

Creation and maintaining a Web based Protection Database and Desktop based Protection setting calculation tool for Eastern Regional Grid



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OPERATIONAL LOAD FLOW STUDIES UNDER OFF PEAK LOADING CONDITIONS

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EXECUTIVE SUMMARY

In the recent past, it has been noted that most of the grid collapses have been attributed to protection system failure or mal functioning. The reports on the North American blackout (August 2003) and the more recent Indian grid collapse (July 2012) have all emphasized the need for “Protection Management System”.

As a recommendation of the Enquiry Committee headed by Chairperson CEA on grid disturbances in NEW grid on 30th and 31st July 2012, Ministry of Power constituted a “Task Force on Power System Analysis under Contingencies” in December 2012.

The task force recommends creation and maintenance of protection database under RPC's. Accordingly, Secretary (Power) in a meeting in Ministry of Power held on 11.03.2014 directed all RPC's to implement the recommendations of the report submitted by “Task Force” in a time bound manner.

Following the decision of Ministry of Power ERPC as a pioneering venture has taken up the project **“Creation and maintaining a Web based Protection Database and a Desktop based Protection Setting Calculation Tool for Eastern Regional Grid”..**

M/s PRDC has been awarded with the order by ERPC to implement the project in its entirety including creation of database and supply of software and hardware along with necessary power system analysis relevant for the project.

Eastern Regional Grid comprises of the electrical system of the states of Bihar, Jharkhand, West Bengal, Odisha, Sikkim and area under DVC. The major constituents of ER grid are the State/UT Transmission and Distribution Utilities, Central Transmission Utility, State and Central sector Generating Companies, DVC, CESC, DPL, IPP's and Private sector Transmission and Distribution Utilities. The ER covers a geographical area of 425432 sq km with an installed capacity of 36575 MW. In addition to this the region has an installed capacity of 7840 MW in the form of CPP's.

Eastern Regional Power Committee (ERPC) formed by Ministry of Power is entrusted for facilitating the integrated operation of the power system in the region.

As a prerequisite of building the protection management system the first step as envisaged is the electrical modelling of the entire network data under ER system from 765 kV to 132 kV and 66 kV for Sikkim and carrying out the base case operational load flow analysis and short circuit studies for peak and off peak load conditions.

The Load flow and Short Circuit studies of Eastern Grid considering grid was carried out for peak load conditions of ER. The network was updated till 31st May 2016 and report was submitted with study results on 27th July 2016.

As a next phase of the power system studies, the off peak scenario of ER grid is studied for Load flow and Short Circuit analysis. The data and electrical parameters of the EHV network elements as updated till 31st August 2016 by collecting data from the respective constituents of ER grid and updated network is modelled in power system analysis software MiP-PSCT.

It was decided in the OCC meeting that the operational Load Flow study for ER grid is carried out for a load generation condition during normal off peak condition on an updated network data till August 2016. The load generation condition was selected for two time steps are collected for 27th & 28th August 2016 at 13:00 hours and 03:00 hours respectively. After analyzing the ERLDC's SCADA record for both these time steps off peak time's total recorded loads appeared to be on the higher side almost of the same quantum as was studied for peak conditions. From ERLDC's SCADA and SEM's data mismatches in regional demand as well as state wise demand is observed. In 126th OCC meeting, it was suggested that off peak load generation of a different day may be considered and load may be apportioned among states based on SCADA data of 27th August 2016 at 13:00 hrs or 28th August 2016 at 03:00 hrs.

After much deliberation (126th OCC) it was decided that the off peak load flow study will be carried out with load generation scenario of 27th August 2016 at 13:00 hrs as per the load generation scenario data given by ERLDC from SEM data.

A comparison of loading details of 26th May 2016 peak hours and 27th August 2016 off peak hours of ER grid is presented below.

Sl. No.	Constituents	Load (MW)	
		27 th Aug-16 13:00 hrs	26 th May-16, 20:00 hrs
1	Bihar	2716	3044
2	Jharkhand	799	991
3	Odisha	2872	3354
4	Sikkim	43	75
5	W. Bengal	4858	5460
6	DVC	2426	2621
7	CESC	1507	1441
8	DPL	217	217
Total Load		15438	17203
loss		671	762
Total Demand		16109	17965

Load flow analysis and short circuit studies are conducted under off peak loading scenario and the observations on the results are detailed in subsequent sections of the report. Constituent's wise demand for ER grid id presented below.

Sl. No.	Constituents	Demand MW)
1	Bihar	2846
2	Jharkhand	872
3	Odisha	3071
4	Sikkim	51
5	W. Bengal	5026
6	DVC	2498
7	CESC	1524
8	DPL	221

Summarized particulars of network data for ER as on 31st August 2016 collected during the studies are given below:

EHV Transmission Grid Substations: The total count is 491 with a voltage grade wise population mix as,

- 765 kV: Number of substations is 5 with installed capacity of 18000 MVA
- 400 kV: Number of substation is 44 with an installed capacity of 32015 MVA
- 220 kV: Number of substation is 94 with an installed capacity of 35690 MVA
- 132 kV: Number of substation is 329 with an installed capacity of 34926 MVA
- 66 kV: Number of substation is 19 with an installed capacity of 212.5 MVA

ER generating units under state, central sector and integrated utilities:

Aggregated generation capacity of 27107.5 MW with a hydro thermal mix of 15.9 : 84.1. The break up is given as,

- Total number of hydro generating units is 83 with an installed capacity of 4302.5 MW
- Total number of thermal generating units is 105 with an installed capacity of 22805 MW

ER generating units under IPPs: Aggregated generation capacity of 9468 MW with a hydro thermal mix of 2.17 : 97.82. The break up is given as,

- Total no. of hydro generating units is 4 with an installed capacity of 206 MW
- Total number of thermal generating units 31 with an installed capacity of 9262 MW

CPP generation capacity: 7840 MW.

ER EHV and HV Transmission Lines (132 kV and above and 66 kV in Sikkim):

76358 ckm

The node wise load and generation data, recorded are collected from the respective system owners and are matched with the demand, generation and exchange recorded by ERLDC, SCADA for the selected time instant.

The consolidated observations from load flow analysis are:

Load Generation Balance Off-Peak Scenario:

- System input (Generation & Import): 22500 MW
- System Demand including losses in ER network : 16109 MW
- Consolidated Export from ER bus : 6391 MW

Generation Scheduling: All generators are scheduled as per SCADA records of ERLDC.

Voltage Profile: Busbar voltages at all voltage levels are within the stipulated range of grid code of CEA

Transformer loading: In the entire population no overloading is observed. 37 number transformers are loaded beyond 80% and 236 numbers are loaded below 20%.

Line loading: No overloading is observed in any of the voltage grades. Number of lines loaded between 80 to 100% of thermal capacity is 37 predominantly in 132 kV level. Number of lines loaded below 5% thermal capacity is 128 and the percentage is predominant at 132 kV level.

Comparison of the simulated results for Bus bar voltages and active power flows with the available SCADA records has not been carried out due to unavailability of accurate SCADA record concurrent with simulated system demand of 16109 MW. This mismatch is attributed to insufficient data in load substations and also to the mismatch of SLDC records and ERLDC records.

Short Circuit studies are conducted on the network topology and generation scheduling of the load flow modelling for both three phase symmetrical faults and single line to ground fault conditions at every bus up to 66 kV level by considering sub transient reactance's of the generators and closed bus operation at all 765,400 and 220 kV bus.

It is observed from the results of short circuit studies the fault MVA is exceeding the breaker capacity in following buses:

- Bihar: Kahalgaon 400 kV
- Jharkhand: Maithon 400 kV

Bus splitting is suggested for above substations. Breaker upgradation may also be considered during substation renovations.

Due to High fault level at 220 kV bus of Meramundali S/S under short circuit study for peak scenario bus splitting was suggested. From short circuit study under off peak scenario with split bus of Meramundali S/S at 220 kV level fault level is well within the breaker capacity.

Detailed analysis of data and study results for operational load flow and short circuit studies are elaborated in subsequent sections of the report.

ABBREVIATIONS AND ACRONYMS

Acronym	Full form
CEA	Central Electricity Authority
CGP/CPP	Captive generating plant
CTU	Central Transmission Utility
DB	Data Base
DPR	Detailed Project Report
DTR	Distribution Transformer
EHV	Extra High Voltage
ER	Eastern Region
ERLDC	Eastern Regional Load Dispatch Centre
ERPC	Eastern Regional Power Committee
GoI	Government of India
GS	Generating Station
GUI	Graphical User interface
HV	High Voltage
IPP	Independent Power Producer
MiP-PSCT	Protection Setting Calculation Tool
NR	Northern region
PRDC	Power Research & Development Consultants Pvt. Ltd.
PSS	Power System Study
SCADA	Supervisory control and data acquisition
SLD	Single Line Diagram
SLDC	State Load Dispatch Centre
SS	Substation
STU	State Transmission Utility

1 INTRODUCTION

Eastern Regional Grid comprises of the electrical transmission system of the states of Bihar, Jharkhand, West Bengal, Odisha, Sikkim and supply area under DVC. The major constituents of ER grid are the State/UT Transmission and Distribution Utilities, Central Transmission Utility, State and Central sector Generating Companies, DVC, CESC, DPL, IPP's and Private sector Transmission and Distribution Utilities. The ER covers a geographical area of 425,432 sq. km which is about 13% of the total area of the country with an installed capacity of **44416 MW**. Keeping in view the criticality of safe and reliable operation of this vast and complex system of ER, M/s. ERPC has awarded the project for implementation of a software based protection management system that includes building up a comprehensive web based protection database for the ER grid to M/s PRDC, a pioneer consultant in the field of power engineering on 31st March 2016.

As a fundamental prerequisite of building the protection management system and as base work for protection system simulation and studies the entire existing network data under ER system is modeled from 765 kV level to 33 kV buses of 132/33 kV substations for all states other than Sikkim where the network is modeled up to 11 kV buses of 66/11 kV substations. The network model in its entirety encompasses each of the individual power system elements including generators (hydro, thermal, pump storage), substations/switching station equipment, transmission lines, HVDC system, reactors, capacitors and load.

This report presents the results of the base case load flow studies for the modeled EHV transmission network of the ER grid for a selected scenario of off peak load condition. With reference to the discussions with M/s ERPC and its constituents, 27th August 2016 is identified as a typical day with the afternoon off peak load at 13:00 hours. The load flow analysis is carried out with the load generation scenario for the selected instant and the parameters are crosschecked with the SCADA results to authenticate the correctness of the modeling.

ER network is modeled for 27th August 2016 load and generation scenario, wherein a demand of 16109 MW is recorded for the ER grid at 13:00 hrs. This volume of the report presents the details of existing Eastern region transmission network data, load generation balance along with operational load flow and short circuit study results under off peak scenario.

2 PROJECT SCOPE

The scope of work envisaged in tender document is elaborated in detailed here.

As per scope M/s PRDC should supply Protection Analysis Software Package with following requirements but not limited to the following modules for the supply of Software and Database building activities,

M/s PRDC should develop and maintain a hardware setup and software package capable of meeting the following objectives; but not limited to:

- Classified database of all bay equipment and the protection system details of all bays 132 kV and above, for Eastern Regional power system.
- A user friendly interface for browsing and editing the contents of the database.
- Tool for simulating the performance/ behavior of the protection system under all possible normal and abnormal operating conditions of the power system, including effect of changing one or more parameter setting of the relays.
- Diagnostics for verifying proper coordination among various protective relays.
- Generation of useful reports.

The detailed scope of work is elaborated in Volume-1 of the DPR and submitted on 27.04.2016. A consolidated view on Network Modeling and database building activity for operational load flow involve “Creation and maintaining a Web based Protection Database and Desktop based Protection setting calculation tool for Eastern Regional Grid” is presented below.

2.1 Database Building Activities for Operational Studies

- One time power system network model building for the Load flow, Short circuit and dynamic simulations of entire Eastern region with Indian national grid transmission network model.
- Data collected from respective substations to be validated before populating the same in the database.
- Complete modeling of ER transmission network for 132 kV and above including HVDC systems connected with ER, with relevant system parameters of transmission lines, generators, transformers, reactors for all existing substations. However, for Sikkim 66 kV system along with 66 kV interconnections are to be considered.
- Prepared network is made ready for base case load flow analysis and the same has to be verified with field engineers of ER constituents. Both MW and

MVA_r flow are computed and Voltage Level at different Buses is ascertained along with suggestive conditions to reduce or enhance Bus voltage.

- Short circuit, studies to be simulated and the results to be demonstrated to the ER constituents for approval.

This report includes operational load flow and short circuit study of existing ER grid under off peak loading condition.

3 SYSTEM OPERATIONAL DATA

As increasing electricity demand, electrical transmission and distribution system is expanding at very fast pace. To meet future expected demand with reliable manner there is a need of great integration among electricity generating, transmission and distribution agencies.

With an objective to facilitate integrated operation of power system in Eastern Region, Govt. of India had established Eastern Regional Power Committee comprising the states of Bihar, Jharkhand, Orissa, West Bengal and Sikkim along with area under DVC. The major constituents of ER grid are the State/UT Transmission and Distribution Utilities, Central Transmission Utility, State and Central sector Generating Companies, DVC, CESC, DPL, IPP's and Private sector Transmission and Distribution Utilities. Figure 3.1 depicts constituents of Eastern Regional grid.

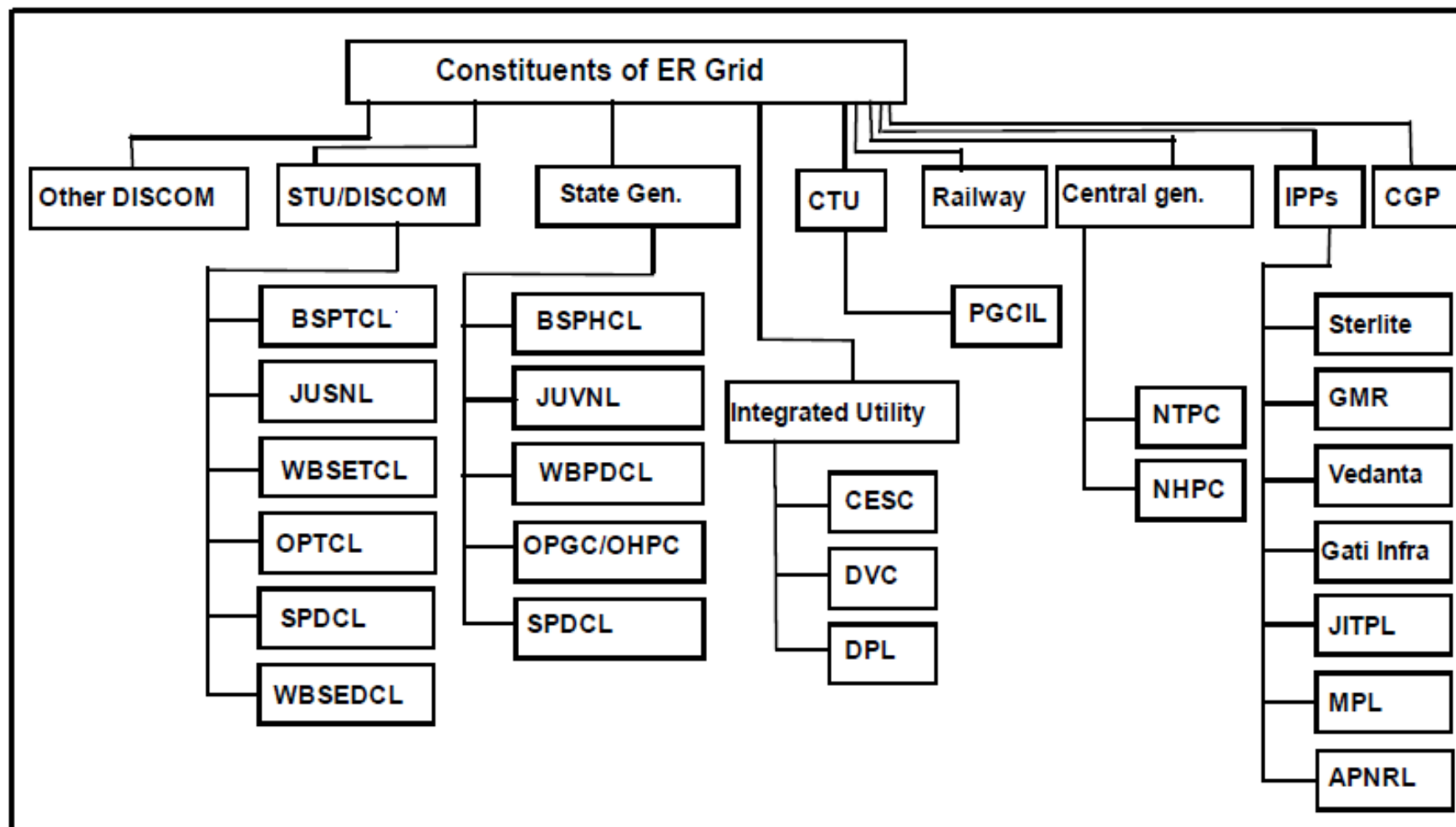


Figure 3.1: Constituents of Eastern Regional grid

3.1 Methodology adopted for performing the load flow analysis

3.1.1 Data Collection Procedure

- In 124th OCC meeting, it was decided that operational load flow study under off peak loading scenario will be carried out for load conditions of 27.08.2016 and 28.08.2016 at 13.00 hrs and 03.00 hrs respectively.
- To collect the Eastern grid network data for operational load flow under off peak scenario a standard data collection format was prepared and forwarded to ERPC.
- Load generation data collection format was finalized by M/s PRDC and uploaded in ERPC portal.
- M/s PRDC has received the network data from most of the constituents in agreed format and remaining is collected from field survey in coordination with ERLDC and SLDC's.

Network data for all the utilities under Eastern region were collected in co-ordination with ERPC and its constituents. The complete Eastern Region Network from 765 kV level to 33 kV buses of 132/33 kV S/S (with the exception where generator is connected to a lower voltage network) is considered in the studies. However, for Sikkim 66 kV system along with 66 kV interconnections are considered. Inter-regional 765 kV, 400 kV, 220 kV and 132 kV transmission lines with Northern, Western, Southern and North-Eastern region is also considered in the studies.

Network update data as collected from ER constituent has been also verified with monthly status report of CEA.

Table 3.1 present the collected/received data status from ERPC and its constituents.

Table 3.1: Data availability status

Constituent of ERPC	State wise Data received*	
	Load data (%)	Network augmentation Data (%)
Bihar	35	0
Jharkhand	82	0
Odisha	93	100
Sikkim	0	0
West Bengal	90	100

Note: Network data includes CTU and STU network details as per state wise location while DVC network details are allocated in Jharkhand and West Bengal as per physical location.

**Utility owners have furnished network data for all elements but the line and transformer parameter data is furnished for 70% elements.*

** SCADA record of 765 & 400 kV line flow and Generation schedule from ERLDC is collected.*

The methodology adopted by the study team for performing the load flow analysis is as given below.

- Configuring the entire Eastern Regional Grid electrical network down to 33 kV (up to 11 kV bus of 66/11 kV S/S in Sikkim) banks of the transmission substations. i.e. transmission system comprising of 765 kV, 400 kV, 220 kV and 132 kV (66 kV S/S in Sikkim) substation buses up to the 33 kV buses at the substations.
- Represented the collective load of the substations at 33 kV buses for Bihar, Jharkhand, Odisha and West Bengal and at 11 kV buses in Sikkim.
- Import from generation located outside the region is considered as a bulk import.
- Railway loads are modeled by considering radially link with grid.
- Slack bus is considered outside the region at the point having a maximum power exchange from eastern grid.
- Generation scheduling is matched with ERLDC's SCADA record.
- Allocation of load to the substations is finally done to match the state wise system demand as per ERLDC's SCADA record.
- Simulation of load flow analysis under off peak scenario is done on the integrated Grid transmission network of Eastern Region.
- Geographical drawings for entire Eastern Regional Grid transmission network along with separate maps of eastern grid constituent states.
- Eastern regional transmission network is simulated under off peak scenario by taking load demand of 27.08.2016 at 13.00 hrs. Currently, the modeled Eastern grid network has been simulated for the loading conditions which are given in Table 3.2.

Table 3.2: ER loading details

Date & Time	27th August 2016, 13:00 hrs
System Demand Met	16109 MW
Total Load	15438 MW
System Loss	671 MW

- Comparison of the simulated results with the available SCADA records has not been carried out due to unavailability of accurate SCADA record concurrent with simulated system demand of 16109 MW.
- Software used : MiP-PSCT

3.2 August 27, 2016 Off-peak system demand condition

The study team has received substation wise load data and SCADA records from the ERLDC and SLDC's of eastern region. The data considered for modeling the transmission network and its sources are given in Table 3.3.

Table 3.3: Source of the data considered for the study

SI No	Data	Source
1	Transformers	Field data and CEA planning criteria
2	Transmission lines / UG cable types	Field data and network data received from CTU, STU and other constituents
3	Lines / UG cable parameters	Data received from CTU, STU and other constituents and CEA planning criteria
4	Loads and Generation	SCADA recordings and Load data received from SLDC's

Note: Transmission lines and Transformers parameters, which are not furnished by CTU's and STU's, is considered as per CEA transmissions planning criteria.

This section of the report presents the basic data considered for the system studies.

3.3 Salient points of CEA planning criteria referred for network modelling and analysis of study results

3.3.1 Transmission line parameters

Table 3.4 provides the transmission line parameters and the thermal loading limit of the transmission lines at various voltage levels considered for the studies.

Table 3.4: Details of transmission line parameters

Conductor Type	Voltage (kV)	Positive Sequence Resistance (ohm/km/ckt)	Positive Sequence Reactance (ohm/km/ckt)	Positive Sequence Suseptance, B/2 (mho/km/ckt)	Zero Sequence Resistance (ohm/km/ckt)	Zero Sequence Reactance (ohm/km/ckt)	Zero Sequence Suseptance, B/2 (mho/km/ckt)	Thermal Rating (MVA)
ACSR Quad Bersimis	765	0.0114	0.2856	2.01E-06	0.2634	1.0534	1.20E-06	3880
ACSR Hexa Zebra	765	0.0123	0.2552	2.27E-06	0.2247	0.9223	1.38E-06	4452
ACSR Quad Moose	400	0.0147	0.2528	2.29E-06	0.2480	1.0000	1.32E-06	1749
ACSR Twin Moose	400	0.0298	0.3320	1.73E-06	0.1619	1.2400	1.12E-06	874
AAAC Twin Moose	400	0.0309	0.3304	1.77E-06	0.1682	1.2368	1.14E-06	840
ACSR Zebra	220	0.0697	0.3978	1.46E-06	0.2048	1.3344	9.14E-07	213
ACSR MOOSE	220	0.0749	0.3993	1.47E-06	0.2200	1.3392	9.20E-07	240
AAAC Zebra	220	0.0749	0.3993	1.47E-06	0.2200	1.3392	9.20E-07	212
800sqmm XLPE Cable	220	0.0321	0.1260	3.23E-05	0.1400	0.0680	3.00E-05	266
ACSR Panther	132	0.1622	0.3861	1.46E-06	0.4056	1.6222	8.99E-07	83
LARK	132	0.1622	0.3861	1.46E-06	0.4056	1.6222	8.99E-07	94
T Snowbird	132	0.0223	0.2900	1.96E-06	0.2840	0.9784	1.36E-06	432
161 sqmm G.F Cable	132	0.1400	0.1873	4.25E-05	0.2700	0.0519	4.25E-05	50
260 sqmm G.F Cable	132	0.0876	0.2167	4.55E-05	0.1695	0.0600	4.55E-05	70
400 sqmm XLPE Cable	220	0.0617	0.1360	2.20E-05	0.2040	0.0830	2.19E-05	100
630 sqmm XLPE Cable	132	0.0391	0.1267	2.27E-05	0.1120	0.0840	2.24E-05	130
800 Sqmm XLPE Cable	132	0.0321	0.1260	3.23E-05	0.1300	0.0680	3.00E-05	160
ACSR DOG	66	0.3274	0.4267	1.36E-06	0.5578	1.3688	9.84E-07	50

Note: Transmission lines parameters, which are not furnished by CTU and STU's, is consider as per CEA transmissions planning criteria.

3.4 Transformer parameters

Actual transformer parameters wherever provided by CTU and STU's is used. In cases where data is not furnished standard data as per CEA transmissions planning criteria given in Table 3.5 is considered.

Table 3.5: Details of transformer parameters

Type of Transformer	Transformer reactance X_t (at its own base MVA)
Generator transformer (GT)	14 – 15 %
Inter-Connecting Transformer (ICT)	12.50%

3.4.1 Voltage limits

The steady-state voltage limits prescribed in CEA's "Transmission Planning Criteria" at different voltage levels are presented in Table 3.6.

Table 3.6: Voltage limits at different voltage levels prescribed in CEA's "Transmission Planning Criteria"

Nominal Voltage (kV)	Normal rating				Emergency rating			
	Maximum		Minimum		Maximum		Minimum	
	kV	pu	kV	pu	kV	pu	kV	pu
765	800	1.05	728	0.95	800	1.05	713	0.93
400	420	1.05	380	0.95	420	1.05	372	0.93
220	245	1.11	198	0.90	245	1.11	194	0.88
132	145	1.10	122	0.92	145	1.10	119	0.90
66	72.5	1.10	60	0.91	72.5	1.10	59	0.89

3.5 Network element statistics for ER Grid

3.5.1 Substation details

The summary of the number of substations present in the Eastern region state wise is presented in Table 3.7 and the complete list of substations along with load considered at each substation is given in Table A of Annexure-I.

Table 3.7: Existing number of sub-station in the ER

Sl. No.	Substation*	State				
		Bihar	Jharkhand	Odisha	Sikkim	W. Bengal
1	765 kV	2	1	2	-	-
2	400 kV	11	7	13	1	12

Sl. No.	Substation*	State				
		Bihar	Jharkhand	Odisha	Sikkim	W. Bengal
3	220 kV	16	15	25	-	38
4	132 kV	88	47	86	4	104
5	66 kV	-	-	-	19	-
Total No. of S/S in ER				491		

Note: If 765/400/220 kV substation has 400/220 kV transformation level also, in that case 765/400/230 kV substation is counted as single 765 kV substation.

**Above listed substation number excludes switching stations and generating stations.*

3.5.2 Transmission line details

The summary of Transmission line data present in the Eastern region is presented in Table 3.8 and the complete list of transmission lines state wise is given in Table B of Annexure-I.

Table 3.8: Summary of transmission line data in the ER

Sl. No.	Voltage (kV)	Line Length (ckm)
1	765	2040
2	400	29983
3	220	17249
4	132	26790
5	66	295

3.5.3 Transformer details

The summary of Transformer data present in the Eastern region is presented below in Table 3.9 and the complete list of substation and their transformation capacity for each constituent state of ER Grid is given in Table A of Annexure-I.

Table 3.9: Summary of transformers capacity in the ER

Sl. No	Voltage Ratio (kV)	Installed Capacity (MVA)
1	765	18000
2	400	32015
3	220	35690
4	132	34926
5	66	212

3.5.4 Generation details

The summary of generator installed capacity present in the Eastern region state wise is presented in Table 3.10 and the complete list of generators is given in Table C of Annexure-I.

Table 3.10: Summary of Generator installed capacity in the ER

Sl. No.	State	Installed capacity (MW)*	
		Thermal	Hydro
1	Bihar	4545	35
2	Jharkhand	5251	289
3	Odisha	15956	2143
4	Sikkim	0	776
5	West Bengal	14155	1265
Total ER		39907	4508
		44415	

**Note: Installed capacity includes central, state, IPP and CPP generations*

3.5.5 HVDC details

The details of the existing converter stations used for HVDC transmission and HVDC Back to Back, considered in the studies are given in Table 3.11 and Table 3.12.

Table 3.11: HVDC Back to Back in the ER

Sl. No.	Parameter	Sasaram B2B	Gazuwaka B2B	
1	Power Rating	1 X 500 MW	1 X 500 MW	1 X 500 MW
2	Number of blocks	1	Block 1	Block 2
3	AC voltage	400 kV	400 kV	400 kV
4	DC voltage	205 kV	205 kV	177 kV
5	Converter transformer (Inverter/Rectifier)	6 X 234 MVA	6 X 234 MVA	6 X 201.2 MVA

Table 3.12: HVDC Link in the ER

Sl. No.	Parameter	Talcher to Kolar
1	Power Rating	2000 MW
2	Number of Poles	2
3	AC voltage	400 kV
4	DC voltage	± 500 kV
5	Converter transformer (Inverter)	6 X 398 MVA
6	Converter transformer (Rectifier)	6 X 398 MVA

3.5.6 Reactor details

The complete list of state wise Series and shunt reactors installed in the Eastern region is presented in Table D and E of Annexure-I respectively.

3.5.7 Load details

The state wise summary of load data considered for the study is given in Table 3.13. Substation wise loading details considered for operational load flow is presented in Table F of Annexure-I.

Table 3.13: Load Details of ER

Sl. No.	Constituents	Load*
1	Bihar	2716
2	Jharkhand	799
3	Odisha	2872
4	Sikkim	43
5	West Bengal	4858
6	DVC	2426
7	CESC	1507
8	DPL	217

**Note: 15438 MW (summation of recorded loads in S/S) on 27.08.2016 at 13:00 hrs in ER grid*

3.6 Generation schedule details for operational load flow

The generation schedule considered was based on the information obtained from the ERLDC and other constituents of ER grid. Power plant wise generation allocation is given in Table 3.14 and graphically represented in figure 3.2.

Table 3.14: Generation schedule Details of ER

Sl.No	State	Station Name	Owned By	Scheduled Generation (MW)
1	Bihar	Muzaffarpur	Joint venture of NTPC & BSEB	100.0
2		Kahalgaon	NTPC	1859
3		Barh		405
4	Jharkhand	Patratu Thermal	JVNL	0
5		Tenughat Thermal	DVC	180
6		Kodarma Thermal		438
7		Chandrapura Thermal		403
8		Panchet		70
9		Mithon Dam		62
10		Bokaro Thermal		148

Sl.No	State	Station Name	Owned By	Scheduled Generation (MW)
11		Adhunik Thermal	APNRL	222
12		Mithon RB Thermal	MPL	416
13	Odisha	Upper Kolab	OHPC	0
14		Indravati		0
15		Rengali		213
16		Hirakud		152
17		Talcher Thermal	NTPC	429
18		IB Thermal	OPGC	390
19		Balimela	OHPC	37
20		Machkund		85
21		Talcher Super Thermal	NTPC	2309
22		Meenakshi Power		40
23		GMR	GMR Kamalanga Energy	536
24		Jindal Thermal	JITPL	1140
25		Sterlite Energy	Vedanta Ltd.	0.0
26		Net CPP Injection to Grid		780
27	Sikkim	Rangit Hydro	NHPC	62
28		Teesta 5 Hydro		330
29		Lagit Hydro	Sikkim Gov.	0.0
30		Meyong Hydro		0.0
31		Rongli Hydro		0.0
32		Chuzachen	Gati Infrastructure Pvt. Ltd	100
33		Jorthang	DANS Energy Pvt. Ltd.	87
34	West Bengal	Bandel Thermal	WBPDCCL	188
35		Santaldih Thermal		177
36		Kolaghat Thermal		671
37		Bakreswar Thermal		899
38		Sagardighi Thermal		495
39		Purulia Pump Storage Hydro	WBSEDCL	300
40		Jaldhaka Hydro		25
41		Rammam Hydro		49
42		Tista Load Dam Hydro	NHPC	0.0
43		Farakka Super Thermal	NTPC	1960
44		Mejia	DVC	1356
45		RTPS		350
46		Durgapur Steel Thermal		389
47		DPL Thermal	DPL	274
48		Budge Budge	CESC	719
49		SRS		45
50		TRS		0
51		Haldia Thermal		538

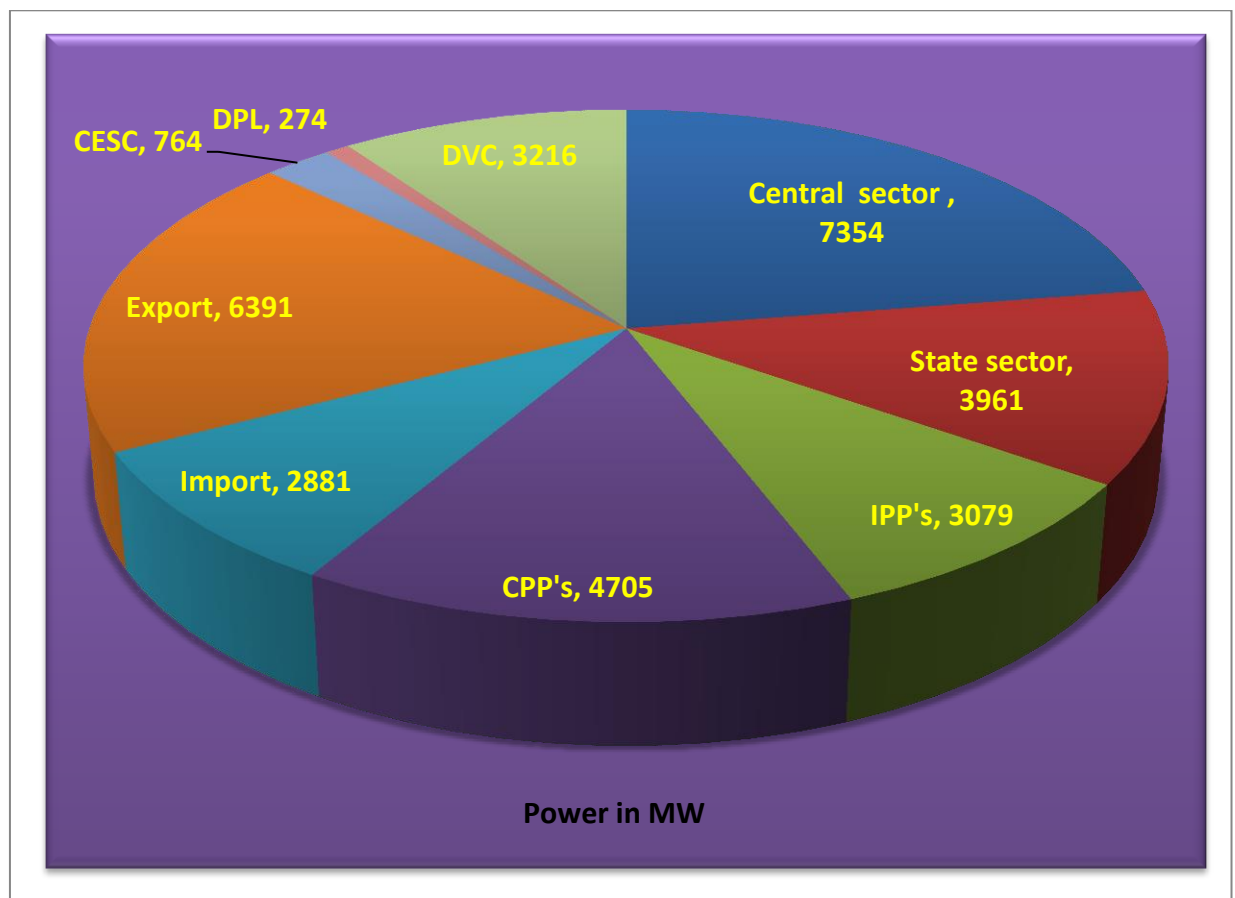


Figure 3.2: Scheduled generation, Import and Export of Eastern Regional grid

4 OPERATIONAL LOAD FLOW STUDY

4.1 Introduction to Load flow analysis

One of the most common computational procedures used in power system analysis is the load flow calculation. The planning, design and operation of power systems require such calculations to analyze the steady state performance of power system under various operating conditions and to study the effects of changes in network configuration. These load flow solutions are performed using computer programs designed specifically for this purpose.

