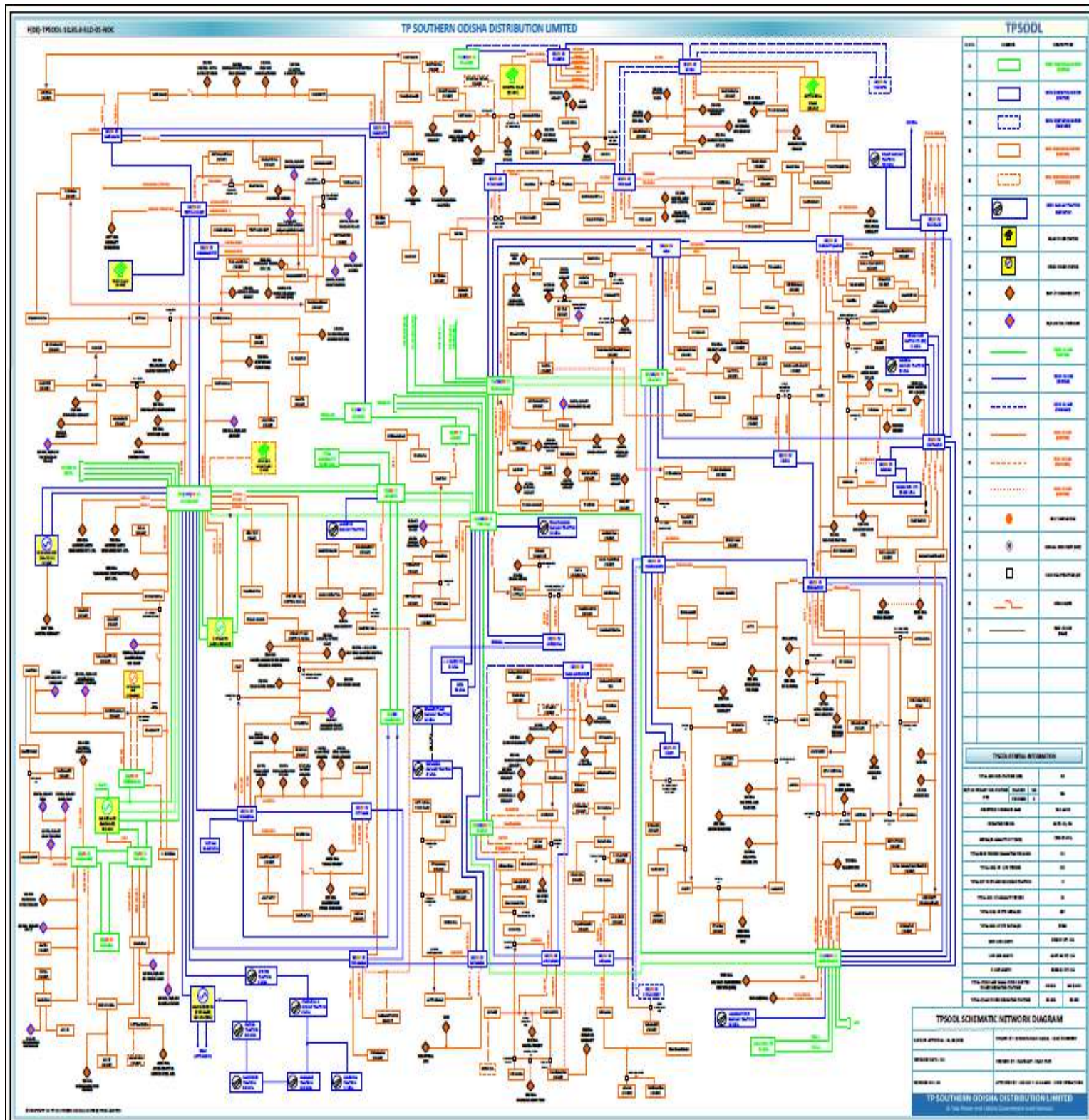
*[Signature]*  
Sr.GM(T&BS)

### Note:

- The provisional BSP Bill of TPSODL has been prepared in line with the vesting order Dt.28-12-2020 of Hon'ble OERC in Case No.83/2020.
- The billing for Bulk Supply of Power has been done basing on Scheduled Energy Data provided by SLDC & Overdrawal/(Underdrawal) Energy derived from Energy Flow Statement provided by SLDC, in line with the order dt. 07.05.2018 of Hon'ble APTEL in Appeal No. 55 of 2015 in the matter of overdrawal by DISCOM and as per the revised rates stipulated in Tariff Order Dt.23.09.2020 of GRIDCO for FY-2020-21.
- In line with the decisions of the 98th & 99th PSOC Meetings and discussions held among GRIDCO, SLDC & WESCO in the chamber of CGM(PP), in the Meeting Dtd.29.08.2016, the Energy Import by Solar Entities has been deducted from the Energy Import Figure of DISCOMs.
- Rebate for prompt payment/late payment surcharge shall be admissible/imposed as per the Clause No. 354 & 355 of Tariff Order of GRIDCO Dt.22/04/2020 in case No.71 of 2019 of OERC.
- In case of any default in monthly BSP dues by the DISCOMs, they are liable for imposition of power regulation to the extent of non payment of monthly BSP dues as per Clause No. 348 of the Tariff Order.
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- The TCS u/s 206 C(1H) shall be recovered from the realised amount at the rate prevailing on the date of realisation.
- The outstanding dues for the period from April-20 to December-20 has been dealt as per Clause 46 of the vesting order dt.28.12.2020.
- The BSP Bill has been prepared on the basis of the actual Energy. The Energy Scheduled to TPWODL will be provided separately when the same will be made available by SLDC.
- Discrepancy, if any, found later on, towards the billing will be taken into account.

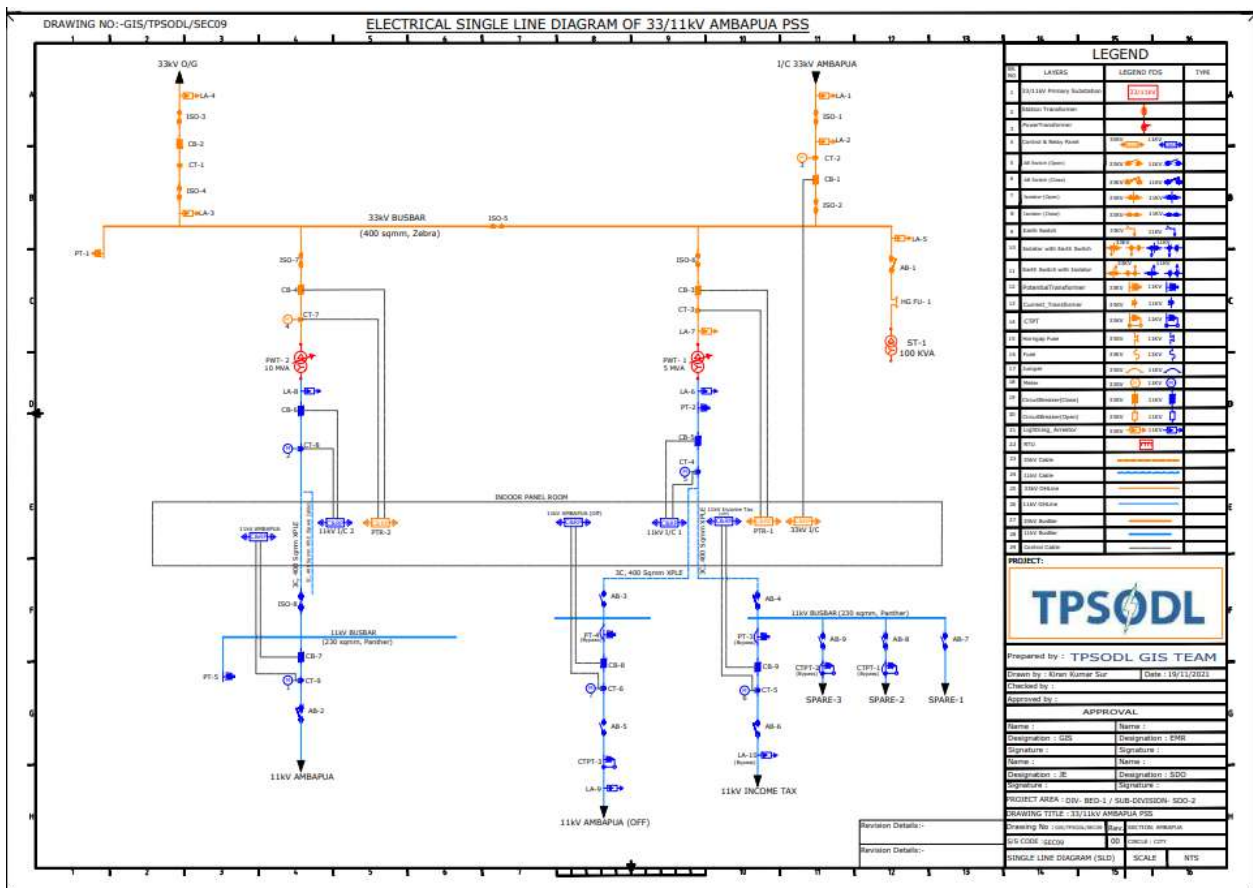
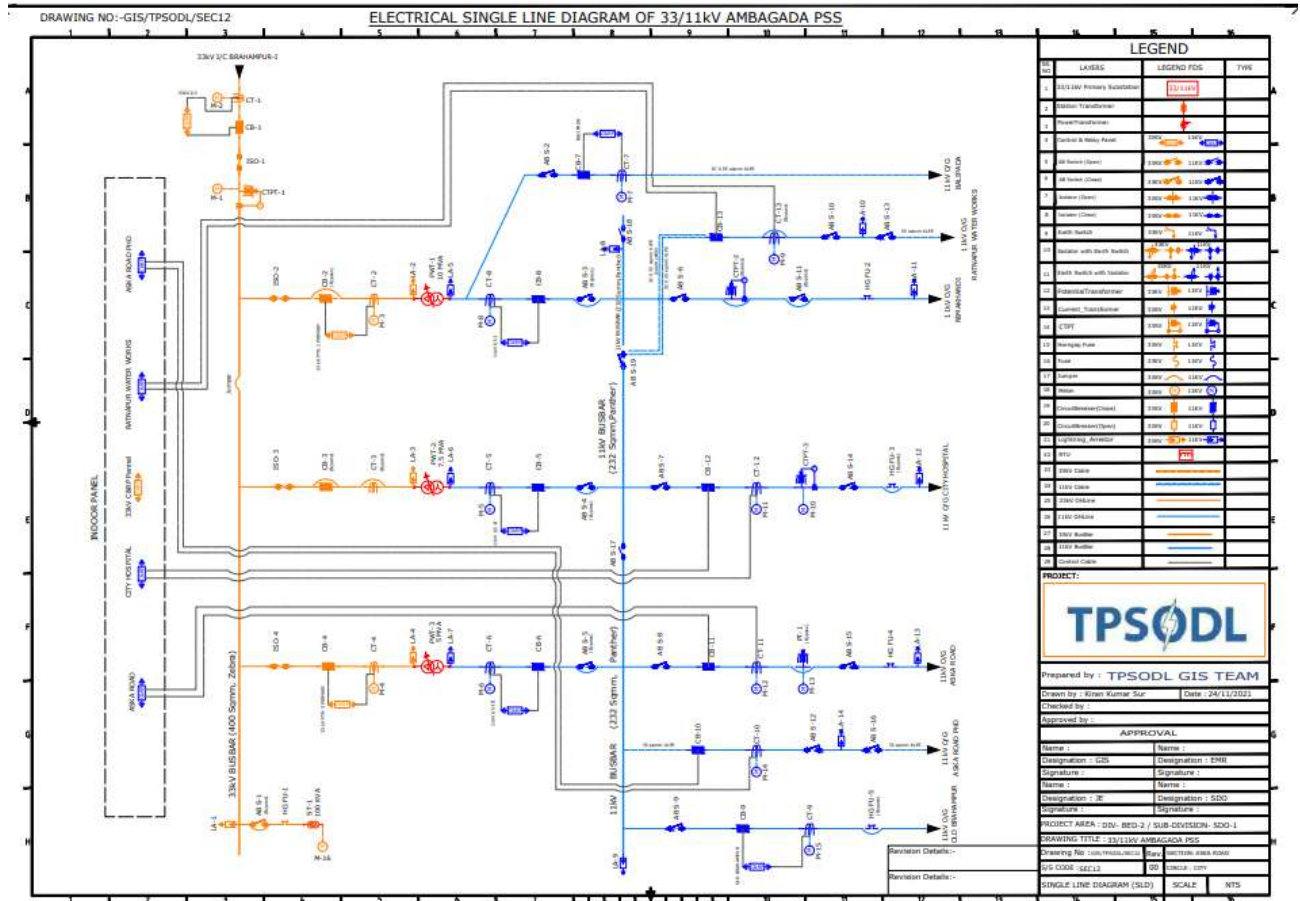


ANNEXURE (VIII): LINE DIAGRAM (SLD):



SLD OF TPSODL SYSTEM





SLD OF THE VISITED SUBSTATIONS.