The basic question in the load flow analysis is: “Given the demand at all buses of a known electric power system configuration and the power production at each generator, find the power flow in each line and transformer of the interconnecting network and the voltage magnitude with phase angle at each bus.”

Analyzing the solution of load flow analysis for numerous conditions helps ensure that the power system is designed to satisfy its performance criteria while incurring the most favorable investment and operation costs. Some examples of the uses of load flow studies are to determine,

- Component or circuit loading.
- Steady state bus voltages.
- Active and Reactive power flows.
- Transformers tap settings.
- System losses.
- Performance under emergency conditions.

Modern systems are complex and have many paths or branches over which power can flow. Such systems form networks of series and parallel paths. Electric power flow in these networks divides among the branches until a balance is reached in accordance with established circuit theory.

Computer programs to solve load flows are divided into two type's static (offline) and dynamic (real time). Most load flow studies for system analysis are based on static network models. Real time load flows (online) that incorporate data input from the actual networks are typically used by utilities in Supervisory Control and Data Acquisition (SCADA) systems. Such systems are used primarily as operating tools for optimization of generation, VAr control, dispatch, losses, and tie line flow control. This discussion is concerned with only static network models and their analysis.

A load flow calculation determines the state of the power system with respect to a given load and generation schedule. It represents a steady state condition which is assumed to remain fixed for some time. In reality, line flows and bus voltages fluctuate in small amounts because load changes due to lights, motors, and other loads being turned on or off in the system. However, these small fluctuations are ignored in calculating the steady state effects on system equipment. As the load distribution, and hence power flow in the network vary considerably during different time periods, it may be necessary to obtain load flow solutions representing different system conditions such as peak load, average load or light load. Generally, these solutions provide,

- Optimum operating modes for normal conditions, such as proper setting of voltage control devices, or how the system will respond to abnormal conditions, such as outage of transformers or lines.
- When the new equipment additions are needed.
- Effectiveness of new alternatives to solve present deficiencies and meet future requirements.

The load flow model is also the basis for several other types of studies such as short circuit, stability, motor starting, and harmonic studies. The load flow model supplies the network data and an initial steady state condition for these studies.

The present study is carried out to determine the power flows at different lines/transformers and to compute the voltage profile at different buses of the existing system. The system configuration considered for the study and simulation results are explained in the subsequent sections.

4.2 Load Generation Balance from the results of operational load flow analysis

The detail of load generation balance of ER is given in Table 4.1 and state wise load generation balance is presented in Table 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 and 4.8. The detailed load and generation data is given in Annexure-I.

Table 4.1: Load generation balance Details of ER

Sl. No.	Description	Quantity (MW)
1	Generation	19619
2	Import	2881
Total (Generation + Import)		22500
3	Loss	671*(2.98%)
4	Load	15438
Demand Met (Load + Loss)		16109
5	Export	6391
Total System (Load + Export + Loss)		22500

**Note: Only for 765 kV, 400 kV, 220 kV, 132 kV and 66 kV transmission network.*

Table 4.2: Load generation balance details of Bihar

Sl. No.	Description	Quantity (MW)
1	Generation	2364
2	Import	3208
Total Total(Generation + Import)		5572
3	Loss	129* (2.32%)
4	Load	2716
Demand Met (Load + Loss)		2846
5	Export	2726
Total (Load + Export + Loss)		5572

**Note: Only for 765 kV, 400 kV, 220 kV and 132 kV transmission network*

Table 4.3: Load generation balance details of Jharkhand

Sl. No.	Description	Quantity (MW)
1	Generation	818
2	Import	3437
Total (Generation + Import)		4255
3	Loss	74*(1.73%)
4	Load	799
Demand Met (Load + Loss)		872

Sl. No.	Description	Quantity (MW)
5	Export	3383
Total (Load + Export + Loss)		4255

**Note: Only for 765 kV, 400 kV, 220 kV and 132 kV transmission network*

Table 4.4: Load generation balance details of Odisha

Sl. No.	Description	Quantity (MW)
1	Generation	6111
2	Import	710
Total (Generation + Import)		6822
3	Loss	199*(2.92%)
4	Load	2872
Demand Met (Load + Loss)		3071
5	Export	3751
Total (Load + Export + Loss)		6822

**Note: Only for 765 kV, 400 kV, 220 kV and 132 kV transmission network*

Table 4.5: Load generation balance details of Sikkim

Sl. No.	Description	Quantity (MW)
1	Generation	579
2	Import	0
Total (Generation + Import)		579
3	Loss	8*(1.31%)
4	Load	43
Demand Met (Load + Loss)		51
5	Export	528
Total (Load + Export + Loss)		579

**Note: Only for 400 kV, 132 kV and 66 kV transmission network*

Table 4.6: Load generation balance details of West Bengal

Sl. No.	Description	Quantity (MW)
1	Generation	5402
2	Import	3360
Total (Generation + Import)		8762
3	Loss	168*(1.92%)
4	Load	4858
Demand Met (Load + Loss)		5026
5	Export	3736
Total (Load + Export + Loss)		8762

**Note: Only for 400 kV, 220 kV and 132 kV transmission network*

Table 4.7: Load generation balance details of DVC

Sl. No.	Description	Quantity (MW)
1	Generation	3307
2	Import	1231
Total (Generation + Import)		4538
3	Loss	72*(1.60%)
4	Load	2426
Demand Met (Load + Loss)		2498
5	Export	2040
Total (Load + Export + Loss)		4538

**Note: Only for 400 kV, 220 kV and 132 kV transmission network*

Table 4.8: Load generation balance details of CESC

Sl. No.	Description	Quantity (MW)
1	Generation	764
2	Import	760
Total (Generation + Import)		1524
3	Loss	17*(1.12%)
4	Load	1507
Demand Met (Load + Loss)		1524
5	Export	0
Total (Load + Export + Loss)		1524

**Note: Only for 220 kV and 132 kV transmission network*

Table 4.9: Load generation balance details of DPL

Sl. No.	Description	Quantity (MW)
1	Generation	274
2	Import	3
Total (Generation + Import)		277
3	Loss	4*(1.47%)
4	Load	217
Demand Met (Load + Loss)		221
5	Export	56
Total (Load + Export + Loss)		277

**Note: Only for 220 kV and 132 kV transmission network.*

A block diagram illustrating the interstate and inter regional power exchange of ER is presented in figure 4.1

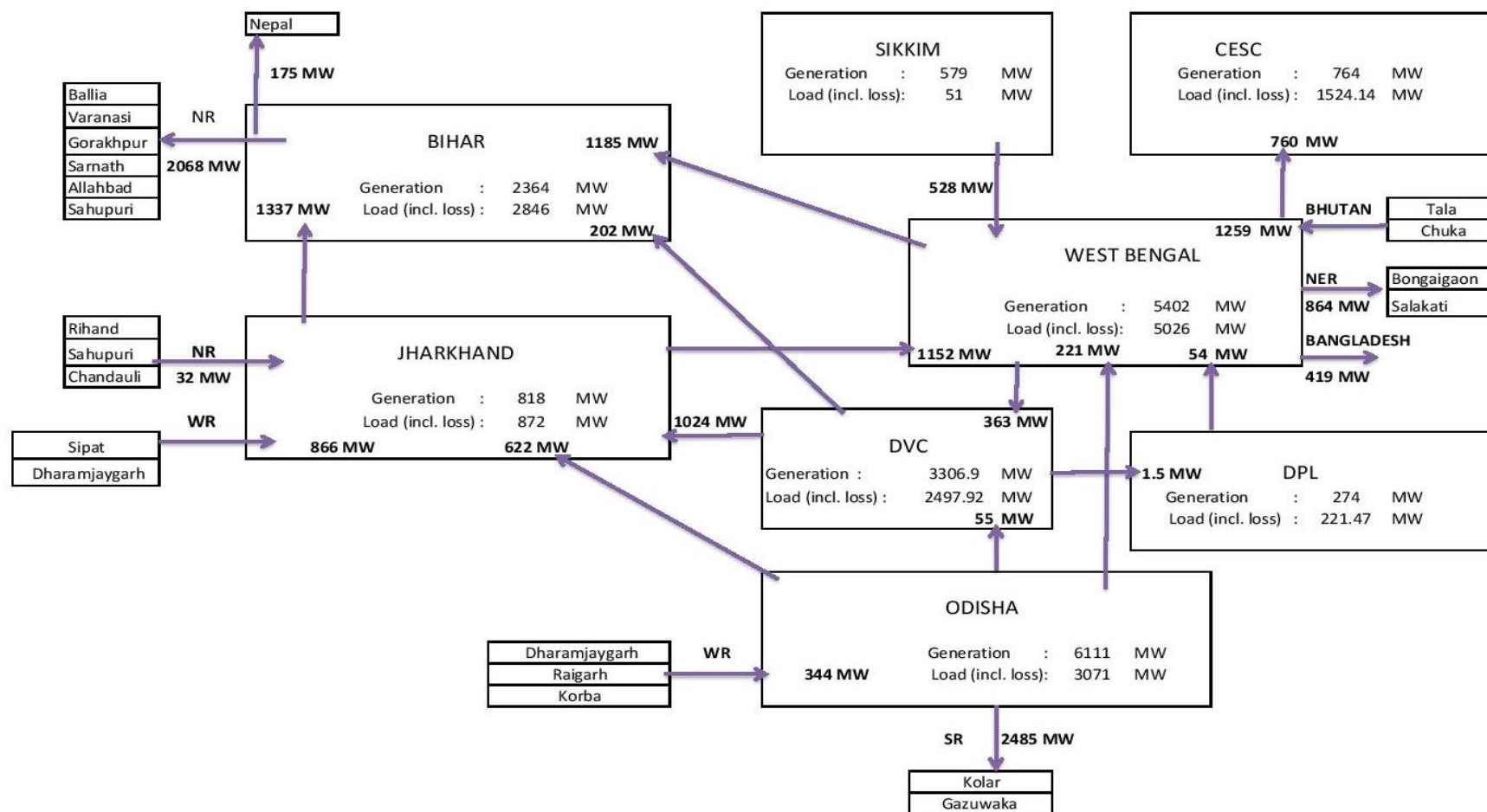


Figure 4.1: Block diagram of load generation balance of ER

Note: Inter regional exchange is shown as net exchange

4.3 Line loading conditions

Under operational load flow study, number of lines whose loading is below 5% and above 80% is presented in Table 4.10 for complete ER grid and Table 4.11 to 4.18 for constituent state of ER grid.

Table 4.10: Percentage loading details of lines of Eastern Region

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	765	14.50	5.30	8.94	0	0
2	400	65.20	3.70	20.89	0	4
3	220	83.90	0.20	30.02	8	28
4	132	99.8	0.10	30.12	29	87
5	66	51.90	0.10	11.87	0	9

Table 4.11: Percentage loading details of lines of Bihar

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	765	14.50	6.00	11.17	0	0
2	400	35.20	5.10	18.80	0	0
3	220	81.60	6.80	39.18	2	0
4	132	95.80	0.40	28.84	8	25

Table 4.12: Percentage loading details of lines of Jharkhand

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	765	12.20	11.70	11.95	0	0
2	400	39.20	6.20	16.40	0	0
3	220	59.10	18.00	36.76	0	0
4	132	99.00	0.90	20.72	1	12

Table 4.13: Percentage loading details of lines of Odisha

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	765	6.20	5.30	5.75	0	0
2	400	65.20	9.00	26.04	0	0
3	220	81.50	0.40	26.09	2	15
4	132	99.8	0.10	26.92	6	31

Table 4.14: Percentage loading details of lines of Sikkim

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	400	26.40	18.90	22.65	0	0
2	220	24.10	16.90	20.23	0	0
3	132	59.4	4.2	34.02	0	1
4	66	51.90	0.10	9.26	0	9

Table 4.15: Percentage loading details of lines of West Bengal

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	400	48.10	4.30	24.40	0	1
2	220	83.90	0.20	32.47	4	4
3	132	97.20	0.10	36.85	8	10

Table 4.16: Percentage loading details of lines of DVC

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	400	39.2	3.7	13.44	0	3
2	220	78	1.2	28.5	0	9
3	132	66.8	0.1	22.39	0	8

Table 4.17: Percentage loading details of lines of CESC

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	220	69.6	43	52.17	0	0
2	132	96.9	6.8	45.84	6	0

Table 4.18: Percentage loading details of lines of DPL

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of lines loaded 80% and above	No of Lines loaded 5% and below
1	132	73.30	15.80	31.74	0	0

Note: As observed in operational load flow that no line is loaded 100% and above.

4.4 Transformer loading conditions

Under operational load flow study, number of transformers whose loading is below 20% and above 80% is presented in Table 4.19 for complete ER grid and Table 4.20 to 4.27 for constituent state of ER grid.

Table 4.19: Percentage loading details of Transformers of Eastern Region

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	765	18.8	6.1	12.62	0	6
2	400	82.3	0.9	46.20	4	14
3	220	93.2	0.1	48.16	3	53
4	132	98.2	1	37.86	30	153
5	66	36.4	16.3	29.01	0	10

Table 4.20: Percentage loading details of Transformers of Bihar

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	765	17	13.1	15.05	0	4
2	400	74.9	6.3	35.13	0	4

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
3	220	79.5	18.7	42.84	0	3
4	132	85.6	6.5	38.08	3	29

Table 4.21: Percentage loading details of Transformers of Jharkhand

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	765	18.8	18.8	18.80	0	2
2	400	37	0.9	28.48	0	2
3	220	47.5	1.9	30.78	0	2
4	132	56.8	4.7	27.28	0	22

Table 4.22: Percentage loading details of Transformers of Odisha

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	765	6.1	2.6	4.00	0	0
2	400	80.8	13.4	37.77	1	8
3	220	79.9	0.1	31.15	0	45
4	132	90.6	1	32.97	2	58

Table 4.23: Percentage loading details of Transformers of Sikkim

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	400	55	55	55.00	0	0
2	220	59.7	12.6	36.15	0	3
3	132	65.4	8.1	37.80	0	0
4	66	33.9	16.3	21.62	0	10

Table 4.24: Percentage loading details of Transformers of West Bengal

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	400	82.3	26	58.79	3	0
2	220	72.2	22.5	33.31	0	0
3	132	98.2	1.1	43.21	15	22
4	66	36.4	36.4	36.40	0	0

Table 4.25: Percentage loading details of Transformers of DVC

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	400	70.5	53.5	62	0	0
2	220	93.2	6.4	38.50	2	7
3	132	96.2	7	43.37	6	10

Table 4.26: Percentage loading details of Transformers of CESC

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	220	76.8	76.8	76.80	0	0
2	132	88.7	13.2	48.42	3	4

Table 4.27: Percentage loading details of Transformers of DPL

Sl.No	Voltage Grade (kV)	Loading Percentage				
		Max	Min	Avg	No of Transformers loaded 80% and above	No of Transformers loaded 20% and below
1	220	86.1	86.1	86.10	1	0
2	132	86	5.3	31.73	1	8

4.5 Voltage profile

Bus Voltage Profile for Eastern Region grid is presented in Table 4.28

Table 4.28: Bus Voltage Profile for Eastern Region

Sl.No	Voltage Grade (kV)	Bus Voltage In pu		
		Max	Min	Average
1	765	1.002	0.985	0.994
2	400	1.044	0.953	1.001
3	220	1.025	0.947	0.990
4	132	1.026	0.903	0.975
5	66	1.027	0.923	0.998

Note: As observed in operational load flow study that bus voltage of ER grid is within the acceptable limit (as per CEA grid code).

4.6 Analysis of the load flow study results

- Power map of ER grid along with separate power map of constituent states (Bihar, Jharkhand, Odisha, Sikkim and West Bengal) for operational load flow study is presented in Annexure-II.
- Line loading details are presented in Table G of Annexure-II.
- The voltages at all the bus bars (765 kV, 400 kV, 220 kV, 132 kV and 66 kV) were within the standard tolerance limits (as per CEA grid code).
- The line /Transformers were loaded within the rated capacity under off-peak operating condition of 27th August 2016 at 13.00 hrs.
- Maximum inter regional power exchange is 2544 MW to NR.

5 SHORT CIRCUIT STUDIES

Even the most carefully designed power systems may be subjected to damaging arc blast or overheating and the explosive magnetic forces associated with high magnitude currents flowing during a short circuit. To ensure that circuit's protective equipment can isolate faults quickly and minimize system component damage, personal hazard and outage severity, it is essential that a short circuit study be included in the electrical design of new industrial and commercial power systems, and for modifications to existing system. There are five possibilities for a short circuit in three-phase system.

- 3-phase to ground fault.
- Single line to ground fault.
- Line to line fault.
- Double line to ground fault.
- Open conductor fault.

If a short circuit of one type is not interrupted promptly, it often progresses to another type, which generally results in more severe damage. For example in a solidly grounded system, a single line to ground fault, if not interrupted, can quickly escalate to a double line to ground or a three phase to ground fault. The choice of study that is required for a particular system is a matter of engineering judgment based on an analysis of the basic single line diagram and determination of the specific purpose of the study.

For the three-phase industrial and commercial power systems, the most common study is the calculation of three-phase (balanced) short circuit current which is more severe compared to other faults, specifically for comparison with switching equipment capability. The short circuit current determined from this type of study generally represents the highest value at a particular location in the system. It is important to realize that single line to ground or double line to ground short circuit current magnitude can exceed three-phase short circuit current under certain conditions. This condition may arise near,

- Solidly grounded synchronous machines.
- Solidly grounded star connection of a delta-star transformer of the three-phase core design.
- Grounded star-delta tertiary autotransformers.

- Grounded star-delta tertiary three winding transformers.

In system where any of these machines or transformer connections exists, it may be necessary to conduct a single line to ground short circuit study. Medium and high voltage circuit breakers have 15% higher interrupting capability for single line to ground short circuits than for phase to phase or three phase short circuits. This difference must be taken into account when comparing short circuit duty with equipment ratings. Further, future network growth (about 20% increases in result obtained through study) has to be accounted while considering the fault levels for equipment ratings.

5.1 Short circuit study result analysis

The detailed results of the Short circuit study for the three phases to ground fault and single line to ground faults are tabulated in Table H and presented in Annexure-III.

Based on the detailed analysis, it is observed that

- For 400 kV and 220 kV voltages, 3-phase fault level & SLG fault level at some of the substations are at the critical level. Fault levels which are more than 80% of breaker rating are listed in Table 5.1 and Table 5.2.
- It is observed from the results of short circuit studies that, the fault MVA is exceeding the breaker capacity in following buses:
 - **Bihar:** Kahalgaon 400 kV
 - **Jharkhand:** Maithon 400 kV
- For 765 kV, 132 kV & 66 kV voltage level, there are no violation in the fault level.

Table 5.1: 3-Ph fault levels > 80% of breaker rating

Sl.No.	Substation Name	Rated Voltage (kV)	3-Phase fault (MVA)	Fault Current (kA)
1	Meramundali	400	27108.0	39.01
2	TTPS	220	13438.4	35.27
3	Budhipadar	220	14259.8	37.42
4	NALCO	220	13646.9	35.81
5	BSSL	220	11211.2	29.42
6	Bidhannagar	220	13268.5	34.82
7	Parulia	400	24895.5	35.93
8	DTPS (Waria)	132	6038.8	26.41

Sl.No.	Substation Name	Rated Voltage (kV)	3-Phase fault (MVA)	Fault Current (kA)
9	Kahalgaon NTPC	400	29907.5	43.17
10	Maithon	400	32198.7	46.48

Table 5.2: SLG fault levels > 80% of breaker rating

Sl.No.	Substation Name	Rated Voltage (kV)	SLG fault (MVA)	Fault Current (kA)
1	Meramundali	400	24817.5	35.82
		220	12284.1	32.23
2	Budhipadar	220	14000.8	36.74
3	Vedanta	220	13036.0	34.21
4	NALCO	220	14100.9	37.01
5	BSSL	220	11040.4	28.97
6	Bidhannagar	220	13621.0	35.75
7	DTPS (Waria)	132	6262.5	27.39
8	Mejia	220	12944.2	33.97
9	DPL	132	6467.6	28.29
10	Kahalgaon NTPC	400	28745.8	41.49

Note: In some of the Generating stations the SLG fault rating is exceeding 80% while the three phase fault rating is within 80% of breaker capacity.

6 CONCLUSION

Based on the operational load flow studies carried out for aforesaid condition following observation are made,

- The voltages at all the bus bars (765 kV, 400 kV, 220 kV, 132 kV and 66 kV) were within the standard tolerance limits (as per CEA grid code).
- The line/transformers were loaded within the rated capacity under off peak operating condition of 27th August 2016 at 13.00 hrs.
- Maximum inter regional power exchange is 2544 MW to NR.
- It is observed that short circuit levels are critical at some of the substations and violating at certain locations. Such cases are listed above in section 5.1.
- Bus splitting is suggested for above substations. Breaker upgradation may also be considered during substation renovations.

The network modelling for operational load flow and short circuit study and the results will provide the base for the subsequent protection system analysis and calculation. This will also provide the base for reactive power compensation of ER grid.

ANNEXURE I – EXISTING EASTERN REGION TRANSMISSION NETWORK AND LOAD DETAILS

Table A: State wise list of substations present in the Eastern region grid

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
Bihar						
765kV Level						
1	Sasaram	765/400	1	1500	1500	PGCIL
		400/220	1	315	315	
			1	500	500	
		132/33	2	10	20	
2	Gaya	765/400	3	1500	4500	PGCIL
		400/220	1	315	315	
			1	500	500	
400kV Level						
1	Banka	400/132	2	200	400	PGCIL
2	Barh	400/132	2	200	400	NTPC
3	Biharsharif	400/220	3	315	945	PGCIL
4	Kahalgaon	400/132	2	200	400	NTPC
5	Muzaffarpur	400/220	2	315	630	PGCIL
			1	500	500	
		220/132	1	100	100	
6	New Purnea	400/220	1	315	315	
			1	500	500	
7	Patna	400/220	2	315	630	
8	Lakhisarai	400/132	2	200	400	
9	Sasaram B2B	400/(93/√3)/93	3	234/117/117		
10	Kishanganj	400/220	2	500	1000	
11	Nabinagar Rly	400/132	2	200	400	Railway
220kV Level						
1	Purnea	220/132	3	160	480	PGCIL
2	Arrah	220/132	1	160	160	
			2	100	200	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
3	Biharshariff	220/132	3	150	450	BSPTCL
		132/33	1	20	20	
4	Bodhgaya	220/132	4	150	600	
		220/132	1	160	160	
		132/33	3	50	150	
5	Darbhanga new	220/132	2	160	320	
6	Dehri	220/132	4	100	400	
		132/33	2	50	100	
7	Fatuha	220/132	5	100	500	
		132/33	3	50	150	
8	Gopalganj	220/132	3	100	300	
		132/33	3	50	150	
9	Khagaul	220/132	4	100	400	
		132/33	5	50	250	
10	Begusarai	220/132	4	100	400	
		132/33	3	50	150	
11	Sipara	220/132	2	150	300	
		220/132	1	160	160	
		132/33	2	50	100	
12	Hazipur New	220/132	2	100	200	
13	Madhepura	220/132	3	100	300	
		132/33	2	20	40	
14	Pusauli New	220/132	2	150	300	
		132/33	2	50	100	
15	Sonenagar	220/132	2	160	320	
		132/33	2	50	100	
16	Muzaffarpur (MTPS)	220/132	3	100	300	
132kV Level						
1	Arrah	132/33	1	20	20	BSPTCL
			3	50	150	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
2	Ataula (Arwal)	132/33	2	20	40	
3	Aurangabad	132/33	2	20	40	
4	Banjari	132/33	3	20	60	
5	Banka	132/33	3	20	60	
6	Barauni TPS	132/33	1	50	50	
			2	20	40	
7	Barh	132/33	1	20	20	
			1	50	50	
8	Baripahari	132/33	2	50	100	
9	Belaganj	132/33	2	20	40	
10	Bettiah	132/33	2	20	40	
			1	50	50	
11	Bihta	132/33	3	50	150	
12	Bikramganj	132/33	2	20	40	
			1	50	50	
13	Buxar	132/33	2	20	40	
			1	50	50	
14	Chandauti (Gaya)	132/33	2	50	100	
		132/25	2	13.35	26.7	
15	Chhapra	132/33	2	20	40	
			1	50	50	
16	Darbhangha (old)	132/33	2	50	100	
17	Dhaka	132/33	3	20	60	
18	Dalsingsarai	132/33	2	20	40	
19	Digha	132/33	3	50	150	
20	Dumraon	132/33	1	20	20	
			1	50	50	
21	Ekma	132/33	1	20	20	
22	Ekanga Sarai (Ekanagar)	132/33	3	20	60	
23	Forbeshganj	132/33	1	20	20	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
			1	50	50	
24	Goh	132/33	2	20	40	
25	Gangwara	132/33	2	50	100	
26	Gaighat	132/33	2	50	100	
27	Hazipur	132/33	3	50	150	
28	Hulasganj	132/33	2	20	40	
29	Harnaut	132/33	2	20	40	
30	Hathidah	132/33	3	20	60	
31	Imamganj	132/33	2	20	40	
32	Jagdishpur	132/33	2	20	40	
33	Jandaha	132/33	2	20	40	
34	Jainagar	132/33	3	20	60	
35	Jakkanpur	132/33	4	50	200	
			1	20	20	
36	Jamalpur	132/33	2	50	100	
37	Jamui	132/33	2	20	40	
38	Jehanabad	132/33	2	20	40	
39	Kahalgaon	132/33	2	20	40	
			2	50	100	
40	Karmnasa	132/33	2	50	100	
			1	20	20	
		132/25	1	21.6	21.6	
			1	20	20	
41	Kataiya	132/33	3	20	60	
42	Katihar	132/33	3	20	60	
			1	50	50	
43	Katra	132/33	3	50	150	
44	Kusheshwarsthan	132/33	2	20	40	
45	Kochas	132/33	2	20	40	
46	Karbigahiya	132/33	4	50	200	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
47	Kudra	132/33	2	20	40	
48	Khagaria	132/33	2	20	40	
			1	50	50	
49	Kishanganj	132/33	1	50	50	
			1	20	20	
50	Lakhisarai	132/33	3	20	60	
51	Madhubani	132/33	2	20	40	
52	Masaurhi	132/33	2	20	40	
53	Mithapur	132/33	2	50	100	
54	Mohania	132/33	1	50	50	
			1	20	20	
55	Motihari	132/33	1	20	20	
			1	50	50	
56	Masrakh	132/33	2	20	40	
57	Muzaffarpur	132/33	3	50	150	
58	Nalanda	132/33	2	20	40	
59	Naugachhia	132/33	3	20	60	
60	Nawada	132/33	1	20	20	
			3	50	150	
61	Pandaul	132/33	2	20	40	
			1	50	50	
62	Phulparas	132/33	2	20	40	
63	Purnea	132/33	1	20	20	
			2	50	100	
64	Rafiganj	132/33	1	50	50	
			1	20	20	
65	Rajgir	132/33	2	20	40	
66	Ramnagar	132/33	2	20	40	
67	Raxaul	132/33	2	20	40	
68	Remi nagar (Runni Saidpur)	132/33	2	20	40	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		
69	Sherghati	132/33	2	20	40		
70	SKMCH	132/33	2	50	100		
71	Sonebarsa	132/33	2	20	40		
72	Sabour	132/33	3	50	150		
73	Saharsa	132/33	1	20	20		
74	Samastipur	132/33	2	20	40		
75	Sasaram	132/33	2	50	100		
76	Shekhpura	132/33	2	20	40		
77	Sheetalpur	132/33	2	20	40		
78	Sitamarhi	132/33	3	50	150		
79	Siwan	132/33	1	20	20		
			2	50	100		
80	Sonenagar	132/33	1	50	50		
			1	20	20		
		132/25	1	21.6	21.6		
			1	20	20		
81	Sultanganj	132/33	2	20	40		
			2	50	100		
82	Supaul	132/33	3	20	60		
83	Tehta	132/33	2	20	40		
84	Tekari	132/33	2	20	40		
85	Udaikishanganj	132/33	2	20	40		
86	Vaishali	132/33	2	20	40		
87	Valmikinagar	132/33	1	10	10		
88	Wazirganj	132/33	2	20	40		
Jharkhand							
765kV Level							
1	Ranchi New	765/400	2	1500	3000	PGCIL	
400kV Level							
1	Jamshedpur	400/220	2	315	630	PGCIL	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
2	Maithon	400/220	2	315	630	
3	Ranchi	400/220	2	315	630	
4	Chaibasa	400/220	2	315	630	
5	Koderma (KTPS)	400/220	2	315	630	DVC
		220/132	2	150	300	
6	BTPS-A (Bokaro)	400/220/33	2	315	630	
7	TISCO	400/220	2	315	630	
220kV Level						
1	Chandil	220/132	4	100	400	JUSNL
2	Chaibasa	220/132	2	150	300	
		132/33	2	50	100	
3	Hatia New	220/132	3	150	450	
4	Lalmatiya	220/132	1	100	100	
		132/33	1	20	20	
			2	50	100	
5	PTPS	220/132	2	150	300	
6	Ramachandrapur	220/132	3	150	450	
7	TTPS	220/132	2	250	500	
8	Dumka (New)	220/132	2	150	300	
9	BTPS-B (Bokaro)	220/132	2	150	300	DVC
		132/33	2	50	100	
10	CTPS	220/132/11	3	150	450	
		132/33	2	80	160	
11	Giridhi	220/132/33	2	150	300	
		220/33	2	80	160	
		132/33	3	80	240	
12	Jamshedpur	220/132/33	2	150	300	
		132/33	3	50	150	
13	Ramgarh	220/132	2	150	300	
		132/33	2	80	160	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
			1	50	50	
14	Dhanbad	220/33	2	80	160	
		220/132				
15	Kalyanswari	220/132/33	2	150	300	
		220/132/33	1	160	160	
		132/33	2	50	100	
132kV Level						
1	Maniqui	132/33	2	50	100	JUSNL
2	Adityapur	132/33	4	50	200	
3	Chakradharpur	132/33	1	50	50	
4	Dalbhumgarh	132/33	2	50	100	
5	Chaibasa	132/33	1	25	25	
6	Manoharpur	132/33	2	50	100	
7	Deogarh	132/33	3	50	150	
8	Dumka	132/33	2	50	100	
9	Garhwa Road	132/33	1	50	50	
			1	20	20	
10	Goelkara	132/33	1	20	20	
11	Golmuri	132/33	2	50	100	
12	Gumla	132/33	2	20	40	
13	Hatia old	132/33	4	50	200	
14	Tamar	132/33	2	50	100	
15	Madhupur	132/33	2	50	100	
16	Sikidri	132/33	2	20	40	
17	Jadugoda	132/33	2	20	40	
			1	50	50	
18	Jamtara	132/33	1	50	50	
			1	20	20	
19	Japla	132/33	2	20	40	
20	Kamdara	132/33	2	20	40	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
			1	20	20	
21	Kanke	132/33	2	50	100	
22	Kendposi	132/33	2	20	40	
			1	50	50	
23	Latehar	132/33	2	50	100	
24	Lohardaga	132/33	2	50	100	
25	Namkum	132/33	4	50	200	
26	Nowamundi	132/33	1	50	50	
27	Pakur	132/33	2	50	100	
28	Rajkharsawan	132/33	1	20	20	
			1	50	50	
29	Sahebgunj	132/33	2	50	100	DVC
30	Daltonganj	132/33	2	50	100	
31	Koderma	132/33	1	80	80	
			1	50	50	
		132/25	1	25	25	
32	Nimiaghat	132/33	2	31.5	63	
		132/25	2	25	50	
33	North Karnapura	132/33	2	50	100	
34	Pradhankanta	132/33	No Load			
35	Patherdhi	132/33	2	80	160	
		132/33	1	50	50	
		132/25	2	12.5	25	
36	Patratu (DVC)	132/33	1	31.5	31.5	
37	Putki	132/33	3	80	240	
38	Barhi	132/33	1	50	50	
		132/33	1	31.5	31.5	
39	Gola	132/33	1	31.5	31.5	
		132/33	1	20	20	
40	Hazaribag Road	132/33	No load			