### ANNEXURE (IX): CATEGORY OF SERVICE DETAILS:

[illegible]

**ANNEXURE (X): DETAILED FORMATS TO BE ANNEXED:**

33KV QUARTERLY ENERGY AUDIT REPORT													
SL.NO.	132/33 KV or 220/33KV Grid Name	33 KV Feeder Name	Electrical Length of the Feeder	Total INPUT in MU=A	CONSUMPTION BY 33KV CONSUMER IF ANY=B	NAME OF 33/11KV S/S	11KV Feeder Name	FDR_CD	INPUT IN 11KV FEEDERS IN MU=C1,C2,C3	TOTAL INPUT TO THE 11KV FEEDERS CORRESPONDING TO 33/11KV S/S=C= C1+C2+C3	TOTAL(33KV CONSUMER +11KV FEEDERS*) Consumption in MU (B)=D=B+C	LOSS IN MU E=(D-A)	AVERAGE % LOSS  (E/A*100)
1													

[illegible]

**Category wise no. of defective meter in TPSODL**

Category	FY 2020-21		
	Total Cons. (Nos)	No. of Defect Meter	% w.r.t. Total cons.
EHT			
HT			
Domestic			
Kutir Jyoti			
L.T. General (Com)			
Agriculture			
Agro			
Allied-Agro			
Street Lighting			
PWW			
Small Industry			
Medium Industry			
Specified Pub. Purpose (P.I.)			
Total			

## Category wise no. of Correct Meter under TPSODL

Category	FY 2020-21		
	Total Cons. (Nos)	No. of correct meters	% w.r.t. Total Cons
EHT			
HT			
Domestic			
Kutir Jyoti			
L.T. General (Com)			
Agriculture			
Agro			
Allied-Agro			
Street Lighting			
PWW			
Small Industry			
Medium Industry			
Specified Pub. Purpose (P.I.)			
Total			

## Category wise no. of without meter under TPSODL

Category	FY 2020-21		
	Total Cons. (Nos)	No. of without meter	%w.r.t Total Cons.
EHT			
HT			
Domestic			
Kutir Jyoti			
L.T. General (Com)			
Agriculture			
Agro			
Allied-Agro			
Street Lighting			
PWW			
Small Industry			
Medium Industry			
Specified Pub. Purpose (P.I.)			
Total			

**ANNEXURE (XI): LIST OF DOCUMENTS VERIFIED WITH EACH PARAMETER:** Details are furnished in sector specific pro-forma.

**ANNEXURE (XII): BRIEF DESCRIPTION OF UNIT:** Details are provided in the MEA report of TPSODL for FY 2020-21

## ANNEXURE (XIII): LIST OF PARAMETERS ARRIVED THROUGH CALCULATION OR FORMULAE WITH LIST OF DOCUMENTS AS SOURCE OF DATA:

### ADDITIONAL ANNEXURE:

### DETAILS OF SUBSIDY CLAIMED AND RECIEVED:

Consumer Category	Billed Energy			Subsidized Billed Energy			Applicable rate of Subsidy as notified by State Govt.		Subsidy Due from State Govt.			Subsidy Actually Billed/Claimed from State Govt.	Subsidy Received from State Govt.	Balance Subsidy yet to be Received from State Govt.
	Metered	Un-Metered	Total	Metered	Un-metered	Total	Metered	Un-metered	Metered	Un-metered	Total	in Rs. Cr.	in Rs. Cr.	in Rs. Cr.
Residential	1623.394	1.615	1625.008	0	0	0	0	0	0	0	0	0	0	0
Agricultural	96.955	0.000	96.955	0	0	0	0	0	0	0	0	0	0	0
Commerical/industrial-LT	314.307	0.054	314.361	0	0	0	0	0	0	0	0	0	0	0
Commerical/industrial-HT	620.492	0.000	620.492	0	0	0	0	0	0	0	0	0	0	0
Other	112.097	0.019	112.116	0	0	0	0	0	0	0	0	0	0	0
Total	2767.244	1.688	2768.933	0	0	0	0	0	0	0	0	0	0	0

**Reply from TPSODL to the observations and critical comments from our External Energy Auditor from Power Tech Consultants in reference to the Energy Audit submission for FY2020-21.**

**The observations and critical comments with regards of the energy data as furnished in the Pro-forma by TPSODL is furnished as under.**

1. As per the ledger data there are 385 no's of 11KV consumers, however as per the Performance Review Report submitted by TPSODL to Hon'ble OERC, the total no of 11KV consumers is 401. It is recommended that TPSODL may review and correct the same while submitting their future Performance Review Report to Hon'ble OERC.

#### TPSODL: Noted

2. There are around 854 conventionally metered Distribution Transformer (DTR). However the meter readings are not taken and meters are not communicating. It is recommended that DTR metering should be made functional and meter reading should be taken on monthly basis.

**TPSODL: In reference with Gazette notification dated 7th Oct, 2021 for carrying out Annual Energy Audit and Periodic Energy Accounting by DISCOMs, for better communication, reading and accurate energy accounting, TPSODL has already placed Work Order for supply and installation of 16000 Nos Smart Energy Meters integrated with AMI in the Phase-I and set to be completed by End of March 2023.**

3. The 11/0.415 kV DTR is considered under LT system as per the current practice followed by TPSODL.

#### TPSODL: Noted

4. In Cell D-25-26-27 of the "Infrastructure Detail" sheet of the Pro-forma in the line length of AB cable, there should be provision for separate entry for line length of AB cable, Underground Cable, 66kV, 33kV. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.

#### TPSODL: Noted



5. The Cell C-28 of “Infrastructure Details” sheet of the Pro-forma may be read and considered as Energy Purchase Particular. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.

**TPSODL: Noted**

6. There is no separate segregation of input energy and sale to consumers at 33kV and 11kV levels as per the prevailing practice of TPSODL. However in the “Infrastructure Details” sheet of the Pro-forma [Ref Row 4(ii) and 4(iii)], there is a requirement to fill the data of 11kV and 33kV voltage wise energy input and energy sale. TPSODL has clubbed both the 33kV and 11kV energy input and energy sale and provided the data in 11kV row. It is Annual Energy Audit Report 2020-21 of TPSODL Page 11 recommended that in future TPSODL is required to segregate the 11kV and 33kV Input Energy and Energy Sale.

**TPSODL: Noted**

7. In the Pro-Forma it is recommended that after Row-76 of “Infrastructure Details” sheet of the Pro-forma there has to be another row having provision to incorporate the energy supplied to 33/11 KV , 33/0.415 Substation.

**TPSODL: Noted**

8. In Energy Accounting Summary of “Infrastructure Details” sheet of the Pro-forma [Ref Row 5(ii) and 5(iii)], TPSODL has reported HT Input by reverse calculating the difference of total sale and HT sale and assuming 8% loss in the HT System, which is not the correct approach. Since majority of the 33kV Feeders are metered at GSS end and all the 33kV consumers are supplied with meters and majority of the outgoing 11KV Feeders in the PSS are being metered, therefore TPSODL is in a position to capture the Total Input Energy and Energy Sale at 33KV System. In view of the same it is recommended TPSODL should take a corrective approach to capture 33kV and 11kV Input Energy and Energy Sale as per the meter data and should not consider the Normative approach of 8% distribution loss in HT Systems.

**TPSODL: Noted**

9. 33kV meters are installed at Grid Substation (GSS) interface points and at each consumer points. 137 nos of 33kV meters are installed at the input point to the 33/11 kV substation (PSS).

**TPSODL: In reference with Gazette notification dated 7th Oct, 2021 for carrying out Annual Energy Audit and Periodic Energy Accounting by DISCOMs. TPSODL has floated tender for 100% communicable feeder metering integrated with AMI and set to be completed by End of March 2023.**

10. TPSODL informed that they have not completed 100% metering of the 11KV Feeder and accordingly submitted the received energy at the 11kV Feeder where they have installed the meter. Further TPSODL submitted that they have not installed meters at DTR and wherever the earlier meters were installed in DT level, the data were not captured in regular interval due to lack of metering and billing personnel . At DTR level the metering data is not available. TPSODL is required to audit the DTR's and provide the metering data. TPSODL has also informed that the consumers are not properly mapped or indexed to each 11KV/33KV Feeders. In view of the same TPSODL couldn't submit the data at Cell K-3 (Received at Feeder), Cell L-3(Feeder consumption), Cell M-3(Final net export at feeder level) in the “Details of Feeder Levels” sheet of the Pro-forma due to which T&D loss and AT&C loss of feeder wise losses could not be computed.

**TPSODL:** In reference with Gazette notification dated 7th Oct, 2021 for carrying out Annual Energy Audit and Periodic Energy Accounting by DISCOMs. TPSODL has floated the tender for 100% communicable feeder metering integrated with AMI also work Order for 16000Nos DT Smart meter for the Phase-I has already been placed and target to be completed by End of March 2023.

11. The energy generated from Solar Rooftops is being metered but the meters readings are not properly captured by TPSODL in financial years 2020-21. Therefore, the Capacity Utilization Factor (CUF) of 19% has been considered to calculate the Solar Energy generated from the Solar Rooftop from each solar plant and accordingly Injected Energy has been derived.

**TPSODL: Noted**

12. In the Cell S-11 & S-12 of "Form Input Energy" sheet of the Pro-forma the remarks couldn't be entered as the cell is protected. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.

**TPSODL: Noted**

13. In the Cell R-23-24 of "Form Input Energy" sheet of the Pro-forma the length of AB cable and length of underground cable may be considered as length of LT-AB cable and length of LT underground cable.

**TPSODL: Noted**

14. In cell no P-28 of "Form input energy" sheet of the pro-forma the (period from-- to --) may be considered as 1st April 2020-31st Mar 2021. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.

**TPSODL: Noted**

15. In the cell D-29 of "Form Input Energy" sheet of the pro-forma, the voltage level unit should be in kV, instead of kVA. Again in Cell E-29 & F-29 "Form Input Energy" sheet of the Annual Energy Audit Report 2020-21 of TPSODL Page 12 pro-forma the unit of division & subdivision (KVA) may be edited. TPSODL may request BEE/SDA for necessary changes in the Pro-forma.

**TPSODL: Noted**

16. In Cell Q-30 to Q-139 of "Form input energy" sheet of the pro-forma, TPSODL informs that they don't have the CT/PT ratio of the meter installed at the injection point and hence the data are not available and left blank. It is recommended that TPSODL may obtain the same from OPTCL and may fill the data in future.

**TPSODL: Noted**

17. Station consumption at OPTCL Grid Substation is considered as Export for adjustment purpose in the BSP Bill of GRIDCO and hence same are mentioned accordingly in the "Form Input Energy" sheet of the pro-forma.

**TPSODL: Noted**

18. It is observed that the EHT/HT consumption is low as compared to LT Consumption. It is recommended that TPSODL should pray before Hon'ble Commission for tariff rationalisation

measures to be adopted for HT / EHT Consumers. TPSODL may be required to incentivise the Industrial Consumption by taking up better tariff rationalisation measures in future tariff hearing process, as increase in HT / EHT consumption will help in reducing the T&D loss and AT & C loss.

**TPSODL: Noted**

19. It is found that the % of defective meters are more in consumer category like Kutri Jyoti, Agro, Allied Agro, Agricultural, Street Lighting and Specified Public purpose. It is recommended to give special emphasize on Kutri Jyoti, Agro, Allied Agro, Agricultural, Street Lighting and specified Public purpose category consumer for replacement of defective meters with correct one. In the next tariff hearing process TPSODL may propose to the Hon'ble Commission DBT based subsidy for these consumers in which the subsidy linked with the above category consumer can be transferred through Direct Benefit Transfer (DBT) Scheme based on the correct meter reading. In case meter is tampered and found to be defective, then the transfer of subsidy may be stopped till the meter is replaced with correct meter.

**TPSODL: TPSODL has taken the activity for replacement of defective meters in the priority basis and more than 3 lacs meters has been replaced since inception.**

20. It is found that the state and central government are implementing a no. of electrification project in which meters are becoming defective and stopped working after few months of installations. Currently very few meters manufacturers have been approved by TPSODL. It is recommended that TPSODL should empanel a nos. of quality meter manufacturers from where the contractor should procure meters and install in Government sponsored project and the meter manufacturer should issue guarantee certificate of each meter for a period of 5 years in favour of the local DISCOM where the project is being implemented so that in case of any defective meter is found by the DISCOM, then same can be replaced by the meter manufacturers directly. TPSODL should inform both State and Central Government implementing agency regarding % increase in defective meters happening in their sponsored scheme so that they can take appropriate remedial measures.

**TPSODL: TPSODL through strict tendering process and uppermost quality & technical evaluation selected meter supply and installation vendor/contractor.**

The various loss reduction recommendations are furnished below.

1. It is recommended that TPSODL should pray before the Hon'ble Commission for tariff rationalisation measures to be adopted for HT / EHT Consumers so that HT / EHT Industries will be incentivised to procure power from DISCOM without depending much on Open Access. TPSODL may be required to incentivise the Industrial Consumption by taking up better tariff rationalisation measures in future tariff hearing process, as increase in HT / EHT consumption will help in reducing the T&D loss and AT & C loss. Annual Energy Audit Report 2020-21 of TPSODL.

**TPSODL: Noted**

2. It is recommended that TPSODL should initiate dialogue with Urban Local Bodies and the Agricultural Department regarding higher % defective meters found in street lights and agricultural sectors. It is recommended that the TPSODL should involve Government Machinery and political people for awareness creation and to reduce meter tampering and theft of electricity. TPSODL should initiate dialogue with the Agricultural Department regarding higher % of agricultural connections having no meters and take early action for providing connections with meters.

**TPSODL: TPSODL has taken the activity for replacement of defective meters and enforcement activity in the priority basis.**

3. It is recommended that the TPSODL should involve the Government Machinery and Agricultural Department for awareness creation for metered power supply connection and to reduce meter tampering. It is proposed that the subsidy meant for Agriculture Category Consumer should be Aadhar linked and should be transferred through Direct Benefit Transfer (DBT) Scheme based on the correct meter reading. In case there is no meter or meter is tampered and found to be defective, then the transfer of electricity tariff subsidy as well as other Agriculture Subsidy of the Agriculture Department may be stopped till the defective meter is replaced with the correct meter.

**TPSODL: TPSODL has taken the activity for replacement of defective meters and enforcement activity in the priority basis.**

4. It is proposed that TPSODL should promote Energy Efficient Lighting System (LED Bulbs, Tube lights and Energy Efficient Fans) in association with BEE / EESL / Private ESCO in its utility area. The availability of LED Bulbs, Tube Lights, BLDC Fans, IE3 Meters which are supposed to be distributed to consumers through BEE / EESL / Private ESCO as part of the Utility based Demand Side Management Program are not available in plenty. TPSODL may discuss with BEE / EESL / Private ESCO to open more outlets and increase the LED Lights, Super Efficient AC and Fans Distribution.

**TPSODL: We already have signed MOU with EESL for Implementation of Energy Efficient Appliances for our DISCOM consumer to meet the Demand Side Management plan. We have also started awareness campaign for the same.**

5. Promoting the use of renewable energy (Solar) through facilitation: Hon'ble Commission has notified Net Metering Scheme for Solar Roof Top Project in the consumer premises. TPSODL should popularize the scheme for LT consumers and provide prompt support and cooperation to the consumer for net metering agreement and solar project interconnection with DISCOM systems. Once Solar Interconnection happens at the LT systems, this will improve the voltage profile and reduce LT loss. Also the RPO of GRIDCO / DISCOM can be compiled which may reduce the BSP in future and will lead to financial savings for DISCOM.