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		
41	Hazaribagh	132/33	2	50	100		
42	Kumardhubi	132/33	2	50	100		
			1	80	80		
		132/25	2	25	50		
43	Konar	132/33	1	20	20		
44	Mosabani	132/33	1	31.5	31.5		
		132/33	1	20	20		
45	Biada	132/33	2	80	160		
46	MHS-Right bank	132/33	2	50	100		
47	Panchet	132/33	1	50	50		
Odisha							
765 kV Level							
1	Jharsuguda	765/400/33	2	1500	3000	PGCIL	
2	Angul	765/400	4	1500	6000		
400 kV Level							
1	Bisra	400/220	2	315	630	PGCIL	
2	Bolangir	400/220/33	2	315	630		
3	Indravati	400/220/33	2	315	630		
4	Jaypore	400/220/33	2	315	630		
5	Kaniha	400/220	2	315	630		
6	Keonjhar	400/220/33	2	315	630		
7	Kuchei/Baripada	400/220	2	315	630		
		220/132	2	160	320		
8	Mendhasal	400/220	2	315	630	OPTCL	
		220/33	1	20	20		
9	Meramundali	400/220	2	315	630	PGCIL	
		220/132	3	100	300	OPTCL	
		132/33	1	12.5	12.5		
10	Rengali	400/220	2	315	630	PGCIL	
11	New Duburi	400/220	2	315	630	OPTCL	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
12	Sterlite	400/220	2	315	630	SEL
13	Pandiabil	400/220	2	500	1000	PGCIL
220 kV Level						
1	Atri	220/132	2	160	320	OPTCL
2	Balasore	220/132	2	160	320	
		132/33	2	63	126	
		132/33	1	40	40	
3	Bhadrak	220/132	3	100	300	
		132/33	2	63	126	
		132/33	1	40	40	
4	Bidanasi	220/132	1	160	160	
		220/132	2	100	200	
		132/33	2	63	126	
		132/33	1	40	40	
5	Bolangir new	220/132	2	160	320	
		132/33	1	12.5	12.5	
6	Budhipadar	220/132	2	160	320	
		132/33	1	20	20	
		132/33	1	12.5	12.5	
7	Chandaka	220/132	2	100	200	
		220/132	2	160	320	
		132/33	2	63	126	
		132/33	1	40	40	
8	Duburi	220/132	3	100	300	
		220/33	2	40	80	
		132/33	1	5	5	
9	Jayanagar	220/132	2	160	320	
		132/33	2	20	40	
		132/33	1	12.5	12.5	
10	Joda	220/132	3	100	300	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
		132/33	3	20	60	
		132/33	1	40	40	
11	Katapalli	220/132	1	160	160	
		220/132	2	100	200	
		132/33	1	40	40	
		132/33	2	20	40	
12	Lapanga	220/132	2	160	320	
13	Mendhasal	220/132	2	100	200	
14	Narendrapur	220/132	1	100	100	
		220/132	2	160	320	
		132/33	2	40	80	
		132/33	1	20	20	
15	Paradip	220/132	1	160	160	
		220/132	1	50	50	
		220/132	1	100	100	
		132/33	2	20	40	
		132/33	1	12.5	12.5	
16	Talcher (TTPS)	220/132	2	160	320	
17	Tarkera	220/132	4	100	400	
18	Theruvali	220/132	2	100	200	
		132/33	2	12.5	25	
19	Bhanjanagar	220/132	2	160	320	
20	Puri (Samangara)	220/132	1	160	160	
21	Balimela	220/33	1	20	20	
		220/33	1	40	40	
22	Barkote	220/33	2	40	80	
23	Nayagarh	220/33	1	40	40	
		220/33	2	20	40	
24	Laxmipur	220/33	1	20	20	
25	Rengali	220/33	2	20	40	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
132 kV Level						
1	Akhusingh	132/33	2	12.5	25	OPTCL
2	Anandapur	132/33	2	12.5	25	
		132/33	1	20	20	
3	Angul	132/33	2	40	80	
		132/33	1	20	20	
4	Argul	132/33	1	40	40	
		132/33	1	20	20	
5	Atri	132/33	1	20	20	
6	Aska	132/33	3	40	120	
7	Balugaon	132/33	1	40	40	
		132/33	1	20	20	
		132/33	1	12.5	12.5	
8	Banki	132/33	2	20	40	
9	Barbil	132/33	2	12.5	25	
10	Baragarh	132/33	3	40	120	
11	Baripada	132/33	3	40	120	
12	Barpalli	132/33	1	20	20	
		132/33	1	40	40	
13	Berhampore	132/33	2	40	80	
		132/33	1	20	20	
14	Basta	132/33	1	12.5	12.5	
		132/33	1	20	20	
15	Bhanjanagar	132/33	2	40	80	
		132/33	1	16	16	
16	Bhawanipatna	132/33	2	12.5	25	
17	Bhubaneswar	132/33	3	63	189	
18	Boinda	132/33	1	20	20	
		132/33	2	12.5	25	
19	Boudh	132/33	1	20	20	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
20	Bolangir	132/33	2	40	80	
		132/33	1	12.5	12.5	
21	Brajrajnagar	132/33	1	40	40	
		132/33	3	20	60	
22	Chainpal	132/33	2	40	80	
		132/33	1	20	20	
23	Chandikhole	132/33	3	20	60	
24	Chhandpur	132/33	2	12.5	25	
25	Chhatrapur	132/33	3	20	60	
26	Chhend	132/33	3	40	120	
27	Choudwar	132/33	1	20	20	
		132/33	2	40	80	
28	Cuttack	132/33	3	40	120	
29	Dabugaon	132/33	2	12.5	25	
30	Dhenkanal	132/33	3	40	120	
31	Digapahandi	132/33	2	20	40	
		132/33	1	12.5	12.5	
32	Ganjam	132/33	2	12.5	25	
33	Jagatsinghpur	132/33	2	20	40	
		132/33	1	40	40	
34	Jajpur road	132/33	2	40	80	
		132/33	1	20	20	
35	Jajpur town	132/33	2	40	80	
		132/33	1	20	20	
36	Jaleswar	132/33	2	31.5	63	
		132/33	1	12.5	12.5	
37	Jharsuguda	132/33	1	40	40	
38	Junagarh	132/33	3	20	60	
39	Kalarangi	132/33	2	12.5	25	
		132/33	1	20	20	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
40	Kalugaon	132/33	2	40	80	
41	Kamakshyanagar	132/33	1	20	20	
		132/33	2	12.5	25	
42	Karanjia	132/33	2	12.5	25	
		132/33	1	20	20	
43	Kendrapara	132/33	2	40	80	
		132/33	1	12.5	12.5	
44	Kesinga	132/33	1	40	40	
		132/33	2	20	40	
45	Kesura/Badagada	132/33	1	63	63	
		132/33	1	40	40	
46	Khariar	132/33	2	40	80	
47	Khurda	132/33	3	40	120	
48	Konark	132/33	2	20	40	
49	Kuchinda	132/33	2	20	40	
50	Lapanaga	132/33	1	20	20	
51	Mania	132/33	1	12.5	12.5	
52	Marshaghai	132/33	2	20	40	
53	Mohana	132/33	2	12.5	25	
54	Nimapara	132/33	2	40	80	
			1	12.5		
55	Nuapara	132/33	2	20	40	
56	Nuapatna	132/33	1	40	40	
		132/33	1	20	20	
		132/33	1	12.5	12.5	
57	Padampur	132/33	1	20	20	
58	Parlakhemundi	132/33	3	12.5	37.5	
59	Patnagarh	132/33	1	40	40	
		132/33	2	20	40	
60	Pattamundai	132/33	2	20	40	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
		132/33	1	12.5	12.5	
61	Phulbani	132/33	2	12.5	25	
		132/33	1	40	40	
62	Phulnakhara	132/33	2	20	40	
63	Polasapanga	132/33	1	40	40	
		132/33	2	20	40	
64	Puri	132/33	3	40	120	
65	Purusottampur	132/33	2	12.5	25	
66	Rairakhole	132/33	2	12.5	25	
67	Rairangpur	132/33	2	20	40	
		132/33	1	12.5	12.5	
68	Rajgangpur	132/33	3	40	120	
69	Ranasinghpur	132/33	2	63	126	
		132/33	1	40	40	
70	Rayagada	132/33	2	12.5	25	
71	Rourkela	132/33	4	35	140	
72	Saintala	132/33	1	10	10	
		132/33	1	12.5	12.5	
73	Salipur	132/33	2	20	40	
		132/33	1	12.5	12.5	
74	Sambalpur	132/33	2	31.5	63	
		132/33	1	40	40	
75	Shamuka	132/33	2	31.5	63	
76	Somnathpur	132/33	1	12.5	12.5	
77	Sonepur	132/33	3	20	60	
		132/33			0	
78	Soro	132/33	1	40	40	
		132/33	2	20	40	
79	Sunabeda	132/33	3	12.5	37.5	
80	Sundargarh	132/33	1	40	40	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		
			132/33	1	20		20
81	Tentulikhunti	132/33	1	20	20		
		132/33	2	12.5	25		
82	Tarkera	132/33	1	12.5	12.5		
83	Umerkote	132/33	2	20	40		
84	Bolani	132/11	2	10	20		
85	Brajrajnagar	132/11	1	12.5	12.5		
86	Jharsuguda	132/11	1	20	20		
		132/11	1	12.5	12.5		
Sikkim							
400kV Level							
1	Rangpo	440/220	5	315	1575	PGCIL	
		220/132	3	100	300		
132kV Level							
1	Gangtok	132/66	2	50	100	PGCIL	
2	Melli	132/66	2	50	100	Sikkim Gov	
3	Geyzing	132/66	1	20	20		
4	Rangit	132/66	1	20	20		
66kV Level							
1	Phodong	66/11	1	5	5	Sikkim Gov	
			1	2.5	2.5		
2	Bulbuley	66/11	2	10	20		
3	Sichey	66/11	2	10	20		
			1	5	5		
4	Tadong	66/11	3	5	15		
5	Rongly	66/11	2	2.5	5		
6	Mamring	66/11	1	10	10		
			1	7.5	7.5		
			1	15	15		
7	Melli	66/11	2	5	10		

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		
8	Namchi	66/11	2	2.5	5		
9	Rabangla	66/11	1	5	5		
10	Rothak	66/11	2	2.5	5		
11	Soreng	66/11	2	2.5	5		
12	Geyzing	66/11	2	2.5	5		
13	Purano Namchi	66/11	2	7.5	15		
14	Pakyong	66/11	1	10	10		
15	Pelling	66/11	1	5	5		
16	Rhenock	66/11	1	5	5		
17	Mangan	66/11	2	5	10		
18	Ranipool	66/11	2	7.5	15		
19	Topakhani	66/11	1	7.5	7.5		
		66/11	1	5	5		
West Bengal							
400 kV Level							
1	Arambagh	400/220	4	315	1260	WBSETCL	
		220/132	3	160	480		
		132/33	3	50	150		
2	Jeerat	400/220	4	315	1260		
		220/132/33	3	160	480		
3	Bidhannagar (Durgapur WBSETCL)	400/220	2	315	630		
4	Kharagpur	400/220	2	315	630		
		220/132	2	160	320		
5	Bakreswar	400/220	2	315	630	WBPDC	
		220/33	1	50	50	WBSETCL	
6	Kolaghat TPS	400/220	2	315	630	WBPDC	
7	Sagardighi	400/220	2	315	630		
8	Binaguri	400/220	2	315	630	PGCIL	
9	Malda	400/220	2	315	630		
10	Parulia (Durgapur PG)	400/220	2	315	630		

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
11	Farakka	400/220	2	315	630	NTPC
12	Subhashgram	400/220	4	315	1260	PGCIL
			1	500	500	
220 kV Level						
1	Asansol	220/132	1	160	160	WBSETCL
			1	160	160	
		132/33	3	50	150	
2	New Bishnupur	220/132	3	160	480	
		132/33	2	31.5	63	
3	Dalkhola	220/132	2	160	320	
		132/33	3	20	60	
4	Dharampur	220/132	2	160	320	
		132/33	2	50	100	
5	Domjur	220/132	1	160	160	
			1	100	100	
		132/33	3	50	150	
6	Gokarna	220/132	4	160	640	
		132/33	3	50	150	
7	Howrah	220/132	3	160	480	
			1	150	150	
		132/25	2	20	40	
8	Kasba	220/132	2	150	300	
			2	160	320	
9	Krishnagar	220/132/33	2	160	320	
		132/33	2	50	100	
			1	31.5	31.5	
10	Laxmikantpur	220/132	3	160	480	
		132/33	2	31.5	63	
			1	50	50	
		132/25	2	12.5	25	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
11	New Haldia	220/132	2	160	320	
		132/33	1	31.5	31.5	
		132/33	1	50	50	
12	New Jalpaiguri	220/132	2	160	320	
		132/33	2	50	100	
13	New town action area-III	220/132	2	160	320	
		220/33	2	50	100	
14	Rishra	220/132	3	160	480	
		132/33	3	50	150	
15	Satgachia	220/132	2	160	320	
		132/33	2	50	100	
			1	31.5	31.5	
16	Subhashgram	220/132	2	160	320	
		132/33	2	31.5	63	
17	KTPS 400 kV	220/132	1	160	160	WBPDC
			2	150	300	
18	STPS (Santhaldih)	220/132	1	130	130	WBPDC
			1	100	100	
19	Birpara	220/132	2	160	320	PGCIL
20	Malda	220/132	1	50	370	
			2	160	640	
21	Siliguri	220/132	2	160	320	
22	DPL	220/132	2	160	320	DPL
			1	100	100	
23	Bidhannagar(Durgapur)	220/132	2	160	320	WBSETCL
		220/132	1	200	200	
24	Hura	220/132	2	160	320	
		132/33	2	50	100	
25	Foundry park	220/132/33	2	160	320	
		132/33	2	50	100	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
26	Midnapur	220/132	3	160	480	
		132/33	2	50	100	
27	Kolkata leather complex	220/132	2	160	320	
		132/33	3	50	150	
28	Vidyasagar Park	220/132	2	160	320	
29	Egra	200/132	2	160	320	CESC
30	EMSS	220/132 /33	5	160	800	
31	BBGS	220/132 /33	2	160	320	
32	NCGS	220/132 /33	2	160	320	DVC
33	Waria (DTPS)	220/132/33	3	150	450	
		132/33	3	50	150	
		132/25	2	25	50	
34	Durgapur/Muchipara	220/33	2	80	160	
			1	50	50	
35	Parulia	220/33	2	80	160	
		132/33	1	50	50	
36	Barjora	220/132	2	150	300	
		220/33	1	100	100	
			1	80	80	
			1	50	50	
37	Mejia	220/33	2	35	70	
38	Burnpur	220/33	2	50	100	
132 kV Level						
1	Adisapthagram	132/33	2	50	100	WBSETCL
			1	31.5	31.5	
		132/25	2	20	40	
2	Alipurduar	132/66	2	16	32	
			1	20	20	
		132/33	1	31.5	31.5	
3	Amtala	132/33	1	31.5	31.5	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
			1	50	50	
4	Asoknagar	132/33	2	50	100	
		132/25	2	7.5	15	
5	Bagnan GIS	132/33	2	50	100	
6	Bagmundi	132/33	1	20	20	
7	Balurghat	132/33	4	12.5	50	
8	Bankura	132/33	2	50	100	
9	Barasat	132/33	3	50	150	
10	Behala/Joka	132/33	3	50	150	
11	Basirhat	132/33	2	50	100	
12	Belmuri	132/33	2	31.5	63	
13	Berhampore	132/33	3	50	150	
14	Bighati	132/33	2	50	100	
15	Birsingha	132/33	2	50	100	
16	Bishnupur (Old)	132/33	1	50	50	
		132/33	1	31.5	31.5	
17	Bolpur	132/33	3	50	150	
18	Bongaon	132/33	3	31.5	94.5	
19	Barjora	132/33	2	31.5	63	
20	Chanditala	132/33	2	50	100	
21	Chandrakora road	132/33	1	50	50	
			1	31.5	31.5	
22	Contai	132/33	2	50	100	
23	Coochbehar	132/33	3	50	150	
24	Darjeeling	132/33	3	10	30	
25	Debogram	132/33	1	20	20	
			1	31.5	31.5	
			1	50	50	
26	Dhulian	132/33	2	31.5	63	
27	Egra	132/33	3	50	150	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
28	Falta	132/33	2	31.5	63	
			1	50	50	
29	Gangarampur	132/33	3	20	60	
			1	12.5	12.5	
30	Haldia	132/33	1	50	50	
			1	31.5	31.5	
		132/25	1	10	10	
			1	12.5	12.5	
31	Haldia NIZ	132/33	2	31.5	63	
32	Hizli	132/33	1	31.5	31.5	
			1	50	50	
		132/25	2	10	20	
33	Jangipara	132/33	2	31.5	63	
34	Jhargram	132/33	1	31.5	31.5	
			1	50	50	
35	Kurseong	132/33	3	10	30	
36	Kakdwip	132/33	2	31.5	63	
37	Kalan	132/33	2	31.5	63	
38	Kalyani	132/33	1	31.5	81.5	
			1	50	150	
39	Khatra	132/33	2	50	100	
40	Katwa	132/33	2	31.5	63	
			1	50	50	
41	Khanyan	132/33	2	31.5	63	
42	Kharagpur	132/33	2	31.5	63	
43	Khejuria GIS	132/33	2	50	100	
44	Kolaghat	132/33	3	50	150	
		132/25	2	12.5	25	
45	Lalgola	132/33	2	31.5	63	
46	Lilooah	132/33	3	50	150	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
		132/25	2	20	40	
47	Mahachanda	132/33	2	31.5	63	
			1	50	50	
48	Mathabhanga	132/33	1	50	50	
			1	31.5	31.5	
49	Malda	132/33	3	50	150	
50	Mankar	132/33	3	31.5	94.5	
51	Maynaguri	132/33	1	31.5	31.5	
			1	50	50	
			2	30	60	
52	North Bengal university (NBU)	132/33	2	31.5	63	
			1	50	50	
53	New town AA 1	132/33	2	50	100	
54	Pingla	132/33	3	50	150	
55	Purulia (WB)	132/33	2	31.5	63	
			1	20	20	
		132/25	2	12.5	25	
56	Raghunathganj	132/33	1	31.5	31.5	
			1	20	20	
			1	50	50	
57	Raghunathpur	132/33	2	31.5	63	
58	Raigunj	132/33	1	31.5	31.5	
			2	20	40	
			2	12.5	25	
59	Raina	132/33	1	50	50	
60	Rampurhat	132/33	2	50	100	
61	Ranaghat	132/33	2	50	100	
		132/66	2	31.5	63	
		132/25	1	12.5	12.5	
			1	10	10	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
62	Sainthia	132/33	2	50	100	
63	Salt lake	132/33	3	50	150	
64	Salt lake GIS	132/33	2	50	100	
65	Samsi	132/33	3	31.5	94.5	
66	Siliguri	132/33	2	50	100	
67	Sonarpur	132/33	3	31.5	94.5	
		132/25	2	20	40	
68	Tamluk	132/33	2	50	100	
69	Tarakeswar	132/33	1	31.5	31.5	
			1	50	50	
70	Titagarh	132/33	3	50	150	
		132/25	2	20	40	
71	Ukhra	132/33	2	50	100	
72	Uluberia	132/33	3	50	150	
73	Kuli	132/33	2	50	100	
74	Birpara	132/66	3	20	60	
75	Chalsa	132/66	1	20	20	
			1	10	10	
		132/33	2	20	40	
76	Serakol	132/33	2	50	100	
77	Belur	132/33	3	50	150	CESC
78	BT Road	132/33	2	75	150	
79	B.Garden	132/33	2	50	150	
80	Titagarh (TRS)	132/33	5	50	250	
81	Dum Dum	132/33	2	75	150	
82	Park lane	132/33	2	75	150	
83	Jadavpore	132/33	2	50	100	
84	Chakmir	132/33	2	55	110	
85	Majerhat	132/33	2	75	150	
86	BBD Bag	132/33	1	68	136	

Sl.No	Name of the SubStation	Voltage level (kV)	Substation details			Owned By
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)	
87	PRS	132/33	3	50	150	
88	East Calcutta	132/33	2	50	100	
89	NCGS	132/33	2	50	100	
			1	75	75	
90	SRS	132/33	2	55	110	
			1	75	75	
91	Patuli	132/33	2	75	150	DPL
92	A Zone	132/11	1	20	20	
		132/11	2	31.5	63	
		132/33	1	50	50	
93	B Zone	132/11	6	31.5	189	
		132/33	1	50	50	
94	AB Zone	132/33	1	50	50	
95	C Zone	132/11	3	31.5	94.5	
		132/33	1	50	50	
96	C1 Zone	132/11	2	31.5	63	
		132/33	2	50	100	
97	Bamunara SS	132/34	2	50	100	DVC
98	Kalipahari	132/33	1	50	50	
		132/33	2	80	160	
99	Kharagpur	132/11	1	7.5	7.5	
100	Burdwan	132/33	2	50	100	
			1	80	80	
101	Belmuri	132/33	1	50	50	
			1	31.5	31.5	
		132/25	2	25	50	
102	Purulia	132/33/11	1	50	50	
103	ASP	132/33/11	2	50	100	
		132/33	2	50	100	
104	Jamuria	132/33	2	50	100	

Table B: State wise list of transmission lines present in the Eastern region grid

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
Bihar					
765 kV					
1	Gaya to Varanasi	D/C	341.0	Quad-Bersimis	PGCIL
2	Sasaram to Fatehpur line I	S/C	61.3	Quad-Bersimis	
3	Gaya to Ballia	S/C	228.0	Quad-Bersimis	
400 kV					
1	Gaya to Koderma	D/C	126.0	Twin-Moose	PGCIL
2	Gaya to Maithon	D/C	272.0	Quad-Moose	
3	Sasaram to Sarnath	S/C	76.0	Twin-Moose	
4	Sasaram to Allahbad	D/C	215.0	Twin-Moose	
5	Sasaram to Nabinagar	D/C	81.0	Twin-Moose	
6	Biharshariff to Sasaram	S/C	192.0	Twin-Moose	
7	Biharshariff to Sasaram	S/C	203.5	Twin-Moose	
8	Kahalgaon to Farakka I & II	D/C	95.0	Twin-Moose	
9	Kahalgaon to Farakka III & IV	D/C	95.0	Twin-Moose	
10	Kahalgaon to Maithon	D/C	172.0	Twin-Moose	
11	Biharshariff to Lakhisarai	S/C	89.0	Twin-Moose	
12	Biharshariff to Lakhisarai	S/C	102.5	Twin-Moose	
13	Lakhisarai to Kahalgaon	D/C	145.0	Twin-Moose	
14	Kahalgaon to Banka	D/C	48.0	Twin-Moose	
15	Kahalgaon to Barh	D/C	217.0	Quad-Moose	
16	Biharshariff to Koderma	D/C	111.0	Quad-Moose	
17	Biharshariff to Banka	D/C	184.0	Twin-Moose	
18	Biharshariff to Balia	D/C	242.0	Quad-Moose	
19	Biharshariff to Muzaffarpur	D/C	132.0	Twin-Moose	
20	Biharshariff to Varanasi	D/C	321.0	Quad-Moose	
21	Biharshariff to Purnea	D/C	232.0	Quad-Moose	
22	Barh to Patna I & II	D/C	93.0	Quad-Moose	
23	Barh to Patna III &IV	D/C	69.0	Quad-Moose	
24	Patna to Balia	D/C	195.0	Quad-Moose	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
25	Patna to Balia	D/C	180.0	Quad-Moose	Power Links
26	Patna to Kishanganj	D/C	347.0	Quad-Moose	
27	Muzaffarpur to Gorakhpur	D/C	261.0	Quad-Moose	
28	Purnea to Muzaffarpur	D/C	240.0	Quad-Moose	
29	Malda to Purnea	D/C	167.0	Twin-Moose	PGCIL
30	Purnea to Binaguri I & II	D/C	168.0	Twin-Moose	
31	Purnea to Kishanganj	D/C	72.0	Quad-Moose	
32	Kishanganj to Binaguri	D/C	98.0	Quad-Moose	
33	Barh II to Gorakhpur	D/C	349.0	Quad-Moose	
220 kV					
1	Patna PG to Sipara	D/C	0.5	Zebra	BSPHCL
2	Dehri to Pusauli	S/C	65.0	Zebra	BSPHCL & PG
3	Pusauli to Sahupuri (UP)	S/C	71.0	Zebra	PGCIL
4	Arrah to Khagaul	D/C	50.0	Zebra	
5	Patratu to Bodhgaya	T/C	136.0	Zebra	BSPHCL & JSEB
6	Patna PG to Khagaul	S/C	30.5	Zebra	BSPHCL
7	Tenughat to Biharshariff	S/C	182.0	Twin-Moose	BSPHCL & JSEB
8	Biharshariff (PG) to Biharhariff (BSPHCL)	T/C	1.7	Zebra	BSPTCL
9	Muzaffarpur to MTPS (Kanti)	D/C	24.0	Zebra	POWER LINKS
10	Dehri to Gaya (PG)	D/C	95.0	Zebra	BSPHCL & PG
11	Bodhgaya to Gaya (PG)	D/C	17.0	Zebra	
12	Muzaffarpur to Hazipur - I & II	D/C	53.0	Zebra	BSPTCL
13	Biharshariff to Fatua	D/C	40.0	Zebra	
14	Biharshariff to Bodhgaya	D/C	80.0	Zebra	
15	Purnea to Dalkhola (WB)	D/C	41.0	Zebra	PGCIL
16	Sipara to Khagaul	S/C	39.0	Zebra	BSPTCL
17	MTPS (Kanti) to Gopalganj	S/C	101.4	Zebra	
18	MTPS (kanti) to Darbhanga	S/C	68.5	Zebra	
19	Purnea (PG) to Madhepura	D/C	100.1	Zebra	
20	Biharsariff to Begusarai	D/C	75.0	Zebra	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
21	MTPS to Begusarai	D/C	152.0	Zebra	
22	Patna (PG) to Fatuha	S/C	27.6	Zebra	
23	Sipara to Fatuha	S/C	26.0	Zebra	
24	Pusauli (PG) to Pusauli new	S/C	1.7	Zebra	PGCIL
25	Pusauli new to Ara (PG)	S/C	116.0	Zebra	
26	Pusauli (PG) to Ara (PG)	S/C	112.0	Zebra	
27	Purnea (PG) to Purnea old	D/C	2.0	Zebra	
28	Kishanganj to Siliguri	D/C	108.0	Zebra	
29	Kishanganj to Dalkhola PG	D/C	31.0	Zebra	
132 kV					
1	Kahalgao to KhSTPP	S/C	6.0	Panther	PGCIL
2	KhSTPP to lalmatya	S/C	47.0	Panther	BSPTCL
3	Arrah (PG) to Arrah BS	S/C	2.1	Panther	
4	Arrah (PG) to Dumraon	S/C	61.5	Panther	
5	Purnea (PG) to Purnea (BS)	T/C	1.3	Panther	
6	Purnea (OLD) to Kishanganj	S/C	70.0	Panther	
7	Karmansa to Sahupuri	S/C	131.0	Panther	BSPHCL & UPPCL
8	Karmansa to Chandauli	S/C	25.0	Panther	
9	Sonenagar to Rihand	S/C	188.0	Panther	
10	Japla to Sonenagar	S/C	56.0	Panther	BSPTCL
11	Kahalgao to Sabour	S/C	19.0	Panther	PGCIL
12	Kahalgao to Lalmatia	S/C	60.0	Panther	NTPC
13	Banka to Sabour	S/C	40.7	Panther	BSPTCL
14	Banka (PG) to Banka (New)	S/C	12.5	Panther	
15	Chandauti to Sipara	S/C	90.0	Panther	
16	Chandauti to Belaganj	S/C	20.0	Panther	
17	Belaganj to Jehanabad	S/C	30.0	Panther	
18	Jehanabad to Masaudhi	S/C	30.0	Panther	
19	Masaudhi to Sipara	S/C	24.0	Panther	
20	Jehanabad to Ataula	S/C	28.0	Panther	
22	Chandauti to Sonenagar (L - 30)	S/C	76.0	Panther	
23	Chandauti to Rafiganj (L - 31)	S/C	41.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
24	Rafiganj to Sonenagar (L - 31)	S/C	35.0	Panther	
25	Chandauti to Tekari	S/C	28.9	Panther	
26	Bodhgaya to Chandauti (Gaya)(Line - I)	D/C	16.0	Panther	
27	Bodhgaya to Chandauti (Gaya) (Line - II)	D/C	14.0	Panther	
28	Tekari to Goh	S/C	22.0	Panther	
29	Bodhgaya to Wazirganj	S/C	30.0	Panther	
30	Wazirganj to Nawada	S/C	26.0	Panther	
31	Bodhgaya to Sherghati	S/C	27.0	Panther	
32	Bodhgaya to Imamganj	S/C	56.0	Panther	
33	Dehri to Banjari	S/C	38.0	Panther	
34	Dehri to Sasaram Ckt. - I	S/C	20.0	Panther	
35	Sasaram to Kudra Ckt. - I	S/C	13.0	Panther	
36	Kudra to Karmnasa Ckt.- I	S/C	10.0	Panther	
37	Dehri to Pusauli PG Ckt - II	S/C	26.0	Panther	
38	Pusouli PG to Mohania Ckt. - II	S/C	10.0	Panther	
39	Mohania to Karmnasa Ckt. - II	S/C	11.0	Panther	
40	Dehri to Bikramganj Ckt. - II	S/C	45.0	Panther	
41	Bikramganj to Dumroan Ckt. - II	S/C	35.0	Panther	
43	Dumroan to Buxar	S/C	16.1	Panther	
44	Ara (PG) to Jagdishpur	S/C	26.3	Panther	
45	Fatuha to Sipara	S/C	26.0	Panther	
46	Sipara to Mithapur	S/C	16.0	Panther	
47	Mithapur to Jakkanpur	S/C	1.0	Panther	
48	Gaighat to Mithapur	S/C	5.0	Panther	
49	Fatuha to Gaighat	S/C	23.0	Panther	
50	Fatuha to Katra	S/C	17.0	Panther	
52	Biharsarif (SG) to Barh Ckt. - I	S/C	25.0	Panther	
53	Barh to Hathidah Ckt. - I	S/C	20.0	Panther	
54	Biharsarif (SG) to Hathidah Ckt. - II	S/C	32.5	Panther	
55	Biharsarif (SG) to Ekangarsarai	S/C	30.0	Panther	
56	Ekangarsarai to Hulasgarh	S/C	14.5	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
57	Baripahari to Harnaut	S/C	26.0	Panther	BSPTCL & DVC
58	Harnaut to Fatuha	S/C	45.0	Panther	
59	Biharsarif (SG) to Barhi (DVC) (L - 28)	S/C	142.0	Panther	
60	Barhi (DVC) to Rajgir (L - 29)	S/C	16.0	Panther	BSPTCL
61	Rajgir to Biharsarif (L - 29)	S/C	126.0	Panther	
62	Biharsarif (SG) to Nawada	S/C	41.0	Panther	
63	Hathidah to Lakhisarai	S/C	28.0	Panther	
64	Hathidah to Shekhpura	S/C	28.0	Panther	
65	Lakhisarai to Jamui	S/C	35.0	Panther	
66	Biharsarif (SG) to Shekhpura	S/C	39.5	Panther	
67	Shekhpura to Jamui	S/C	49.0	Panther	
68	Lakhisarai to Jamalpur	S/C	45.0	Panther	
69	Sultanganj to Jamalpur	S/C	38.0	Panther	
70	Sabour to Sultanganj Ckt I	S/C	30.0	Panther	
71	Sabour to Sultanganj Ckt II	S/C	31.0	Panther	
72	Sultanganj to Deoghar	S/C	105.0	Panther	
73	KhSTPP to Sabour	S/C	25.0	Panther	
74	Purnia(bs) to Naugachia (L - 16)	S/C	70.0	Panther	
75	Naugachia to BTPS (L- 16)	S/C	136.0	Panther	
76	Purnia(bs) to Khagaria (L - 23)	S/C	150.0	Panther	
77	Khagaria to BTPS (L - 23)	S/C	60.0	Panther	
78	Purnia(BS) to Katihar	S/C	29.0	Panther	
79	Purnia(BS) to Saharsa	S/C	101.2	Panther	
80	Purnia (BS) to Farbisganj	S/C	85.0	Panther	
81	Kishanganj to Dalkola (WB)	S/C	26.0	Panther	
82	Kishanganj to Farbisganj	S/C	88.6	Panther	
83	Farbisganj to Kataya (Kosi) Ckt. - II (Old)	S/C	50.9	Panther	
84	Madhepura to Saharsa	S/C	50.0	Panther	
85	Madhepura to Sonebarsa	S/C	50.0	Panther	
86	Saharsa to UdaKishanganj	S/C	50.4	Panther	
87	Begusarai to Samastipur (L - 9)	S/C	57.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
88	Begusarai to Dalsingsarai (L - 10)	S/C	34.0	Panther	
89	Dalsingsarai to Samastipur (L - 10)	S/C	23.0	Panther	
90	KBUNL to Muzaffarpur Ckt - I	S/C	15.5	Panther	
91	KBUNL to Muzaffarpur Ckt - II	S/C	16.7	Panther	
92	KBUNL to SKMSH	S/C	14.1	Panther	
93	Samastipur to Darbhanga	S/C	40.0	Panther	
94	Samastipur to Hazipur LILO at Jandaha	S/C	92.0	Panther	
95	Hazipur to Sheetalpur	S/C	30.0	Panther	
96	Chapra to Sheetalpur	S/C	40.0	Panther	
97	Muzaffarpur to Vaishali	D/C	30.1	Panther	
98	Chapra to Siwan	S/C	70.0	Panther	
99	Chapra/Siwan to Ekma	S/C	0.6	Panther	
100	Gopalganj to Siwan	S/C	40.0	Panther	
101	Gopalganj to Masrakh to Siwan	S/C	74.9	Panther	
102	Gopalganj to Bettia	D/C	60.8	Panther	
	Gopalganj/Bettia Ckt- I LILO at Sidhwalia SM	S/C	12.0	Panther	
103	MTPS to Motihari	S/C	70.0	Panther	
104	Bettia to Motihari	S/C	45.0	Panther	
105	Bettia to Ramnagar	S/C	41.5	Panther	
106	Bettia to Raxaul	S/C	37.1	Panther	
107	Ramnagar to BHPC, Valmikinagar	S/C	77.8	Panther	
108	BHPC, Valmikinagar to Nepal (Surajpura)	S/C	7.2	Panther	
109	Motihari to Dhaka	S/C	24.0	Panther	
110	Dhaka to Sitamarhi	S/C	52.0	Panther	
111	Sitamarhi to Runisaidpur(Reiminagar)	S/C	21.0	Panther	
112	Runisaidpur to SKMCH	S/C	35.0	Panther	
113	SKMCH to Muzaffarpur	S/C	15.0	Panther	
114	Darbhanga (220 kV) to Darbhanga (132 kV)	S/C	1.0	Panther	
115	Darbhanga to Phoolparas	S/C	71.8	Panther	
116	Pandaul to Madhubani	S/C	16.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
117	Madhubani to Jainagar	S/C	40.0	Panther	
118	Jainagar to Phoolparas	S/C	55.0	Panther	
119	Barauni TPS to Begusarai (L - 9 & L - 10)	D/C	10.0	Panther	
120	BHPC Kosi (Kataiya) to Duhabi (Nepal)	D/C	3.5	Panther	
121	Biharshariff (BSEB) to Baripahari	D/C	5.0	Panther	
122	Dehri to Sonenagar	D/C	14.5	Panther	
123	Khagaul to Bihta	D/C	14.5	Panther	
124	Khagaul to Digha	D/C	16.0	Panther	
125	Samastipur to MTPS (Kanti)	D/C	85.2	Panther	
126	Sheetalpur to Vaishali	D/C	30.2	Panther	
127	Sonenagar to Aurangabad	D/C	21.0	Panther	
128	Supaul to Phulparas	D/C	31.9	Panther	
129	Madhepura to Supaul	D/C	30.0	Panther	
130	Biharshariff to Hulasgarh	S/C	40.0	Panther	
131	Ara to Ara TSS	S/C	4.0	Panther	
132	Dumroan to Dumroan TSS	S/C	2.0	Panther	
133	Rafiganj to Rafiganj TSS	S/C	4.6	Panther	
134	Barh/Hathidah line to Mokama TSS	S/C	6.0	Panther	
135	Lakhisaai to Lakhisarai TSS	S/C	6.0	Panther	
136	Khagaul to Khagaul TSS	S/C	1.0	Panther	
137	Fatuha to Khusrupur TSS	S/C	7.2	Panther	
138	Chapra to Chapra TSS	S/C	1.0	Panther	
139	Hazipur to Hazipur TSS	S/C	2.0	Panther	
140	Lakhisari PG to Lakhisarai BSPTCL	D/C	15.3	Panther	
141	Chandauti to Tehta	D/C	15.0	Panther	
142	Tehta to Jehanabad	D/C	40.0	Panther	
143	Sipara to Jakkampur	D/C	18.0	Panther	
144	Farbisganj to Kataya Ckt. - I (New)	D/C	39.7	Panther	
145	Supaul to Kataya	D/C	59.6	Panther	
146	Samastipur to Hazipur (220 kV)	D/C	70.0	Panther	
147	Bodhgaya to Paharpur TSS	D/C	35.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By	
148	Jamui to Jhajha TSS	D/C	31.0	Panther		
149	Lakhisari PG to Jamui	D/C	25.3	Panther		
150	Dehri to Kudra	S/C	46.0	Panther		
151	kudra to Pusauli	S/C	25.0	Panther		
152	Kudra to kochas	S/C	27.0	Panther		
153	Banjari to KCL	S/C	1.0	Panther		
154	Khagaul to Fatuha	S/C	35.0	Panther		
155	Begusarai to Khusweshthan	S/C	65.5	Panther		
156	Fatuha to Birpahari	S/C	42.0	Panther		
157	Nalanda to (L - 28) LILO Point	D/C	2.0	Panther		
158	(L - 28) Line to Rajgir grid (T - Connection)	S/C	6.0	Panther		
159	Muzaffarpur to SKMCH	S/C	16.7	Panther		
160	Sasaram to Banjari	S/C	47.5	Panther		
161	Tehata to Belaganj	S/C	22.0	Panther		
162	Aurangabad to Shree Cement	S/C	0.8	Panther		
163	Kahalgaon (BSPTCL) to Sultanganj	D/C	63.5	Panther		
164	Darbhangha to Gangwara GSS	D/C	7.3	Panther		
165	Gangwara GSS to Pandaul			Panther		
166	Kisanganj to Forbesganj Circuit- 2	S/C	88.4	Panther		
167	Forbesganj to Kataiya Circuit- 3	S/C	39.8	Panther		
168	Mithapur to Karbighaia	S/C	2.5	Panther		
169	Dehri to Kochas	S/C	31.6	Panther		
170	Kochas to Dumraon Circuit- 1	S/C		Panther		
171	Banka (PG) to Sultanganj	D/C	46.0	Panther		
Jharkhand						
765 kV						
1	Ranchi (New) to Dharamjaygarh	S/C	301.0	Qd Bermis	PGCIL	
2	Ranchi (New) to Dharamjaygarh	S/C	344.6	Qd Bermis		
400 kV						
1	Chaibasa to Bisra (Rourkela)	S/C	131.0	Twin-Moose	PGCIL	
2	Jamshedpur to Chaibasa	S/C	46.0	Twin-Moose		