**TPSODL: With support from MNRE, we have taken the target to install 5MW Grid connected solar rooftop power plant for our DISCOM. We have also started awareness campaign for the same.**

6. At present Hon'ble OERC has implemented kVAh billing for the HT/ EHT/ Commercial / MSME and Industrial consumers. In view of the kVAh billing, the consumer which are having low power factor are paying higher energy bills, still the awareness about kVAh billing is not there and consumers are operating with low Power Factors. TPSODL may carry out special drives for awareness and sensitisation about kVAh billing. This may lead to more numbers of APFC installation and improvement in Power Factor and will lower the burden on the existing infrastructure. TPSODL may sign MoU with ESCO / AFPC installer under the Utility based Demand Side Management program so that APFC installer will assess the data base of Consumers with low power factor, take necessary action for installation of APFC Panels in consultation with Consumers directly. Annual Energy Audit Report 2020-21 of TPSODL

**TPSODL: Noted**



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7. Exploring opportunities in industrial segments (using efficient motors, pumps, compressors, capacitor bank, etc). TPSODL can coordinate and inform BEE / EESL / Private ESCO to provide the Industrial LED lighting Solution, IE3 Motors in RESCO / PMC level as per the provision of DSM Regulations. This will facilitate Demand Side Management in a long way. 8. TPSODL should conduct more nos. of Consumer awareness programs on saving electricity, electricity wastage, power theft, using electricity during off peak hour, using star rated equipment.

**TPSODL: We already have signed MOU with EESL for Implementation of Energy Efficient Appliances for our DISCOM consumer to meet the Demand Side Management plan. We have also started awareness campaign for the same.**

**TPSODL Response for the BEE Query:**

Sl No.	Description	Primary Observations and Comments of BEE	Reply From TPSODL and AEA
1	Executive Summary	<p>The TPEA has not followed the reporting structure in sequence as stipulated in the BEE Regulation and not included the mandatory EA Formats duly signed by the EA within the report.</p> <p>The Report did not include the Abstract of Energy Billing from GRIDCO for the year FY 2020-21 for the total energy purchased and invoiced to DISCOM although Monthly invoice images are annexed separately.</p> <p>The EA may also include on System adequacy and network planning aspect duly considering the Peak Demand of 600 MVA, the total Connected Load and the annual load growth.</p>	<p>Reporting structure has been updated Load and Demand previous and projected load demand included in the report.</p> <p>Abstract of Energy Billing from GRIDCO for the year FY 2020-21 has been included in the updated report.</p> <p>System adequacy and network planning for Load Growth has been updated in the report.</p>
2	Summary of Critical Analysis by Energy Auditor (including status and progress in compliance to prerequisites to energy accounting) and Management Analysis (Responses of DISCOM management on Comments by Auditor.	<p>Provided, but it does not include the action plan of the DISCOM to complete communicable metering of Feeders, DTs and smart meters for consumers as per RDSS time frame although it is mentioned that the DISCOM is planning to have Smart Meters for all Consumers &gt;5KW of load. It is also not clear to what extent Mapping of assets and Consumers is completed.</p> <p>There is no mention on the management action plan on submission feeder losses at least for those 11 kV feeders in urban areas having DTs already metered under R- APDRP/IPDS and also to overcome the shortage of manpower issues as mentioned in 2.0 and also on the control of unaccounted /theft of energy of 830 MU (23%) as estimated. ( Page20)</p> <p>The report does not include Management response on the comments by the Auditor on the above.</p>	<p>TPSODL has acquired licensee of the Utility on 1st April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL has already plans to install smart communicable meters across the system.</p> <p>Management action plan on metering of Feeders &amp; DTs has been included in the report.</p>

3	Background-Extant Regulations and role of BEE. Purpose and Period of Energy Auditing accounting.	There is no Management response included on completing the mapping of assets and consumers and complete metering under RDSS and take up IT Enabled EA within the specified time frame.	1. TPSODL is a private organization and is not eligible under RDSS. However, asset mapping is completed by GIS and Operations team of TPSODL and Consumer mapping have been started by dedicated GIS team and in progress, as on Sept 2022, 3 Division out of 19 division has been mapped and plan to complete 10 division at end of FY22-23 and rest by FY23-24. TPSODL also had developed and adopted IT enable Energy Audit Portal called 'Sarathi 2.0' which can integrate FG, SAP and GIS data into it.
4	Introduction of DISCOMs (DC) Name and Address of Designated Consumer.  Contact Details of Nodal Officer and EM/EA.  Summary profile of DCs (Assets, Energy Flow, Consumer base, salient features etc.)	Provided the details of assets and salient features. The report did not included the Energy Flow diagram. The TPEA may please update the report with voltage wise break up consumer data base for all existing voltage levels by proper verification.	SLD of TPSODL as a whole has been included in the report showing the energy flow. Voltage wise breakup of consumer data has been included the updated report.
5	Discussion and Analysis		
5.1	(i) Energy accounts for previous years (Discussion and data in tabular format)	Provided. The report includes Energy loss performance of previous year 2019-20 only with 24.47% of T&D Loss.	Included in the report.
5.2	(ii) Energy accounts and performance in the current year (% losses — aggregate, voltage-wise and category-wise, divisionwise, feeder and DT wise)	Provided by endorsing the net input energy input of 3599 MU and the Billed Energy of 2768 MU with T&D Loss level of 23 %. The report did not include Voltage level for different category of consumers, feeder wise and DT wise losses. While computing category wise losses, HT losses was assumed as 8% which was also pointed out by the TPEA. The basis of the above assumption and ERC approval details if any may please be included. The DISCOM may please provide Quarterly EA report for 33 kV and 11 kV Feeders as requested by the EA (page34)	Included in the report.

5.3	(iii) Unit-wise performance	<p>The report includes Division wise loss performance for the 6 circles and 19 divisions but did not include any specific action plan on loss control for the Urban and Rural Divisions exceeding T&amp;D loss of 15% and 25% Respectively ( such as Hinjilcut, Ganjam North, PS Pur ,ASKA1 and ASKA2,Bhanjanagar).</p> <p>There is no list Identified Over Loaded segments for capacity addition in the report.</p> <p>The report should also include details of assessed Units on back billing on meter defect and theft of Energy cases detected during the year FY2020-21. The EA may please include the same.</p>	MMG Activity, Enforcement, GP Model, DT Loading Enhancement included in the updated report.
5.4	(iv) Energy Conservation measures already taken and proposed for future	<p>DSM measures such as LED Bulbs BLDC Fans, EE Motors and pumps to be adopted from DISCOM side has been suggested and loss reduction measures such as High accuracy meters, network refurbishments, DT level metering and certain system strengthening measures suggested.</p> <p>In the above regard, for every ENCON measure suggested, the EA may please include the energy saving potential with cost benefits and the IRR/pay back calculation.</p> <p>The report did not include the details on the extant of % RPO obligation met by the DISCOM and to be achieved.</p>	Cost benefits and the pay back calculation has been included in the updated report.
5.5	(v) Critical analysis by the Energy Auditor.	<p>It is mentioned that the DISCOM has option to do Energy accounting of 33 kV and 11kV feeders but the same is not being done and clubbing the energy input and sales of both and also not carrying out EA for those feeders and DTs which were already metered under RAPDRP/IPDS.</p> <p>The report should also include a brief note on the Agriculture consumption estimation methodology being adopted and its rationality with respect to data verification and sample field checks.</p>	Included in the updated report.
5.6	(vi) Inclusion and Exclusions	N/A	
5.7	(vii) Detailed Formats to be annexed	Provided separately as annexure which needs to be included in the report duly signed by the EA with the stamp of their Firm on each of those formats.	Included in the updated report.
6	Notes of the EA/EM along with queries and replies to data gaps.	Provided separately.	Included in the updated report.



<b>7</b>	Annexure-to be accompanied with the Report		
<b>7.1</b>	(i) Introduction of Verification Firm.	Provided	Included in the updated report.
<b>7.2</b>	(ii) Minutes of Meeting with the DISCOM team	Conducted and Minutes of the meeting attached separately. This may please be included within the report.	Included in the updated report.
<b>7.3</b>	(iii) Check List prepared by auditing Firm.	Check List provided separately. This may please be included within the report.	Included in the updated report.
<b>7.4</b>	(iv) Brief Approach, Scope & Methodology for audit.	Provided	Included in the updated report.
<b>7.5</b>	(v) Infrastructure Details	Provided and included Peak demand, Capacity of PTRs and DTs. MVAR of total capacitor banks existing in the Substations may also be included.	Included in the updated report.
<b>7.6</b>	(vi) Electrical Distribution System	The report did not include this chapter on Electrical Distribution system specific to the DISCOM.	Included in the updated report.
<b>7.7</b>	(vii) Power Purchase Details,	Provided the monthly invoices of GRIDCO but it does not include April-May 2020. Annual Abstract on Energy Billing from SLDC, OPTCL/GRIDCO for FY2020-21 may be included in the report that clarifies total power purchases, transmission losses and net input energy chargeable to DISCOM.	Included in the updated report.
<b>7.8</b>	(viii) Line Diagram (SLD)	The SLDs of PSS provided .SLD of the DISCOM Network is not included. It is not clear whether those four Substations are covered under Field Visit.	Included in the updated report.
<b>7.9</b>	(ix) Category of service details (With Consumer and voltage-wise)	Voltage wise category details not provided covering all Voltage levels.	Included in the updated report.
<b>7.10</b>	(x) Detailed Formats to be annexed	Included in separate annexure.	Included in the updated report.
<b>7.11</b>	(xi) List of documents verified with each parameter.	Included in separate annexure.	Included in the updated report.
<b>7.12</b>	(xii) Brief description of the Unit	Provided	Included in the updated report.
<b>7.13</b>	(xiii) List of Parameters arrived through	The test and calibration certificates of meters inspected during Field visit not included in the report.	TPSODL has acquired licensee of the Utility on 1 <sup>st</sup> April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL being a new DISCOM couldn't provide the meter testing certificates already installed in the system.

<b>8</b>	Details of Formats to be annexed:		
<b>8.1</b>	General Information	Provided	Included in the report.
<b>8.2</b>	Performance Summary of Electricity Distribution Company	Provided	Included in the report.
<b>8.3</b>	Form-Details of Input Infrastructure	Inadequate and incomplete details w.r.t the Format .58% loss shown in LT and 0% in 33kV. The EA has pointed out the DISCOM on clubbing of 33kV and 11 kV and asked to segregate them. This may please be done and included in the report with proper estimation of losses	TPSODL has acquired licensee of the Utility on 1 <sup>st</sup> April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL being a new DISCOM couldn't segregate 11 kV & 33 kV losses will segregate them in future.
<b>8.4</b>	A. Form-Input energy(Details of Input energy	Form A-Provided	
	B. Meter reading of Input energy at injection points)	The Status of communication, CT/PT ratio and the sales (Import-export) columns not filled. The EA needs to include the fully filled format.	Included in the updated report.
<b>8.5</b>	Details of Input Energy Sources-Form A&B	The format does not include type and duration of contract and POC Loss details obtained from SLDC/OPTCL. The EA needs to include and submit in the report.	No POC Losses
<b>8.6</b>	Division wise Losses	The format is not included in the report	Included in the updated report.
<b>8.7</b>	Details of consumers and consumption	Certain categories such as HT/LT Lift Irrigation, LT/HT/EHT Large industry are merged instead of furnishing Voltage wise Break up as stipulated. Also the LT Agriculture Consumers shown in Division loss sheet is not reflected in this Sheet. The EA needs to provide voltage wise category of consumer's clearly in this format	Updated & Included in the report.
<b>8.8</b>	Details of Feeder Levels and Losses	Feeder levels are furnished but Feeder losses not furnished even for those 47% of AMR Meters out of the 904 Feeder in total.	AMR are installed but maximum no of AMR for non-functional currently. Due to this reason and new notification, TPSODL has already planned to installed Smart Meters in all 11KV and 33KV feeders
<b>8.9</b>	Details of Subsidy Claimed and received	The format is not included in the report	

8.10	Details of DT Metering.	DT Level metering also not provided, The EA recommended the DISCOM to provide communicable metering.	TPSODL has acquired licensee of the Utility on 1st April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL being a new DISCOM has reported that the above 33kV & 11kV Feeder losses & DT losses couldn't not be obtained due to the the unmetered & defected meter present in the current system. TPSODL is working on replacement of current defected meters present in the system and will be able to obtain the above losses further.
8.11	DT wise Losses to the extent DT meters are existing.	Not provided and 98% of DTs shown as unmetered.	TPSODL has acquired licensee of the Utility on 1st April 2021 by virtue of the vesting order of the Hon'ble OERC. TPSODL being a new DISCOM has reported that the above 33kV & 11kV Feeder losses & DT losses couldn't not be obtained due to the the unmetered & defected meter present in the current system. TPSODL is working on replacement of current defected meters present in the system and will be able to obtain the above losses further.

General Information				
1	Name of the DISCOM	TP SOUTHERN ODISHA DISTRIBUTION LIMITED (erstwhile		
2	i) Year of Establishment	2021 (erstwhile SOUTHCO 1997)		
	ii) Government/Public/Private	DIS0042OD		
3	DISCOM's Contact details & Address			
i	City/Town/Village	Berhampur		
ii	District	Ganjam		
iii	State	Odisha	Pin	760004
iv	Telephone		Fax	
4	Registered Office			
i	Company's Chief Executive Name	Mr. Arvind Singh		
ii	Designation	Chief Executive Officer		
iii	Address	Kamapalli, Courtpeta		
iv	City/Town/Village	Berhampur	P.O.	Medical Campus
v	District	Ganjam		
vi	State	Odisha	Pin	760004
vii	Telephone		Fax	
5	Nodal Officer Details*			
i	Nodal Officer Name (Designated at DISCOM's)	Mr. Saumitro Banerjee		
ii	Designation	Head		
iii	Address	Kamapalli, Courtpeta		
iv	City/Town/Village	Berhampur	P.O.	Medical Campus
v	District	Ganjam		
vi	State	Odisha	Pin	760004
vii	Telephone	9810281982	Fax	
6	Energy Manager Details*			
i	Name	Mr. Ratan Kuber		
ii	Designation	Lead Engineer	Whether EA or EM	EM
iii	EA/EM Registration No.	EA-32475/21		
iv	Telephone		Fax	
v	Mobile	9777333245	E-mail ID	<a href="mailto:energyaudit@tpsouthernodisha.com">energyaudit@tpsouthernodisha.com</a>
7	Period of Information			
	Year of (FY) information including Date and Month (Start & End)	1st April 2020 - 31st March 2021		

M/s. Power Tech Consultants

*(Bishu Charan Saini)*  
Authorised Signatory





Performance Summary of Electricity Distribution Companies			
1	Period of Information Year of (FY) information including Date and Month (Start & End)	1st April 2020 - 31st March 2021	
2	Technical Details		
(a)	Energy Input Details		
(i)	Input Energy Purchase (From Generation Source)	Million kwh	3599.30
(ii)	Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	Million kwh	3599.30
(iii)	Total Energy billed (is the Net energy billed, adjusted for energy traded))	Million kwh	2768.93
(b)	Transmission and Distribution (T&D) loss Details	Million kwh	830.36
		%	0.23
	Collection Efficiency	%	91%
(c)	Aggregate Technical & Commercial Loss	%	30%

I/We undertake that the information supplied in this Document and Pro-forma is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

Authorised Signatory and Seal

Signature:-

Name of Energy Manager\*:

Registration Number:

Name of Authorised Signatory

Name of the DISCOM:

Full Address:-

Seal

M/s. Power Tech Consultants

*Amrinder*  
(Bilal Chohan Sirain)  
Authorised Signatory



Form-Details of Input Infrastructure					
1	Parameters	Total	Covered during in audit	Verified by Auditor in Sample Check	Remarks (Source of data)
i	Number of circles	6	2	yes	Performance Report as
ii	Number of divisions	19	4	yes	Performance Report as submitted by TPSODL to OERC
iii	Number of sub-divisions	51	4	yes	Performance Report as submitted by TPSODL to OERC
iv	Number of feeders	904	2	yes	Performance Report as submitted by TPSODL to OERC. It includes 33 kV feeder and 11 kV feeder
v	Number of DTs	54451		yes	Performance Report as submitted by TPSODL to OERC
vi	Number of consumers	2340713		yes	Performance Report as submitted by TPSODL to OERC
2	Parameters	66kV and above	33kV	11/22kV	LT
a. i.	Number of conventional metered consumers	16	83	401	2237602
ii	Number of consumers with 'smart' meters	0	0	0	0
iii	Number of consumers with 'smart prepaid' meters	0	0	0	0
iv	Number of consumers with 'AMR' meters	0	0	0	9900
v	Number of consumers with 'non-smart prepaid' meters	0	0	0	0
vi	Number of unmetered consumers	0	0	0	92711
vii	Number of total consumers	16	83	401	2340213
b.i.	Number of conventionally metered Distribution Transformers	Not Applicable	Not Applicable	Not Applicable	854
ii	Number of DTs with communicable meters	Not Applicable	Not Applicable	Not Applicable	0
iii	Number of unmetered DTs	Not Applicable	Not Applicable	Not Applicable	53597
iv	Number of total Transformers	Not Applicable	Not Applicable	Not Applicable	54451
c.i.	Number of metered feeders	16	83	616	
ii	Number of feeders with communicable meters	0	16	417	
iii	Number of unmetered feeders	0	27	178	
iv	Number of total feeders		110	794	
d.	Line length (ct km)		81334.85		
e.	Length of Aerial Bunched Cables		27703		
f.	Length of Underground Cables				
3	Voltage level	Particulars	MU	Reference	Remarks (Source of data)
i	66kV and above	Long-Term Conventional	3,599	Includes input energy for franchisees	BSP Bill of GRIDCO to TP
		Medium Conventional	0		
		Short Term Conventional	0		
		Banking	0		
		Long-Term Renewable energy	0		
		Medium and Short-Term RE	0	Includes power from bilateral/ PX/ DEEP	
		Captive, open access input	0	Any power wheeled for any purchase other than sale to DISCOM. Does not include input for franchisee.	
		Sale of surplus power	0.00%		
		Quantum of inter-state transmission loss		As confirmed by SLDC, RLDC etc	OPTCL Transmission Loss
		Power procured from inter-state sources	3,599	Based on data from Form 5	
ii	33kV	Power at state transmission boundary	3,599		
		Long-Term Conventional	0		
		Medium Conventional	0		
		Short Term Conventional	0		
		Banking	0		
		Long-Term Renewable energy	0		
		Medium and Short-Term RE	0		
		Captive, open access input	0		
		Sale of surplus power	0.00%		
		Quantum of intra-state transmission loss	0		
iii		Power procured from intra-state sources	0		
iv	33 kV	Input in DISCOM wires network	3,599		
v	11 kV	Renewable Energy Procurement	0		
		Small capacity conventional/ biomass/ hydro plants Procurement	0		
		Captive, open access input	0		
		Renewable Energy Procurement	0		
vi	LT	Small capacity conventional/ biomass/ hydro plants Procurement	0		
		Sales Migration Input	0		
		Renewable Energy Procurement	0		There are few Solar Roo
vii		Sales Migration Input	0		
		Energy Embedded within DISCOM wires network	0		
viii		Total Energy Available/ Input	3,599		

M/s. Power Tech Consultants

*(Bilhu Charan Swain)*  
Authorised Signatory



4	Voltage level	Energy Sales Particulars	MU	Reference	
i	LT Level	DISCOM' consumers	2,148	Include sales to consumers in franchisee areas, unmetered consumers	Performance Report as s
		Demand from open access, captive	0	Non DISCOM's sales	
		Embedded generation used at LT level	0	Demand from embedded generation at LT level	
		Sale at LT level	2,148		
		Quantum of LT level losses	577		
		Energy Input at LT level	2,726		Performance Report as s
ii	11 kV Level	DISCOM' consumers	182	Include sales to consumers in franchisee areas, unmetered consumers	Performance Report as s
		Demand from open access, captive	0	Non DISCOM's sales	
		Embedded generation at 11 kV level used	0	Demand from embedded generation at 11kV level	
		Sales at 11 kV level	182		Performance Report as s
		Quantum of Losses at 11 kV	253		Performance Report as s
		Energy input at 11 kV level	435		Performance Report as s
iii	33 kV Level	DISCOM' consumers	0	Include sales to consumers in franchisee areas, unmetered consumers	
		Demand from open access, captive	0	Non DISCOM's sales	
		Embedded generation at 33 kV or below level	0	This is DISCOM and OA demand met via energy generated at same voltage level	
		Sales at 33 kV level	0		
		Quantum of Losses at 33 kV	0		
		Energy input at 33kV Level	0		
iv	> 33 kV	DISCOM' consumers	438.43	Include sales to consumers in franchisee areas, unmetered consumers	Performance Report as s
		Demand from open access, captive	0	Non DISCOM's sales	
		Cross border sale of energy	0		
		Sale to other DISCOMs	0		
		Banking	0		
		Energy input at > 33kV Level	438		Performance Report as s
		Sales at 66kV and above (EHV)	438		
Total Energy Requirement			3,599		
Total Energy Sales			2,769		
Energy Accounting Summary					
5	DISCOM	Input (in MU)	Sale (in MU)	Loss (in MU)	Loss %
i	LT	2,726	2,148	577	21.18485203
ii	11 Kv	435	182	253	58.13638036
iii	33 kv				
iv	> 33 kv	438	438.43	0	0
6	Open Access, Captive	Input (in MU)	Sale (in MU)	Loss (in MU)	
i	LT				
ii	11 Kv				
iii	33 kv				
iv	> 33 kv				

Loss Estimation for DISCOM	
T&D loss	830
D loss	830
T&D loss (%)	0.230697636
D loss (%)	0.230697636

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*Authorised Signatory*  
*C. B. Chavan Swain*  
 Authorised Signatory



Registration Number:





### Details of Input Energy Sources

Period 1st Apr, 2020 - 31st March, 2021

A. Generation at Transmission Periphery (Details)

S.No.	Name of Generation Station	Generation Capacity (In MW)	Type of Station Generation (Based- Solid ( Coal ,Lignite)/Liquid/Gas/Renewable ( biomass-bagasse)/Others)	Type of Contract (in years/months/days)	Type of Grid (Intra-state/Inter-state)	Point of Connection (POC) Loss MU	Voltage Level ( At input)	Remarks (Source of data)
1	Meenakshi Power Ltd	37	Others		Inter-State		132KV	GRIDCO
2	Utkal Alumina	90	Coal		Inter-State		220KV	GRIDCO
3	NALCO (Damanjodi)	74	Coal		Inter-State		132KV	GRIDCO
4	Abacus Holding Pvt Ltd	1	Renewable		Inter-State		11KV	GRIDCO
5	JK Paper Ltd, Theruvali	25	Biomass		Inter-State		132KV	GRIDCO
6	GEDCOL, Manmunda	20	Renewable		Inter-State		33KV	GRIDCO
7	Vento Power & Energy Ltd	40	Renewable		Inter-State		132KV	GRIDCO
8	IMFA Solar	4.5	Renewable		Inter-State		33KV	GRIDCO
9	Ltd	25	Renewable		Inter-State		33KV	GRIDCO
10	Balimela Power House	510	Others		Inter-State		220KV	GRIDCO
11	Upper Kolab Power House	320	Others		Inter-State		220KV	GRIDCO
12	Machhkund Power House	60	Others		Inter-State		132KV	GRIDCO

B. Embedded Generation in DISCOM Area

S.No	Name of Generation Station	Generation Capacity (In MW)	Type of Station (Generation Based- Solid/Liquid/Gas/Renewable/Others)	Type of Contract	Type of Grid	Voltage Level (KVA)	Circle Load (MW)	Received at Circle (KVA)	Received at Circle (In MU)	Division Level Load (MW)	Received at Division Level (KVA)	Received at Division Level (In MU)	Sub-Division Level Load (MW)	Received at Sub-Division Level (KVA)	Received at Sub-Division Level (In MU)	Remarks (Source of data)
1	RoofTop Solar LIC OFFICE B	0.03	Renewable	Net Metering	Renewable Source	440V	City 0.03			BED I 0.03			Medical 0.03			
2	LIC OF INDIA SR. Divisional	0.03	Renewable	Net Metering	Renewable Source	11KV	City 0.03			BED I 0.03			Medical 0.03			
3	THE HEAD LIGHT KEEPER	0.015	Renewable	Net Metering	Renewable Source	440V	City 0.015			BED I 0.015			Gopalpur 0.015			
4	MAIN POST OFFICE Head	0.02	Renewable	Net Metering	Renewable Source	440V	City 0.02			BED I 0.02			Industrial 0.02			
5	City Hospital Sulabha Soud	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED I 0.002			Industrial 0.002			
6	Bijpur Bandha Sulabha Sou	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED I 0.002			Industrial 0.002			
7	Near Payal Cinema Hall Sou	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED I 0.002			Industrial 0.002			
8	Giri Road Bus Stop BeMC	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Industrial 0.001			
9	Bijpur Junction Bus Stop Be	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Industrial 0.001			
10	Old Bus Stand Bus Stop Be	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Industrial 0.001			
11	City Hospital Bus Stop BeMC	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Industrial 0.001			
12	Salt Tax Office Bus Stop Be	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Medical 0.001			
13	Bibek Vihar Bus Stop BeMC	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Medical 0.001			
14	Medical Gate Bus Stop Be	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Medical 0.001			
15	Smt.Bisindini Rath Khodas	0.003	Renewable	Net Metering	Renewable Source	230V	City 0.003			BED I 0.003			Medical 0.003			
16	The Secy., Digapahandi Re	0.006	Renewable	Net Metering	Renewable Source	440V	City 0.006			BED I 0.006			Gopalpur 0.006			
17	Secretary Digapahandi Re	0.006	Renewable	Net Metering	Renewable Source	440V	City 0.006			BED I 0.006			Gopalpur 0.006			
18	Sai Neurology and Radiolo	0.006	Renewable	Net Metering	Renewable Source	440V	City 0.006			BED I 0.006			Medical 0.006			
19	Smt. Usha Rani Acharya G	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED I 0.001			Gopalpur 0.001			
20	BeMC COMMISSIONER MU	0.098	Renewable	Net Metering	Renewable Source	440V	City 0.098			BED II 0.098						
21	ARUN KU PANDEY, C/O Be	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED II 0.002						
22	ARUN KU PANDEY, C/O Be	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED II 0.002						
23	ARUN KU PANDEY, C/O Be	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED II 0.002						
24	ARUN KU PANDEY, C/O Be	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED II 0.001						
25	ARUN KU PANDEY, C/O Be	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED II 0.002						
26	ARUN KU PANDEY, C/O Be	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED II 0.002						
27	ARUN KU PANDEY, C/O Be	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED II 0.001						
28	ARUN KU PANDEY, C/O Be	0.002	Renewable	Net Metering	Renewable Source	230V	City 0.002			BED II 0.002						
29	ARUN KU PANDEY, C/O Be	0.001	Renewable	Net Metering	Renewable Source	230V	City 0.001			BED II 0.001						
30	C.S. BHUYAN MARTHA SA	0.005	Renewable	Net Metering	Renewable Source	230V	City 0.005			BED II 0.005						
31	HABR MALANKA GURJINTHI	0.005	Renewable	Net Metering	Renewable Source	230V	City 0.005			BED II 0.005						
32	SWOSTI CHILKA RESORT A	0.02	Renewable	Net Metering	Renewable Source	11KV	Berhampur 0.02			GNED 0.02						
33	LIGHT HOUSE PRAYAGI	0.01	Renewable	Net Metering	Renewable Source	440V	Berhampur 0.01			GNED 0.01						
34	SANKAR EYE HOSPITAL KA	0.15	Renewable	Net Metering	Renewable Source	11KV	Berhampur 0.15			HED 0.15						
35	S. N. PATTNAIK NIRANJAN	0.003	Renewable	Net Metering	Renewable Source	230V	Aska 0.003			AED I 0.003						
36	MILK PRODUCER WOMEN	0.006	Renewable	Net Metering	Renewable Source	440V	Aska 0.006			ISED 0.006						
37	COLLECTORATE BOUDH	0.015	Renewable	Net Metering	Renewable Source	440V	Bhanjanagar 0.015			BoED 0.015						
38	L. V. PRASAD EYE INSTITUT	0.045	Renewable	Net Metering	Renewable Source	440V	Rayagada 0.045			RED 0.045						
39	COLLECTORATE RAYAGADA	0.015	Renewable	Net Metering	Renewable Source	440V	Rayagada 0.015			RED 0.015						
40	TARINI FILLING STATION, K	0.015	Renewable	Net Metering	Renewable Source	440V	Rayagada 0.015			RED 0.015						
41	GIFT GUNUPUR	0.125	Renewable	Net Metering	Renewable Source	11KV	Rayagada 0.125			GED 0.125						
42	COLLECTORATE PARALAKHE	0.055	Renewable	Net Metering	Renewable Source	440V	Rayagada 0.055			PKED 0.055						
43	LIC BUILDING PARALAKHE	0.01	Renewable	Net Metering	Renewable Source	440V	Rayagada 0.01			PKED 0.01						
44	THE REGISTRAR (CUTM) PA	0.5	Renewable	Net Metering	Renewable Source	11KV	Rayagada 0.5			PKED 0.5						
45	202, KOBRA BATAUDN SUJ	0.1985	Renewable	Net Metering	Renewable Source	11KV	Jaypore 0.1985			KED 0.1985						
46	SOG TRAINING CENTRE KG	0.04958	Renewable	Net Metering	Renewable Source	440V	Jaypore 0.04958			KED 0.04958						
47	PRAKASH VIDYALAYA DHO	0.01	Renewable	Net Metering	Renewable Source	440V	Jaypore 0.01			JED 0.01						
48	THE REGISTRAR (CUTM) UP	0.5	Solar	NET MEETING	Renewable Source	11KV										
49	SRI NABIN CHANDRA PATRO	0.015	Solar	NET MEETING	Renewable Source	440V										
50	MIS. RAMKRISHNA MISSION	0.16	Solar	NET MEETING	Renewable Source	11KV										
51	HYDERABAD EYE INSTITUTE	0.045	Solar	NET MEETING	Renewable Source	440V										
52	COLLECTOR & DISTRICT	0.015	Solar	NET MEETING	Renewable Source	440V										