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
3	Jamshedpur to Bisra	S/C	182.0	Twin-Moose	
4	Jamshedpur to Mejia B	S/C	168.0	Twin-Moose	
5	Jamshedpur to Maithon	S/C	153.0	Twin-Moose	
6	Maithon to Mejia B	S/C	97.0	Twin-Moose	
7	Jamshedpur to DTPS	D/C	156.0	Twin-Moose	
8	Jamshedpur to Adhunik	D/C	0.3	Quad-Moose	APNRL
9	Jamshedpur to Parulia	S/C	177.0	Twin-Moose	PGCIL
10	Jamshedpur to Baripada	S/C	141.0	Twin-Moose	
11	Jamshedpur to TISCO	S/C	39.0	Twin-Moose	
12	TISCO to Baripada	S/C	116.0	Twin-Moose	
13	Maithon to Maithon RB	D/C	31.0	Twin-Moose	
14	Maithon to Kahalgaon	D/C	172.0	Twin-Moose	
15	Maithon to Mejia B	D/C	84.0	Twin-Moose	
16	Maithon to Gaya	D/C	277.0	Quad-Moose	
17	Maithon to Durgapur	D/C		Lapwing	
18	Ranchi to Maithon RB	D/C	188.0	Twin-Moose	
19	Ranchi to Maithon	S/C	200.0	Twin-Moose	
20	Ragunathpur to Maithon	S/C	52.9	Twin-Moose	
21	Ranchi to Raghunathpur	S/C	169.2	Twin-Moose	
22	Ranchi to Sipat	D/C	405.0	Twin-Moose	
23	Ranchi to Rourkela	D/C	145.0	Twin-Moose	
24	Ranchi to Ranchi (New)	2XD/C	78.6	Quad-Moose	
25	Ranchi (New) to Chandwa (JK Pool)	D/C	69.0	Quad-Moose	
26	Koderma to Gaya	D/C	82.0	Quad-Moose	
27	Koderma to Biharshariff	D/C	111.0	Quad-Moose	
28	Koderma to BTPS	D/C	100.0	Twin-Moose	
29	Jharkhand pooling station (Chandwa) to Gaya	D/C	117.0	Quad-Moose	
220 kV					
1	Farakka to Lalmatia	S/C	79.0	Zebra	PGCIL
2	Ramchandrapur to Joda	S/C	130.0	Zebra	OPTCL & JSEB
3	Chandil to Santadih (STPS)	S/C	98.0	Zebra	WBSETCL & JSEB

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
4	Jamshedpur PG to Ramchandrapur	D/C	0.1	Zebra	JUSNL
5	Ramchandrapur to Chandil	S/C	30.0	Zebra	
6	Chandil to Ranchi PG	S/C	78.4	Zebra	
7	Tenughat to Patratu	S/C	64.0	Double Moose	
8	Tenughat to Biharsharif	S/C	180.0	Double Moose	
9	Ranchi PG to Hatia new	D/C	35.0	Zebra	
10	PTPS to Hatia new	D/C	42.0	Zebra	
11	Dumka to Rupnarayanpur PG (Maithon PG)	D/C	74.0	Zebra	
12	Chaibasa PG to Chaibasa	D/C	0.7	Zebra	BSPHCL & JSEB
13	PTPS to Bodhgaya	T/C	136.0	Zebra	
14	BTPS (DVC) to Ramgarh	D/C	54.6	Zebra	DVC
15	BTPS to CTPS Old	D/C	31.8	Zebra	
16	CTPS B (New) to Dhanbad	D/C	45.6	AAAC Zebra	
17	Jamshedpur DVC to BTPS	D/C	150.0	Zebra	
18	Dhanbad to Kalyanaswari	D/C	79.2	Zebra	
19	CTPS A (Old) to Kalyanaswari	D/C	141.8	Zebra	
20	Dhanbad to Giridih	D/C	44.4	AAAC Zebra	
21	Jamshedpur DVC to Jindal (Joda)	S/C	135.0	Zebra	
22	CTPS A (Old) to CTPS B (New)	D/C	2.6	AAAC Zebra	
23	Giridhi to Koderma	D/C	100.9	AAAC Zebra	
24	Dhanbad to Electro Steel	D/C	58.6	AAAC Zebra	PGCIL
25	BSL to CTPS A	D/C	9.0	AAAC Zebra	DVC
132 kV					
1	ABCIL to Garhwa	S/C	2.0	Panther	JUSNL
2	Adityapur to Ramchandrapur	D/C	8.3	Panther	
3	Chakradharpur to Rajkharsawan	D/C	22.0	Panther	
4	Chandil 220 kV to Rajkharsawan	S/C	34.5	Panther	
5	Rajkharsawan to Chaibasa 132 kV	S/C	20.0	Panther	
6	Chandil 220 kV to Adityapur	S/C	16.0	Panther	
7	Chandil 220 kV to Golmuri	D/C	30.0	Panther	
8	Chandil 220 kV to Chandil 132 kV	S/C	1.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
9	Deoghar to Sultanganj	S/C	92.0	Panther	
10	Deogarh to Jamtara	D/C	75.0	Panther	
11	Jamtara to Madupur	D/C	54.0	Panther	
12	Deoghar to Shankarpur Rly	S/C	11.0	Panther	
13	Deoghar to Dumka 220 kV	D/C	68.0	Panther	
14	Dumka 132 kV to Lalmatiya	D/C	96.0	Panther	
15	Goiekera to Goiekera Rly	S/C	0.5	Panther	
16	Goiekera to Rajkharsawan	S/C	55.0	Panther	
17	Gumla to Kamdara	S/C	62.0	Panther	
18	Kamdara to Hatia Old	S/C	61.0	Panther	
19	Garhwa to Japla	S/C	50.0	Panther	
20	Hatia old to Sikadari	S/C	46.0	Panther	
21	Hatia old to HEC	D/C	8.0	Panther	
22	Hatia New to Lohardanga	D/C	62.0	Zebra	
23	Chaibasa 132 kV to Kendposi	S/C	30.0	Panther	
24	Jadugoda to Golmuri	S/C	22.0	Panther	
25	Lalmatia to Kahalgaon TPP	S/C	47.0	Panther	POWERGRID
26	Kendposi to Noamndi	S/C	28.0	Panther	JSEB
27	Kendposi to Joda	S/C	42.0	Panther	JUSNL & OPTCL
28	Lalmatia to Sahebgunj	S/C	49.0	Panther	JUSNL
29	Lohardanga to Latehar	D/C	56.0	Zebra	
30	Latehar to Daltonganj	D/C	64.0	Zebra	
31	Maithon DVC 132 kV to Jamtara	S/C	25.0	Panther	DVC & JSEB
32	PTPS to Hatia Old	S/C	44.0	Zebra	JUSNL
33	Hatia old to Kanke	S/C	28.0	Zebra	
34	Kanke to PTPS	S/C	28.0	Zebra	
35	Rajkharsawan to Adityapur	S/C	36.0	Panther	
36	Saljhagiri Rly to Golmuri	S/C	4.0	Panther	
37	Sikkidri (pooling point of SHPS) to Namkum	S/C	34.0	Panther	
38	Namkum to Hatia new	S/C	27.0	Panther	
39	Sonenagar to Japla	S/C	49.6	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
40	Tolra Rly to Garhwa	S/C	8.0	Panther	
41	UMI to Adityapur	D/C	3.5	Panther	
42	Gumla to Lohardaga	D/C	71.0	Zebra	
43	Dumka to Pakur	S/C	85.0	Panther	
44	Ramchanderpur to APL (Odisha minerals)	S/C	4.0	Panther	
45	DVM to DVM Railway	D/C	0.5	Panther	
46	PTPS to Patratu DVC	D/C	6.4	Panther	JSEB & DVC
47	Chandil 220 kV to Tamar	S/C	50.0	Panther	JUSNL
48	Garwa to Rihand	S/C	106.0	Panther	JSEB & UPPCL
49	Hatia New to Hatia Old	D/C	0.5	Panther	JUSNL
50	Kamdara to Bakaspur Rly	S/C	15.0	Panther	
51	Kamdara to Bano Rly	S/C	35.0	Panther	
52	Kendiposi FD Stn to Kendiposi	D/C	-	Panther	
53	Lodhma Rly to Hatia Old	D/C	15.0	Panther	
54	Namkum to Tatisiloi Rly	D/C	15.0	Panther	
55	Noamundi to Kendiposi FD STN	S/C	-	Panther	
56	Goelkera to Manoharpur	S/C	10.0	Panther	
57	Sikkidri (Pooling point of SHPS) to SHPS - 1	S/C	1.0	Panther	
58	Sikkidri (pooling point of SHPS) to SHPS - 2	S/C	7.0	Panther	
59	Dumka 220 kV to Dumka 132 kV	D/C	2.0	Panther	BSPHCL & JSEB
60	Lalmatia to Sabour	S/C	46.6	Panther	
61	Chandil to Manique (JSEB)	D/C	1.0	Panther	JSEB/DVC
62	Chandil to JUSCO	No details available			
63	Maithon (MHS) to Jamtara	S/C	30.0	Lark	DVC/JSEB
64	Barhi to Rajgir	S/C	149.0	Lark	DVC
65	Barhi to Nalanda	S/C	138.0	Lark	
66	PTPS to Patratu DVC	D/C	12.5	Lark	
67	Patratu to JSPL		No details available		
68	Barhi to Hazaribhag	D/C	36.5	Lark	DVC
69	Barhi to KTPP	D/C	20.1	Lark	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
70	BTPS B to ECR Gomia	D/C	6.9	AAAC Panther	
71	BTPS B to Barhi	D/C	82.0	Panther	
72	BTPS B to Konar	S/C	23.0	Lark	
73	Barhi to Konar	S/C	61.0	Panther	
74	CTPS A to Gola	D/C	36.0	Lark	
75	CTPS B to Putki	D/C	29.0	Lark	
		D/C	30.0	Lark	
76	CTPS A to Purulia DVC	D/C	59.6	Lark	
77	CTPS A to Ramkanali	S/C	60.0	Lark	
78	Ramkanali to DTPS	S/C	73.0	AAAC Panther	
79	BSL to CTPS A	D/C	10.0	Lark	
80	BSL (MSDS) to CTPS A	D/C	10.0	Lark	
81	Gola to Manique (DVC)	D/C	86.1	Lark	
82	Jamshedpur to Chandil	D/C	43.7	Lark	
83	Jamshedpur (DVC) to Mosabani	D/C	39.6	Lark	DVC
84	Jamshedpur to TISCO		No details available		
85	KTPP to Koderma	D/C	18.3	Lark	DVC
86	Koderma JSEB to Koderma DVC	D/C	18.3	ACSR Panther	
87	Konar to Hazaribhag Road	D/C	35.0	Lark	
88	Nimiaghat to Putki	D/C	45.0	AAAC Panther	
89	Nimiaghat to Giridhi (New)	D/C	43.6	AAAC Panther	
90	Giiridhi (New) to Giridhi (Old)		No proper data available		
91	Patherdhi to Putki	D/C	22.6	Lark	DVC
92	Patherdhi to Sindri	D/C	3.2	Lark	
93	Pradhankhanda to Sindri	D/C	20.0	Lark	
94	Patherdhi to Maithon (MHS)	D/C	41.0	AAAC Panther	
95	Ramgarh to Gola	D/C	25.3	Lark	
96	Gola to SER Muri	D/C	30.3	Lark	
97	Ramkanali to Panchet	D/C	14.5	Lark	
98	Jamshedpur (DVC) to Purulia DVC	D/C	87.0	Lark	
99	Kalipahari to Kalyanswari	D/C	28.8	Lark	
100	Kalyanswari to MAL IMPEX	S/C	1.5	AAAC Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	FERRO				
101	Mosabani to JSEB (Dhalbhumgarh)	D/C	10.7	Lark	
102	Maithon (MHS) to Kumardubi	S/C	4.9	Lark	
103	Kumardubi to Panchet	S/C	9.6	Lark	
104	Ramgarh to ECR Barkakana	S/C	10.0	Panther	
105	Dhanbad to Govindpur	D/C	24.0	AAAC Panther	
106	Ramgarh to Patratu	S/C	30.4	Lark	
107	Ramgarh to Patratu	S/C	28.0	Lark	
108	North Karnpura to Patratu	D/C	32.0	Lark	
109	North Karnpura to E.C.Rly	D/C	4.5	Lark	
110	Putki to Balihari 132 kV	S/C	0.5	Lark	
111	Patherdih to Balihari	S/C	24.0	Lark	
112	CTPS B to Biada R/S	D/C	12.1	AAAC Panther	
113	CTPS A to Rajabera	D/C	4.9	Lark	
114	CTPS B to Jamuria	S/C	119.2	Lark	
115	Maithon (MHS) to Panchet	S/C	14.5	Lark	
116	Maithon (MHS) to Kalyanaswari	D/C	1.6	Lark	
Odisha					
765 kV					
1	Jharsuguda pooling station to Dharamjaygarh	D/C	151.0	ACSR Hexa-ZEBRA	PGCIL
2	Angul to Jharsuguda pooling station	D/C	272.0	ACSR Quad Bersimis	
400 kV					
1	Jaypore to Bolangir PGCIL	S/C	287.7	ACSR Moose	PGCIL
2	Bolangir PGCIL to Angul	S/C	198.0	Twin Moose	
3	Angul to Meramundali - I	S/C	25.0	Twin Moose	
4	JITPL to Angul	D/C	68.0	Twin Moose	Jindal
5	TSTPS to Angul	S/C	68.0	Twin Moose	PGCIL
6	Angul to Meramundali - II	S/C	18.0	Twin Moose	
7	TSTPS to Meramundali	S/C	52.3	Twin Moose	
8	GMR to Angul	D/C	30.0	Quad Moose	GMR
9	Meramundali to JSPL	D/C	37.9	Twin Moose	OPTCL

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
10	Meramundali to Vedanta (Sterlite)	D/C	222.0	Twin Moose	PGCIL
11	GMR to Meramundali	S/C	8.5	Twin Moose	OPTCL
12	Meramundali to Mendhasal	S/C	106.0	Twin Moose	
13	Meramundali to New Duburi	D/C	97.0	Twin Moose	
14	TSTPS to Rengali	D/C	24.0	Twin Moose	PGCIL
15	Baripada to Keonjhar	S/C	156.3	ACSR Moose	OPTCL
16	Keonjhar PGCIL to Rengali	S/C	100.3	Twin Moose	OPTCL
17	Baripada to Kharagpur	S/C	100.3	ACSR Moose	WBSETCL & OPTCL
18	Baripada to Jamshedpur	S/C	141.0	ACSR Moose	PGCIL
19	Baripada to TISCO (DVC)	S/C	115.0	ACSR Moose	
20	Baripada to Pandiabil	S/C	295.0	ACSR Moose	
	Pandiabil to Mendhasal		25.0		
21	Baripada to Duburi	S/C	190.3	ACSR Moose	OPTCL
22	Dubri to Pandiabil	S/C	130.0	Twin Moose	
	Pandiabil to Mendhasal		25.0		
23	Bisra to TSTPS	D/C	171.0	Twin Moose	PGCIL
24	Bisra to Ranchi	D/C	145.0	ACSR Moose	
25	Bisra to Chaibasa	S/C	131.5	ACSR Moose	
26	Bisra to Sterlite	S/C	135.0	ACSR Moose	PGCIL& Sterlite
27	Sterlite to Raigarh	S/C	147.0	Twin Moose	
28	Bisra to Raigarh	S/C	230.4	ACSR Moose	PGCIL
29	Bisra to Jharsuguda	D/C	145.3	ACSR Twin Moose	
30	Jharsuguda to Raigarh	S/C	110.0	ACSR Twin Moose	
31	Jharsugud to Indbarath	S/C	62.6	ACSR Twin Moose	
32	Ind Bharath to Raigarh	S/C	91.0	Twin Moose	
33	Indravati PG to Rengali	S/C	356.0	ACSR Moose	
34	Indravati PG to Jaypore	S/C	72.0	ACSR Moose	
35	Indravati PG to Indravati OHPC	S/C	4.0	ACSR Moose	OPTCL
36	Jaypore to Gazuwaka	D/C	225.0	AAAC	PGCIL
37	TSTPS to Kolar	Double pole	1450.0	HVDC	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
38	Bishra to Jamshedpur	S/C	181.4	ACSR Moose	
220 kV					
1	LILO of Balasore to Duburi new S/C line at Bhadrak		1.4	Zebra	OPTCL
	Balasore to Bhadrak	S/C	70.0		
	Bhadrak to New Duburi	S/C	70.0		
2	Balasore to Baripada	D/C	77.0	Zebra	
3	Budhipadar to Raigarh	S/C	81.0	Zebra	
4	Budhipadar to Korba	D/C	183.0	Zebra	
5	Budhipadar to ITPS	D/C	25.3	AAAC MOOSE	
6	Budhipadar to ITPS	D/C	25.3	AAAC MOOSE	
7	Budhipadar to Vedanta	D/C	16.8	ACSR MOOSE	Vedanta
8	Budhipadar to Bhusan	D/C	14.9	Zebra	OPTCL
9	Budhipadar to SPS	D/C	7.1	Zebra	
10	Budhipadar to Basundhara	S/C	35.8		
11	Budhipadar to Lapanga	D/C	25.0	Zebra	
	Lapanga to Katapalli		51.0		
12	Budhipadar to Tarkera	D/C	102.0	Zebra	
13	Budhipadar to Aditya Aluminum	D/C	20.5	Zebra	
14	Balimela to Upper Silleru	S/C	24.7	Zebra	
15	Balimela to Balimela SC	S/C	0.2	Zebra	
16	Duburi to New Duburi	D/C	6.4	Zebra	
17	Duburi to NINL (Nilachal)	S/C	5.5	Zebra	
18	New Duburi to Paradeep	D/C	113.3	ACSR+AAAC	
19	New Duburi to JSL	D/C	4.8	Zebra	JSL
20	New Duburi to Maithan Ispat Nigam Limited	S/C	4.8	Zebra	MINL
21	New Duburi to Rohit	S/C	4.8	Zebra	Rohit
22	New Duburi to Balasore	S/C	137.9	Zebra	OPTCL
23	New Duburi to Visa	S/C	10.5	Zebra	Visa
24	New Duburi to Tata steel	D/C	4.0	Zebra	
25	Meramundali to Dubri	D/C	95.6	ACSR Zebra	OPTCL
26	Meramundali to TSTPS	D/C	42.0	ACSR Zebra	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
27	Meramundali to TTPS	D/C	11.2	ACSR Zebra	
28	Meramundali to NALCO	D/C	11.5	ACSR Zebra	
29	Meramundali to Bhusan steel	D/C	2.4	ACSR Zebra	
30	Meramundali to Bhanja nagar	D/C	139.0	ACSR Zebra	
31	Mendhasal to Bhanja nagar	S/C	135.0	Zebra	
	Mendhasal to Nayagarh		69.0		
	Nayagarh to Bhanja nagar		68.6		
32	Mendhasal to Chandaka	4	6.04 & 7.26	ACSR Zebra	
33	Meramundali to Bidanasi	S/C	92.3	Twin Moose	
34	Bidanasi to Mendhasal	S/C	31.1		
35	Mendhasal to Atri	D/C	16.0	Zebra	
	Atri to Narendrapur	S/C	120.0	Zebra	
36	Theruvali to Bhanja nagar	D/C	171.5	Zebra	
37	Theruvali to Narendrapur	D/C	196.0	Zebra	
38	Theruvali to Indravati	D/C	86.0	AAAC Zebra	
39	Theruvali to Indravati	D/C	91.0	AAAC Zebra	
40	Theruvali to Upper Kolab	S/C	123.0	Zebra	
41	Jaynagar to Laxmi pur	S/C	53.5	Zebra	
	Laxmi pur to Theruvali		70.0		
	Theruvali to Jaynagar		123.0		
42	Jaya nagar to Upper Kolab	D/C	6.0	Zebra	
43	Jaya nagar to Jaya nagar PGCIL (Jaypore)	D/C	7.7	Zebra	
44	Jaya nagar to Balimela	S/C	92.0	Zebra	
45	Jaya nagar to Balimela	D/C	93.0	Zebra	
46	Joda to TTPS	D/C	154.0	Zebra	
47	Joda to chaibasa	S/C	90.0	Zebra	
48	Joda to JSPL	S/C	12.0	Zebra	
	JSPL to Jamshedpur (DVC)		126.0		
49	Joda to TSIL	S/C	7.3	Zebra	
50	Joda to Ramchandrapur	S/C	130.0	Zebra	
51	Katapalli to Bolangir	D/C	117.8	Zebra	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	Bolangir to Bolangir PG	S/C	3.0		
52	Laxmi pur to Aditya Alumina	D/C	16.9	Zebra	
53	Laxmi pur to Utkal Alumina	D/C	14.1	Zebra	
54	Paradeep to Essar steel	D/C	9.0	Zebra	
55	Paradeep to IOCL	S/C	6.2	Zebra	
56	Rengali PH to TSTPS	S/C	29.5	Zebra	
57	TSTPS to TTPS	S/C	34.5	Zebra	
58	Rengali PH to TTPS	S/C	70.0	Zebra	
	Rengali PH to NALCO		62.7		
	NALCO to TTPS		8.6		
59	Rengali Switching Station to Rengali PG	D/C	1.0	Zebra	
60	Rengali Switching Station to Rengali PH	D/C	5.0	Zebra	
61	Rengali Switching Station to Barkot	S/C	34.7	Zebra	
	Barkot to Tarkera		115.0		
62	Rengali Switching Station to Chandiposh	S/C	102.0	Zebra	
	Chandiposh to Tarkera		30.0		
63	Tarkera to Bisra PG	D/C	15.0	Zebra	
64	Tarkera to RSP	D/C	10.0	Zebra	
65	Vedanta to SEL	D/C	6.0	Zebra	
66	Atri to Pandiabil (Uttara)	D/C	22.0	Zebra	
	Pandiabil (Uttara) to Samangara		45.9	Zebra	
132 kV					
1	Angul to MCL Nandira	D/C	10.8	Panther	OPTCL
2	Angul to Boinda	S/C	38.5	Panther	
3	Angul to Chainpal	S/C	14.9	Panther	
4	Angul to TTPS	S/C	16.0	Panther	
5	LILO of TTPS to Duburi S/C line at Jambay Ferro Alloys		0.7	Panther	
	TTPS to Jambay Ferro Alloys	S/C	45.0		
	Jambay Ferro Alloys Duburi		8.0		
6	LILO of ICCL to Salipur S/C line at OCL		25.8	Panther	
	ICCL to Mania	S/C	22.0		

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	Mania to OCL		5.0		
	OCL to Salipur		35.0		
7	LILO at Kamakhyanagar	S/C	1.0	Panther	
	LILO at Kalarangi		13.0		
	LILO at OPCL		23.0		
	TTPS to OPCL		24.0		
	Kamakshya Nagar to OPCL		40.0		
	Kalarangi to Kamakhyanagar		36.0		
	Duburi to Kalarangi		20.0		
8	Chainpal to FCI	D/C	7.0	Panther	
9	Chainpal to Meramundali	D/C	7.8	Panther	
10	Chainpal to TTPS	3	3.0	Panther	
11	LILO of Chandaka to Choudwar S/C line at Bidanasi	S/C	6.8	Panther	
	Choudwar to Bidanasi		8.6		
	Bidanasi to BPPL		35.0		
	BPPL to Chandaka		10.0		
12	Choudwar to Kendrapara Road (Traction)	S/C	4.6	Panther	
13	LILO at Rawmeet	S/C	8.8	Panther	
	LILO at Nuapatna Tap		-		
	LILO at Arati steel		11.0		
	Meramundali to Arati steel		66.0		
	Nuapatna Tap Arti Steel		20.0		
	Arti Steel to Rawmet		22.3		
	Choudwar to Rawmet		27.5		
14	LILO at Maheswari	S/C	4.9	Panther	
	LILO at ICCL		-		
	Dhenkanal to Maheswari		28.0		
	Maheswari to ICCL		23.5		
	ICCL to Grid Steel (GSAL)		2.0		
	Grid Steel (GSAL) to Choudwar		1.9		
15	Dhenkanal to Meramundali	S/C	43.8	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
16	Dhenkanal to Joranda traction	S/C	19.4	Panther	
17	LILO at Ranasinghpur		1.3	Panther	
	LILO at Kesura		-		
	Chandaka to Ranasinghpur	S/C	23.6		
	Ranasinghpur to Kesura		26.4		
	Kesura to Nimpara		43.2		
18	Chandaka to Nimpara	S/C	62.0	Panther	
19	Chandaka to Mendhasal	S/C	36.5	Panther	
	Mendhasal to Khurda	S/C	36.5	Panther	
20	Chandaka to Bhubaneswar	D/C	5.5	Panther	
21	LILO of Bhubaneswar to Cuttack S/C line at Phulnakhara		-	Panther	
	Bhubaneswar to Phulnakhara	S/C	23.5		
	Phulnakhara to Cuttack		20.0		
22	Cuttack to Jagatsinghpur	S/C	35.2	Panther	
23	Jagatsingpur to Paradeep	S/C	56.1	Panther	
24	Jagatsingpur to Gorakhnath (Traction)	S/C	16.2	Panther	
25	Nimpara to Konark	S/C	20.3	Panther	
26	Puri to Nimpara	S/C	30.0	Panther	
27	Puri to Samangara	S/C	15.0	Panther	
	Samangara to Nimpara	S/C	20.0		
28	Khurda to Arugul Tap	S/C	15.0	Panther	
	Arugul Tap to Arugul	S/C	3.9		
	Arugul Tap to Shamukh	S/C	35.6		
	Shamukh to Puri	S/C	18.6		
29	Khurda to Kaipadar traction	S/C	11.5	Panther	
30	LILO at Balugaon		9.1	Panther	
	LILO at Chandpur		2.3		
	Khurda to Balugaon T	S/C	68.6		
	Balugaon T to Chandapur		5.0		
	Chandapur to Balugaon		30.0		
	Balugaon to Chatrapur		54.2		

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	Balugaon T to Atri		18.0		
	Argul to Atri		19.4		
	Atri to Baki		19.6		
31	Balugaon T to Narendrapur	S/C	86.0	Panther	
32	Balugaon to Solari Rly	S/C	15.0	Panther	
33	Chatrapur to Ganjam	S/C	12.0	Panther	
34	Chatrapur to IRE	D/C	5.8	Panther	
35	Chatrapur to Narendrapur	D/C	13.9	Panther	
36	Chatrapur to Rambha Traction	S/C	28.9	Panther	
37	Chatrapur to Aska	S/C	43.8	Panther	
38	LILO of Aska to Chatrapur S/C line at Purusottampur		2.5	Panther	
	Chatrapur to Purusottampur	S/C	22.0		
	Purusottampur to Aska		24.0		
39	Aska to Bhanja nagar	D/C	33.0	Panther	
40	Bhanja nagar to Phulbani	S/C	86.6	Panther	
41	Aska to Berhampur	S/C	34.0	Panther	
42	Berhampur to Narendrapur	D/C	11.0	Panther	
43	LILO of Berhampur to Mohanan S/C at Digapahandi		1.9	Panther	
	Berhampur to Digapahandi	S/C	39.0		
	Digapahandi to Mohanan		19.0		
44	Narendrapur to Jagannathpur traction	S/C	0.5	Panther	
45	LILO of Rayagada to Mohana S/C line at Akhusinghi		-	Panther	
	Rayagada to Akhusinghi	S/C	65.0		
	Akhusinghi to Mohana		55.0		
46	Akhusinghi to Parlakemundi	S/C	76.9	Panther	
47	Rayagada to VVC Ferro (JESCO)	S/C	0.3	Panther	
48	Rayagada to Jayanagar	S/C	108.0	Panther	
49	Rayagada to Theruvali	S/C	20.0	Panther	
50	Theruvali to IMFA	S/C	2.0	Panther	
51	Theruvali to J.K. paper	S/C	9.7	Panther	
52	LILO of Kesingh to Theruvali S/C line at		12.4	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	Vedanta Aluminum				
	Theruvai to Vedanta Aluminum	S/C	63.7		
	Vedanta Aluminum to Kesingh		59.4		
53	Jayanagar to Tentulikhunti	S/C	54.6	Panther	
54	Jayanagar to Meenakshi	S/C	53.2	Panther	
55	Jayanagar to Machukhand	S/C	43.0	Panther	
56	Jayanagar to Machukhand (RE line)	S/C	148.0	Panther	
	Jayanagar to Jayanagar Traction		0.5		
	Jayanagar Traction to Maliguda traction		12.0		
	Maliguda traction to Manbar traction		17.7		
	Manbar traction to Machukhand road		37.0		
	Machukhand road to Machukhand		50.0		
57	Jayanagar to Damanjodi	S/C	45.0	Panther	
	Damanjodi to Sundarbeda		13.0		
58	Jayanagar to Sunabeda	S/C	40.0	Panther	
59	Jayanagar Traction to Ch Kusumi Traction	S/C	20.0	Panther	
60	Sunabeda to HAL	S/C	0.7	Panther	
61	Machukhand to Vizag	D/C	45(160)	Lark	
62	Machukhand road to Padwa Traction	S/C	20.0	Panther	
63	Dabugaon to Tentulikhunti	S/C	43.2	Panther	
64	Dabugaon to Umerkote	S/C	45.9		
65	LILO of Kesinga to Junagarh S/C line at Bhawanipatna		6.6	Panther	
	Kesinga to Bhawanipatna	S/C	43.0		
	Bhawanipatna to Junagarh		37.4		
66	Kesinga to Khariar	S/C	58.5	Panther	
67	Kesinga to Powmax (Turla)	S/C	14.5	Panther	
68	Kesinga to Saintala	S/C	40.0	Panther	
	Saintala to Bloangir Old	S/C	33.0	Panther	
69	Khariara to Naupara	S/C	77.2		
70	LILO of Bolangir to Patnagarh S/C line at New		0.5	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	Bolangir				
	Bolangir to New Bolangir	S/C	3.0		
	New Bolangir to Patnagarh		39.8		
71	Bolangir to Bolangir New	S/C	3.0	Panther	
72	LILO of New Bolangir to Bargarh S/C line at Barpali				
	Barpali to Bargarh	S/C	26.0	Panther	
	New Bolangir to Barpali		60.0	Panther	
73	Bolangir to Sonepur	S/C	54.0	Panther	
74	Sonepur to Boudh	S/C	51.1	Panther	
75	Patnagarh to Padampur	S/C	44.6	Panther	
76	Baragarh to ACC	S/C	3.0	Panther	
77	LILO of Chiplima to Bargarh S/C line at Katapali		12.7	Panther	
	Chiplima to Katapali	S/C	16.4		
	Katapali to Bargarh		38.5		
78	Burla to Chiplima	D/C	20.0	Panther	
79	LILO at Katapali		8.5	Panther	
	LILO at Rairakhole		0.5		
	Burla to Katapali	S/C	11.1		
	Katapali to Rairakhole Tap		85.2		
	Rairakhole Tap to Sambalpur		0.4		
	Rairakhole Tap to Rairakhole		65.3		
	Rairakhole to Boinda		89.9		
80	Burla to Hindalco	D/C	8.3	Panther	
81	LILO at Sambhalpur		0.5	Panther	
	LILO at Shyam DRI		29.4		
	LILO at Aryan ispat		6.9		
	Burla to Sambalpur	S/C	19.9		
	Sambalpur to Shyam DRI		33.0		
	Shyam DRI to Aryan Steel		10.0		
82	Aryan Steel to Lapanga	S/C	5.0		
83	Lapanga to SMC	S/C	12.0	Panther	

SI.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	SMC to Kuchinda		53.3	Panther	
	Kuchinda to Rajgangpur		100.7	Panther	
	Burla to Rajganpur Tap to Bamra traction		5.0	Panther	
	Rajgangpur to Trakera		28.4	Panther	
	Trakera to Raurkela		3.0	Panther	
84	Lapanga to Burla	D/C	57.3	Panther	OPTCL
	Bhudipadar to Lapanga	D/C	16.4	Panther	
85	Bhudipadar to Sundargarh	D/C	29.9	Panther	
86	Bhudipadar to Brajaraj Nagar	S/C	11.7	Panther	
87	Bhudipadar to MSP	S/C	0.6	Panther	
88	Bhudipadar to Jharsuguda	S/C	7.0	Panther	
89	LILO of Bhudipadar to Tarkera S/C Line at Rajgangpur		1.2	Panther	
	Bhudipadar to Rajgangpur	S/C	81.0		
	Rajgangpur to Tarkera		29.0		
90	Bhudipadar to Kalugaon	S/C	95.0	Panther	
	Kalugaon to Tarkera	S/C	15.0		
91	Bhudipadar to MCL	D/C	23.0	Panther	
92	Jharsuguda to Jharsuguda Traction	S/C	0.2	Panther	
93	Jharsuguda to Action ispat	S/C	1.6	Panther	
94	Jharsuguda to L&T	D/C	15.7	Panther	
95	Rajgangpur to OCL	S/C	0.5	Panther	
96	Rajgangpur to Rajgangpur Traction	D/C	2.1	Panther	
97	Tarkera to Rourkela	D/C	3.0	Panther	
98	Tarkera to RSP	3	11.0	Panther	
99	Tarkera to Chhend	D/C	6.2	Panther	
100	Chhend to NugaonTraction	S/C	36.0	Panther	
101	Chhend to Adhunik	S/C	21.0	Panther	
102	Adhunik to Sriganesh	S/C	2.0	Panther	
103	LILO at Barbil		1.4	Panther	OPTCL
	LILO at Arya		0.5		
	LILO at Beekey		2.4		

SI.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	LILO at Bolain		7.9		
	Rourkela to Bhalulata Tap	S/C	27.0		
	Bhalulata Tap to Beekay Steels		14.0		
	Beekay Steels to Nalda		14.0		
	Nalda to Nalda Traction				
	Nalda to Barbil		8.0		
	Barbil to Arya Iron		10.0		
	Arya Iron to Bolani		12.0		
	Bolani to Joda		25.0		
	Bhalulata top to Bhalulata traction		3.7		
104	Joda to Kenduposi		S/C	50.0	Panther
105	Joda to Bansapani	S/C	3.0	Panther	
106	Joda to FAP Joda	S/C	1.0	Panther	
107	Arya iron to BRPL	S/C	9.0		
108	LILO at Karanjia		23.5	Panther	
	LILO at Polasapanga		18.0		
	Karenjia to Rairangpur	S/C	72.5		
	Polasapanga to Karenjia		90.0		
	Joda to Polasapanga		55.0		
109	Polasapanga to Keonjhargarh	S/C	19.4	Panther	
110	Rairangpur to Kuchei	S/C	66.1	Panther	
111	Kuchei to Baripada	S/C	11.0	Panther	
112	Baripada to Balasore	S/C	57.3	Panther	
113	Balasore to Birla Tyre	S/C	3.0	Panther	
114	Balasore to Somanthpur	S/C	3.0	Panther	
	Somanthpur to Emami	S/C	1.5	Panther	
115	Balasore to Balasore Traction	S/C	3.6	Panther	
116	Balasore to Balasore Alloys	S/C	6.0	Panther	
117	LILO of Balasore to Jaleswar S/C line at Basta		0.5	Panther	
	Balasore to Basta	S/C	24.5		
	Basta to Jaleswar		32.5		
118	LILO of Balasore to Bhadrak S/C line at Soro		1.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	Balasore to Soro	S/C	34.8		
	Soro to Bhadrak		40.3		
119	Jaleswar to Jaleswar Traction	S/C	2.0	Panther	
120	Bhadrak to Dhamara Traction	S/C	36.0	Panther	
121	Bhadrak to Dhamara Port	S/C	65.0	Panther	
122	Bhadrak to FACOR	S/C	4.6	Panther	
123	Bhadrak to Bhadrak Traction	S/C	8.5	Panther	
124	LILO of Bhadrak to Jajpur road S/C at Jajpur Town		10.5	Panther	
	Jajpur road to Jajpur Town	S/C	28.0		
	Jajpur Town to Bhadrak		38.0		
125	Jajpur Road to Anadapur	S/C	29.4	Panther	
126	Jajpur Road to Kendrapara	S/C	63.0	Panther	
127	LILO of Jajpur Road to Kendrapara S/C line at Chandikhole		1.6	Panther	
	Jajpur Road to Chandikhole	S/C	32.0		
	Chandikhole to Kendrapara		34.1		
128	Jajpur Road to Duburi	D/C	13.0	Panther	
129	Kendrapara to Pattamundai	S/C	19.5	Panther	
130	Kendrapara to Paradeep	S/C	34.8	Panther	
131	Kendrapara to Marshghai	S/C	12.0	Panther	
	Marshghai to Paradeep		31.5	Panther	
132	Paradip to IFFCO	D/C	7.2	Panther	
133	Paradip to PPT	D/C	7.7	Panther	
134	Paradip to PPL	D/C	6.2	Panther	
135	Duburi to MISRILAL (MSL)	S/C	9.0	Panther	
136	Duburi to MESCO	S/C	5.0	Panther	
137	LILO of Duburi to MESCO S/C line at BRPL		2.8	Panther	
	Duburi to BRPL	S/C	4.0		
	BRPL to MESCO		6.5		
138	Duburi to Jakhpur Traction	S/C	13.2	Panther	
139	LILO of Duburi -TISCO (Bamanipal) S/C Line at B.C.Mohanty			Panther	
	Duburi to B.C. Mohanty	S/C	8.0		

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	B.C. Mohanty to TISCO (Bamanipal)		13.0		
140	B.C. Mohanty to Tomaka traction	S/C	11.9	Panther	
141	Meramundali to ML Rungta	S/C	7.5	Panther	
142	Meramundali to BRG	S/C	3.6	Panther	
143	Nuapatna Tap to Nuapatna	S/C	37.1	Panther	
144	Nuapatna Tap to Dhenkanal	S/C	37.1	Panther	
145	Kharagprasad to Meramundali	D/C	5.5	Panther	
146	Kharagprasad to Nabbharat	D/C	0.6	Panther	
147	Kharagprasad to Salibahan	S/C	7.0	Panther	
148	Kharagprasad to Hind Metal	S/C	0.5	Panther	
149	Kharagprasad to Samal Metal	S/C	1.0	Panther	
150	Kharagprasad to Traction	S/C	1.2	Panther	
Sikkim					
400 kV					
1	Lilo of Teesta to V to Binaguri D/C line (115km) at Rangpo		-	Twin Moose	PGCIL
	Teesta to V to Rangpo	D/C	12.3		
	Rangpo to Binaguri		110.0		
220kV					
1	Jorethang loop to Rangpo	S/C	25.0	Zebra	
2	LILO of one circuit of 220kV D/C from Jorethang loop to new melli at Rangpo			Zebra	
	Jorethang loop to New Melli	S/C	10.0	Zebra	
	Rangpo to new melli		26.0	Zebra	
132 kV					
1	Rangit to Rammam	S/C	27.0	Panther	PGCIL
2	Rangit to Rangpo	S/C	54.2	Panther	PGCIL
3	Rangeet HEP to Sagbari	S/C	0.3	Panther	NHPC
4	Sagbari to Melli	S/C	32.0	Panther	-
5	Sagbari to Geyzing	S/C	15.5	Panther	
7	LILO of Gangtok to Melli at Rangpo and Chuzachen		-	-	-
	Rangpo to Gangtok	S/C	26.0	-	-
	Rangpo to Chuzachen		21.0	Panther	Gati infra

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
	Gangtok to Chuzachen		48.6	Panther+Zebra	Sikkim
8	Melli to NJP	S/C	90.0	Panther	PGCIL
9	Melli to Rangpo	S/C	16.6	Panther	
10	Rangit to Kurseong	S/C	68.0	Panther	
66 kV					
1	LLHP G/T to Ranipool	D/C	0.2	Dog	Sikkim Gov
2	Ranipool to Gangtok PGCIL	S/C	0.7	Dog	
3	Ranipool to Pakyong	S/C	12.0	Dog	
4	Pakyong to Rongli	S/C	21.0	Dog	
5	Ranipool to Topakhani	S/C	15.0	Dog	
6	Tadong to Gangatok PGCIL	S/C	8.0	Dog	
7	Tadong to Sichey	S/C	5.0	Dog	
8	Tadong to Phudong	S/C	18.0	Dog	
9	Sichey to Bulbuley	S/C	4.0	Dog	
10	Bulbuley to Gangatok PGCIL	S/C	10.0	Dog	
11	Mangan to Meyong HEP	S/C	12.0	Dog	
12	Mangan to Phudong	S/C	20.0	Dog	
13	Rongli HEP to Rongli	S/C	4.9	Dog	
14	Rongali to Rhenock	S/C	12.0	Dog	
15	Geyzing 132kV to Geyzing 66kV	S/C	0.2	Dog	
16	Geyzing 132kV to Pelling	S/C	2.1	Dog	
17	Geyzing to Namchi	S/C	25.0	Dog	
18	Melli 132kV to Melli 66kV	S/C	0.1	Dog	
19	Melli 66kV to Purano Namchi	S/C	22.0	Dog	
20	Melli 66kV to Namchi	S/C	22.0	Dog	
21	Melli 66kV to Mamring	S/C	18.0	Dog	
22	Melli 66kV To Kalingpong	D/C	15.0	Dog	
23	Rangit HEP to Ravangla	S/C	13.0	Dog	
24	Purno Namchi to Rohatak	S/C	9.0	Dog	
25	Rohtak to Soreng	S/C	11.0	Dog	
West Bengal					
400 kV					

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
1	Jeerat to KTPS	S/C	136.0	Twin Moose	WBSETCL
2	Jeerat to Bakreswar	S/C	163.0	Twin Moose	
3	Jeerat to Behrampur	S/C	200.0	Twin Moose	PGCIL
4	Jeerat to Subhashgram	S/C	80.0	Twin Moose	
5	Farakka (NTPC) to Behrampur	S/C	73.0	Twin Moose	
6	Sagardighi to Behrampur	D/C	26.0	HTLS	
7	Behrampur to Behramara (Bangladesh)	D/C	71*	Twin Moose	
8	Subhashgram to Haldia	D/C	90.0	Twin Moose	CESC
9	Sagardighi to Subhashgram	S/C	246.0	Twin Moose	PGCIL
10	Farakka (NTPC) to Sagardighi	S/C	67.0	Twin Moose	PGCIL
11	Farakka (NTPC) to Kahalgaon I, II, III & IV	4	95.0	Twin Moose	
12	Farakka (NTPC) to Malda	D/C	40.0	Twin Moose	
13	Sagardighi to Parulia (PGCIL)	D/C	171.0	Twin Moose	WBSETCL
14	Arambag to KTPS	S/C	78.0	Twin Moose	
15	KTPS to Kharagpur	S/C	95.0	Twin Moose	
16	KTPS to Kharagpur	S/C	91.0	Twin Moose	
17	Kharagpur to Baripada	S/C	98.0	Twin Moose	WBSETCL & OPTCL
18	PPSP to Arambag	D/C	210.0	Twin Moose	WBSETCL
19	PPSP to Bidhanagar	D/C	183.5	Twin Moose	
20	Parulia (PGCIL) to Bidhanagar (Durgapur)	D/C	11.0	Twin Moose	
21	Parulia (PGCIL) to Jamshedpur	S/C	177.0	Twin Moose	PGCIL
22	Durgapur (DSTPS) to Raghunathpur (RTPS)	D/C	70.5	Twin Moose	DVC
23	Maithon to Raghunathpur (RTPS)	S/C	52.9	Twin Moose	DVC & PGCIL
	Raghunathpur (RTPS) to Ranchi		169.0		
24	Raghunathpur (RTPS) to Ranchi	D/C	155.0	Quard Moose	DVC
25	Durgapur (DSTPS) to Jamshedpur PG	D/C	161.0	Twin Moose	DVC & PGCIL
26	Maithon to Mejia B	S/C	84.0	Twin Moose	PGCIL
	Mejia B to Jamshedpur		168.0		
26	Maithon to Mejia B	D/C	59.0	Twin Moose	
26	Malda (PGCIL) to Purnea	D/C	167.0	Twin Moose	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
27	Binaguri (PGCIL) to Purnia I & II	D/C	168.0	Twin Moose	
28	Binaguri (PGCIL) to Purnia III & IV	D/C	160.0	Quad Moose	
29	Binaguri (PGCIL) to Malbase	S/C	121*	Twin Moose	
30	Binaguri (PGCIL) to Rangpo - I	S/C	110.0	Twin Moose	
31	Binaguri (PGCIL) to Rangpo - II	S/C	110.0	Twin Moose	
32	Binaguri (PGCIL) to Bongaigaon	D/C	217.0	Twin Moose	
33	Binaguri (PGCIL) to Bongaigaon	D/C	220.0	Quad Moose	
34	Binaguri (PGCIL) to Tala IV	S/C	98*	Twin Moose	
35	Binaguri (PGCIL) to Tala I & II	D/C	115*	Twin Moose	
36	Farakka (NTPC) to Parulia (PGCIL)	D/C	150.0	Twin Moose	
37	Arambag to Bakreswar	S/C	130.0	Twin Moose	WBSETCL
38	Maithon to Parulia (PGCIL)	D/C	70.7	Twin Moose	PGCIL
39	Bidhannagar to Arambag	S/C	115.0	Twin Moose	
40	KTPS to Chaibasa	S/C	70.0	Twin Moose	
41	Kharagpur to Chaibasa	S/C	161.0	Twin Moose	
220 kV					
1	Bakreswar to Bidhanagar	D/C	40.0	Zebra	WBSETCL
2	Bidhanagar to Waria (DTPS)	D/C	17.2	ACSR DEER	DVC
3	Bidhanagar to DPL	D/C	10.0	Zebra	WBSETCL
4	Gokarna to Bakreswar	D/C	81.0	Zebra	
5	Jeerat to New Town	D/C	40.0	Zebra	
6	KTPS to Howrah	D/C	71.0	Zebra	
7	NJP (WB) to Binaguri	D/C	6.0	Zebra	PGCIL
8	J K nagar to Bidhanagar	S/C	40.5	Deer+Zebra	WBSETCL/IP CL
9	J K Nagar to STPS	S/C	89.9	Deer+Zebra	
10	STPS to New Bishnupur	S/C	145.5	Zebra	WBSETCL
11	Subhasgram (WB) to Subhasgram (PG)	D/C	0.6	Moose	
12	Kharagpur to Midnapur	D/C	45.6	Zebra	
13	Dalkhola to Dalkhola (PG)	D/C	1.0	Zebra	PGCIL
14	Dalkhola PG to Kishanganj	D/C	31.0	Zebra	
	Kishanganj to Siliguri (PG)	D/C	108.0	Zebra	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
15	Dalkhola PG to Purnea	D/C	41.0	Zebra	
16	Dalkhola PG to Malda	D/C	116.0	Zebra	
17	Binaguri to Siliguri (PG)	D/C	6.0	Zebra	
18	Binaguri to Birpara	D/C	80.0	Zebra	
19	Birpara to Salakati (NER)	D/C	160.0	Zebra	
20	Birpara to Malbase	S/C	40.0	Zebra	
21	Birpara to Chukha	D/C	38.0	Zebra	PGCIL
22	Gokarna to Sagardighi	D/C	40.0	Zebra	WBSETCL
23	Farakka to Lalmatia	S/C	79.0	Zebra	PGCIL
24	STPS to Chandil	S/C	98.0	Zebra	WBSETCL & JSEB
25	Subhashgram (PG) to Newtown (WBSETCL)	S/C	24.0	Zebra	WBSETCL
26	Kasba to EMSS	S/C	1.0	Single Core XLPE	CESC
27	Subhasgram (PG) to EMSS (CESC)	D/C	23.2	ACSR Moose	
28	EMSS to Budge Budge G.S (BBGS)	D/C	85.0	Moose	
		D/C	2.5	800 sqmm, XLPE	
29	NCGS to EMSS	D/C	19.0	800 sqmm, XLPE	WBSETCL
30	Arambagh to Midnapore	D/C	71.0	Zebra	
31	Arambagh to Rishra	S/C	73.0	Zebra	
32	Arambagh to New Bishnupur	D/C	49.0	Zebra	
33	Bakreswar to Satgachia	D/C	132.0	Zebra	
34	Domjur to Arambagh	D/C	58.0	Zebra	
35	Howrah to Foundry Park	D/C	34.0	Zebra	
36	Foundry Park to Domjur	D/C	14.5	Zebra	
37	Jeerat to Satgachia	D/C	78.0	Zebra	
38	Kasba to Jeerat	D/C	55.0	Zebra	
39	Kasba to Subhasgram (WB)	D/C	22.0	Zebra	
40	Krishnanagar to Satgachia	D/C	52.0	Zebra	
41	NJP (WB) to TLDP-III	S/C	80.8	Zebra	
42	NJP (WB) to TLDP-IV	D/C	145.0	Zebra	
43	New Haldia to KTPS	D/C	56.0	Zebra	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
44	Bidhanagar to Asansol	S/C	114.0	Zebra	
45	STPS to Asansol	S/C	62.0	Zebra	
46	STPS to Hura	S/C	45.3	Zebra	
47	Hura to New Bishnupur	S/C	131.8	Zebra	
48	Subhasgram (WB) to Lakshmikantapur	D/C	43.0	Zebra	
49	Jeerat to Rishra	S/C	70.0	Zebra	
50	Jeerat to Dharampur	S/C	32.5	Zebra	
51	Dharampur to Rishra	S/C	32.5	Zebra	
52	Malbase to Chukha	S/C	36.0	Zebra	PGCIL
53	Subhasgram (PG) to Bantala - CLC (WB)	S/C	20.7	Zebra	WBSETCL
54	Bantala (CLC) to New town	S/C	20.0	Zebra	
55	Kalyanisweri to Maithon (Pithakari) PGCIL	D/C	7.6	Zebra	PGCIL
56	Maithon(Pithakari) to Dhanbad	D/C	52.0	Zebra	
57	Mejia to Borjora	D/C	8.5	ACSR Zebra	DVC
58	Mejia to Muchipara (Durgapur)	D/C	31.5	Zebra	
59	Muchipara (Durgapur) to Parulia (DVC)	D/C	14.8	Zebra	
60	Parulia (DVC) to Tumla	3	6.0	Zebra	
61	Burnpur to IISCO	D/C	1.2	AAAC ZEBRA	
62	Mejia (DVC) to Waria DTPS (DVC)	D/C	42.0	Zebra	
63	Waria (DTPS) to Parulia (DVC)	D/C	22.0	Zebra	
64	Parulia (DVC) to Parulia (PG)	D/C	1.0	Zebra	
65	Mejia to Kalyanswari	S/C	54.9	Zebra	
66	Mejia to Burnpur	S/C	58.2	Zebra	
67	Burnpur to Kalyanswari	S/C	22.0	Zebra	DVC
68	Gokarna to Krishnanagar	D/C	105.0	Zebra	WBSETCL
69	Kharagpur to Vidyasagar Park	D/C	100.0	Zebra	
132 kV					
1	Adisaptagram to Belmuri	D/C	32.0	Panther	WBSETCL
2	Adisaptagram to BTPS	D/C	10.0	Panther	
3	Alipurduar to Coochbehar	S/C	19.0	Panther	
4	Amtala to Debagram	D/C	40.5	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
5	Arambag to Birsingha	D/C	24.0	Panther	
6	Arambag to Raina	D/C	32.0	Panther	
7	Arambag to Tarakeswar	D/C	34.0	Panther	
8	Ashoknagar to Basirhat	D/C	39.0	Panther	
9	Bagmundi to Purulia (WB)	S/C	69.0	Panther	
10	Balichak TSS to Pingla	S/C	18.0	Panther	
11	Bankura to Bankura TSS	S/C	0.6	Panther	
12	Bankura to Bishnupur New	D/C	36.2	Panther	
13	Bankura to Bengal Concast	S/C	3.8	Panther	
14	Bankura to Raghunathpur	D/C	59.6	Panther	
15	Barasat to New Town AA-III	D/C	35.0	Panther	
16	Barasat to Barasat TSS	S/C	3.0	Panther	
17	Berhampore to Amtala	D/C	47.3	Panther	
18	Berhampore to Cossimbazar traction	S/C	13.0	Panther	
19	Bighati to Rishra	D/C	10.0	Panther	
20	Birpara to Alipurduar	S/C	54.0	Panther	
21	Birpara to Coochbehar	S/C	67.0	Panther	
22	Birpara to Birpara (PG)	D/C	0.5	Panther	
23	Bishnupur to (Chandrakonaroad) CK Road	S/C	48.0	Panther	
24	Bishnupur to Midnapur	S/C	88.0	Panther	
25	Bishnupur to Modern/ Gaytri (load)	S/C	4.0	Panther	
26	Bishnupur to New Bishnupur	D/C	5.5	Panther	
27	Bishnupur to New Bishnupur	S/C	3.0	Panther	
28	Bishnupur to Rohit Ferro	S/C	2.8	Panther	
29	New Bishnupur to Borjora	D/C	44.5	Panther	
30	Borjora to Durgapur (Bidhanagar)	D/C	27.0	Panther	
31	Bolpur to Durgapur (Bidhanagar)	D/C	71.0	Panther	
32	Bolpur to Sainthia	D/C	40.0	Panther	
33	BTPS to Dharampur	3	26.0	Panther	
34	BTPS to Bighati	D/C	25.0	Panther	
36	BTPS to Kalyani	S/C	22.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
37	BTPS to Khanyan	S/C	18.0	Panther	
38	BTPS to Satgachia	S/C	55.0	Panther	
39	Chanditala to Rishra	D/C	6.0	Panther	
40	CK Road to Ck Road Traction	S/C	5.0	Panther	
41	Contai to Egra	S/C	32.0	Panther	
42	Contai to New Haldia	S/C	77.0	Panther	
43	Dalkhola to Raigaunj	D/C	51.0	Panther	
44	Dalkhola to TCF PS - III	D/C	95.0	Panther	
45	Dankuni to Hind Motor	S/C	7.0	Panther	
46	Dankuni to Liluah	S/C	8.0	Panther	
47	Debagram to Debagram TSS	S/C	6.0	Panther	
48	Debagram to Katwa	D/C	35.0	Panther	
49	Dharampur to Kalyani	S/C	10.0	Panther	
50	Dharampur to Ranaghat	D/C	26.0	Panther	
51	Dharampur to Titagarh	D/C	29.0	Panther	
52	Dhulian to Farakka	S/C	22.0	Panther	
53	Domjur to Jangipara	D/C	17.0	Panther	
54	Domjur to Uluberia	D/C	27.0	Panther	
55	Durgapur (Bidhanagar) to DPL	D/C	10.0	Panther	
56	Durgapur (Bidhanagar) to Mankar	D/C	30.0	Panther	
57	Durgapur (Bidhanagar) to Ukhra	D/C	22.5	Panther	
58	Egra to New Haldia	S/C	100.0	Panther	
59	Gangarampur to Balurghat	S/C	35.0	Panther	
60	Gokarna to Katwa	D/C	57.0	Panther	
61	Gokarna to Berhampore	D/C	18.0	Panther	
62	Gokarna to Lalgola	S/C	46.8	Panther	
63	Gokarna to Lalgola	S/C	67.0	Panther	
64	Lalgola to Raghunathganj	S/C	27.0	Panther	
65	Gokarna to Raghunathganj	S/C	42.0	Panther	
66	Gokarna to Rampurhat	S/C	63.0	Panther	
67	Gokarna to Kuli	S/C	23.6	Panther	
68	Haldia to Haldia NIZ	D/C	22.0	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
69	Haldia NIZ to Rohit Ferro	S/C	2.0	Panther	
70	Haldia to TATA Power	D/C	6.5	Panther	
71	Haldia to New Haldia	S/C	2.0	Panther	
72	Haldia NIZ to Maniksia	S/C	1.0	Panther	
73	Hizli to Midnapur	D/C	25.5	Panther	
74	Egra to Bengal Energy (BEL)	S/C	50.1	Panther	
75	Bengal Energy (BEL) to Hizli	S/C	22.7	Panther	
76	Hind Motor (HM) to Rishra	S/C	13.0	Panther	
77	Howrah to Liluah I&II	D/C	14.0	Panther	
78	Howrah to Liluah III	S/C	18.0	Panther	
79	Howrah to Liluah IV	S/C	24.0	Panther	
80	HPCL to Haldia	S/C	3.0	Panther	
81	HPCL to New Haldia	S/C	2.0	Panther	
82	Jeerat to Ashoknagar	D/C	15.0	Panther	
83	Jeerat to Barasat	D/C	24.5	Panther	
84	Jeerat to Bongaon	D/C	36.0	Panther	
85	Jeerat to Dharampur	D/C	14.0	Panther	
86	Kalna to Satgachia	D/C	18.8	Panther	
87	Kasba to Salt Lake	S/C	21.0	Panther	
88	Kasba to KLC	S/C	13.0	Panther	
89	KLC to Salt Lake	S/C	13.0	Panther	
90	Kasba to Sonarpur	S/C	12.0	Panther	
91	Katwa to Katwa TSS	S/C	2.4	Panther	
92	Katwa to Satgachia	D/C	45.0	Panther	
93	Khanyan to Satgachia	S/C	42.0	Panther	
94	Kharagpur (DVC) to Kharagpur (WB)	S/C	1.0	Panther	
95	Khargapur (WBIDC) to TATA Metalic	S/C	5.0	Panther	
96	Khatra to Bishnupur Old	D/C	66.5	Panther	
97	Khejuria to Farakka (Cable)	D/C	2.6	Panther	
98	Kolaghat to KTPS	D/C	4.0	Panther	DVC
99	Kolaghat to Madras Cement	S/C	5.0	Panther	WBSETCL

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
100	Krishnanagar to Bongaon	D/C	53.0	Panther	
101	Krishnanagar to Debagram	D/C	46.0	Panther	
102	Krishnanagar to Ranaghat	D/C	33.4	Panther	
103	KTPS to Tamluk	D/C	19.0	Panther	
104	KTPS to Uluberia	S/C	29.0	Panther	
	KTPS to Bagnan		16.0		
	Bagnan to Uluberia		21.0		
105	Kuli to Sainthia	S/C	35.6	Panther	
106	Laxmikantapur to Falta	D/C	34.0	Panther	
107	Laxshmikantapur to Kakdwip	D/C	53.5	Panther	
108	Liluah to BTPS	S/C	58.0	Panther	
109	Liluah to Rishra	S/C	19.5	Panther	
110	Liluah to Rishra	S/C	36.0	Panther	
111	Mahachanda to Mankar	D/C	43.0	Panther	
112	Mahachanda to Satgachia	D/C	54.0	Panther	
113	Malda to Balurghat Tap point	S/C	98.4	Panther	
114	Malda to Khejuriaghat	D/C	35.0	Panther	
115	Malda to Malda (PG)	D/C	7.0	Panther	
116	Malda to Raigaunj	S/C	85.0	Panther	
117	Malda to Samsi	S/C	55.0	Panther	
118	Midnapur to Khargapur (WBIDC)	S/C	18.0	Panther	
119	Midnapur to Balichak TSS	S/C	26.0	Panther	
120	Midnapur to Chandrakonaroad (CK Road)	S/C	46.0	Panther	
121	Midnapur to Jhargram	D/C	48.0	Panther	
122	Midnapur to Pingla	S/C	41.0	Panther	
123	Moinaguri to Birpara	S/C	43.0	Panther	
124	Moinaguri to Mathabhanga	S/C	50.0	Panther	
125	Mathabhanga to Birpara	S/C	83.8	Panther	
126	Moinaguri to Chalsa	S/C	43.0	Panther	
127	Gokarna to Sonar Bangla	S/C	47.2	Panther	
128	Sonar Bangla to Lalgola	S/C	28.4	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
129	New Town AA-III to New Town AA-I	S/C	8.3	Panther	
130	New Town AA-III to Salt Lake GIS	S/C	15.0	Panther	
131	New Town AA-I to Salt Lake GIS S/C	S/C	11.1	Panther	
132	NBU to Leborg	S/C	66.0	Panther	
133	NBU to NJP (PG)	S/C	15.0	Panther	
134	NBU to Rammam	S/C	69.0	Panther	
135	NBU to TCF PS - I	S/C	18.0	Panther	
136	NJP (WB) to Chalsa	S/C	78.0	Panther	
137	NJP (WB) to Moinaguri	S/C	41.0	Panther	
138	NJP (WB) to TCF PS - I	S/C	16.0	Panther	
139	Purulia (WB) to STPS	D/C	35.0	Panther	
140	Raghunathganj to Dhulian	S/C	22.0	Panther	
141	Raghunathganj to Farakka	S/C	44.0	Panther	
142	Raigaunj to Gangarampur	S/C	75.0	Panther	
143	Rampurhat to Sainthia	S/C	38.0	Panther	
144	Reshmi to TATA Metalic	S/C	6.0	Panther	
145	Samsi to Raigaunj	S/C	68.0	Panther	
146	Satgachia to Debagram TSS	S/C	18.0	Panther	
147	Siliguri to NJP (WB)	D/C	16.0	Panther	
148	Tamluk to Haldia NIZ	D/C	46.0	Panther	
149	Tarakeswar to Belmuri	D/C	18.0	Panther	
150	TCF PS - I to TCF PS - II	S/C	16.0	Panther	
151	TCF PS - I to TCF PS - III	S/C	34.0	Panther	
152	TCF PS - II to TCF PS - III	S/C	20.0	Panther	
153	Hura to Purulia(WB)	D/C	15.9	Panther	
154	Howrah to Foodpark	S/C	20.0	Panther	
155	Foodpark to Kolaghat	S/C	37.0	Panther	
156	Vidyasagarpark to Hizli TSS	S/C	90.0	Panther	
157	Vidyasagarpark to Hizli	S/C	80.0	Panther	
158	Hizli to Hizli TSS	S/C	1.1	Panther	
159	Midnapur to BRG steel Tap	S/C	2.5	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
160	BRG steel Tap to BRG	S/C	8.4	Panther	
161	BRG steel Tap to Vidyasagarpark	S/C	87.5	Panther	
162	New Town AA-1 to Salt Lake GIS	D/C	11.1	Panther	
163	NJP (WB) to NJP (PG)	S/C	10.0	Panther	
164	NJP (PG) to Melli	S/C	90.0	Panther	PGCIL
165	NJP (PG) to Kurseong	S/C	31.3	Panther	
166	Kurseong to Rangit	S/C	68.0	Panther	
167	NJP (WB) to NBU	S/C	10.0	Panther	
168	Raghunathganj to farakka Ambuja Cement	D/C	5.0	Panther	WBSETCL
169	NBU to Siliguri (Ujanoo)	S/C	10.0	Panther	
170	Midnapur to Rashmi	S/C	10.0	Panther	
171	Crescent power to Asansol	D/C	20.0	Panther	
172	Raghunathpur to Hura	D/C	33.4	Zebra	
173	Joka to Falta	D/C	28.8	Panther	
174	Joka to Sonarpur	S/C	18.0	Panther	
175	Kasba to Joka	S/C	27.0	Panther	
176	Kolagat (WB) to Kolagat (DVC)	D/C	5.0	Panther	DVC
177	Waria (DTPS) to ASP	D/C	5.0	Lark	
178	Wariac (DTPS) to Kalipahari	D/C	39.7	Lark	
179	Waria to Burdwan	D/C	69.2	Lark	
180	Belmuri to Burdwan	D/C	51.5	Lark	
181	Belmuri to Howrah	D/C	49.3	Lark	
182	Howrah to Kolaghat	D/C	57.3	Lark	
183	Kolaghat to kharagpur	D/C	69.2	Lark	
184	Waria (DTPS) to Jamuria	S/C	33.0	AAAC Panther	
185	Borjora to Sonic Thermal	S/C	1.8	AAAC Panther	
186	Mosabani to Kharagpur	D/C	95.2	ACSR LARK	
187	Kolaghat to Badrinarayan alloy steel		No proper details available		
188	DTPS to DPL	D/C	11.0	Lark	DVC/DPL
189	Joka to Sirakol	S/C	17.0	Panther	WBSETCL
190	Amtala to Najirpur	D/C	13.4	Panther	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
191	Rammam to Rangit	S/C	27.0	Panther	
192	Laxmikantapur to Sirakol	D/C	35.2	Panther	
193	Siliguri to Siliguri (Ujanoo)	S/C	10.0	Panther	
194	Dalkhola to Kishengunj	S/C	26.0	Panther	
195	Lebong (Darjeling) to Rammam	S/C	20.0	Panther	
196	DPPS to B Zone	D/C	1.6	Panther	DPL
197	DPPS to A Zone	S/C	6.4	Panther	
198	DPPS to C Zone	D/C	4.8	Bison	
199	DPPS to C1 Zone	D/C	5.5	Panther	
200	DPPS to AB Zone	D/C	1.2	Panther	
201	A Zone to Bamunara	D/C	3.6	Panther	
202	BBGS to Chakmir	D/C	20.1	ACSR Moose	CESC
203	BBGS to Chakmir	D/C	18.7	ACSR Moose	
204	Chakmir to Majerhat	D/C	6.1	XLPE 630 sqmm	
205	Chakmir to Taratala	D/C	5.4	XLPE 630 sqmm	
206	Taratala to BBD Bag	S/C	10.4	XLPE 630 sqmm	
207	Taratala to PRS	S/C	11.0	XLPE 630 sqmm	
208	Majerhat to Taratala	S/C	0.9	XLPE 630 sqmm	
209	Jadavpore to Majerhat	S/C	5.6	XLPE 630 sqmm	
210	Majerhat to Southern	D/C	6.4	XLPE 400 sqmm	
211	Majerhat to PRS	S/C	9.0	XLPE 400 sqmm	
212	WBSETCL (Howrah) to Southern	S/C	3.0	GF 161 sqmm	
213	Botanical Garden to Southern	D/C	2.2	XLPE 800 sq.mm(1st circuit) 2 x GF 161 sq.mm. Cu.(2nd circuit)	
214	WBSETCL (Howrah) to B.Garden	D/C	1.1	XLPE 630 sq.mm(1st circuit) 2 x GF 161 sq.mm. Cu.(2nd circuit)	

Sl.No	Transmission line	Ckt type	Distance (km)	Conductor Type	Owned By
215	BBD Bag to PRS	D/C	1.4	XLPE 630 sqmm	
216	East Calcutta to PRS	S/C	6.6	XLPE 630 sqmm	
217	PRS to Park lane	S/C	2.1	XLPE 800 sqmm	
218	East Calcutta to BT road	S/C	9.6	XLPE 630 sqmm	
219	BT road to NCGS	S/C	1.5	GF 260 sq. mm. Cu	
220	BT road to NCGS	S/C	2.5	XLPE 800 sqmm	
221	BT road to Titagarh	S/C	9.3	XLPE 800 sqmm	
222	Dum dum to BT road	S/C	7.5	XLPE 800 sqmm	
223	NCGS to Titagarh	S/C	13.4	XLPE 400 sqmm	
224	WBSETCL (Titagarh) to Titagarh	D/C	0.5	GF 225 sq. mm. Al.	
225	WBSETCL (Lilooah) to Belur	T/C	4.4	GF 161 sq.mm. Cu	
226	WBSETCL (Rishra) to Rishra	D/C	6.4	XLPE 800 sqmm	
227	EMSS to East Calcutta	S/C	7.8	XLPE 800 sqmm	
228	EMSS to PRS	S/C	9.8	XLPE 800 sqmm	
229	WBSETCL (Kasba) to EMSS	T/C	0.4	XLPE 800 sqmm	
230	EMSS to Jadavpore	S/C	11.0	XLPE 630 sqmm	
231	EMSS to Park lane	S/C	7.0	XLPE 800 sqmm	
232	EMSS to Patuli	S/C	7.0	XLPE 800 sqmm	
233	EMSS to DDSS	S/C	17.3	XLPE 800 sqmm	