M/s. Power Tech Consultants

Authorised Signatory  
(Bilal Chavan Sr. an)



(Details of Consumers)						
Summary of Energy						
Period 1st Apr, 2020 - 31st March, 2021						
S.No	Type of Consumers	Category of Consumers (EHT/HT/LT/Others)	Voltage Level (In Voltage)	No of Consumers	Total Consumption (In MU)	Remarks (Source of data)
1	Domestic	LT	230/400	2200508	1625.008	
2	Commercial	LT/HT	230/400/110	99290	273.310198	
3	IP Sets					
4	Hor. & Nur. & Coffee/Tea & Rubber (Metered)					
5	Hor. & Nur. & Coffee/Tea & Rubber (Flat)					
6	Heating and Motive Power					
7	Water Supply	LT/HT	230/400/110	4576	47.169944	
8	Public Lighting	LT	230/400	4796	34.821879	
9	HT Water Supply					
10	HT Industrial					
11	Industrial (Small)	LT/HT	400/11000	2506	11.01121	
12	Industrial (Medium)	LT/HT	400/11000	1807	59.378	
13	HT Commercial					
14	Applicable to Government Hospitals & Hospitals					
15	Lift Irrigation Schemes/Lift Irrigation Societies	LT/HT	230/400/110	25767	84.242299	
16	HT Res. Apartments Applicable to all areas					
17	Mixed Load					
18	Government offices and department					
19	Others-1 (if any , specify in remarks)					
20	Others-2 (if any , specify in remarks)					
21	Others-3 (if any , specify in remarks)					
22	Others-4 (if any , specify in remarks)					
23	Others-5 (if any , specify in remarks)					
24	ALLIED AGRICULTURE ACTIVITIES	HT/EHT	11000/33000	37	9.966737	
25	ALLIED AGRO-INDUSTRIAL ACTIVITIES	HT/EHT	11000/33000	6	1.340159	
26	BULK SUPPLY DOMESTIC	HT	11000	13	6.253043	
27	LARGE INDUSTRY	LT/HT/EHT	400/11000/3	253	206.735624	
28	GENERAL PURPOSE>=110 KVA	LT/HT/EHT	400/11000/3	88	33.176682	
29	IRRIGATION PUMPING AND AGRICULTURE	HT/EHT	11000/33000	18	2.259258	
30	RAILWAY TRACTION	EHT	132000	10	197.22594	
31	SPECIFIED PUBLIC PURPOSE	LT/HT/EHT	400/11000/3	53	14.350978	
32	PUBLIC WATER WORKS & SEWERAGE PUMPING	HT/EHT	11000/33000	15	24.324066	
33	PUBLIC WATER WORKS AND SEWERAGE>= 110 KVA	LT	400	5	0.17001	
34	POWER INTENSIVE INDUSTRY	EHT	132000	1	122.714271	
35	EMERGENCY SUPPLY TO CGP	EHT	220000	1	1.9756	
36	ALLIED AGRICULTURE ACTIVITIES	LT/HT	230/400/110	894	12.713154	
37	ALLIED AGRO-INDUSTRIAL ACTIVITIES	LT/HT	400/11000	69	0.784678	
38						
39						
40						

M/s. Power Tech Consultants

*Authorised Signatory*  
*(Bilal Chavan Swain)*  
 Authorised Signatory



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**TPSODL**

**PERFORMANCE REVIEW**

**FOR THE F.Y. 2020-21  
(APRIL 2020- MARCH 2021)**

**BY**

**O. E. R. C**

**DATE: 21.06.2021**

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BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION  
BIDYUT NIYAMAK BHAWAN, PLOT NO-4, CHUNOKOLI,  
SAILASHREE VIHAR, CHANDRASEKHARPUR, BBSR-23

IN THE MATTER OF:

REVIEW OF PERFORMANCE OF SOUTHCO UTILITY  
FOR THE FINANCIAL YEAR 2020-21  
(APRIL 2020 TO MARCH 2021)

A N D

IN THE MATTER OF:

TPSODL, COURTPETA, BERHAMPUR

... Applicant

**Affidavit furnishing information for the Review of Performance of  
SOUTHCO UTILITY for the FY 2020-21  
(April 2020 to March 2021)**

I, Sri Arvind Singh aged about 60 years, S/O. Virendra Singh residing  
at Court Peta, Berhampur, do here by solemnly affirm and sincerely state as  
follows:

1. That, I am working as Chief Executive Officer of TPSODL, Courtpeta,  
Berhampur, Dist. Ganjam-760004, the Applicant in the above matter  
and duly authorized by the said applicant to make this affidavit on its  
behalf.
2. That, the statements made in this booklet for Review of Performance of  
SOUTHCO Utility as stated above containing Page-1 to Page-17 has  
been prepared as per the prescribed Formats. The facts and figures  
given in the booklet are true to the best of my knowledge basing upon  
information available on record and I believe them to be true.



**P.C. PATNAIK**  
**NOTARY**

BERHAMPUR (GM.)

No. A-1883

Time 12.15 AM/PM

Date 18.6.2021

Identified by:

[Signature]  
18.6.2021  
Advocate.

[Signature]

Chief Executive Officer  
Deponent

the Declarant having been identified by  
Sri S.R. Mohanta Adv. [Signature]  
Solemnly affirmed before me on this 18.6.2021  
the 18.6.2021 Day of June 2021  
12.15 AM/PM Contents having been  
readover & explained the declarant who  
seemed to have perfectly understood the  
contents the there of making the affidavit

18.6.2021  
**NOTARY**

Berhampur (Gm.) Odisha



PERFORMANCE OF TPSODL

Items	Apr 19 - Mar 20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr 20 - Mar 21
<b>BULK SUPPLY</b>														
Demand (MVA)	614	528	558	557	557	579	595	579	576	569	589	578	600	600
<b>ENERGY INPUT (MU)</b>	3469	280	318	298	318	318	320	301	275	270	297	269	336	3599
BST bill of GRIDCO (Rs Cr.)	740	59	67	63	67	67	68	67	61	60	66	60	75	779
BST bill (P/U)	211	211	211	211	211	211	211	222	222	222	222	222	222	216
Performance of Southco (Contd..)														
<b>Items</b>	<b>Apr 19 - Mar 20</b>	<b>Apr-20</b>	<b>May-20</b>	<b>Jun-20</b>	<b>Jul-20</b>	<b>Aug-20</b>	<b>Sep-20</b>	<b>Oct-20</b>	<b>Nov-20</b>	<b>Dec-20</b>	<b>Jan-21</b>	<b>Feb-21</b>	<b>Mar-21</b>	<b>Apr 20 - Mar 21</b>
<b>SALE TO CONSUMERS (MU)</b>														
EHT	489	23	31	33	33	34	35	35	37	38	49	43	46	438
HT	270	15	16	15	15	14	16	14	13	15	16	15	20	182
LT	1862	203	197	190	174	168	181	179	168	160	161	168	200	2148
<b>Total Sale (MU)</b>	<b>2620</b>	<b>241</b>	<b>244</b>	<b>238</b>	<b>222</b>	<b>216</b>	<b>232</b>	<b>227</b>	<b>218</b>	<b>212</b>	<b>226</b>	<b>226</b>	<b>266</b>	<b>2769</b>
T & D LOSS (%) - ASSUMING HT LOSS 8%														
LT	25	9	20	17	29	32	27	23	18	20	24	13	19	21
HT & LT	28	15	26	22	33	36	31	28	24	25	29	19	24	26
<b>OVERALL (%)</b>	<b>24</b>	<b>14</b>	<b>23</b>	<b>20</b>	<b>30</b>	<b>32</b>	<b>28</b>	<b>25</b>	<b>21</b>	<b>21</b>	<b>24</b>	<b>16</b>	<b>21</b>	<b>23</b>
<b>BILLING EFFICIENCY (%)</b>														
HT & LT	75	91	80	83	71	68	73	77	82	80	76	87	81	79
<b>OVERALL (%)</b>	<b>72</b>	<b>85</b>	<b>74</b>	<b>78</b>	<b>67</b>	<b>64</b>	<b>69</b>	<b>72</b>	<b>76</b>	<b>75</b>	<b>71</b>	<b>81</b>	<b>76</b>	<b>74</b>
BILLING TO CONSUMERS (Rs. Cr.)	76	86	77	80	70	68	72	75	79	79	76	84	79	77
EHT	297	16	20	21	22	21	21	22	24	26	31	27	28	278
HT	179	10	11	12	11	10	11	10	10	11	11	11	13	131
LT	803	84	77	80	75	71	77	77	72	69	72	73	81	908
<b>TOTAL</b>	<b>1279</b>	<b>110</b>	<b>108</b>	<b>113</b>	<b>108</b>	<b>103</b>	<b>109</b>	<b>110</b>	<b>106</b>	<b>105</b>	<b>114</b>	<b>111</b>	<b>123</b>	<b>1318</b>

PART OF AFFIDAVIT  
18-6-20  
NOTARY

*[Handwritten signature]*



Items	Apr 19- Mar 20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr 20- Mar 21
<b>Billing to Govt. Dept. &amp; PSU</b> (Rs. In Crores)	82	9	9	8	8	8	9	9	9	9	9	9	10	106
<b>Performance of Southco (Contd..)</b>														
<b>Items</b>	<b>Apr 19 - Mar 20</b>	<b>Apr-20</b>	<b>May-20</b>	<b>Jun-20</b>	<b>Jul-20</b>	<b>Aug-20</b>	<b>Sep-20</b>	<b>Oct-20</b>	<b>Nov-20</b>	<b>Dec-20</b>	<b>Jan-21</b>	<b>Feb-21</b>	<b>Mar-21</b>	<b>Apr 20 - Mar 21</b>
<b>COLLECTION RECEIVED (Rs Cr.)</b>														
EHT	297	16	20	21	22	21	21	22	24	26	31	27	28	278
HT	164	10	10	10	9	9	9	11	10	11	12	20	11	132
LT	619	71	59	43	57	60	62	66	56	57	59	149	49	788
<b>Total</b>	<b>1079</b>	<b>97</b>	<b>89</b>	<b>74</b>	<b>88</b>	<b>90</b>	<b>93</b>	<b>100</b>	<b>89</b>	<b>94</b>	<b>102</b>	<b>196</b>	<b>88</b>	<b>1198</b>
Collection from Govt. & PSU included above	62	4	6	5	3	3	7	9	6	7	6	40	3	99
<b>COLLECTION EFFICIENCY (%)</b>														
EHT	100	100	100	100	100	100	100	100	100	100	100	100	100	100
HT	91	97	96	82	83	88	87	107	97	103	102	187	79	100
LT	77	85	76	54	76	84	81	86	77	83	82	204	60	87
HT & LT	80	86	78	58	77	85	82	88	80	86	85	202	63	89
<b>OVERALL (%)</b>	<b>84</b>	<b>88</b>	<b>82</b>	<b>65</b>	<b>82</b>	<b>88</b>	<b>85</b>	<b>91</b>	<b>84</b>	<b>89</b>	<b>89</b>	<b>177</b>	<b>72</b>	<b>91</b>
Collection efficiency (%) (excluding Govt & PSU dues)	85	92	84	65	85	93	86	90	85	91	91	154	75	91
<b>AT &amp; C LOSS (%)</b>														
LT	42	22	39	55	46	43	41	34	37	33	38	-77	51	32
HT & LT	43	27	42	55	49	46	44	36	39	35	39	-63	52	35
<b>OVERALL (%)</b>	<b>36</b>	<b>24</b>	<b>37</b>	<b>48</b>	<b>43</b>	<b>40</b>	<b>38</b>	<b>32</b>	<b>33</b>	<b>30</b>	<b>32</b>	<b>-48</b>	<b>43</b>	<b>30</b>
<b>Realisation (Rs)</b>														
LT	2.50	3.22	2.37	1.90	2.32	2.43	2.52	2.85	2.70	2.88	2.80	7.69	1.98	2.89
HT & LT	2.62	3.15	2.40	2.00	2.34	2.43	2.51	2.89	2.75	2.94	2.87	7.46	2.05	2.91
<b>OVERALL</b>	<b>3.11</b>	<b>3.46</b>	<b>2.79</b>	<b>2.48</b>	<b>2.78</b>	<b>2.83</b>	<b>2.89</b>	<b>3.31</b>	<b>3.24</b>	<b>3.47</b>	<b>3.43</b>	<b>7.27</b>	<b>2.62</b>	<b>3.33</b>

PART OF AFFIDAVIT  
 12.01.2021  
 NOTARY

STATUS OF ARREAR FY 2020-2021									
CATEGORY	Arrears as on 1.04.1999	Arrears as on 1.04.2020	Billing for the period Apr 20- Mar 21	Collection Against		Total Collection	Adjustments	Arrear for the period Apr 20- Mar 21	Arrears as on 31.03.2021
				Current dues Apr 20- Mar 21 against '4'	Arrear during Apr 20-Mar 21 against '3'				
1	2	3	4	5	6	7=5+6		8=4-5	10=3+4-7
(i) EHT	4		278	278		278		0	0
(ii) HT	57	29	101	99	2	101	4	2	25
(iii) LT	110	1219	832	598	121	719		234	1332
TOTAL	171	1248	1212	976	123	1099	4	236	1357
(i) Govt & PSU- LT	18	88	75	61	8	69	54	15	40
(ii) Govt & PSU- HT		23	30	29	1	30	9	1	14
Total Govt & PSU	18	110	106	90	9	99	63	16	54
GRAND TOTAL	189	1359	1318	1066	132	1198	67	252	1411

PART OF AFFIDAVIT  
 2-01-18-6-2021  
 NOTARY



**TPSODL**

**Details of Govt. Outstanding**

(Rs. in Crores)