Table C: State wise list of generators present in the Eastern region grid

Sl.No	Name of the power station	Power station details			Owned By
		No. of units	Capacity of each unit (MW)	Total capacity (MW)	
Bihar					
State Sector					
1	Barauni (BTPS)	2	110	220	BSPGCL
2	Muzaffarpur (Kanti)	2	110	220	Joint venture of NTPC & BSEB
		1	195	195	
3	Eastern gandak canal HEP (Valmikinagar)	3	5	15	BSHPGCL
Central sector					
1	Khalgoan	4	210	2340	NTPC
		3	500		
2	Barh STPP, St-II	2	660	1320	
Jharkhand					
State Sector					
1	PTPS	1	110	110	
2	TTPS	2	210	420	
3	Subernrekha (SHPS)	2	65	130	
DVC					
1	Bokaro 'B'	3	210	630	DVC
		1	500	500	
2	Chandrapur	3	140	920	DVC
		2	250		
3	Koderma TPS	2	500	1000	DVC
4	Tiliya	2	2	4	DVC
5	Maithon dam	1	23.2	63.2	DVC
		2	20		
6	Panchet	2	40	80	DVC
7	MGT gen (Gas based)	3	27.5	82.5	DVC
CPP					
1	Jojobera	3	120	427.5	Tata Steel

Sl.No	Name of the power station	Power station details			Owned By
		No. of units	Capacity of each unit (MW)	Total capacity (MW)	
		1	67.5		
2	Inland Power	1	70	70	
3	Usha Martin Ltd. (Adityapur)	3	30	130	
		1	25		
		1	15		
4	Usha Martin Ltd. (Ranchi)	2	10	20	
5	Rungta mines	2	20	40	
6	ABCIL	2	30	60	
IPP					
1	Adhunik Power Co. Ltd.	2	270	540	Joint venture of DVC & TATA
2	Maithon RB (MPL)	2	525	1050	
Odisha					
State sector					
1	Burla power house (Hirakud-I)	2	49.5	275.5	OHPC
		2	32		
		3	37.5		
2	Chiplima power house (Hirakud-II)	3	24	72	OHPC
3	Balimela power house (HPS)	6	60	510	OHPC
		2	75		
4	Rengali power house (HPS)	5	50	250	OHPC
5	Upper Kolab power house (HPS)	4	80	320	OHPC
6	Upper Indravati hydro electric (HPS)	4	150	600	OHPC
7	Machhkund power house (HPS)	3	17	115.5	OHPC
		3	21.5		
8	IB thermal power station	2	210	420	OPGC
9	TTPS (NTPC- State dedicated)	4	60	460	NTPC
		2	110		
Central sector					
1	Talcher super thermal power-I	2	500	3000	NTPC

Sl.No	Name of the power station	Power station details			Owned By
		No. of units	Capacity of each unit (MW)	Total capacity (MW)	
	Talcher super thermal power-II	4	500		
CPP					
1	NALCO (Angul)	10	120	1200	
2	RSP (Rourkela)	2	60	220	
		4	25		
3	ICCL (IMFA), (Choudwara)	2	54	258	
		2	60		
		1	30		
4	HPCL(HINDALCO), (Hirakud)	1	67.5	467.5	
		4	100		
5	KMCL (NINL), (Duburi)	1	24	62.5	
		2	19.25		
6	NBVL (Meramundali)	1	30	94	
		1	64		
7	Bhusan Power & Steel, Jharsuguda	1	60	506	
		1	40		
		3	130		
		2	8		
8	Vedanta (Lanjigarh)	3	30	90	
9	Tata sponge iron (Joda)	1	18.5	26	
		1	7.5		
10	Shyam DRI (Pandoli, Sambalpur)	1	33	33	
11	Aarti steel (Ghantikhal, Cuttak)	1	40	40	
12	Bhusan steel and strips (Meramundali)	1	33	410	
		1	77		
		2	150		
13	Jindal stainless Ltd. (Duburi)	2	125	263	
		1	13		
14	Vedanta (Jharsuguda)	9	135	1215	
15	Visa steel (New Duburi)	3	25	75	

Sl.No	Name of the power station	Power station details			Owned By
		No. of units	Capacity of each unit (MW)	Total capacity (MW)	
16	IFFCO (Paradeep)	2	55	110	
17	SMC power generation Ltd.	1	8	33	
		1	25		
18	Action ispat and power Ltd.	1	12	123	
		1	25		
		2	43		
19	Aryan ispat and power Ltd.	1	18	18	
20	EMAMI	1	15	20	
		1	5		
21	Shree Ganesh	1	32	32	
22	ACC (Baragarh)	1	30	30	
23	Jindal steel and power Ltd. (Angul)	6	135	810	
24	Maithan ispat nigam Ltd. (Jajpur road)	1	30	30	
25	MSP mettallics Ltd.	1	25	25	
26	OCL India Ltd.	2	27	54	
27	FACOR	1	45	45	
		1	55	55	
28	HINDALCO (AAL) (Budhipadar)	4	150	600	
29	Maheswari Ispat Pvt Ltd	2	12	24	
IPP					
1	Meenakshi power (Jayanagar)	3	4	37	
		2	12.5		
2	Odisha power consortium Ltd. (Samal)	4	5	20	
3	Aarati steel (Ghantikhal)	1	50	50	
4	Sterlite energy Ltd. (Jharsuguda)	4	600	2400	
5	GMR Kamalanga	3	350	1050	
6	JITPL (Derang)	2	600	1200	
7	Ind-Barath	1	350	350	
Sikkim					

Sl.No	Name of the power station	Power station details			Owned By
		No. of units	Capacity of each unit (MW)	Total capacity (MW)	
State Sector					
1	LLHP	2	6	12	
2	Meyonchu	2	2	4	
3	Rongali HEP	2	3.125	6.25	
Central sector					
1	Teesta-V	3	170	510	NHPC
2	Rangeet -III	3	20	60	NHPC
IPP					
1	Chuzachen	2	55	110	
2	Jorthang loop	2	48	96	
West Bengal					
State Sector					
1	Bakreswar TPS	5	210	1050	WBPDCL
2	Bandel TPS	4	60	450	WBPDCL
		1	210		
3	Kolaghat TPS	3	210	630	WBPDCL
		3	210	630	
4	Sagardighi TPS	2	300	600	WBPDCL
5	Santaldih TPS	2	250	500	WBPDCL
6	Rammam II hydro	4	12.75	51	WBSEDCL
7	Purulia pumped storage	4	225	900	WBSEDCL
8	Jaldhaka hydro 1	3	9	27	WBSEDCL
9	Teesta canal fall hydro 1	3	7.5	22.5	WBSEDCL
10	Teesta canal fall hydro 2	3	7.5	22.5	WBSEDCL
11	Teesta canal fall hydro 3	3	7.5	22.5	WBSEDCL
Central sector					
1	Farakka	3	200	2100	NTPC
		3	500		
2	Chuka Bhutan, Hydro	4	84	336	Bhutan
3	Tala Bhutan, Hydro	6	170	1020	Bhutan

Sl.No	Name of the power station	Power station details			Owned By
		No. of units	Capacity of each unit (MW)	Total capacity (MW)	
4	Teesta low dam 3	4	33	132	NHPC
5	Teesta low dam 4	2	40	220	NHPC
Private Sector and DVC					
1	DPL	1	110		DPL
		1	250		
		1	300		
2	Mejia	4	210	1340	DVC
		2	250		
3	Waria TPS (DTPS)	1	140	350	DVC
		1	210		
4	Mejia TPS phase-II	2	500	1000	DVC
5	Durgapur steel TPS	2	500	1000	DVC
6	Budge Budge	2	250	500	CESC
		1	250	250	
7	Southern generating station	2	67.5	135	CESC
8	Haldia TPP	2	300	600	CESC
9	Raghunathpur TPS	2	600	1200	DVC
CPP					
1	Tata power	2	45	120	
		1	30		
2	Crescent power	2	20	40	

Table D: State wise list of Bus reactor present in the Eastern region grid

SI No	Name of the substaion	Voltage level (kV)	Existing reactor details		
			no of units	capacity of each unit (MVar)	Total capacity (MVar)
Bihar					
1	Gaya	765	2	240	480
		400	2	125	250
2	Biharshariff	400	1	125	125
		400	1	50	50
		400	1	80	80
3	Kahalgaon	400	2	50	100
4	Muzaffarpur	400	2	125	250
5	Patna	400	1	80	80
		400	2	125	250
6	New Purnea	400	2	125	250
7	Barh	400	1	80	80
8	Banka	400	1	80	80
9	Lakhisarai	400	1	80	80
10	Pusauli	765	1	330	330
		400	2	125	250
11	Kishanganj	400	1	125	125
Jharkhand					
1	Ranchi (New)	400	2	125	250
		765	2	240	480
2	Maithon	400	1	50	50
3	Maithon RB (MPL I & II)	400	2	50	100
4	Jamshedpur	400	2	50	100
5	Ranchi	400	1	80	80
		400	1	125	125
6	Koderma	400	2	50	100
7	Chaibasa	400	1	80	80
8	Chandwa (Jharkhand Pooling)	400	2	125	250

SI No	Name of the substaion	Voltage level (kV)	Existing reactor details		
			no of units	capacity of each unit (MVar)	Total capacity (MVar)
Odisha					
1	Angul	765	2	330	660
		400	3	125	330
2	Jharsuguda	765	1	240	240
			1	240	240
3	Bolangir	400	1	80	80
4	Rourkela	400	1	50	50
			1	125	125
5	Rengali	33	1	31.5	31.5
6	Jeypore	33	1	31.5	31.5
		400	1	125	125
		400	1	63	63
7	Keonjhar	400	1	80	80
8	Jharsuguda	400	2	125	250
9	Indravati	400	1	125	125
10	Duburi	400	1	80	80
11	JITPL	400	2	50	100
12	Pandiaballi	400	1	80	80
			1	63	63
Sikkim					
1	Rangpo	400	2	80	160
2	New Melli	220	1	63	63
West Bengal					
1	Farakka	400	2	50	100
2	Parulia	400	3	16.77	50.01
3	Bidhannagar	400	1	50	50
4	Bakreswar	400	1	50	50
5	Jeerat	400	1	50	50
6	Arambagh	400	1	50	50
7	Ragunathpur	400	2	50	100

SI No	Name of the substaion	Voltage level (kV)	Existing reactor details		
			no of units	capacity of each unit (MVar)	Total capacity (MVar)
8	Kharagpur	400	1	80	80
9	Binaguri	400	2	125	160
10	Behrampur	400	1	80	80
11	KTPS	400	2	50	50
12	Durgapur	400	1	50	50

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Table E: State wise list of Line reactor present in the Eastern region grid

SI No	Name of the transmission line	Voltage level (kV)	Existing reactor details				Remarks
			no of units	capacity of each unit (MVar)	Total capacity (MVar)	End	
Bihar							
1	Maithon to Gaya I & II	400	2	50	100	Gaya	Switchable
		400	2	50	100	Maithon	Switchable
2	Purnea to Kishanganj-I	400	1	63	63	Purnea	-
3	Purnea to Binaguri-III	400	1	63	63	Purnea	-
4	Purnea to Muzaffarpur I & II	400	2	63	126	Purnea	Switchable
		400	2	63	126	Muzaffarpur	
5	Muzaffarpur to Gorakhpur I	400	1	63	63	Muzaffarpur	Switchable
6	Muzaffarpur to Gorakhpur II	400	1	50	50	Muzaffarpur	Switchable
7	Biharshariff to Balia I & II	400	2	50	100	Balia	-
8	Pasuali-Fatehpur	765	1	310	240	Pasuali	-
		765	1	330	330	Fatehpur	-
9	Banka to Biharshariff I & II	400	2	50	100	Banka	-
10	Biharshariff to Purnea I & II	400	2	80	160	Biharshariff	-
11	Lakhisarai to Biharshariff I & II	400	1	50	50	Biharshariff	-
12	Barh to Patna I & II	400	2	50	100	Patna	-
13	Lakhisarai to Kahalgaon I & II	400	2	50	100	Lakhisarai	-
14	Biharshariff to Tenughat	220	1	50	50	Tenughat	-
15	Biharshariff to Pusauli I	400	1	50	50	Biharshariff	Switchable
16	Pasauli to Allahabad	400	1	63	63	Pasauli	Switchable
17	Pasauli to Sarnath	400	1	63	63	Pasauli	Switchable
18	Patna to Balia III & IV	400	2	63	126	Balia	-
19	Pasauli to Biharshariff I & II	400	2	63	126	Pasauli	-
20	Patna to Krishanganj I & II	400	1	63	63	Patna	Switchable
			1	63	63	Patna	Switchable
21	Patna to Krishanganj I & II	400	1	63	63	Kishangaunj	

SI No	Name of the transmission line	Voltage level (kV)	Existing reactor details				Remarks
			no of units	capacity of each unit (MVar)	Total capacity (MVar)	End	
			1	63	63	Kishangaunj	
22	Biharshariff to Varanasi I & II	400	2	50	100	Biharshariff	Switchable
23	Gaya to Balia	765	1	240	240	Gaya	Switchable
			1	330	330	Balia	-
24	Gaya to Varanasi-I	765	1	240	240	Gaya	Switchable
25	Gaya to Varanasi-II	765	2	240	480	Gaya	Switchable
Jharkhand							
26	Ranchi (New) to Dharmjaygarh I	765	1	240	240	Ranchi	Switchable
			1	330	330	Dharamjaygarh	-
27	Ranchi (New) to Dharmjaygarh II		1	240	240	Ranchi	Switchable
			1	330	330	Dharamjaygarh	-
28	Ranchi to Sipat-I & II	400	2	80	160	Ranchi	-
			2	80	160	Sipat	-
29	Maithon RB (MPL) to Ranchi I & II	400	2	50	100	MPL	-
			2	50	100	Ranchi	
30	Maithon to Kahalgaon-I & II	400	2	50	100	Maithon	-
31	Maithon to Mejia I	400	1	50	50	Maithon	Switchable
32	Kharagpur to Chaibasa	400	1	63	63	Chaibasa	
Odisha							
33	Jharsuguda to Angul-I & II	765	2	240	480	Jharsuguda	Switchable
			2	240	480	Angul	-
34	Jeypore to Gajuwaka I & II	400	2	80	160	Gajuwaka	Switchable
35	Pandiabill to Mendhasal	400	1	63	63	Mendasal	-
	Baripada to Pandiabill	400	1	63	63	Baripada	
36	Rourkel to Jharsuguda I	400	1	63	63	Rourkela	-
37	Rourkel to Sterlite I	400	1	63	63	Rourkela	-
38	Meramundali to Angul I	400	1	80	80	Meramundali	-
	Meramundali to Vedanta	400	2	50	100	Meramundali	

SI No	Name of the transmission line	Voltage level (kV)	Existing reactor details				Remarks
			no of units	capacity of each unit (MVar)	Total capacity (MVar)	End	
39	Angul to Bolangir	400	1	50	50	Bolangir	-
40	Bolangir to Jeypore	400	1	50	50	Bolangir	-
		400	1	80	80	Jeypore	
41	Rourkela to Talcher I & II	400	2	50	100	TSTPP	-
42	Keonjhar to Rengali	400	1	63	63	Rengali	-
43	Rengali to Indravati	400	2	50	100	Rengali	-
			1	50	50	Indravati	
44	Rourkela to Chaibasa-I	400	1	50	50	Rourkela	Switchable
45	Baripada to Duburi	400	1	63	63	Baripada	-
46	Rourkela to Jamshedpur II	400	1	50	50	Rourkela	Switchable
47	Baripada to Keonjhar	400	3	16.67	50.01	Baripada	-
48	Jharsuguda to Dharamjaygarh-I	765	1	330	330	Dharamjaygarh	-
49	Jharsuguda to Dharamjaygarh-II	765	1	330	330	Dharamjaygarh	-
West Bengal							
50	Behrampur to Jeerat-I	400	1	50	50	Jeerat	-
51	Sagardighi to Subashgram	400	3	21	63	Sagardighi	-
			1	50	50	Subashgram	
52	Farakka to Parulia-I	400	1	50	50	Farakka	-
53	Bidhannagar to Parulia-I	400	3	16.7	50.01	Parilia	-
54	Bakreswar to Arambagh	400	1	63	63	Bakreswar	-
55	Bakreswar to Jeerat	400	1	63	63	Jeerat	-
56	Malda to Purnea I & II	400	2	63	126	Malda	-
57	Binaguri to Bongaigaon- I & II	400	2	63	126	Bongaigoan	
58	Binaguri to Tala I & II	400	2	63	126	Binaguri	-
59	Binaguri to Tala IV	400	1	63	63	Binagiri	-
60	Binaguri to Bongaigaon III & IV	400	2	80	160	Binagiri	Switchable
61	Ragunathpur to Ranchi	400	1	60	60	Ranchi_PG	-
62	Ragunathpur to Ranchi	400	1	60	60	Ranchi_PG	-

Table F: State wise list of load data considered for the study present in the Eastern region grid

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
Bihar								
1	Arrah	132/33	1	20	20	BSPTCL	13.01	4.27
			3	50	150			
2	Ataula (Arwal) (Karpi)	132/33	2	20	40		25.27	8.30
3	Aurangabad	132/33	2	20	40		12.20	2.83
4	Banjari	132/33	3	20	60		5.29	1.74
5	Banka	132/33	3	20	60		17.45	7.75
6	Barauni TPS	132/33	1	50	50		39.03	12.82
			2	20	40			
7	Barh	132/33	1	20	20		34.48	11.32
			1	50	50			
8	Baripahari	132/33	2	50	100		25.90	8.50
9	Belaganj	132/33	2	20	40		14.87	4.88
10	Bettiah	132/33	2	20	40		29.74	9.77
			1	50	50			
11	Bihta	132/33	3	50	150		60.00	19.72
12	Bikramganj	132/33	2	20	40		18.24	5.99
			1	50	50			
13	Buxar	132/33	2	20	40		18.59	6.10
			1	50	50			
14	Chandauti (Gaya)	132/33	2	50	100		20.43	6.71
		132/25	2	13.35	26.7		0.00	0.00
15	Chhapra	132/33	2	20	40		26.49	8.70
			1	50	50			
16	Darbhanga (old)	132/33	2	50	100		37.17	12.21
17	Dhaka	132/33	3	20	60		15.51	5.09
18	Dalsingsarai	132/33	2	20	40		21.75	7.14
19	Digha	132/33	3	50	150		52.28	16.95

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
20	Dumraon	132/33	1	20	20		20.45	6.71
			1	50	50			
21	Ekma	132/33	1	20	20		13.01	4.27
22	Ekanga Sarai (Ekanagar)	132/33	3	20	60		24.63	8.09
23	Forbeshganj	132/33	1	20	20		54.71	17.97
			1	50	50			
24	Goh	132/33	2	20	40		10.95	3.60
25	Gangwara	132/33	2	50	100		26.18	8.60
26	Gaighat	132/33	2	50	100		45.81	19.58
27	Hazipur	132/33	3	50	150		53.36	17.53
28	Hulasganj	132/33	2	20	40		12.77	4.19
29	Harnaut	132/33	2	20	40		8.49	4.11
30	Hathidah	132/33	3	20	60		13.04	3.62
31	Imamganj	132/33	2	20	40		13.68	4.49
32	Jagdishpur	132/33	2	20	40		18.59	6.10
33	Jandaha	132/33	2	20	40		24.54	8.06
34	Jainagar	132/33	3	20	60		5.56	1.83
35	Jakkanpur	132/33	4	50	200		91.00	33.60
			1	20	20			
36	Jamalpur	132/33	2	50	100		32.55	10.70
37	Jamui	132/33	2	20	40		28.00	9.20
38	Jehanabad	132/33	2	20	40		26.50	8.72
	Jehanabad TSS	Railway feeder					3.00	0.99
39	Kahalgaon	132/33	2	20	40		27.88	9.16
			2	50	100			
40	Karmnasa	132/33	2	50	100		19.00	6.24
			1	20	20			
		132/25	1	21.6	21.6		6.00	1.86
			1	20	20			
41	Kataiya	132/33	3	20	60		20.60	3.37

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
42	Katihar	132/33	3	20	60		30.47	11.37
			1	50	50			
43	Katra	132/33	3	50	150		65.00	20.87
44	Kusheshwarsthan	132/33	2	20	40		4.33	2.10
45	Kochas	132/33	2	20	40		18.51	6.08
46	Karbigahiya	132/33	4	50	200		23.20	8.30
47	Kudra	132/33	2	20	40		12.15	4.06
48	Khagaria	132/33	2	20	40		24.64	5.99
			1	50	50			
49	Kishanganj	132/33	1	50	50		40.32	13.24
			1	20	20			
50	Lakhisarai	132/33	3	20	60		32.00	15.00
51	Madhubani	132/33	2	20	40		19.70	6.47
52	Masaurhi	132/33	2	20	40		25.54	8.39
53	Mithapur	132/33	2	50	100		51.11	20.66
54	Mohania	132/33	1	50	50		14.90	0.09
			1	20	20			
55	Motihari	132/33	1	20	20		42.17	16.84
			1	50	50			
56	Masrakh	132/33	2	20	40		7.14	1.27
57	Muzaffarpur	132/33	3	50	150		48.00	15.78
58	Nalanda	132/33	2	20	40		20.70	6.80
59	Naugachhia	132/33	3	20	60		15.67	5.85
60	Nawada	132/33	1	20	20		42.40	9.70
			3	50	150			
61	Pandaul	132/33	2	20	40		16.00	2.27
			1	50	50			
62	Phulparas	132/33	2	20	40		10.00	2.00
63	Purnea	132/33	1	20	20		47.77	16.98
			2	50	100			

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
64	Rafiganj	132/33	1	50	50		19.16	6.29
			1	20	20			
65	Rajgir	132/33	2	20	40		13.59	4.46
66	Ramnagar	132/33	2	20	40		7.75	2.55
67	Raxaul	132/33	2	20	40		13.01	4.27
68	Remi nagar (Runni Saidpur)	132/33	2	20	40		7.74	2.54
69	Sherghati	132/33	2	20	40		10.27	3.37
70	SKMCH	132/33	2	50	100		49.26	16.18
71	Sonebarsa	132/33	2	20	40		11.38	2.98
72	Sabour	132/33	3	50	150		10.00	2.75
73	Saharsa	132/33	1	20	20		24.00	7.18
74	Samastipur	132/33	2	20	40		36.62	11.29
75	Sasaram	132/33	2	50	100		25.91	8.51
76	Shekhpura	132/33	2	20	40		26.55	8.72
77	Sheetalpur	132/33	2	20	40		10.49	3.45
78	Sitamarhi	132/33	3	50	150		18.59	6.10
79	Siwan	132/33	1	20	20		29.74	9.77
			2	50	100			
80	Sonenagar	132/33	1	50	50		37.17	12.21
			1	20	20			
		132/25	1	21.6	21.6		11.86	3.89
			1	20	20			
81	Sultanganj	132/33	2	20	40		16.73	5.49
			2	50	100			
82	Supaul	132/33	3	20	60		21.80	7.16
83	Tehta	132/33	2	20	40		10.95	3.60
84	Tekari	132/33	2	20	40		14.69	4.82
85	Udaikishanganj	132/33	2	20	40		10.00	6.00
86	Vaishali	132/33	2	20	40		32.07	10.53
87	Wazirganj	132/33	2	20	40		18.59	6.10

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
88	Arrah Rly	132/25					7.30	2.40
89	Lakhisarai Rly	132/25					8.21	2.70
90	Rafigunj Rly	132/25					7.75	2.55
91	Dumarn Rly	132/25					8.21	2.70
92	Hajipur Rly	132/25					6.39	2.10
93	Chapra Rly	132/25					6.39	2.10
94	Kudra Rly	132/25					6.11	2.01
95	Mokama Rly	132/25					6.39	2.10
96	Railfactory Rly	132/25					18.24	5.99
97	Khsurupur Rly	132/25					5.00	1.62
98	Paharpur Rly	132/25					5.47	1.80
99	KCL Rly	132/25					5.47	1.80
100	Jhaja Rly	132/25					5.47	1.80
101	BodhGaya	132/33	1	50	50		40.41	13.27
102	Dehri	132/33	2	50	100		42.75	14.04
103	GopalGanj	132/33	2	50	100		44.61	14.65
104	Begusarai	132/33	3	50	150		31.47	10.34
105	Khagaul	132/33	5	50	250		92.00	30.24
106	Khagaul Rly	133/25					8.00	2.69
107	Sipar	132/33	2	50	100		16.40	5.00
108	Fatuha	132/33	3	50	150		46.00	14.79
109	Bihar Sarif	132/33	1	20	20	10.28	3.38	
110	Madhepura	132/33	2	20	40	18.11	8.00	
			1	100	100			
111	Pussoli New	132/33	1	50	50	82.28	27.02	
Jharkhand								
1	Chaibasa	132/33	2	50	100	JUSNL	5.23	2.56
2	Lalmatiya	132/33	1	20	120		19.33	6.36
			2	50				
3	PTPS	220/132	2	150	300			

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
4	Adityapur	132/33	4	50	200		71.03	39.48
5	Chakradharpur	132/33	1	20	20		6.10	2.97
6	Dalbhumgarh	132/33	2	50	100		41.84	13.32
		Railway feeder					5.40	2.62
7	Chaibasa	132/33	1	25	25		1.15	0.35
8	Chandil II/ Maniq	132/33	2	50	100		16.56	5.47
9	Deogarh	132/33	3	50	150		42.71	13.37
		Railway feeder						
10	Dumka (Maharo)	132/33	2	50	100		23.89	6.43
11	Garhwa Road	132/33	1	50	70		17.43	2.40
			1	20				
		Railway feeder						
12	Goelkara	132/33	1	20	20		8.00	4.27
							3.49	1.81
13	Golmuri	132/33	2	50	100		38.36	12.48
14	Gumla	132/33	2	20	40		12.46	4.07
15	Hatia old	132/33	4	50	200		70.96	23.12
		Railway feeder						
16	Tamar	132/33	2	50	100		10.46	3.04
17	Madhupur	132/33	2	50	100		14.99	5.59
18	Jadugoda	132/33	2	20	90		20.92	1.92
			1	50				
19	Jamtara	132/33	1	50	70	23.54	5.62	
			1	20		4.00	0.97	
		Railway feeder						
20	Japla	132/33	2	20	40	6.10	2.09	
21	Kamdara	132/33	2	20	60	10.46	3.47	
			1	20		0.00	0.00	
		Railway feeder						
22	Kanke	132/33	2	50	100	10.34	2.98	

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
23	Kendposi	132/33	2	20	90	Owned By	15.59	5.06
			1	50			7.08	2.33
		Railway feeder					7.08	2.33
24	Latehar	132/33	2	50	100		8.73	2.88
25	Lohardaga	132/33	2	50	100		25.19	9.05
26	Namkum	132/33	4	50	200		75.14	24.41
		Railway feeder					75.14	24.41
27	Nowamundi	132/33	1	50	50		5.54	1.73
28	Nowamundi Tata Steel	132					20.80	7.80
29	Pakur	132/33	2	50	100		30.86	9.92
30	Rajkharsawan	132/33	2	50	100		6.97	1.84
		Railway feeder					6.00	2.91
31	Sahebgunj	132/33	2	50	100		22.94	1.38
32	Daltonganj	132/33	2	50	100		17.43	3.46
33	Saljagiri Rly	132/25	-	-	-		0.00	0.00
34	Shankarpur Rly	132/25	-	-	-		3.00	0.65
35	Tatisiloi RLY	132/25	-	-	-		5.70	1.60
36	Tolra Rly	132/25	-	-	-		12.00	5.81
37	Lodhma Rly	132/25	-	-	-		0.49	0.24
38	Bakaspur Rly	132/25	-	-	-		3.00	0.99
39	Chakradharpur Rly	132/25	-	-	-		1.00	0.48
40	Bano Rly	132/25	-	-	-		0.00	0.00
41	Umi Rly	132/25	-	-	-		2.75	1.66
42	HEC Hatia	132					6.60	2.93
43	Ushamartin	132				13.96	4.78	
44	APL Ramchandrapur	132				18.63	9.02	
45	Patherdih	132/33	2	80	160	DVC	59.08	24.05
			1	50	50		4.85	1.19
		132/25	2	12.5	25		6.92	3.35
46	Patratu	132/33	1	31.5	32		6.92	3.35

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
47	Gola	132/33	2	50	100		19.23	5.44
48	K'Dubi	132/33	2	50	100		34.50	16.55
			1	80	80		8.10	3.91
		132/25	2	25	50		8.31	2.03
49	Konar	132/33	1	20	20		6.36	2.09
		Railway feeder					20.72	5.44
50	Biada	132/33	2	80	160		31.36	10.31
51	BTPS B	132/33	2	50	100		33.30	7.98
52	Dhanbad	220/33	2	80	160		14.93	3.98
53	Jamshedpur	132/33	3	45	135		75.00	24.65
54	Koderma	132/33	1	80	80		14.53	5.58
			1	50	50		111.00	30.41
55	Ramgarh	132/33	2	80	160		27.27	10.48
		132/33	1	50	50		68.88	21.06
56	Mosabani	132/33	2	20	52		19.49	5.61
			1	32			12.71	6.00
57	Girdhi	132/33	2	80	160		29.60	7.97
		220/33	1	80	80		34.60	12.20
58	North Karanpura	132/33	2	50	100		50.00	16.43
59	Govindpur	132					127.05	41.76
60	Hazaribag	132/33	2	50	100		23.00	8.00
61	Nimghat	132/33	2	31.5	63		73.91	27.24
62	Putki	132/33	3	80	240		29.88	12.05
63	Barhi	132/33	1	50	81.5		0.00	0.00
			1	31.5			12.32	4.04
64	CTPS	132/33	2	80	160		139.13	17.27
65	MHS-RB3	132/33	2	50	100			
66	Panchet	132/33	1	50	50			
67	Maniq Rly	132						
68	Jamshedpur	220/132						

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
69	JSPL	132					12.52	0.81
70	TISCO	400/132					237.00	17.03
71	Maniq	132					31.25	-0.43
72	ECRBR-D	132					0.00	0.00
73	EC Rly North Karanpura	132					9.06	4.39
74	BSL	132					66.80	25.56
75	Elctr DVC /Dhanbad	220					5.17	1.70
76	Nimiaghat Rly	132/25					26.22	10.08
77	ECR Gomia	132					0.52	0.25
78	MAL-Impex	132					34.05	4.31
79	Sermuri	132					10.26	4.49
80	Pradhankant	132					4.29	1.43
81	BSLGD	132					33.44	12.78
82	Rajbera	132					9.11	4.41
83	Manoharpur	132/33	2	50	100	JUSNL	4.36	1.41
84	Sikidri	132/33	2	20	40		0.00	0.00
Odisha								
1	Mendhasal	220/33	1	20	20	OPTCL	0.02	0.00
2	Balasore	132/33	2	63	166		61.63	18.63
			1	40			10.94	2.70
		Railway Feeder						
3	Bhadrak	132/33	2	63	166		54.31	15.73
			1	40			4.83	-0.13
		Railway Feeder						
4	Bidanasi	132/33	2	63	166		71.98	29.26
			1	40				
5	Budhipadar	132/33	1	20	20		3.80	1.25
6	Chandaka	132/33	2	63	166		91.00	33.00
			1	40				
		Railway Feeder						

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
7	Jayanagar	132/33	2	20	52.5		20.37	7.18
			1	12.5			9.61	3.16
		Railway Feeder					0.00	0.00
		ChakusTrac						
8	Joda	132/33	3	20	100		13.91	3.70
			1	40				
9	Narendrapur	220/132	1	100	520		27.80	9.14
			2	160				
		132/33	2	40				
			1	20				
		Railway Feeder (JagnathTrac)						
10	Paradip	132/33	2	20	52.5		22.40	6.13
			1	12.5				
11	Theruvali	132/33	2	12.5	25		8.00	1.34
12	Balimela	220/33	1	20	60		15.60	3.20
			1	40				
13	Barkote	220/33	2	40	80		16.87	-4.66
14	Nayagarh	220/33	1	40	80		27.00	6.70
			2	20				
15	Duburi	220/33	2	40	80		8.00	3.02
16	Akhusingh	132/33	2	12.5	25	8.85	2.66	
17	Anandapur	132/33	2	12.5	45	11.40	3.19	
			1	20				
18	Angul	132/33	2	40	100	20.25	6.79	
			1	20				
19	Argul	132/33	1	40	60	1.60	-0.70	
			1	20				
20	Atri	132/33	1	20	20	0.00	0.00	
21	Aska	132/33	3	40	120	29.30	9.27	
22	Balugaon	132/33	1	40	72.5	23.93	6.81	

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVar
		Railway feeder (Solar Trac)						
23	Banki	132/33	2	20	40			
24	Barbil	132/33	2	12.5	25			
		Railway Feeder						
25	Baragarh	132/33	3	40	120			
26	Baripada	132/33	3	40	120			
27	Barpalli	132/33	1	20	60			
			1	40				
28	Berhampore	132/33	2	40	100			
			1	20				
29	Basta	132/33	1	12.5	32.5			
			1	20				
30	Bhanjanagar	132/33	2	40	96			
			1	16				
31	Bhawanipatna	132/33	2	12.5	25			
32	Bhubaneswar (BBSR)	132/33	3	63	189			
33	Boinda	132/33	1	20	45			
			2	12.5				
34	Boudh	132/33	1	20	20			
35	Bolangir	132/33	2	40	92.5			
			1	12.5				
36	Brajrajnagar	132/33	1	40	100			
			3	20				
		132/11	1	12.5	12.5			
37	Chainpal	132/33	2	40	100			
			1	20				
38	Chandikhole	132/33	3	20	60			
39	Chhandpur	132/33	2	12.5	25			

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
40	Chhatrapur	132/33	3	20	60	15.17	5.53	
		Railway Feeder (Ramba Trac)				10.97	4.85	
41	Chhend	132/33	3	40	120	47.91	8.44	
		Railway Feeder (Naugaon Trac)				0.58	0.19	
42	Choudwar	132/33	1	20	100	42.00	14.74	
			2	40		5.00	-0.18	
		Railway Feeder (Kendpur Trac)						
43	Cuttack	132/33	3	40	120	24.90	5.00	
44	Dabugaon	132/33	2	12.5	25	2.69	0.19	
45	Dhenkanal	132/33	3	40	120	41.07	-5.65	
		Railway Feeder (Jornda Trac)				5.90	0.05	
46	Digapahandi	132/33	2	20	52.5	20.51	6.38	
			1	12.5				
47	Ganjam	132/33	2	12.5	25	10.30	1.30	
48		Bulk industrial Load				10.30	1.30	
49	Jagatsinghpur	132/33	2	20	80	22.23	5.21	
			1	40				
		Railway Feeder (Goreknath Trac)				10.50	5.40	
50	Jajpur road	132/33	2	40	100	24.79	10.03	
			1	20				
51	Jajpur town	132/33	2	40	100	22.68	5.70	
			1	20				
52	Jaleswar	132/33	2	31.5	75.5	20.41	7.48	
			1	12.5		12.72	6.94	
		Railway Feeder						
53	Jharsuguda	132/33	1	40	72.5	9.50	3.24	
		132/11	1	20		3.60	1.10	
			1	12.5		10.00	4.40	
		Railway Feeder						
54	Junagarh	132/33	3	20	60	19.12	5.28	