Name of the Deptt.	Outstanding as on 01.04.2020	Amount collected during Apr-20 to MAR- 21	Outstanding as on 31.03.2021
<b>a) Govt. Deptts.</b>			
(i) Health & Family Welfare	4.18	15.37	-4.69
(ii) School & Mass Edu.	11.50	7.33	-1.22
(iii) Higher Edu.	0.26	2.12	0.03
(iv) Home Department including Police s	5.38	6.72	0.53
(v) ST & SC Dev. Department	1.09	1.31	-0.16
(vi) Water Resource Deptt.	14.79	2.48	19.19
(vii) RWSS	14.04	11.39	2.80
(viii) Other Govt. Dept.	5.44	5.67	0.17
<b>b) Urban Local Bodies</b>	21.14	12.18	22.21
c) (i) Lift Irrigation	7.13	0.74	6.37
(ii) Panipanchayat			
(iii) Urban Water Supply	8.45	25.97	-4.88
<b>d) Govt. PSUs</b>	3.24	2.19	0.27
<b>e) Pachayat Raj Institution</b>			
(i) Gram Panchayats	13.70	5.94	13.48
(ii) Panchayat Samiti (including Block)			
(iii) Zilla Parishad			
<b>Total</b>	<b>110.34</b>	<b>99.43</b>	<b>54.09</b>

PAGE - 7

PARTIAL AFFIDAVIT  
n-2-21/18-6-20  
NOTARY

**OUTSTANDING GOVT. ARREARS**  
**TPSODL**

Departments	As on 01.04.2020	As on 31.03.2021
<b>1.Housing &amp; Urban Development</b>		
(i) P.H.D. Dept.	8.45	-4.89
(ii) others	0.00	0.02
<b>Total</b>	<b>8.45</b>	<b>-4.88</b>
<b>2.Rural Development</b>		
(i) R.W.S.S	17.75	2.77
(ii) others	-3.71	0.03
<b>Total</b>	<b>14.04</b>	<b>2.80</b>
<b>3.Irrigation</b>		
Water resources/Irrigation Dept.	14.79	19.19
(i) Lift Irrigation		
(ii) Pani Panchayat		
(iii) Others		
<b>Total</b>	<b>14.79</b>	<b>19.19</b>
<b>4.Home Department</b>		
(i) Judiciary		
(ii) Police	5.38	0.53
(iii) Jail		
(iv) Others		
<b>Total</b>	<b>5.38</b>	<b>0.53</b>
<b>5.Law Department</b>		
(i) Judiciary	0.49	0.05
(ii) Police		
(iii) Jail		
(iv) Others		
<b>Total</b>	<b>0.49</b>	<b>0.05</b>
<b>6.Panchayat raj Deptt</b>		
Panchayat Raj Dept.	13.70	13.48
(i) Zila Parishada		
(ii) Panchayat samiti		
(iii) Grampanchayat		
(iv) Other Establishment		
<b>Total</b>	<b>13.70</b>	<b>13.48</b>
<b>7. School &amp; Mass Education</b>		
School Education Dept.	5.06	-1.29
Mass Education Dept.	6.44	0.07
<b>Total</b>	<b>11.50</b>	<b>-1.22</b>

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**PART OF AFFIDAVIT**  
**N-2-a**  
**NOTARY**



Departments	As on 01.04.2020	As on 31.03.2021
<b>8. Higher Education</b>		
Higher Education Dept.	0.26	0.03
<b>Total</b>	<b>0.26</b>	<b>0.03</b>
<b>9. Industries</b>		
Industries Dept.	0.03	-0.02
(i) Technical Education		
(ii) Other Establishment	0.04	0.00
<b>Total</b>	<b>0.07</b>	<b>-0.02</b>
<b>10. Revenue</b>		
Revenue. Excise Dept.	0.02	0.00
Revenue. Commerce Dept.	0.25	0.63
Revenue. Land Revenue Dept.	1.44	-0.12
<b>Total</b>	<b>1.71</b>	<b>0.50</b>
<b>11. Works</b>		
Public works Department	0.66	-0.08
<b>Total</b>	<b>0.66</b>	<b>-0.08</b>
<b>12. Fisheries &amp; Animal Resources</b>		
(i) Fisheries Dept.	0.06	-0.14
(ii) Veterinary	0.61	-0.05
(iii) Others		
<b>Total</b>	<b>0.67</b>	<b>-0.19</b>

PART OF AFFIDAVIT  
 1-2-21  
 NOTARY

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# PERFORMANCE OF TPSODL- SYSTEM IMPROVEMENT

Man Power	As on 31st March 2020	As on March 2021	31st
No. of Circles	6		6
No. of Divisions	19		19
No. of Subdivisions	51		51
No. of Sections	136		136
No of Special Police Stations	10		10
No of Courts	1		1
<b>No. of consumers</b>			
EHT	15		16
HT	432		484
LT	22,78,649		23,40,213
<b>Total</b>	<b>22,79,096</b>		<b>23,40,713</b>
<b>Network System</b>			
Length of 33 KV Line (km.)	3,550		3,665
Length of 11 KV Line (km.)	39,713		40,368
Length of LT KV Line (km.)	35,971		37,302
Length of LT AB Cable (km.)	26,140		27,703
Length of conductor stolen (km.)			
Cost involved (Cr.)			
No. of 33 KV Group & Feeder Breakers Required	336		339
No. of 33 KV Group & Feeder Breakers Installed	322		162
No. of 11 KV Group & Feeder Breakers Required	260		1023
No. of 11 KV Group & Feeder Breakers Installed	735		813
<b>FEEDER METERING</b>			
No. of 33 KV feeders (Including GRIDCO interface)	105		110
No. of 33 KV feeder metering	74		83
No. of 11 KV feeders	695		794
No. of 11 KV feeder metering	290		616
No. of 33 / 11 kv POWER Transformers	442		481
No. of 33/11 kv transformer metering position			
No. of Distribution Transformers (11/0.4 & 33/ 0.4 kv)	51,915		54,451
No. of distribution transformer metering position	-		854
Energy Audit Carried Out-33 KV	64		69



Man Power	As on 31st March 2020	As on March 2021	31st
Energy Audit Carried Out-11 KV	140		239
Energy Audit Carried out- No of DTRs covered	-		-
<b>Consumer Metering Position</b>			
Total number of meters	21,48,081		22,47,898
No. of working meters	19,02,494		20,62,263
Percentage of working meters ( % )	89%		92%
New meters installed ( 3 ph )	4,726		6,286
New meters installed ( 1 ph )	2,31,087		1,06,144
No of 3 Phase Consumers	46,182		51,643
No of Consumers with TOD benefit	498		490
No of Consumers above 10 KW load	9,536		10,074
No of Consumer AMR metering	9,900		9,900
Total No of consumers	22,79,096		23,40,713
No. of consumers added	2,35,813		61,617
No of meters purchased (1-Ph)	5,94,755		3,69,190
Cost involved in purchase of meters (Rs. In Cr.)	36		22
No of meters used for installation for new consumer and replacements for old consumers	6,97,441		3,69,190
Cost of meter rent Collected (Rs. In Cr.)	5		3
<b>Anti Theft Measures during review period</b>			
No of cases Finalised under Section 126 & 135	7,803		5,782
Amount Finalised (lakhs)	666		390
Amount Assessed during filing of case ( Rs. In Lakhs)	1,085		851
No of new connections given	15		10
No of Connection Regularised	10		10
Amount Collected (Lakhs.)	422		225
NO. of FIR Lodged	9		1
No. of illegal consumers prosecuted/Initiated in Court	-		-
Number of disconnection made	21,322		22,345
Revenue realised ( Rs. Cr. )	6		7



Man Power	As on 31st March 2020	As on March 2021	31st
<b>Franchisee Activity</b>			
No of Micro-Franchisees	398		398
No of Consumers Covered	4,85,000		4,98,000
No of Macro-Franchisees	-		-
No of Consumers Covered	-		-
No of Input Based-Franchisees	-		-
No of Consumers Covered	-		-
Total no of consumers covered under Franchisee	4,85,000		4,98,000
<b>QUALITY OF SUPPLY</b>			
Failure of Power Transformers	5		2
No. of transformers burnt	1,425		575
Cost involved (Cr.)	4		4
No of Interruptions in 33 KV Feeders	2,860		3,072
No of Interruptions in 11 KV Feeders	2,10,416		1,81,167
No. of Grievances received through CHP during FY	4,238		2,345
Disposed through CHP including Bijuli Adalat during FY	3,978		2,100
No. of GRF Orders received	487		729
No. of GRF Orders Complied	422		563
<b>SYSTEM IMPROVEMENT WORKS DURING REVIEW PERIOD</b>			
Installation of New Transformers ( Nos.)	4,333		1,460
Upgradation of Transformers (Nos.)	76		19
Length of AB Cable Laid(Km.)	4,677		946
Conversion of Single Phase to Three Phase Lines(Km.)	-		-
Amount estimated under Deposit Work (Govt)-(Rs. in Lakhs)	1,405		1,286
Amount finalised for 6% calculations- ( Rs. in Lakhs)	84		77
Amount estimated under Deposit Work (Pvt)- (Rs. in Lakhs)	630		764
Amount finalised for 6% calculations- (Rs. in Lakhs)	38		46

# METER REPLACEMENT FOR THE FY 2020-21

DESCRIPTION		TARGET	OPENING BALANCE	METER RECEIVED DURING THE PERIOD			TOTAL METERS AVAILABLE	STATUS OF INSTALLATION DURING THE PERIOD				CLOSING BALANCE
				NEW	REPAIR	TOTAL		NEW METER INSTALLED	REPLACE MENT	ENERGY AUDIT METER	TOTAL	
1	2	3	4	5	6	7	8	9	10	11	12	13
Single Ph.	DISTCO.	450,000	6,637	394,190		394,190	400,827	100,081	269,109	-	369,190	31,637
	PARTY	-	-	18,201		18,201	18,201	6,063	12,138	-	18,201	-
3 Ph.-LT		7,000	1,356	5,836		5,836	7,192	6,286	846	-	7,132	60
3 Ph.-HT												
TOTAL		457,000	7,993	418,227	-	418,227	426,220	112,430	282,093	-	394,523	31,697

PART OF AFFIDAVIT  
 1-2-21  
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CONSUMER MIX DATA - TPSDOL AS ON 31.03.2021												
Sl No	Name of the Division	Category in terms of Area			Category in terms of Use of power(MU)							No of Villages Electrified
		Urban	Rural	Total	Kutir Jyoti	Agricultural	Domestic	Commercial	Industrial	Others	Total	
1	BERHAMPUR- I	51,207	29,177	80,384	0	6	115	44	7	48	220	3,289
2	BERHAMPUR- II	62,629	66	62,695	0	-	104	24	4	4	135	
3	BERHAMPUR- III	1,393	74,666	76,059	0	9	63	11	15	7	106	
4	CHATRAPUR	54,286	56,885	111,171	2	8	87	17	204	38	356	
5	PURUSOTTAMPUR	49,569	72,045	121,614	0	7	81	9	5	6	109	
6	HINJILICUT	15,483	78,347	93,830	0	3	68	7	8	5	92	
7	ASKA- I	7,260	58,348	65,608	0	3	43	6	3	6	61	
8	ASKA- II	7,552	59,988	67,540	0	1	45	5	4	4	59	
9	DIGAPAHANDI	46,198	64,112	110,310	1	3	73	9	9	5	99	
10	BHANJANAGAR	38,120	104,764	142,884	4	1	88	12	5	8	119	
11	PHULBANI	41,515	131,810	173,325	20	2	65	13	6	8	115	
12	BOUDH	17,300	95,581	112,881	11	12	56	10	9	3	101	
13	JEYPORE	31,773	130,438	162,211	15	11	91	20	13	50	200	
14	NOWRANGPUR	39,309	243,208	282,517	25	20	136	17	10	11	219	
15	MALAKANGIRI	32,411	111,443	143,854	10	9	92	17	11	7	146	
16	KORAPUT	25,368	122,231	147,599	14	3	67	17	64	59	223	
17	RAYAGADA	31,774	136,872	168,646	14	5	104	20	14	69	225	
18	GUNUPUR	13,629	64,300	77,929	3	6	46	7	4	7	73	
19	PARALAKHEMUNDI	31,488	108,167	139,655	7	2	76	13	6	7	112	
	<b>SOUTHCO TOTAL</b>	<b>598,264</b>	<b>1,742,448</b>	<b>2,340,712</b>	<b>128</b>	<b>115</b>	<b>1,498</b>	<b>276</b>	<b>400</b>	<b>351</b>	<b>2,769</b>	<b>15,281</b>
												<b>12,909</b>

PART OF AFFIDAVIT  
1-2-21-6-20  
NOTARY



LT PERFORMANCE OF TPSODL										
CATEGORY	2019 - 20 (Apr'19- March'20)					2020 - 21 (Apr'20- March'21)				
	No of Consumers As on March'19	Consumption (MU)	Amount Billed (Rs in Cr.)	Amount Collected (Rs in Cr.)	Collection Efficiency	No of Consumers As on March'20	Consumption (MU)	Amount Billed (Rs in Cr.)	Amount Collected (Rs in Cr.)	Collection Efficiency
Domestic	1786360	1181.679	453.41	360.91	80%	1930906	1497.208	569.40	519.55	91%
Kutir Jyoti	364409	155.029	44.23	16.81	38%	269612	127.802	33.84	13.87	41%
General Purpose (Com)	81082	252.343	170.68	133.13	78%	87167	243.190	165.38	140.57	85%
Irrigation	22693	81.984	13.50	6.08	45%	25767	84.240	13.91	7.26	52%
Allied Agriculture	775	10.589	1.86	1.86	100%	894	12.713	2.21	2.21	100%
Allied Agro Industries	60	0.813	0.40	0.40	100%	69	0.785	0.38	0.38	100%
Public Lighting	3836	27.053	15.47	12.38	80%	4796	34.822	20.21	16.17	80%
LT Industrial (Small)	2470	12.187	7.84	7.61	97%	2506	11.011	7.26	7.04	97%
LT Industrial (Medium)	1745	62.279	47.07	36.72	78%	1807	59.379	45.74	38.88	85%
Specific Public Purpose (PI)	11009	38.335	24.82	23.08	93%	12112	30.124	20.35	18.93	93%
PWW	4210	39.418	24.10	19.52	81%	4576	47.170	29.03	23.51	81%
TOTAL L.T.	2278649	1861.71	803.40	618.50	77%	2340212	2148.44	907.71	788.38	87%
Energy Input in LT (MU)	2471.955					2725.909				
Energy sold in LT (MU)	1861.708					2148.443				
Distribution loss(%)	25					21				
AT & C LOSS (%)	42					32				
Realisation per LT Unit (Rs.)	2.50					2.89				

PART OF AFFIDAVIT  
1-2-2018  
NOTARY







Sl. No.	Name of Division	Period	No. of Consumer	Energy Input(MU)		Energy Sold (MU)			LOSS (%) (Assuming HT Loss 8%)			Billing Efficiency (%)			Collection Received (Cr.)			Collection Efficiency (%)		AT & C LOSS (%)		Overall Realisation per LT input p.u.	LT Reduction per LT input p.u.		
				LT	TOTAL	EHT	HT	LT	TOTAL	LT	HT & LT	Over All	LT	HT & LT	Over All	HT	LT	TOTAL	LT	TOTAL	LT	TOTAL			
13	GSED, DIGAPAHANDI	2019 - 20(APR-MAR)	110299	109	126		7	86	93	21%	26%	26%	79%	74%	74%		4	28	32	80%	82%	37%	40%	2.51	2.52
		2020 - 21(APR-MAR)	110310	115	133		7	94	101	18%	24%	24%	82%	76%	76%		5	37	42	98%	99%	20%	25%	3.12	3.19
14	PKED, PARALAKHEMUNE	2019 - 20(APR-MAR)	139635	109	125		6	94	100	14%	20%	20%	86%	80%	80%		5	35	40	86%	88%	26%	30%	3.16	3.20
		2020 - 21(APR-MAR)	139655	118	133		5	107	112	9%	16%	16%	91%	84%	84%		4	44	48	97%	97%	12%	19%	3.63	3.77
15	RED, RAYAGADA	2019 - 20(APR-MAR)	168596	144	211	43	11	136	190	5%	10%	10%	95%	90%	90%		7	49	91	82%	89%	22%	20%	4.33	3.38
		2020 - 21(APR-MAR)	168646	152	238	62	11	152	225	0%	6%	6%	100%	94%	94%		9	61	118	93%	96%	7%	9%	4.94	4.02
16	GED, GUNUPUR	2019 - 20(APR-MAR)	77920	68	77		3	61	64	10%	17%	17%	90%	83%	83%		2	21	23	83%	85%	25%	30%	3.00	3.10
		2020 - 21(APR-MAR)	77929	71	79		2	71	74	-1%	7%	7%	101%	93%	93%		2	29	30	97%	97%	2%	10%	3.82	4.04
17	BERHAMPUR- II	2019 - 20(APR-MAR)	62677	144	157		4	129	133	10%	15%	15%	90%	85%	85%		3	62	64	98%	98%	12%	17%	4.09	4.28
		2020 - 21(APR-MAR)	62695	141	156		3	133	136	5%	13%	13%	95%	87%	87%		2	70	72	109%	108%	-3%	5%	4.63	4.98
18	BERHAMPUR- I	2019 - 20(APR-MAR)	80311	154	242	44	33	147	223	5%	8%	8%	95%	92%	92%		20	66	114	94%	95%	11%	12%	4.72	4.33
		2020 - 21(APR-MAR)	80384	154	233	31	32	155	218	-1%	7%	7%	101%	93%	93%		18	78	117	107%	103%	-8%	4%	5.02	5.09
19	BERHAMPUR- III	2019 - 20(APR-MAR)	75998	90	113		17	79	96	12%	15%	15%	88%	85%	85%		9	32	42	93%	92%	18%	22%	3.68	3.60
		2020 - 21(APR-MAR)	76059	89	114		16	89	105	0%	8%	8%	100%	92%	92%		11	42	53	109%	107%	-8%	1%	4.69	4.75
ACTUAL TOTAL SOUTHCO			2,196,378	2,481	3,469	489	270	1,862	2,620	25%	24%	24%	75%	76%	76%		164	619	1,079	77%	84%	42%	36%	3.11	2.50
			2,340,712	2,726	3,599	438	182	2,148	2,769	21%	23%	23%	79%	77%	77%		132	789	1,199	87%	91%	32%	30%	3.33	2.89
																							PAGE - 17		

PART OF AFFIDAVIT  
 1-2-21 18-6-20  
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**ODISHA ELECTRICITY REGULATORY COMMISSION**  
**BIDYUT NIYAMAK BHAWAN**  
**PLOT NO.-4, CHUNOKOLI, SHAILASHREE VIHAR**  
**BHUBANESWAR - 751 021**  
\*\*\*\*\*

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

**Case No. 83/2020**

Director (Regulatory Affairs), OERC	.....	Designated Petitioner
Vrs.		
DoE, GoO & Others	.....	Respondents

**In the Matter of:**      **An Application for initiation of Suo Motu Proceeding under Regulation 9 (1) and (4) of OERC (Conduct of Business) Regulations, 2004 to issue suitable directions with respect to sale of utility of SOUTHCO under Section 20 of the Electricity Act 2003 for vesting of Utility (SOUTHCO) to the intending purchaser under Section 21 of the said Act.**

**For Petitioner:**      **Shri Priyabrata Patnaik, Director (RA), OERC.**

**For Respondent:**      **Ms. Niharika Pattnayak, ALO, DoE, GoO, Shri Kulamani Biswal, Advocate and Shri P.K.Mohanty, Sr. Advocate on behalf of GRIDCO Ltd., Shri B.R.Mishra, Sr. GM, OPTCL, Shri Pradip Kumar Sahoo, AO, SOUTHCO Utility, Shri Anand Kumar Shrivastava, Advocate, Shri Tejab Patil, Advocate on behalf of M/s. TPCL, Shri Ramesh Satpathy, President of Upabhokta Mahasangha, Shri Ananda Mohapatra, Shri Ashutosh Mishra, Advocate on behalf of Hirakhanda Bidyut Karmachari Sangha, Sambalpur and National Secretary of Electricity Employees Federation of India (EEFI), BBSR, General Secretary of Western Orissa Bidyut Sramik Mahasangha, Secretary, OSE Employees Federation, BBSR, Nikhila Odisha Bidyut Sramika Mahasangha, BBSR, Shri Mahendra Kumar Mohapatro, Advocate on behalf of SOUTHCO Employees Engineers Officers Ekata Mancha (SEEOEM), Shri Matrugupta Mishra, Advocate and Shri S.K.Padhi, Sr. Advocate on behalf of Shri Bijay Kumar Mishra, Senior Journalist Activist, Indian Institute of Mass Communication.**

**ORDER**

**Date of hearing: 17.12.2020**

**Date of order: 28.12.2020**

1.      Southern Electricity Supply Company of Odisha Limited (the "SOUTHCO") was incorporated on 19<sup>th</sup> November 1997 under the Companies Act, 1956. Pursuant to the Odisha Electricity Reforms Act 1995 and Odisha Electricity Reforms Rules



1998, all the assets of GRIDCO pertaining to the distribution business in the Southern Zone of GRIDCO comprising districts of Ganjam, Gajapati, Boudh, Kandhamal, Rayagarda, Koraput, Nabarangapur and Malkanagiri were transferred to SOUTHCO.

2. On 1st April 1999, 51% (fifty one percent) shares of GRIDCO in SOUTHCO were transferred to BSES Limited selected through competitive bidding process. SOUTHCO was continued to be managed by BSES Limited and later by its successor R-Infra Limited.
3. Under Section 19 of the Electricity Act, 2003 (the “Act”), the Commission revoked license of SOUTHCO with effect from Mar 2015 and appointed CMD, GRIDCO as the administrator under Section 20(d) of Act and vested the management and control of SOUTHCO Utility along with their assets, interests and rights with the CMD, GRIDCO Limited. The order on revocation of licenses by the Commission was upheld by the Hon’ble APTEL in Appeal No. 64 of 2015 and has also been confirmed by the Hon’ble Apex Court vide their Order dated 24.11.2017 in Civil Appeal No.18500 of 2017.
4. Thereafter, in terms of Section 20 of Act the Commission initiated a transparent and competitive bidding process for selection of an investor for sale of utility of SOUTHCO and had issued the updated Request for Proposal (the “RFP”) on 14.08.2020.
5. In response to the said RFP, two bids were received by the bid due date. After detailed evaluation by independent bid evaluation committee setup by Commission, The Tata Power Company Limited (the “TPCL”) was recommended as the successful bidder and Commission accepted the same under Section 20(1)(a) of the Act.
6. Thereafter, the Commission issued a Letter of Intent (the “LoI”) to TPCL vide Letter No. OERC/RA/SALE of SOUTHCO-34/2020/1386 dated 03.12.2020. TPCL communicated the acceptance of the LoI vide Letter No. T&D /BD/ DOM/ FY21/ OERC/ SOUTHCO/PPP/090 dated 06.12.2020.
7. That as per the terms of the RFP, upon completion of sale, SOUTHCO Utility shall

vest in a special purpose vehicle (the “Project SPV” or “Operating Company”) in which TPCL shall hold 51% (fifty one percent) equity shares and Government of Odisha (“GoO”) shall hold 49% (forty nine percent) equity shares through GRIDCO.

8. The Commission vide letter no. OERC/RA/SALE OF SOUTHCO-34/2020/1395 dated 04.12.2020 then directed GRIDCO to incorporate the SPV to which the utility of SOUTHCO shall be vested and license of SOUTHCO Utility shall be transferred. TP Southern Odisha Distribution Limited (the “TPSODL”) will be incorporated as a wholly owned subsidiary of GRIDCO with an authorized share capital of Rs. 1000 crores (Indian Rupee One thousand crores) only and paid-up capital of Rs. 5 lakhs (Indian Rupee Five lakhs only). TPSODL shall be the SPV in which TPCL and GRIDCO shall hold 51% (fifty one percent) and 49% (forty nine percent) equity shares respectively after the completion of sale.
9. The Commission vide letter no. OERC/RA/SALE OF SOUTHCO-34/2020/1395 dated 04.12.2020 provided GRIDCO/ OPTCL the RFP Documents namely – Share Acquisition Agreement, Shareholders Agreement, Bulk Supply Agreement and Bulk Power Transmission and SLDC Agreement for execution by concerned parties.
10. TPCL quoted a purchase price of Rs. 250 crores (Indian Rupee Two hundred fifty crores) in its financial Bid in response to the RFP for 100% (one hundred percent) equity in the SPV. TPCL is required to pay 51% (fifty one percent) of the purchase price of Rs. 250 crores (Indian Rupee Two hundred and fifty crores) quoted in its Bid. As per terms of RFP, this amount is required to be deposited by TPCL with the Commission.
11. The Commission vide letter No. OERC/RA/SALE of SOUTHCO-34/2020/1386 dated 03.12.2020 (LoI) had directed TPCL to submit the Performance Guarantee and deposit the amount equivalent to 51% (fifty one percent) of the purchase price of Rs 250 crores (Indian Rupee Two hundred and fifty crores) with the Commission.
12. TPCL vide letter no. T&D/BD/DOM/FY21/OERC/SOUTHCO/ PPP/093 dated 22.12.2020 communicated that the amount has been deposited with the Commission and the Performance Guarantee of Rs. 100 crores (Indian Rupee One hundred crores) has been submitted as per the directions of the Commission.

## ORDER OF THE COMMISSION

32. As per Section 21(a) of the Act, the utility of SOUTHCO shall be vested in TPSODL with effect from 01.01.2021 (the “Effective Date”) subject to completion of sale and delivery of the utility to TPSODL.

33. The Commission approves the transaction structure proposed by the parties. TPSODL has been incorporated with a paid-up share capital of Rs. 5 lakhs (Indian Rupee Five lakhs). The trade payables to GRIDCO (in the books of SOUTHCO

Utility) amounting to Rs. 199.95 crores (Indian Rupees One hundred ninety nine crores and ninety five lacs) only shall be converted to equity share capital of TPSODL. With this, the equity share capital shall be Rs 200 crores (Indian Rupee Two hundred crores) only. TPCL shall purchase equity shares equivalent to 51% (fifty one percent) of the equity share capital in TPSODL from GRIDCO at the premium of Rs. 25.50 crores (Indian Rupee Twenty five crores and fifty lakhs) only by paying to GRIDCO an amount of Rs. 127.50 crores (Indian Rupee One hundred twenty seven crores and fifty lakhs) only.

34. The amount of Rs. 127.50 crores (Indian Rupee One hundred twenty seven crores and fifty lakhs) only is already deposited by TPCL with the Commission as per the requirement of RFP documents. The Commission shall, after vesting of utility of SOUTHCO with TPSODL, remit the amount after deducting the Transaction Process Costs incurred by the Commission for the sale process directly to GRIDCO. Suitable accounting adjustments may be made in the financial statements of SOUTHCO Utility and GRIDCO to this effect.
35. If the Administrator of SOUTHCO Utility delivers the utility to TPSODL but the sale does not get completed in its entirety by 01.01.2021, TPSODL shall, as per Section 20(4) of the Act, operate and maintain the utility for a maximum period of upto 7 (seven) days from 01.01.2021, pending completion of transaction. In case transaction is not completed in its entirety within such extended period, then the Commission may, at its discretion, either grant extension on day by day basis or cancel the LoI. The decision of the Commission shall be final in this regard.

## TERMS OF VESTING

36. As per Section 21(a) of the Act, the utility shall vest in TPSODL free from any debt, mortgage and similar obligation of SOUTHCO and SOUTHCO Utility except for certain serviceable liabilities that are being transferred to TPSODL along with mechanism for funding of such liabilities as provided in para 56 of this Order.
37. As per Section 21(b) of the Act, the rights, powers, authorities, duties and obligations of the license under SOUTHCO Utility's license shall stand transferred to TPSODL on Effective Date upon delivery of utility on the same date. The amended license shall be issued by the Commission within 90 (ninety) days from the

Effective Date.

38. With the transfer of utility of SOUTHCO and license, the rights and responsibilities of SOUTHCO utility shall transfer to TPSODL with effect from 01.01.2021.
39. Performance Guarantee
- (a) As per the terms of RFP, TPCL has provided to the Commission Performance Guarantee of Rs. 100 crores (Indian Rupee One hundred crores) with following details:
    - (i) Bank Guarantee (PBG) No. 0665720BG0000150 for an amount of Rs 50 crores (Indian Rupee Fifty crores) from SBI Commercial Branch, Bhubaneswar with expiry date of 15.12.2023 and claim date of 15.12.2024.
    - (ii) Bank Guarantee (PBG) No. 200126IBGP00912 for an amount of Rs 50 crores (Indian Rupee Fifty crores) from IDBI Bank, Bhubaneswar with expiry date of 15.12.2023 and claim date of 15.12.2024.
  - (b) As per the terms of the RFP, the Performance Guarantee(s) shall be renewed till the completion of 15 (fifteen) years from the Effective Date by TPCL at least 30 (thirty) days before the expiry date of such Performance Guarantee.
  - (c) Upon satisfactory performance of TPSODL for a period of 5 (five) years from the Effective Date, and TPSODL having met all its obligations in regard to the performance and commitments made as part of its Bid in response to the RFP as determined by the Commission in performance review as per para 61 of this Order, the value of the Performance Guarantee shall be reduced to half of the original amount in para 39(a) above i.e. Rs. 50 crores (Indian Rupee Fifty crores).
  - (d) The existing bank guarantee as per clause 39(a) shall be returned to TPCL on submission of a revised Performance Guarantee of Rs. 50 crores (Indian Rupee Fifty crores) by TPCL which shall initially be valid for 3 (three) years and thereafter renewed every year by TPCL till the end of the 10<sup>th</sup> (tenth) year from the Effective Date.