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
55	Kalarangi	132/33	2	12.5	45		14.13	3.70
			1	20				
56	Kalunga	132/33	2	40	80		25.25	1.25
57	Kamakshyanagar	132/33	1	20	45		14.57	3.08
			2	12.5				
58	Karanjia	132/33	2	12.5	45		7.32	2.02
			1	20				
59	Kendrapara	132/33	2	40	92.5		21.07	6.61
			1	12.5				
60	Kesinga	132/33	1	40	80		30.60	1.32
			2	20				
61	Kesura/Badagada	132/33	1	63	103		21.21	7.34
			1	40				
62	Khariar	132/33	2	40	80		28.70	9.30
63	Khurda	132/33	3	40	120		53.71	2.37
		Railway Feeder (Kaipad Trac)					7.88	1.37
64	Konark	132/33	2	20	40		5.80	1.60
65	Kuchinda	132/33	2	20	40		11.04	3.14
66	Lapanaga	132/33	1	20	20		0.20	0.07
67	Mancheswar	132/33	3	63	189		0.00	0.00
68	Mania	132/33	1	12.5	12.5		10.50	2.40
69	Marshaghai	132/33	2	20	40		2.92	1.00
70	Mohana	132/33	2	12.5	25			
71	Nimapara	132/33	2	40	92.5		37.23	12.24
			1	12.5				
72	Nuapara	132/33	2	20	40		8.20	3.20
73	Nuapatna	132/33	1	40	72.5		28.22	9.48
			1	20				
			1	12.5				
74	Padampur	132/33	1	20	20		11.20	3.68

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
75	Parlakhemundi	132/33	3	12.5	37.5		9.80	3.05
76	Patnagarh	132/33	1	40	80		13.07	5.40
			2	20				
77	Pattamundai	132/33	2	20	52.5		15.13	4.30
			1	12.5				
78	Phulbani	132/33	2	12.5	65		12.07	2.65
			1	40				
79	Phulnakhara	132/33	2	20	40		14.22	4.37
80	Polasapanga	132/33	1	40	80		21.67	6.05
			2	20				
		Railway Feeder						8.31
81	Puri	132/33	3	40	120		37.50	11.40
82	Purusottampur	132/33	2	12.5	25		10.43	3.33
83	Rairakhole	132/33	2	12.5	25		7.09	1.60
84	Rairangpur	132/33	2	20	52.5		6.50	0.80
			1	12.5				
85	Rajgangpur	132/33	3	40	120		41.52	3.48
		Railway Feeder					0.93	0.31
86	Ranasinghpur	132/33	2	63	166		38.00	12.49
			1	40				
87	Rayagada	132/33	2	12.5	25	10.09	3.57	
88	Rourkela	132/33	4	35	140	36.60	9.43	
		Railway Feeder					3.30	-0.57
89	Saintala	132/33	1	10	22.5	1.82	0.05	
			1	12.5				
		Railway Feeder						
90	Salipur	132/33	2	20	52.5	19.70	6.83	
			1	12.5				
91	Sambalpur	132/33	2	31.5	103	53.63	21.04	
			1	40				

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
92	Shamuka	132/33	2	31.5	63		10.99	1.91
93	Somnathpur	132/33	1	12.5	12.5		0.00	0.00
94	Sonepur	132/33	3	20	60		34.95	10.38
95	Soro	132/33	1	40	80		28.46	10.72
			2	20				
96	Sunabeda	132/33	3	12.5	37.5		17.00	3.50
97	Sundargarh	132/33	1	40	60		20.10	5.08
			1	20				
98	Tentulikhunti	132/33	1	20	32.5		9.69	2.94
			1	12.5				
99	Tarkera	132/33	1	12.5	40		0.00	0.00
100	Umerkote	132/33	2	20	40		9.00	2.00
101	Bolani	132/11	2	10	20		1.62	-0.49
102	Nandira	132					16.73	0.13
103	REN	220/33	2	20	40		5.05	1.08
104	Sterling	400					0.00	0.00
105	Laksmipur	220/33	1	20	20		4.08	0.76
106	Chiplma	132/11					19.16	6.30
107	Katpali	132/33	1	40	80		24.40	9.70
			2	20				
108	SPS	220					2.00	0.66
109	Bolangir New	132/33	1	12.5	12.5		4.60	0.30
110	Salibani	132					16.71	2.93
111	Rengli	132	2	20	40		5.05	1.08
112	Samangara	132/33	1	20	20		0.10	0.05
113	Rajgangpur Rly						0.02	0.01
114	Bhulta Rly	132					5.48	1.80
115	Meramandali Rly	132					7.40	1.90
116	Jakhpur Rly (Dubri)	132					4.00	1.31

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
117	Dharma Rly	132					0.25	0.12
118	Tomka Rly	132					0.00	0.00
119	Padwa Rly	132					5.00	1.64
120	Manbar Rly	132					5.00	1.64
121	Maling Rly	132					5.00	1.64
122	Keonjhar Rly	132					7.19	-3.20
123	Bamra Rly	132					0.00	0.00
Bulk Load								
124	IMFA1	132					24.00	11.62
125	Damanjod	132					37.70	22.00
126	IRE	132					6.38	1.90
127	FCI	132					0.40	0.19
128	Baminpl	132					18.00	5.92
129	Balasore Alloy	132					50.96	0.34
130	BirlaTyr	132					3.02	0.17
131	PPL	132					0.06	0.03
132	L&T Cem co	132					8.00	0.10
133	Power Max	132					0.22	0.11
134	MCL	132					15.00	0.20
135	Chandiposh	220					18.00	0.50
136	J K Paper	132					0.04	0.02
137	FAP Joda	132					15.58	4.22
138	HAL	132					10.11	4.39
139	BRG	132					6.00	0.85
140	M L Rungta	132					0.33	0.16
141	PPT	132					7.62	1.04
142	RAW MET	132					21.56	7.08
143	Hind Metalic	132					0.00	0.00
144	MESCO	132					3.59	1.18
145	ROHIT	220					20.00	8.00

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
146	Adhunik	132					32.67	10.74
147	Dahmra Prt	132					4.80	0.76
148	OCL TA	132					7.84	2.58
149	Saliban (Bhuvi Profile)	132					1.50	0.50
150	ESSAR	220					19.10	1.40
151	IOCL	220					0.60	0.20
152	Jabamaye Ferro	132					0.00	0.00
153	Beekay Steels	132					7.84	2.58
154	Arya	132					6.53	2.15
155	Bansapani	132					2.28	-0.93
156	BC Monty	132					18.00	1.00
157	Saintla	132					0.00	0.00
158	Tata Steel	220					70.00	13.00
159	BRPL	132					13.07	4.30
160	MSL	132					3.11	0.79
161	VVC	132					0.00	0.00
162	JSPL	220					32.67	10.74
163	Greed Steel	132					0.00	0.00
164	BRP-Steel	132					13.07	4.30
165	Basundra	220					2.00	0.97
166	Utkal Aluminum	220					0.00	0.00
167	Adity Aluminum	220					0.00	0.00
Sikkim								
1	Phodong	66/11	1	5	5	Sikkim Gov	1.08	0.26
			1	2.5	2.5			
2	Bulbuley	66/11	2	10	20		3.76	0.91
3	Sichey	66/11	2	10	20		6.45	1.55
			1	5	5			
4	Tadong	66/11	3	5	15		3.76	0.91
5	Rongly	66/11	2	2.5	5		0.81	0.20

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
6	Mamring	66/11	1	10	10		5.11	1.28
			1	7.5	7.5			
			1	15	15			
7	Melli	66/11	2	5	10		1.61	0.41
8	Namchi	66/11	2	2.5	5		0.81	0.21
9	Rabangla	66/11	1	5	5		1.61	0.40
10	Rothak	66/11	2	2.5	5		0.81	0.20
11	Soreng	66/11	2	2.5	5		0.81	0.20
12	Geyzing	66/11	2	2.5	5		0.81	0.21
13	Purano Namchi	66/11	2	7.5	15		2.15	0.54
14	Pakyong	66/11	1	10	10		3.76	0.91
15	Pelling	66/11	1	5	5		1.61	0.41
16	Rhenock	66/11	1	5	5		1.61	0.39
17	Mangan	66/11	2	5	10		2.15	0.52
18	Ranipool	66/11	2	7.5	15		2.15	0.53
19	Topakhani	66/11	1	7.5	7.5		2.15	0.53
		66/11	1	5	5			
Westbengal								
1	Arambagh	132/33	3	50	150	WBSETCL	67.25	22.11
2	Bakreswar	220/33	1	50	50		10.91	6.18
3	Asansol	132/33	3	50	150		90.15	29.62
4	New Bishnupur	132/33	2	31.5	63		20.01	11.12
5	Dalkhola	132/33	3	20	60		21.20	6.97
6	Dharampur	132/33	2	50	100		63.60	11.22
7	Domjur	132/33	3	50	150		71.14	17.79
8	Gokarna	132/33	3	50	150		59.25	19.48
9	Howrah	132/25	2	20	40		9.12	2.66
10	Krishnagar	132/33	2	50	100		81.95	26.93
			1	31.5	31.5			
11	Laxmikantpur	132/33	1	31.5	81.5	76.70	25.21	

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
	Laxmikantpur Rly	132/25	2	12.5	25		3.34	1.10
12	New Haldia	132/33	1	31.5	31.5		32.01	10.53
		132/33	1	50	50			
13	New Jalpaiguri	132/33	2	50	100		53.36	17.54
14	New town action area-III	220/33	2	50	100		53.36	11.12
15	Rishra	132/33	3	50	150		56.45	18.55
16	Satgachia	132/33	2	50	131.5		44.46	14.62
			1	31.5				
		Railway Feeder						
17	Subhashgram	132/33	2	31.5	63		46.04	19.94
18	Hura	132/33	2	50	100		5.80	1.90
19	Foundry park	132/33	2	50	100		19.75	6.47
20	Midnapur	132/33	2	50	100		37.79	18.31
21	Kolkata leather complex (KLC)	132/33	3	50	150		76.15	23.34
22	Adisapthagram	132/33	2	50	131.5		111.16	36.54
			1	31.5				
		132/25	2	20	40		24.46	8.04
23	Alipurduar	132/66	2	16	52		27.90	9.17
			1	20				
		132/33	1	31.5	31.5		5.34	1.76
24	Amtala	132/33	1	31.5	31.5		50.02	21.12
			1	50	50			
25	Asoknagar	132/33	2	50	100		54.47	17.90
		132/25	2	7.5	15		3.34	1.10
26	Bagnan GIS	132/33	2	50	100		40.35	13.26
27	Bagmundi	132/33	1	20	20		2.60	1.26
28	Balurghat	132/33	4	12.5	50		19.00	9.20
29	Bankura	132/33	2	50	100		33.46	1.22
		Railway Feeder					11.23	5.11

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
30	Barasat	132/33	3	50	150		115.61	37.99
		Railway Feeder					8.89	4.30
31	Behala / Joka	132/33	3	50	150		66.57	19.42
32	Basirhat	132/33	2	50	100		48.81	8.88
33	Belmuri	132/33	2	31.5	63		17.79	5.85
34	Berhampore	132/33	3	50	150		108.94	32.97
35	Bighati	132/33	2	50	100		28.46	3.11
36	Birsingha	132/33	2	50	100		43.24	15.23
37	Bishnupur (old)	132/33	1	50	50		26.69	7.67
		132/33	1	31.5	31.5			
38	Bolpur	132/33	3	50	150		47.80	15.71
	Bolpur Prantik TSS	132/25					1.22	0.39
39	Bongaon	132/33	3	31.5	94.5		31.13	10.23
40	Barjora	132/33	2	31.5	63		12.45	3.19
41	Chanditala	132/33	2	50	100		30.38	14.71
42	Chandrakora road	132/33	1	50	81.5		37.11	14.88
			1	31.5				
		Railway Feeder					2.40	0.78
43	Contai	132/33	2	50	100		75.12	26.45
		Railway					0.67	0.32
44	Coochbehar	132/33	3	50	150		73.40	24.13
45	Darjeeling	132/33	3	10	30		3.71	1.22
46	Debogram	132/33	1	20	101.5		31.13	0.82
			1	31.5				
			1	50				
		Railway Feeder					3.78	0.29
47	Dhulian	132/33	2	31.5	63		21.79	7.23
48	Egra	132/33	3	50	150		50.36	4.56
49	Falta	132/33	2	31.5	63		62.25	20.45
			1	50	50			

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
50	Gangarampur	132/33	3	20	72.5		33.60	16.41
			1	12.5				
51	Haldia	132/33	1	50	104		30.79	10.12
			1	31.5				
		132/25	1	10			3.34	1.10
			1	12.5				
52	Haldia NIZ	132/33	2	31.5	63		1.78	0.58
53	Hizli	132/33	1	31.5	81.5		42.24	10.44
			1	50				
		132/25	2	10	20		14.45	4.75
54	Jangipara	132/33	2	31.5	63		22.38	7.36
55	Jhargram	132/33	1	31.5	31.5		30.42	6.57
			1	50	50			
56	Kurseong	132/33	3	10	30		0.90	0.50
57	Kakdwip	132/33	2	31.5	63		31.13	10.00
58	Kalan	132/33	2	31.5	63		38.46	18.45
59	Kalyani	132/33	1	31.5	81.5		49.11	17.84
			1	50				
60	Khatra	132/33	2	50	100		23.57	7.44
61	Katwa	132/33	2	31.5	63		47.82	20.44
			1	50	50			
		Railway Feeder					0.20	0.07
62	Khanyan	132/33	2	31.5	63	27.70	12.23	
63	Kharagpur	132/33	2	31.5	63			
	Kharagpur TSS	132/33				0.06	0.03	
64	Khejuria GIS	132/33	2	50	100	19.12	5.55	
65	Kolaghat	132/33	3	50	150	40.02	13.15	
		132/25	2	12.5	25	5.11	2.22	
66	Lalgola	132/33	2	31.5	63	17.79	8.89	
67	Lilooah	132/33	3	50	150	103.38	33.98	

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
		132/25	2	20	40		31.13	10.23
68	Mahachanda	132/33	2	31.5	63		59.35	24.71
			1	50	50			
69	Mathabhanga	132/33	1	50	50		21.40	4.50
			1	31.5	31.5			
70	Malda	132/33	3	50	150		94.49	27.40
71	Mahishpota	132/33	2	31.5	63			
72	Mankar	132/33	3	31.5	94.5		45.51	14.06
73	Maynaguri	132/33	1	31.5	141.5		28.12	9.25
			1	50				
			2	30				
74	Nazirpur	132/33	2	31.5	63		23.79	8.48
75	North Bengal university (NBU)	132/33	2	31.5	113		36.47	17.66
			1	50				
76	New Town AA 1	132/33	2	50	100		42.91	8.44
77	Pingla	132/33	3	50	150		56.26	18.49
78	Purulia (WB)	132/33	2	31.5	83		39.90	0.99
			1	20				
		132/25	2	12.5	25		7.78	2.56
79	Raghunathganj	132/33	1	31.5	101.5		58.92	35.35
			1	20				
			1	50				
80	Raghunathpur	132/33	2	31.5	63		12.54	4.27
81	Raigunj	132/33	1	31.5	96.5		44.00	21.31
			2	20				
			2	12.5				
82	Raina	132/33	1	50	50		94.26	25.01
83	Rampurhat	132/33	2	50	100		49.19	12.11
		Railway Feeder					1.67	1.06
84	Ranaghat	132/33	2	50	100		67.62	32.75

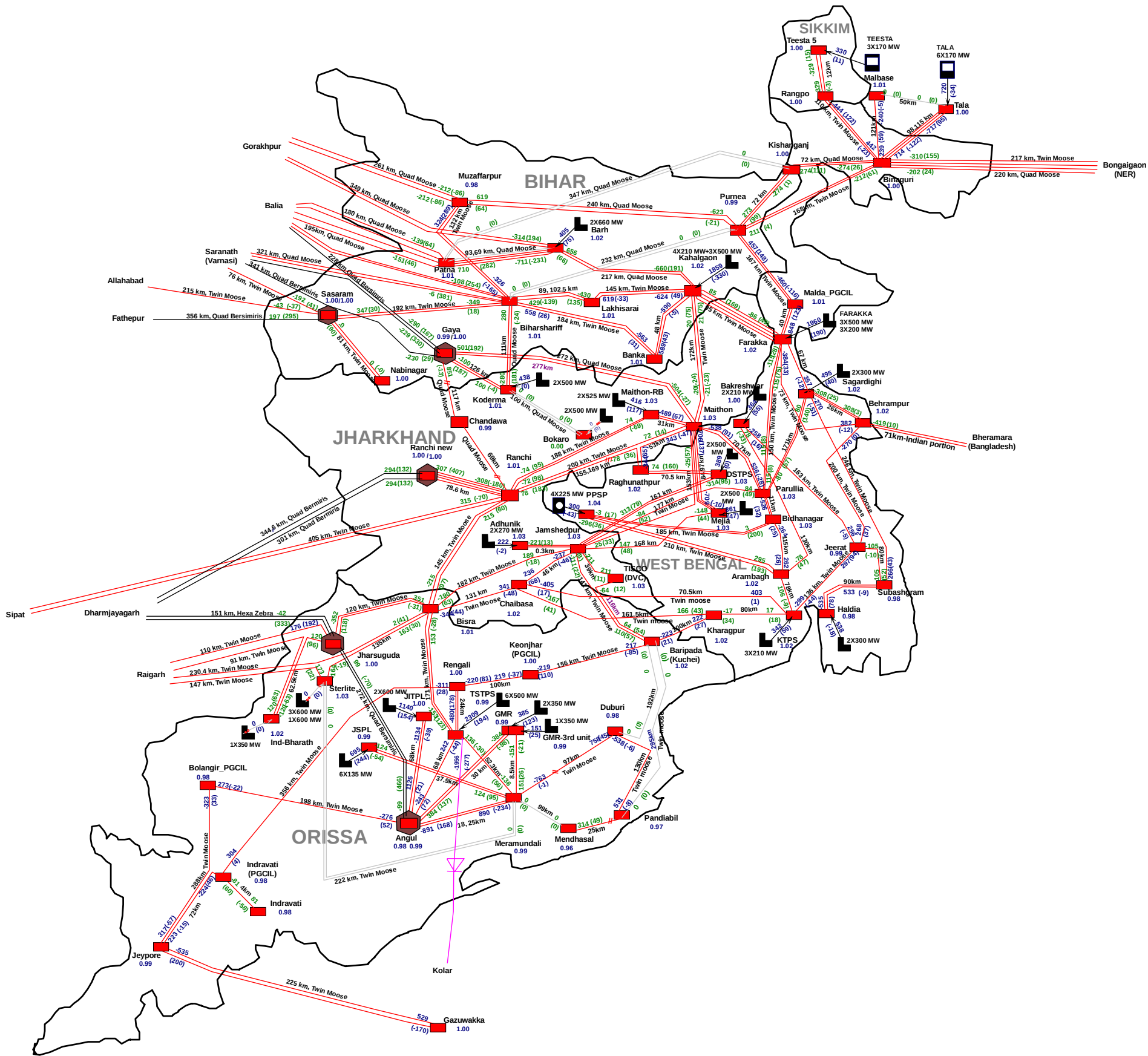
Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
		132/66	2	31.5	63		10.00	4.59
		132/25	1	12.5	22.5		8.89	0.03
			1	10				
85	Sainthia	132/33	2	50	100		51.36	6.89
86	Salt lake	132/33	3	50	150		77.15	25.36
87	Salt lake GIS	132/33	2	50	100		47.91	15.00
88	Samsi	132/33	3	31.5	94.5		46.38	15.24
89	Siliguri	132/33	2	50	100		40.02	13.15
90	Sonarpur	132/33	3	31.5	94.5		48.91	16.07
		132/25	2	20	40		10.89	3.58
91	Tamluk	132/33	2	50	100		39.24	11.78
92	Tarakeswar	132/33	1	31.5	81.5		44.91	14.76
			1	50				
93	Titagarh	132/33	3	50	150		101.58	29.35
	Titagarh Rly	132/25	2	20	40		13.21	6.23
94	Ujaano (NBU New)	132/33	2	31.5	63		28.90	9.50
95	Ukhra	132/33	2	50	100		48.52	8.67
96	Uluberia	132/33	3	50	150		83.48	19.45
97	Kuli	132/33	2	50	100		32.24	15.61
98	Food Park	132/33	2	50	100		21.69	6.97
99	Birpara	132/66	3	20	60		30.90	14.97
100	Chalsa	132/66	1	20	30		19.38	6.36
			1	10				
	Chalsa	132/33	2	20	40		6.23	-1.66
101	Serakol	132/33	2	50	100		26.05	9.10
102	Cossipur Rly	132					0.45	0.22
103	Balichak Rly	132					22.14	7.28
104	Dhatrigram Rly	132					4.45	2.22
105	Kalingpong	66/33					16.00	5.26
106	WBIDC	132/33	2	31.5	63		38.54	9.06

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
107	Resmi Bulk	132					29.52	9.70
108	Tata Metalic	132					6.16	2.02
109	SonarLal	132					18.79	2.89
110	HNIZ	132					22.23	10.77
111	Ambuja Frakka	132					40.02	13.15
112	Hind Motor	132					5.00	1.64
113	HPCL	132					9.26	3.05
114	Madras Cement	132					4.45	1.11
115	Rohit Ferro1	132					0.00	0.00
116	Manaksia	132					0.00	0.00
117	Bencon	132					0.00	0.00
118	Rohit Ferro	132					0.00	0.00
119	Modern	132				IPCL	10.45	5.02
120	BEL	132					15.00	7.27
121	JK Nagar	220/33	2	100	200	DPL	46.43	7.99
122	A Zone	132/11	1	20	20		11.64	3.69
		132/11	2	31.5	63		0.00	0.00
		132/33	1	50	50		60.36	19.05
123	B Zone	132/11	6	31.5	189		0.00	0.00
		132/33	1	50	50		42.00	13.38
124	AB Zone	132/33	1	50	50		16.65	5.29
125	C Zone	132/11	3	31.5	94.5		17.59	5.56
		132/33	1	50	50		3.15	1.01
126	C1 Zone	132/11	2	31.5	63		21.80	6.92
		132/33	2	50	100		44.20	13.84
127	Bamunara SS	132/34	2	50	100	DVC	1.60	0.12
128	Burnpur	220/33	2	50	100		15.25	1.21
129	Purulia	132/33	1	50	50		41.80	9.43
130	ASP	132	4	50	200		39.00	4.50
131	Jamuria	132/33	2	50	100			

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
132	Kalipahari	132/33	2	80	160	Owned By	51.14	19.52
133	Kalyaneswari	132/33	2	50	100		64.99	18.28
134	Mejia TPS	220/33	2	80	160		56.70	23.31
135	Barjora	220/33	1	100	100		83.52	6.42
		220/33	1	80	80			
		220/33	1	50	50			
136	Durgapur	220/33	1	50	50		107.00	35.17
		220/33	2	80	160			
137	Waria	132/33	3	50	150		10.20	1.26
138	Waria Rly	132/25	2	25	50		15.43	5.06
139	Belmuri	132/33	1	50	81.5		0.48	0.23
			1	31.5				
140	Belmuri Rly	132/25	2	25	50		15.06	5.75
141	Burdwan	132/33	2	50	180		48.00	5.00
			1	80				
142	Burdwan Rly	132/25					3.00	1.45
143	Rumkanali Rly	132/25					7.00	2.00
144	Tamla Rly	220					21.00	6.90
145	IISCOD	220					99.40	-10.40
146	Sonic thermal	132					56.94	2.14
147	Badrinarayan Alloy	132					36.32	11.93
148	Parulia	220/33	2	80	160		76.00	24.98
149	Howrah	132/33	2	55	110		0.09	0.04
150	EMSS	220/132 /33	5	160	800	CESC	53.00	22.58
							18.00	7.67
							18.00	7.67
							59.00	25.13
							46.00	19.60
151	Belur	132/33	3	50	150		132.50	13.14
152	BT Road	132/33	1	75	150		27.00	9.10

Sl.No	Name of the Sub-Station	Voltage level (kV)	Substation details			Owned By	33 KV lump load	
			No. of units	Capacity of each unit (MVA)	Total capacity (MVA)		MW	MVAr
			1	75			27.00	9.90
153	B.Garden	132/33	2	50	100		87.50	43.75
154	Titagarh	132/33	5	50	250		19.00	7.80
							51.00	15.00
							64.00	24.00
155	Dum Dum	132/33	2	75	150		38.00	15.00
156	Park lane	132/33	2	75	150		72.00	22.50
157	Jadavpore	132/33	2	50	100		72.00	19.70
			1	55	55		28.00	9.20
158	Chakmir	132/33	2	55	110		49.00	20.50
159	Majerhat	132/33	2	75	150		102.00	16.50
160	BBD Bag	132/33	1	68	136		39.00	12.82
			1	68			35.00	9.10
161	PRS	132/33	2	50	175		37.00	11.40
			1	75			28.00	6.30
162	East Calcutta	132/33	2	50	100		34.00	11.18
							89.00	16.10
163	NCGS	132/33	2	50	100		0.00	0.00
			1	75	75		0.00	0.00
			2	50			38.00	18.40
164	SRS	132/33	2	55	110		73.00	8.70
			1	75	75		47.00	14.00
165	Patuli	132/33	2	75	150		26.00	9.80
166	WBRS	132/33	2	75	150		81.00	25.00
167	Park Circus	132/33	1	75	75		17.00	5.60

ANNEXURE II – POWER MAP OF ER GRID AND ITS CONSTITUENTS STATES AND LINE LOADING DETAILS



LEGEND	Existing
765 kV S/S	
400 kV S/S	
765 kV line	
400 kV line	
Thermal generation	
Hydro generation	
Pumped storage plant	
Display Notation Injection into the bus : +ve Drawl away from the bus : -ve Voltage Mag/(Ang) in pu /degree Flows in MW and (Mvar)	

					R0	20/12/2016	
APPROVED	REVIEWED	CHECKED	DRAWN	DESCRIPTION	REV	DATE	REMARKS

Eastern Region existing network (August-16) geographical map



Eastern Regional Power Committee
14, Golf Club Road, Tollygunge,
Kolkata, West Bengal 700033

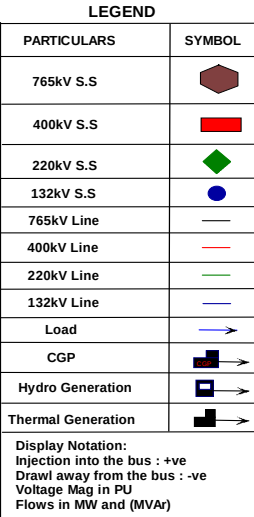
LOA details: ERPC/PR_DBASE/2016/3567 Dated 30 March 2016

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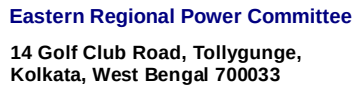


5, 11th cross, 2nd Stage,
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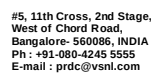
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Bihar state existing network (August-16) geographical map

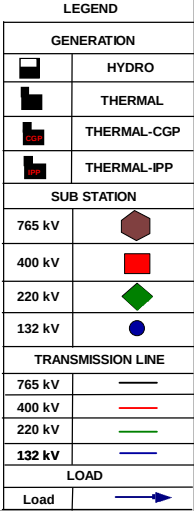


LOA details: ERPC/PR_DBASE/2016/3567 Dated 30 March 2016

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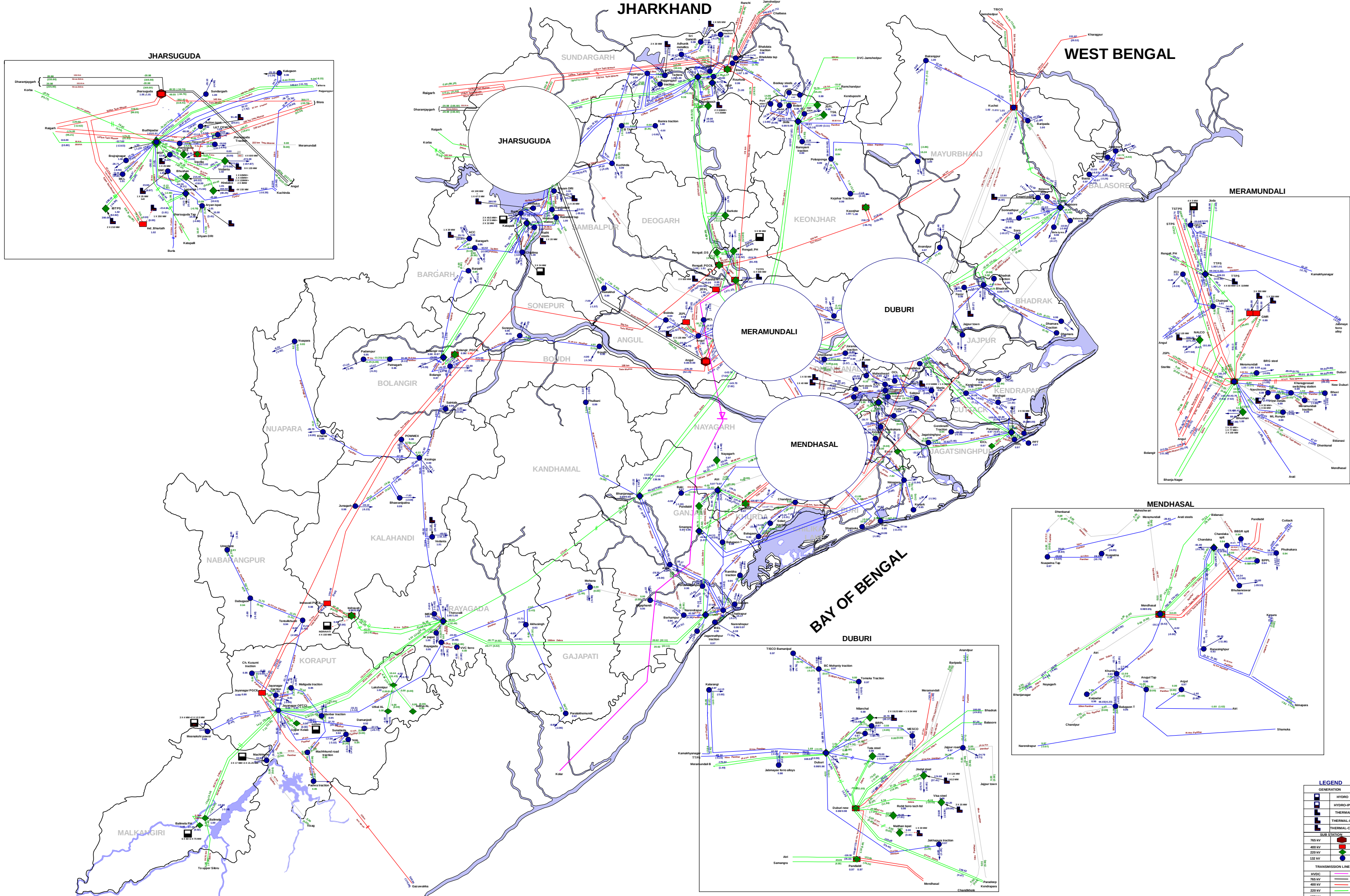
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Jharkhand state existing network (August-16) geographical map

 विज्ञाने ज्ञानेन जीवने	Power Research and Development Consultants Pvt. Ltd. #5, 11th Cross, 2nd Stage, West of Chord Road, Bangalore- 560086, INDIA Ph : +91-980-4245 5555 E-mail : prdc@vsnl.com
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Orissa state existing network (August-16) geographical map



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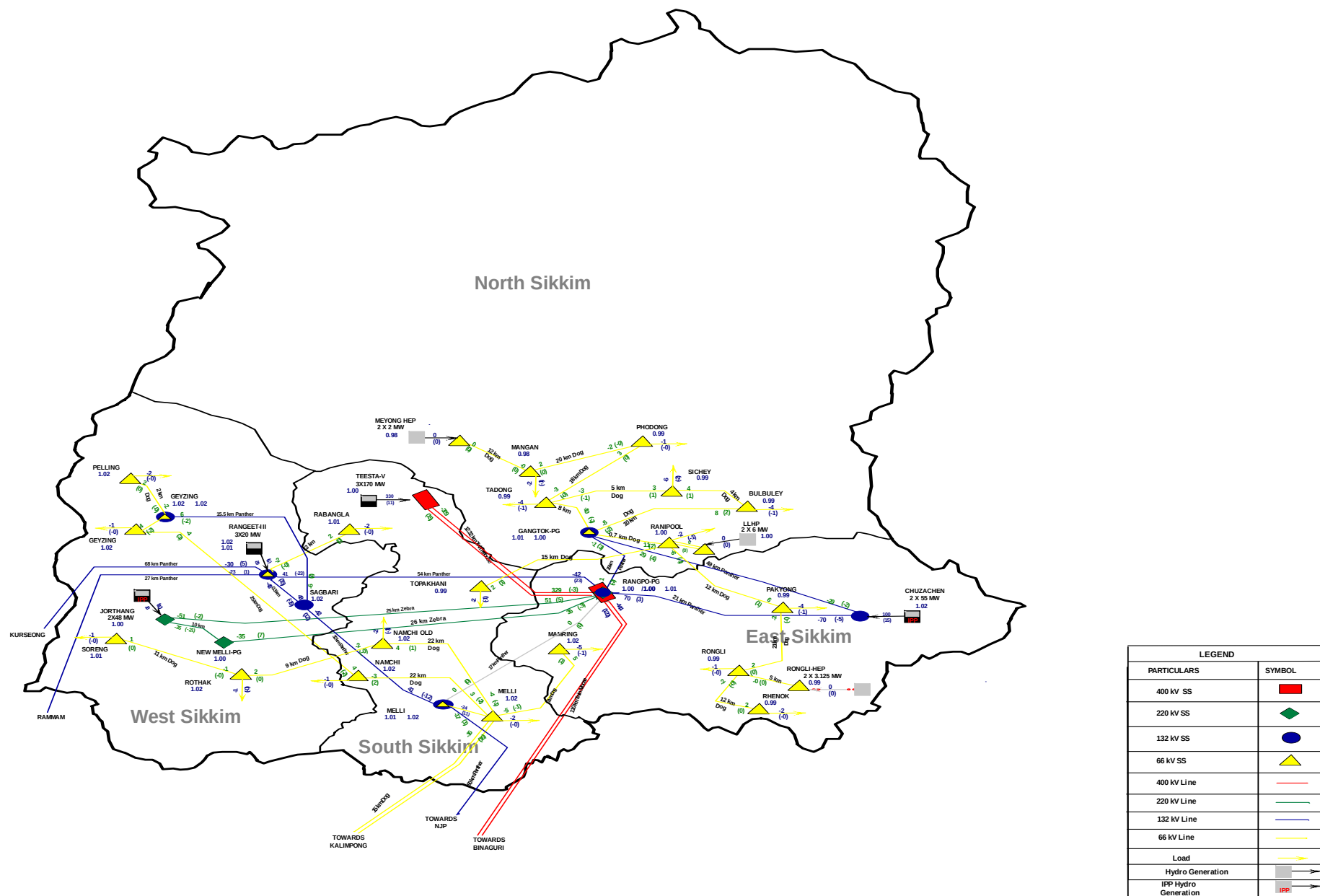
LOA details: ERPC/PR_DBASE/2016/3567 Dated 30 March 2016

DRAWN IN : MIP-PSCT

DWG. NO. : Geographical Power Map/ERAugust-2016/Odisha

LEGEND	
GENERATION	
	HYDRO
	HYDRO-PP
	THERMAL
	THERMAL-PP
	THERMAL-COP
SUB STATION	
	765 kV
	400 kV
	220 kV
	132 kV
TRANSMISSION LINE	
	HVDC
	765 kV
	400 kV
	220 kV
	132 kV

Geographical Diagram of Existing Sikkim Network (AUGUST-16)



					R0	20/12/2016	
APPROVED	REVIEWED	CHECKED	DRAWN	DESCRIPTION	REV.	DATE	REMARKS

Sikkim state existing network
(August-16) geographical map.