- (e) Further, the Commission, on satisfactory performance of TPSODL between the 6<sup>th</sup> (sixth) and the 10<sup>th</sup> (tenth) year of operations, may further reduce the Performance Guarantee to 25% (twenty five percent) of the original amount in para 39(a) above i.e. to Rs 25 crores (Indian Rupee Twenty five crores). The same shall be required to be maintained by TPCL till the end of the 15<sup>th</sup> (fifteenth) year from the Effective Date.
- (f) The reduced Performance Guarantee shall be refunded to TPCL at the end of the 15<sup>th</sup> (fifteenth) year from the Effective Date.
- (g) TPCL shall restore the Performance Guarantee to its original amount within 30 (thirty) days of its being encashed. Failure to restore the Performance Guarantee to its original value shall result in non-compliance of the license conditions and the Commission shall then act as per the relevant provisions provided under the Act.
- (h) The Performance Guarantee may be encashed for any reasons as follows:
  - (i) Failure to meet loss reduction target as specified in para 44(b);
  - (ii) Failure to collect Past Arrears as per para 47(e);
  - (iii) Failure to pay the Bulk Supply Price and Transmission Charges as per para 41 and 42; or
  - (iv) Any other reason as mentioned in the RFP and required under the license conditions.

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

\*\*\*\*\*

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

**Case No. 08/2021**

M/s. TPSODL	.....	Petitioner
Vrs.		
DoE, GoO & Others	.....	Respondents

**In the matter of:** Application for approval of CAPEX Plan for the FY 2021-22 in compliance to the directions of the Commission in the vesting order dated 28.12.2020 passed in Case No. 83/2020.

**For Petitioner:** Shri Arvind Singh, CEO, TPSODL and Shri Milind Pravakar Kulkarni, Chief Operation & Services, TPSODL.

**For Respondents:** Shri B.K.Das, Sr. GM (RT & C), OPTCL, Shri R.P. Mahapatra, Shri L.K.Mishra, GRIDCO, Shri Ramesh Satpathy, Shri Prabhakar Dora, Shri Bibhu Charan Swain on behalf of Power Tech Consultant Pvt. Ltd. and UCCI, Shri Pramod Ku. Sahu, Shri Manoj Panda and Ms. Sonali Patnaik, ALO, DoE, GoO.

**ORDER**

**Date of Hearing:** 29.06.2021

**Date of Order:** 18.09.2021

1. The petitioner, Tata Power Southern Odisha Distribution Limited (TPSODL), has submitted an application for approval of Capital Expenditure (CAPEX) to the tune of Rs. 408.47 Crore for FY 2021-22 to carry out various system improvement and safety activities in its area of operation. This application has been filed pursuant to the direction of the Commission at para 43 in the vesting order in Case No.83/2020.
2. TPSODL's licensed area is spread over a geographical area of 48751 sq.km and it serves a registered consumer base of around 23 lakhs. TPSODL procures power from GRIDCO through Odisha Power Transmission Corporation Limited (OPTCL)'s 220/132/33 kV grid substations at sub transmission voltage level of 33 kV and then distributes the power at 33 kV/11 kV/440 volt/230 volt depending on the demands of the consumers. TPSODL has submitted that it has inherited the power distribution network in dilapidated state at some places, which is not compliant with the requisite statutory standards and poses threat to consumers, staff, etc. Further, underrated/undersized/worn out conductors, poor earthing, presence of either faulty equipment or non-availability of equipment/switchgears/protection devices are creating potential safety hazards to the employees, consumers, children, animals,

public, etc. TPSODL has therefore, come up with this Capital Investment Plan with the primary objective of ensuring safe reliable power supply and ensuring best customer service to its end consumers. TPSODL has categorised the various activities of the Capital Investment Plan under 5 major broad subheads, i.e., (i) statutory and safety, (ii) loss reduction, (iii) network reliability, (iv) load growth, (v) technology and civil infrastructure.

3. The petitioner has submitted that every area under its operation has different characteristics and thus, has different challenges. However, some common challenges have been identified for taking up the work in the first year of its operation. TPSODL receives power from 28 no. of EHT Grid S/s and handles about 3000 MU with around 23,24,777 total consumers. It has 224 no. of 33/11 kV substations (6459 nos. of transformer), 33/0.415 kV substations (459 nos. transformer)] and 53658 nos. of 33/0.415 kV, 11/0.415/0.230 kV DTR. There are 3632.06 ckt. km. of Over Head (OH) 33 kV line, 3.9 ckt. km. of Under Ground (UG) 33 kV line, 40440.2 ckt. km. of OH 11 kV line, 47.2 ckt. km. of UG 11 kV line, 9600.15 ckt. km. of bare LT line and 27036.95 ckt. km. of ABC LT line.
4. The petitioner has submitted that due to vast geography, wide-spread network and absence of preventive maintenance, the existing network has become very weak to serve the consumers. Major factors causing damage to the poles/lines include structural deterioration of poles due to flood, cyclone, heavy vegetation, etc. The petitioner has proposed to replace the damaged poles, replace worn out conductors, do re-stinging of the conductor, install the mid-span pole, install stay-wire at start and end of the line and at every H pole. The petitioner has also proposed to strengthen earthing system by introducing fresh earthing in both Distribution Sub-Station (DSS) and Primary Sub-Station (PSS) as a part of refurbishment activity, which will enhance the life of the equipment with proper functioning of protection relays. The petitioner has also proposed various activities required to be performed for the aforesaid job.
5. The petitioner has further submitted that most of the 33/11 kV and 11/0.415 kV substations either have broken boundary fence or no boundary fence. Hence, it has proposed to put up fencing/build boundary wall under Statutory and Safety. The petitioner has also proposed to procure Personal Protective Equipment (PPE) and safety equipment for its staff to ensure safety to which the Licensee is mandated to comply as per the prevailing Regulations.
6. Therefore, TPSODL has submitted the Detailed Project Report (DPR) for CAPEX plan of Rs. 408.47 Crore for FY 2021-22 categorised under the following five broad sub-heads:
  - (i) **Statutory & Safety** – which includes purchase of PPEs, safety and testing equipment, providing Cradle guard at major road crossings, Fencing of Distribution substations (DSS), Boundary wall for Primary substations (PSS) and establishment of

meter testing lab.

- (ii) **Loss Reduction** – which includes Input Energy Monitoring System (ABT/AMR) – IEMS, Replacement of burnt, Faulty and Electromechanical meters and meter installation at no Meter cases, Bare LT to ABC conversion and initiatives under Demand Side Management.
- (iii) **Network Reliability** – which includes 33 kV and 11 kV Network refurbishment, installation of 33 kV and 11 kV AB Switch, PSS and DSS Refurbishment, installation of LV protection at DSS , installation of Auto reclosure/sectionalisers, RMU and FPIs, Trolley Mounted Pad Substations and Package Distribution Substations.
- (iv) **Load growth** – which includes Network augmentation/addition to meet load growth/11 kV line, PTR, DTR, LT line and installation of meters for new connection.
- (v) **Technology and Civil infrastructure** – Technology includes installation of Smart Meters along with back end IT Infrastructure, Augmentation of IPDS Software licenses pan TPSODL, development of IT Infrastructure (H/W and Field office infra for augmentation of IPDS application licenses), Communication Network Infra, SCADA and GIS implementation. Further, Civil works includes development of Civil infrastructure, Civil Work for Meter Test Bench, Civil work for Call center and PSCC, Upgradation of DT workshop, Security system in Central Store and assets for offices.

The summary of the above CAPEX as proposed by the petitioner is given in the table below:

Sl. No	Major Category	Activity	DPR Cost (Rs. Crore)
1	Statutory & Safety	PPEs, Safety & Testing Equipment	19.98
		Cradle guard at major road crossings	8.53
		Fencing of Distribution substations (DSS)	15.00
		Boundary wall for Primary substations (PSS)	15.40
		Establishment of Meter Testing Lab	2.47
		<b>Total</b>	<b>61.38</b>
2	Loss Reduction	Input Energy Monitoring System (ABT/AMR) –IEMS	10.97
		Replacement of burnt, Faulty and Electromechanical meters and meter installation at no Meter cases	62.98
		LT Bare to ABC conversion	11.98
		Demand Side Management	5
		<b>Total</b>	<b>90.93</b>
3	Network Reliability	33 KV Network refurbishment	10.08
		Installation of 33 KV AB Switch	2.23
		PSS Refurbishment	12.17
		11 KV Network refurbishment	11.16
		Installation of 11 KV AB Switch	5.00
		DSS Refurbishment	10.00
		Installation of LV protection at DSS	10.09
		Installation of Auto reclosure /Sectionalizers, RMUs & FPIs	8.72
		Trolley Mounted Pad Substations	1.31
		Package Distribution Substations	1.64
		<b>Total</b>	<b>72.40</b>
4	Load Growth	Network augmentation / addition to meet load growth/11 KV line, PTR, DTR, LT line	26.52
		Meter Installation for all new connections	12.71



Sl. No	Major Category	Activity	DPR Cost (Rs. Crore)
		Total	39.23
5	Technology & Civil Infrastructure	Installation of Smart Meters along with back end IT Infrastructure	28.28
		Augmentation of IPDS Software licenses pan TPSODL	18.24
		IT Infrastructure (H/W & Field office infra for augmentation of IPDS application licenses)	29.26
		Communication Network Infra	5.38
		SCADA Implementation	16.71
		GIS Implementation	10.46
		Civil Infrastructure	20
		Civil Work for Meter Test Bench	2
		Civil work for Call centre & PSCC	4
		Upgradation of DT workshop	1
		Security system in Central Store	4.25
		Assets for Offices	4.95
		Total	144.53
Grand Total			408.47

#### Approved CAPEX Plan FY 2021-22

Sl. No	Major Category	Activity	DPR Cost (Rs. Crore)	Board Approved Cost (Rs. Crore)	OERC Approved Cost (Rs. Crore) (Considering Board approved Cost data, disallowance of schemes & not considering the CAPEX for Metering)
1	Statutory & Safety	PPEs, Safety & Testing Equipment	19.98	9.99	9.99
		Cradle guard at major road crossings	8.53	4.57	4.57
		Fencing of Distribution substations (DSS)	15.00	9	9
		Boundary wall for Primary substations (PSS)	15.40	5.4	5.4
		Establishment of Meter Testing Lab	2.47	2.47	2.47
		<b>Total</b>	<b>61.38</b>	<b>31.43</b>	<b>31.43</b>
2	Loss Reduction	Input Energy Monitoring System (ABT/AMR) – IEMS	10.97	0	0
		Replacement of burnt, Faulty and Electromechanical meters and meter installation at no Meter cases	62.98	32.98	8.68
		LT Bare to ABC conversion	11.98	7.01	7.01

Sl. No	Major Category	Activity	DPR Cost (Rs. Crore)	Board Approved Cost (Rs. Crore)	OERC Approved Cost (Rs. Crore) (Considering Board approved Cost data, disallowance of schemes & not considering the CAPEX for Metering)
		Demand Side Management	5	0	0
		<b>Total</b>	<b>90.93</b>	<b>39.99</b>	<b>15.69</b>
3	Reliability	33 KV Network refurbishment	10.08	5.04	5.04
		Installation of 33 KV AB Switch	2.23	2.23	2.23
		PSS Refurbishment	12.17	6.25	6.25
		11 KV Network refurbishment	11.16	6.92	6.92
		Installation of 11 KV AB Switch	5.00	3.05	3.05
		DSS Refurbishment	10.00	4.08	4.08
		Installation of LV protection at DSS	10.09	5.08	5.08
		Installation of Auto reclosure /Sectionalizers ,RMUs, &FPIs	8.72	3.95	3.95
		Trolley Mounted Pad Substations	1.31	0.22	0.22
		Package Distribution Substations	1.64	0.65	0.65
		<b>Total</b>	<b>72.40</b>	<b>37.47</b>	<b>37.47</b>
4	Load Growth	Network augmentation / addition to meet load growth/11 KV line, PTR,DTR,LT line	26.52	8.74	8.74
		Meter Installation for all new connections	12.71	8.71	0
		<b>Total</b>	<b>39.23</b>	<b>17.45</b>	<b>8.74</b>
5	Technology & Civil Infrastructure	Installation of Smart Meters along with back end IT Infrastructure	28.28	23.28	14.07
		Augmentation of IPDS Software licenses pan TPSODL	18.24	12.24	12.24
		IT Infrastructure (H/W & Field office infra for augmentation of IPDS application licenses)	29.26	19.26	19.26
		Communication Network Infra	5.38	5.38	5.38
		SCADA Implementation	16.71	14.71	14.71
		GIS Implementation	10.46	5.46	5.46
		Civil Infrastructure	20	10	10
		Civil Work for Meter Test Bench	2	2	2

Sl. No	Major Category	Activity	DPR Cost (Rs. Crore)	Board Approved Cost (Rs. Crore)	OERC Approved Cost (Rs. Crore) (Considering Board approved Cost data, disallowance of schemes & not considering the CAPEX for Metering)
		Civil work for Call centre & PSCC	4	2	2
		Upgradation of DT workshop	1	1	1
		Security system in Central Store	4.25	2.25	2.25
		Assets for Offices	4.95	2.95	2.95
		<b>Total</b>	<b>144.53</b>	<b>100.53</b>	<b>91.32</b>
<b>Grand Total</b>			<b>408.47</b>	<b>226.87</b>	<b>184.65</b>

The approved cost shall be passed in the ARR as per the norm subject to rational utilization by the petitioner and prudence check through audit.

The Commission feels it appropriate to make an observation on the role of GRIDCO in the matter of TPSODL's CAPEX proposal. GRIDCO holds 49% equity in TPSODL and it has 4 out of 9 Directors in its Board. TPSODL is required to obtain approval of its Board of Directors while submitting its CAPEX proposal. Commission, as a matter of principle, limits its consideration to the amounts approved by the Board. GRIDCO as such has a substantial role in shaping the CAPEX proposal at its formulation stage itself. Instead of doing that, we observe that they have raised a number of objections in the case here. While we have considered the comments of GRIDCO in its perspective, we advise GRIDCO to play their role in the right earnest at the level of the Board of Directors of TPSODL.

Accordingly the case is disposed of.

Sd/-  
(G. Mohapatra)  
Member

Sd/-  
(S. K. Parhi)  
Member

Sd/-  
(U. N. Behera)  
Chairperson