Eastern Regional Power Committee
14, Golf Club Road, Tollygunge,
Kolkata, West Bengal 700033



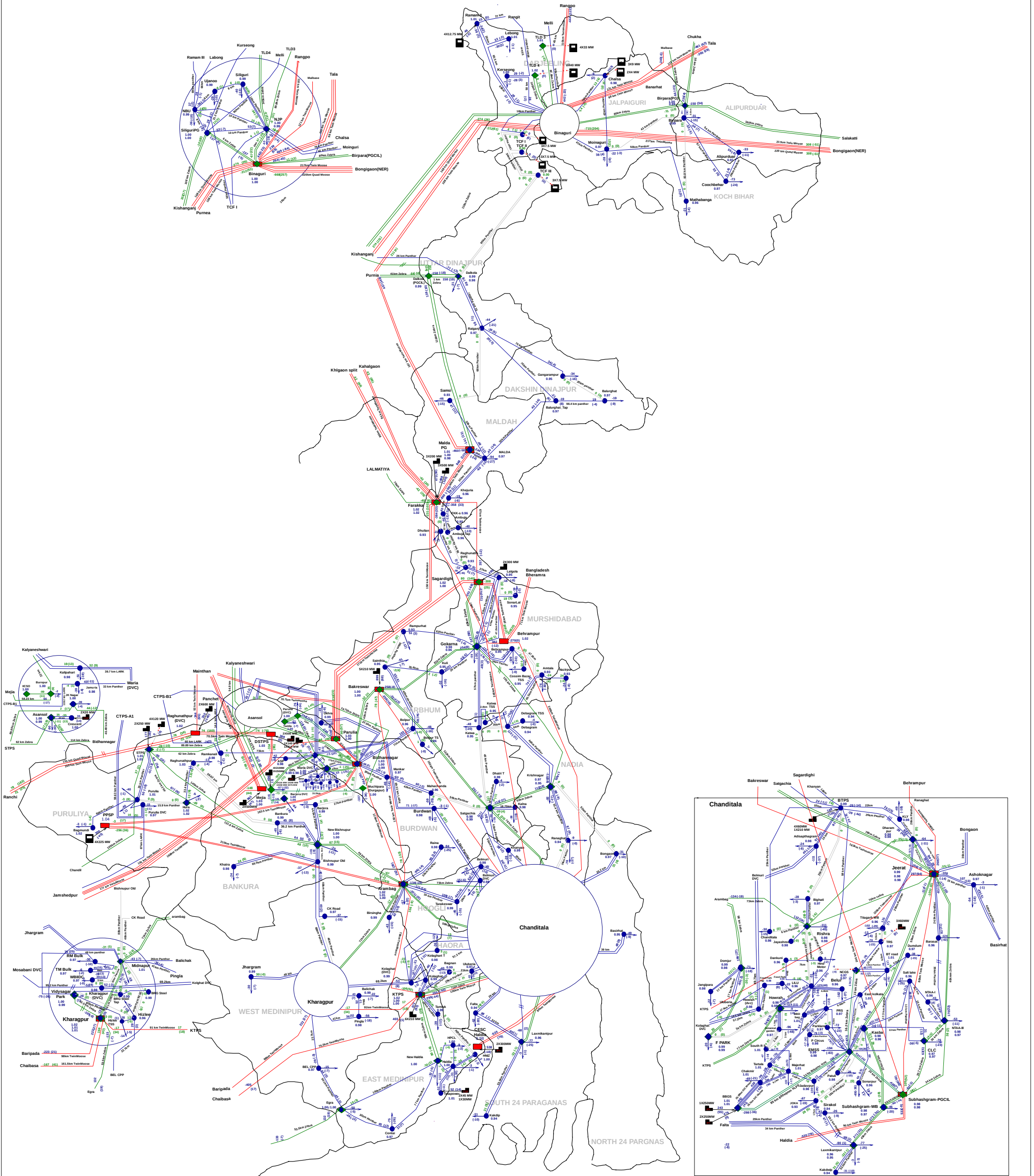
**Power Research and Development
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PO details: ERPC/PR_DBASE/2016/3567 Dated 30 March 2016

DRAWN IN :	MIP-PSCT	TM
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DWG. NO. : Geographical Power Map
ER/August-2016/Sikkim



PARTICULARS							SYMBOL	
400 kV S.S.							[Red Square]	
220 kV S.S.							[Green Diamond]	
132 kV S.S.							[Blue Circle]	
400 kV Line							[Red Line]	
220 kV Line							[Blue Line]	
132 kV Line							[Green Line]	
Load							[Black Arrow]	
Thermal Generation							[Black Square]	
Hydro Generation							[Black Square]	
IPP							[Black Square]	
CGP							[Black Square]	
Display Notation							[Black Square]	
Injection into the bus : +ve							[Black Square]	
Drawn away from the bus : -ve							[Black Square]	
Voltage Mag(Avg) in Pu (degree)							[Black Square]	
Flow in MW and MVA							[Black Square]	

Table G: 765 kV, 400 kV, 220 kV, 132 kV and 66kV line flow (simulated result) of Eastern region grid

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
Bihar							
765 kV							
1	1	Fathepur	Sasaram	197.0	- 515.538	14.5	PGCIL
2	1	Balia	Gaya	- 290.0	342.861	11.8	
3	1	Gaya	Varanasi	- 229.4	50.472	6.2	
4	1	Gaya	Varanasi	229.0	- 329.793	13	
400 kV							
1	1	Varanasi	Biharshariff	-3.1	6.021	10.70	PGCIL
2	1	Varanasi	Biharshariff	-2.9	-6.896	10.70	
3	1	Banka	Biharshariff	281.7	- 15.697	31.90	
4	1	Banka	Biharshariff	281.7	- 15.697	31.90	
5	1	Biharshariff	Muzaffarpur	162.9	82.696	25.40	
6	1	Biharshariff	Muzaffarpur	162.9	82.696	25.40	
7	1	Biharshariff	Purnea	0.0	0	0.00	
8	1	Biharshariff	Purnea	0.0	0	0.00	
9	1	Biharshariff	Lakhisarai	- 229.5	74.765	27.30	
10	1	Biharshariff	Lakhisarai	- 229.5	74.765	27.30	
11	1	Biharshariff	Balia	54.3	-126.9	7.80	
12	1	Balia	Biharshariff	- 53.8	-7.747	7.80	
13	1	Sasaram	Biharshariff	- 178.6	-7.843	20.60	
14	1	Sasaram	Biharshariff	- 178.	-7.843	20.60	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
				6			
15	1	Barh	Kahalgaon	- 327.8	- 33.063	19.30	
16	1	Barh	Kahalgaon	- 327.8	- 33.063	19.30	
17	1	Kahalgaon	Banka	295.2	2.325	33.30	
18	1	Kahalgaon	Banka	295.2	2.325	33.30	
19	1	Farraka	Kahalgaon	21.6	- 12.157	5.40	
20	1	Farraka	Kahalgaon	21.6	- 12.157	5.40	
21	1	Farraka	Kahalgaon	21.2	- 12.397	5.30	
22	1	Farraka	Kahalgaon	21.2	- 12.397	5.30	
23	1	Lakhisarai	Kahalgaon	- 309.5	16.661	35.20	
24	1	Lakhisarai	Kahalgaon	- 309.5	16.661	35.20	
25	2	Patna	Kishanganj	0.0	0	0.00	
26	1	Patna	Barh	- 212.0	- 124.859	14.00	
27	1	Patna	Barh	- 212.0	- 124.859	14.00	
28	1	Patna	Barh	- 212.0	- 124.859	14.00	
29	1	Patna	Barh	- 212.0	- 124.859	14.00	
30	1	Balia	Patna	- 69.4	- 63.989	5.40	
31	1	Balia	Patna	- 69.4	- 63.989	5.40	
32	1	Balia	Patna	- 69.4	- 63.989	5.40	
33	1	Balia	Patna	- 69.4	- 63.989	5.40	
34	1	Balia	Biharsarif	- 53.8	-7.747	7.80	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
35	1	Barh	Gorakhpur	156.8	- 97.175	12.40	
36	1	Barh	Gorakhpur	156.8	- 97.175	12.40	
37	1	Sarnath	Sasaram	- 191.0	4.852	22.40	
38	1	Nabinagar Rly	Sasaram	0.0	0	5.10	
39	1	Nabinagar Rly	Sasaram	0.0	0	5.10	
40	1	Allhabad	Sasaram	- 43.0	-94.99	12.20	
41	1	Muzaffarpur	Gorakhpur	212.0	86.358	17.10	Power link
42	1	Muzaffarpur	Gorakhpur	212.0	86.358	17.10	
43	1	Muzaffarpur	Purnea	- 309.4	- 31.864	18.00	
44	1	Muzaffarpur	Purnea	- 309.4	- 31.864	18.00	
45	2	Kishanganj	Purnea	273.6	-1.102	8.40	PGCIL
46	1	Kishanganj	Binaguri	- 136.8	- 55.639	8.50	
47	1	Kishanganj	Binaguri	- 136.8	- 55.639	8.50	
48	1	Malda	Purnea	230.1	58.227	27.70	
49	1	Malda	Purnea	230.1	58.227	27.70	
50	1	Binaguri	Purnea	105.8	- 30.435	12.60	
51	1	Binaguri	Purnea	105.8	- 30.435	12.60	
220 kV							
1	1	Bodhgaya	Biharshariff	0.0	- 15.477	7.30	BSPTCL
2	1	Bodhgaya	Biharshariff	0.0	- 15.477	7.30	
3	1	MTPS	Gopalganj	131.5	5.509	63.60	
4	1	MTPS	Muzaffarpur	- 167.8	15.243	81.60	Power link

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
5	1	MTPS	Muzaffarpur	- 167.8	15.243	81.60	BSPTCL
6	1	MTPS	Begusarai	- 10.9	16.064	9.40	
7	1	MTPS	Begusarai	- 10.9	16.064	9.40	
8	1	Purnea	Madhepura	79.9	4.357	38.30	PGCIL
9	1	Purnea	Madhepura	79.9	4.357	38.30	
10	1	Biharshariff	Biharshariff	91.3	23.899	44.50	BSPTCL
11	1	Biharshariff	Biharshariff	91.3	23.899	44.50	
12	1	Biharshariff	Biharshariff	91.3	23.899	44.50	
13	1	Biharshariff	TTPS	0	0	0.00	BSPHCL & JSEB
14	1	Patna	Khagaul	123.3	8.36	58.70	BSPHCL
15	1	Pusauli New	Pusauli	- 128.4	-8.978	60.60	PGCIL
16	1	Pusauli	Dehri	1.5	8.908	8.50	BSPHCL & PG
17	1	Arrah	Pusauli	- 14.3	- 17.462	10.80	PGCIL
18	1	Hajipur	Muzaffarpur	- 62.5	-9.59	30.70	BSPTCL
19	1	Hajipur	Muzaffarpur	- 62.5	-9.59	30.70	
20	1	MTPS	Darbhanga	96.4	3.121	46.60	
21	1	Gaya	Dehri	94.9	-14.63	45.30	BSPHCL & PG
22	1	Gaya	Dehri	94.9	-14.63	45.30	
23	1	Gaya	Bodhgaya	154.9	0.885	73.20	
24	1	Gaya	Bodhgaya	154.9	0.885	73.20	
25	1	Patna	Sipara	279.9	44.206	67.30	
26	1	Patna	Fatua	15.2	1.145	7.60	
27	1	Sipara	Khagaul	94.6	5.158	45.10	
28	1	Sipara	Fatua	13.5	1.009	6.80	
29	1	Arraha	Pusali New	- 12.0	- 17.287	10.00	
30	1	Pusali	Sahupura	163.8	- 29.992	78.40	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
132 kV							
1	1	Chandauti	Karamnasa	0.0	0	0.00	BSPHCL & UPPCL
2	1	Bodhgaya	Wajirganj	62.9	19.862	80.80	BSPTCL
3	1	Sonenagar	Japla	4.6	-1.707	6.10	
4	1	Sonenagar	Chandauti	-15.4	7.24	23.10	
5	1	Sonenagar	Aurangabad	12.3	-2.619	15.30	
6	1	Sonenagar	Aurangabad	12.3	-2.619	15.30	
7	1	Jehanabad	Arwal	25.6	1.867	31.90	
8	1	Rafiganj	Sonenagar	0.8	-9.454	11.70	
9	1	Rafiganj	Rafiganj_R	7.8	2.289	10.10	
10	1	Dehri	Banjari	10.8	1.73	13.90	
11	1	KCL	Banjari	-5.5	-1.776	7.10	
12	1	Dehri	Sasaram	15.8	-12.27	24.30	
13	1	Dehri	Sonenagar	25.0	3.324	30.80	
14	1	Dehri	Sonenagar	25.0	3.324	30.80	
15	1	Dehri	Bikramganj	29.3	4.417	36.20	
16	1	Biharshariff	Rajgir	0.0	0	0.00	
17	1	Biharshariff	Barh	0.0	0	0.00	
18	1	Biharshariff	Hathidah	-20.0	15.007	31.80	BSPTCL
19	1	Biharshariff	Nalanda	12.2	-5.141	16.20	
20	1	Biharshariff	Ekangasarai	22.1	6.555	28.80	
21	1	Biharshariff	Nawada	0.0	0	0.00	
22	1	Biharshariff	Sheikhpura	-11.8	11.753	22.10	
23	1	Hathidah	Sheikhpura	6.6	-0.947	8.10	
24	1	Hathidah	Lakhisarai	-46.2	11.824	59.00	
25	2	Lakhisarai	Jamui	66.7	-2.851	40.30	
26	2	Jamui	Jhajha_R	5.5	-1.303	3.50	
27	1	Lakhisarai	Lakhisarai_R	8.2	2.381	10.60	
28	1	Jamui	Sheikhpura	32.5	-3.969	39.90	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
29	1	Rajgir	Barhi	-13.6	12.329	25.40	
30	1	Jamalpur	Sultanganj	0.0	0	0.00	
31	1	Sultanganj	Sabour	-3.2	-1.082	4.10	
32	1	Jamalpur	Lakhisarai	-32.6	-11.915	42.70	
33	2	Lakhisarai	Lakhisarai	-120.4	-18.998	74.30	
34	1	Lakhisarai	Jamui	0.0	0	0.00	
35	1	Sabour	Kahalgaon	-13.8	-1.28	16.50	PGCIL
36	1	Dumraon	Arrah	-26.2	-0.469	32.70	BSPTCL
37	1	Dumraon	Dumraon_R	8.2	2.543	10.70	
38	1	Dumraon	Buxar	18.7	5.825	24.70	
39	1	Arrah_PG	Arrah_BSEB	13.0	4.24	16.80	
40	1	Arrah_PG	Arrah_R	7.3	2.175	9.40	
41	1	Arrah_PG	Jagdishpur	18.7	1.117	23.10	
42	1	Purnea_BSEB	Saharsa	26.3	-4.127	33.10	
43	1	Purnea_BSEB	Forbesganj	71.0	3.775	88.30	
44	1	Saharsa	Udakishanganj	0.0	0	0.00	
45	1	Saharsa	Madhepura	1.5	-2.565	3.80	
46	1	Khagaul	Purnea	-24.7	0.648	32.60	
47	1	Muzaffarpur	SKMCH	17.7	2.414	22.80	
48	1	Samastipur	Begusarai	-46.5	6.181	59.50	
49	1	Samastipur	Hajipur	4.4	-0.05	6.90	
50	1	Pandauli	Madhubani	12.1	-5.592	16.90	
51	1	Hajipur	Hajipur	6.4	1.934	8.50	
52	1	Gopalganj	Mashrakh	12.9	-2.632	16.80	
53	1	Chhapra	Chhapra	6.4	1.956	8.70	
54	1	Siwan	Gopalganj	-26.5	2.342	34.40	
55	1	Ekma	Ekma	13.1	-2.058	17.10	
56	1	Motihari	Dhaka	3.1	-2.578	5.30	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVar		
57	1	Bettiah	Motihari	-7.3	11.081	19.30	
58	1	Bettiah	Gopalganj	-21.7	1.3	28.40	
59	1	Bettiah	Gopalganj	-21.7	1.3	28.40	
60	1	Ramnagar	Bettiah	-7.8	7.06	15.20	
61	1	Ramnagar	Swadesi_G	0.0	-0.635	0.8*	
62	1	Nalanda	Barhi	-8.8	1.074	12.70	
63	1	Darbhanga	Darbhanga	-40.2	-11.607	52.90	
64	1	Darbhanga	Samastipur	-9.2	-0.001	11.90	
65	2	Darbhanga	Pulparas	12.2	5.313	10.80	
66	1	Kahalgaoon	Sabour	1.3	0.417	2.30	
67	1	Kahalgaoon	Lalmatia	33.5	-9.086	41.10	
68	1	Kahalgaoon	Lalmatia	20.7	-7.856	26.30	
69	1	Belaganj	Chandauli	-31.0	0.767	38.40	
70	1	Belaganj	Hjehanabad	16.1	1.617	20.30	
71	1	MTPS	Samastipur	-5.9	0.926	9.60	
72	1	MTPS	Samastipur	-5.9	0.926	9.60	
73	1	Sitalpur	Chhapra	44.7	-10.165	58.80	
74	1	Jainagar	Pulparas	-13.3	10.352	23.50	
75	1	Madhubani	Jainagar	-7.7	2.865	11.50	
76	1	Pulparas	Supaul	-5.7	10.931	17.40	
77	1	Pulparas	Supaul	-5.7	10.931	17.40	
78	1	Supaul	Katiya	41.6	5.738	54.10	
79	1	Mohania	Karmansa	-17.2	-4.1	21.50	
80	1	Dehri	Kochas	20.4	-2.639	25.10	
81	1	Bikranganj	Dumraon	10.7	-0.67	13.30	
82	1	Forbesganj	Katiya	24.4	-2.097	32.40	
83	2	Forbesganj	Katiya	24.4	-2.097	32.40	
84	1	Barh	Hathidah_R	0.0	0	0.00	
85	1	Pusaali	Sasaram	10.3	3.903	13.60	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
86	1	Katiya	Duhabi	122.3	17.173	64.20	
87	1	Barauni TPS	Khagaul	0.0	0	0.00	
88	1	Barauni TPS	Begusarai	-18.9	-5.641	24.40	
89	1	Barauni TPS	Begusarai	-18.9	-5.641	24.40	
90	1	Surjapur	Balmikinagar	0.0	0	0.4*	
91	1	MTPS	Muzaffarpur	54.1	1.609	68.10	
92	1	MTPS	Muzaffarpur	54.1	1.609	68.10	
93	2	MTPS	Vaisali	45.6	-2.562	29.00	
94	1	MTPS	SKMCH	72.4	4.63	91.30	
95	1	Kishanganj	Forbesganj	53.4	-0.933	67.50	
96	1	Kudra_R	Karmansa	17.1	-6.019	22.00	
97	2	Mithapur	Karbigahia	12.5	-3.721	4.20	
98	1	Kudra New	Dehri	-18.9	2.911	24.00	
99	1	Pusauli	Kudra	2.3	4.097	7.10	
100	1	Kudra	Kochas	9.0	2.762	12.10	
101	1	Chandauli	Bodhgaya	-46.3	5.896	57.50	
102	1	Chandauli	Bodhgaya	-46.3	5.896	57.50	
103	1	Chandauli	Bodhgaya	-46.3	5.896	57.50	
104	1	chandauli	Bodhgaya	-46.3	5.896	57.50	
105	2	Bodhgaya	Paharpur	5.5	-1.666	3.50	
106	1	chandauli	Tekari	25.9	-0.517	31.90	
107	1	Balmikinagar	Ramnagar	0.0	0.327	4.90	
108	1	Purnea	Katihar	31.0	13.242	41.80	
109	1	Purnea_PG	Kishanganj	18.9	2.243	24.40	
110	1	Purnea_PG	Purnea	73.5	5.15	91.40	
111	1	Purnea_PG	Purnea	73.5	5.15	91.40	
112	1	Purnea_PG	Purnea	73.5	5.15	91.40	
113	1	Darbhanga New	Gangwara	54.9	-8.761	70.20	
114	1	Masaurhi	Jehanabad	2.2	-1.065	3.00	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
115	1	Masaurhi	Sipara	- 27.9	-1.697	34.60	
116	1	Pusauli	Mohania	-2.3	-4.097	5.70	
117	1	Kahalgaoon TPP	Kahalgaoon	53.9	-0.061	63.80	PGCIL
118	1	Hathidah_R	Mokama_R	6.4	1.779	8.30	BSPTCL
119	1	Hathidah_R	Hathidah	-6.4	-1.779	8.20	
120	1	Nalanda	Rajgir	0.0	0	0.00	
121	1	Raxaul	Bettiah	- 13.0	-0.373	17.00	
122	1	Runisaudpur	Sitamarhi	31.3	-3.636	40.60	
123	1	SKMCH	Runisaudpur	39.7	-5.584	51.10	
124	1	Tekari	Goh	11.0	-5.045	15.00	
125	1	Wazirganj	Nawada	43.0	11.111	56.20	
126	1	Ekangasari	Hulasganj	-2.7	-1.704	4.00	
127	1	Biharshariff	Hulasganj	15.6	3.974	20.40	
128	1	Gangwara	Pandauli	28.4	- 10.889	38.50	
129	1	Madhepura	Supaul	59.4	-1.241	75.30	
130	1	Madhepura	Supaul	59.4	-1.241	75.30	
131	1	Madhepura	Sonbhadra	21.7	6.605	29.70	
132	1	Mashrakh	Siwan	5.6	-1.757	7.60	
133	1	Dalsingsarai	Siwan	33.8	-6.701	43.20	
134	2	Jehanabad	Tehta	- 36.9	-2.83	23.00	
135	1	Begusarai	Dalsingsarai	56.7	-5.156	70.40	
136	1	Jandaha	Samastipur	- 17.7	-2.524	22.70	
137	1	Hazipur	Jandaha	7.0	-1.99	9.20	
138	1	Begusarai	Kuswesthan	4.3	-1.013	6.00	
139	1	Sherghati	Sherghati	10.3	2.624	13.60	
140	1	Sherghati	Bodhgaya	- 24.1	-6.466	30.80	
141	1	Imamganj	Sherghati	- 13.7	-5.052	18.20	
142	1	Purnea	naughat	18.5	- 11.767	27.20	
143	1	Railfactory	Sitalpur	-	-5.721	24.70	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
				18.2			
144	1	Muzaffarpur	Dhalkera	53.5	-0.191	12.80	
145	1	Khagul	Bihta	60.5	22.21	40.10	
146	1	Khagul	Fatua	-36.6	2.124	45.80	
147	1	Digha	Khagul	-52.4	-4.245	32.80	
148	1	Khagul	Khagaul Rail	8.0	2.585	10.50	
149	1	Mithapur	Gaighat	-13.9	4.664	18.40	
150	1	Katra	Fatua	-65.3	-24.715	87.40	
151	1	Sipara	Mithapur	55.0	9.684	69.00	
152	1	Jakkanpur (Patna)	Mithapur	-4.6	1.032	5.90	
153	1	Jakkanpur (Patna)	Sipara	-97.5	-16.56	61.60	
154	1	Khusrupur RLY	Fatua	-5.0	-1.596	6.50	
155	1	Fatua	Harnuth	-11.9	0.087	14.90	
156	1	Fatua	Sipara	22.5	-4.666	28.30	
157	1	Harnuth	Baripahari	-20.5	5.937	26.60	
158	1	Baripahari	Biharshariff	-72.1	3.322	44.20	
159	1	Baripahari	Fatua	25.6	-5.874	32.20	
160	1	Sabour	Banka PG	-1.3	0.841	3.90	
161	1	Rafiganj	Chandauti (Gaya)	-27.7	8.344	36.40	
162	1	Karmnasa	Sahupura	-25.2	-4.94	30.40	
163	1	Fatua	Gaighat	60.7	3.424	74.80	
164	1	Naugachhia	Baruni TPS	1.4	-2.892	4.90	
165	1	Sitamarahi	Dhaka	12.5	-2.22	16.50	
166	1	Hazipur	Sheetalpur	61.7	-10.293	79.30	
167	1	Hazipur	Hazipur New	-121.6	-11.343	77.40	
168	1	Chapra	Ekma Tap	10.9	-7.385	17.00	
169	1	Motihari	MTPS	-52.8	4.064	69.30	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
170	1	Vaishali	Sheetalpur	13.1	0.391	8.60	
171	1	Banka	Banka PG	-17.5	-8.315	23.10	
172	1	Kishanganj	Dalkhola	-75.3	-10.408	95.80	
173	1	Chandauti (Gaya)	Sipara	4.1	-1.898	5.90	
174	1	Sultanganj	Kahalgaon	-3.8	-4.147	3.40	
175	1	Ekma Traction	Siwan	-2.3	-3.92	5.90	
176	1	Banka PG	Sultanganj	6.5	-5.373	5.00	
177	1	Kochas	Dumaraon	10.6	4.428	15.70	
178	1	Pusali	Kudra Rail	23.2	-4.4	28.70	
179	1	Karbigahiya	Jakkanpur (Patna)	-10.7	8.417	17.00	
180	1	Naugachhia	Begusarai	1.1	-12.453	15.50	
181	1	Sonebarsha	Udakishanganj	10.1	4.891	15.30	
182	1	Jehanabad	Jehanabad Traction	3.0	0.921	3.90	
Jharkhand							
765 kV							
1	1	Ranchi New	Dharamjaygarh	-293.6	-132.408	11.7	PGCIL
2	1	Ranchi New	Dharamjaygarh	-293.6	-132.408	11.7	
400 kV							
1	1	Aadhunik	Jamshedpur	110.7	-6.309	6.2	APNRL
2	1	Aadhunik	Jamshedpur	110.7	-6.309	6.2	
3	1	Maithon	Jamshedpur	25.4	-56.607	6.9	PGCIL
4	1	Jamshedpur	Durgapur (DSTPS)	-156.3	-39.702	18.2	
5	1	Jamshedpur	Durgapur (DSTPS)	-156.3	-39.702	18.2	
6	1	Jamshedpur	Mejia B	-147.2	-47.732	17.2	
7	1	Chaibasa	Jamshedpur	-	-	27.5	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
				236.3	67.687		
8	1	TISCO	Jamshedpur	211.1	11.115	23.5	DVC
9	1	Parulia (PGCIL)	Jamshedpur	84.0	49.062	11	PGCIL
10	1	MPL	Ranchi	37.1	34.738	6.8	
11	1	MPL	Ranchi	37.1	34.738	6.8	
12	1	Ranchi	RanchiP	77.0	44.964	7.3	
13	1	Ranchi	RanchiP	77.0	44.964	7.3	
14	1	Ranchi	RanchiP	77.0	44.964	7.3	
15	1	Ranchi	RanchiP	77.0	44.964	7.3	
16	1	Ranchi	Maithon	72.4	98.283	13.8	
17	2	Ranchi	Chandwa	856.9	49.455	24.5	
18	1	Ranchi	Sipat	157.7	34.852	21.5	
19	1	Ranchi	Sipat	157.7	34.852	21.5	
20	1	Raghunathpur	Ranchi	57.2	20.221	4.7	
21	1	Raghunathpur	Ranchi	57.2	20.221	4.7	
22	1	Gaya	Maithon	250.5	96.175	15.40	
23	1	Gaya	Maithon	250.5	96.175	15.40	
24	1	Maithon	Mejia B	211.5	46.423	24.10	
25	1	Mejia B	Maithon	248.4	5.962	28.00	
26	1	Mejia B	Maithon	248.4	5.962	28.00	
27	1	Maithon	Kahalgaoon	20.9	23.459	8.80	
28	1	Maithon	Kahalgaoon	19.6	23.601	8.70	
29	1	Maithon	MPL	244.	19.321	27.50	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVar		
				3			
30	1	Maithon	MPL	-244.3	19.321	27.50	
31	1	Maithon	Parulia (PGCIL)	269.0	-45.369	30.40	
32	1	Maithon	Parulia (PGCIL)	269.0	-45.369	30.40	
33	1	Raghunathpur	Maithon	344.3	-64.704	39.20	
34	1	Gaya	Koderma	50.1	-93.313	6.10	
35	1	Gaya	Koderma	50.1	-93.313	6.10	
36	1	Koderma	Biharshariff	140.0	-90.74	9.50	
37	1	Koderma	Biharshariff	140.0	-90.74	9.50	
38	1	Koderma	Bokaro (BTPS)	0.0	0	0.00	
39	1	Koderma	Bokaro (BTPS)	0.0	0	0.00	
40	2	Chandwa	Gaya	854.5	-2.492	24.60	
220 kV							
1	1	Kalyaneshwari	Mejia-D	-56.3	19.895	29.3	DVC
2	1	CTPS-Old	BTPS-B	103.5	-11.702	49.2	
3	1	CTPS-Old	BTPS-B	103.5	-11.702	49.2	
4	1	CTPS-Old	Kalyaneshwari	-40.0	-11.72	19.7	
5	1	CTPS-Old	Kalyaneshwari	-40.0	-11.72	19.7	
6	1	CTPS-New	Dhanbad	-80.7	14.987	38.8	
7	1	Kalyaneshwari	Maithon	-163.7	33.428	78	
8	1	Kalyaneshwari	Maithon	-163.7	33.428	78	
9	1	BTPS-B	Jamshedpur	43.5	-2.691	22	
10	1	BTPS-B	Jamshedpur	43.5	-2.691	22	
11	1	Giridhi	Dhanbad	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
12	1	Giridhi	Dhanbad	0.0	0	0	
13	1	Kalyaneshwari	Dhanbad	20.2	-8.541	10.2	
14	2	Ramgarh	BTPS-B	-191.9	-12.203	45.8	
15	1	CTPS-Old	CTPS-New	-152.5	-13.102	71.6	
16	1	CTPS-Old	CTPS-New	-152.5	-13.102	71.6	
17	1	Kalyaneshwari	Dhanbad	20.2	-8.541	10.2	
18	2	BSL	CTPS-New	0.0	0	1.2	
19	1	CTPS-New	Dhanbad	-80.7	-14.987	38.8	
20	1	Ramchandapur	Jamshedpur	-125.7	-23.919	59.1	JUSNL
21	1	Ramchandapur	Jamshedpur	-125.7	-23.919	59.1	
22	1	PTPS-TPS	Hatia	37.9	-15.777	19.1	
23	1	PTPS-TPS	Hatia	37.9	-15.777	19.1	
24	1	PTPS-TPS	TTPS	-178.3	25.804	37.5	
25	1	KTPP	Giridhi	54.9	7.369	27.7	
26	1	KTPP	Giridhi	54.9	7.369	27.7	
27	1	RanchiTG	Chandil	77.4	-14.919	36.6	
28	1	Maithon	Dumka	31.1	-9.019	6.7	
29	1	Maithon	Dumka	31.1	-9.019	6.7	
30	2	RanchiTG	Hatia	75.9	3.579	17.9	
31	1	Chandil	Ramchandapur	-97.2	-13.375	45.4	
32	2	Chaibasa	Chaibasa	5.2	2.406	1.3	
33	2	Maithon	Dhanbad	109.7	-5.618	25.6	
34	2	PTPS-TPS	Bodhgaya	0.0	0	0	BSPHCL & JSEB
35	1	PTPS-TPS	Bodhgaya	0.0	0	0	BSPHCL &

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
							JSEB
36	1	Chandil	STPS	37.0	-11.33	18	WBSETCL & JSEB
37	2	Dhanbad	Elctro Steel	5.2	-14.984	3.7	PGCIL
132 kV							
1	2	Manique D	Gola D	-19.6	-7.389	13.1	DVC
2	2	Manique D	Jamshedpur	-24.0	4.052	15.9	
3	1	CTPS-B	Putki	38.2	12.733	44.1	
4	1	CTPS-B	Putki	38.2	12.733	44.1	
5	1	CTPS-B	Putki	38.2	12.733	44.1	
6	1	CTPS-B	Putki	38.2	12.733	44.1	
7	1	BTPS-B-D	ECR-Gom D	0.5	-0.093	0.7*	
8	1	BTPS-B-D	ECR-Gom D	0.5	-0.093	0.7*	
9	1	CTPS-A	Purulia D	8.1	-0.084	9.4	
10	1	CTPS-A	Purulia D	8.1	-0.084	9.4	
11	1	Jamshedpur	Mosabani D	12.3	2.761	14.5	
12	1	Jamshedpur	Mosabani D	12.3	2.761	14.5	
13	1	CTPS-A	Gola D	5.7	2.831	7.9	
14	1	CTPS-A	Gola D	5.7	2.831	7.9	
15	1	Ramgarh	Gola D	19.1	-1.822	20.9	
16	1	Ramgarh	Gola D	19.1	-1.822	20.9	
17	1	Patratu D	North karnpura D	10.9	-0.354	13.6	
18	1	Patratu D	Ramgarh	-21.5	2.289	23.9	
19	1	Patratu D	Ramgarh	-21.5	2.289	23.9	
20	1	Patratu D	North karnpura D	10.9	-0.354	13.6	
21	2	Patratu D	JSPL	12.5	-7.083	7.9	
22	1	Maithon D	Kumardubi D	13.5	13.933	24	
23	1	Klyaneshwari	Maithon D	54.1	17.85	61.6	
24	1	Maithon D	Panchet	-15.0	-0.291	18.4	
25	1	Kumardubi D	Panchet	-29.2	-7.199	36.8	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
26	1	Maithon D	Patherdhi D	53.8	8.692	66.8	
27	1	Maithon D	Patherdhi D	53.8	8.692	66.8	
28	1	Patherdhi D	Sindri D	2.1	-0.381	2.8	
29	1	Patherdhi D	Sindri D	2.1	-0.381	2.8	
30	1	Patherdhi D	Putki	12.6	-3.582	14.6	
31	1	Patherdhi D	Putki	12.6	-3.582	14.6	
32	1	Putki	Nimiaghat	28.8	-3.4	36.6	
33	1	Putki	Nimiaghat	28.8	-3.4	36.6	
34	1	Nimiaghat	Giridhi D	-9.9	-11.953	19.9	
35	1	Nimiaghat	Giridhi D	-9.9	-11.953	19.9	
36	1	Barhi D	BTPS-B-D	-15.3	-1.877	19	
37	1	Barhi D	Konar	-11.0	-1.688	13.7	
38	1	Barhi D	KTPP	-27.4	4.937	34.7	
39	1	Barhi D	Hazaribhag	17.5	5.348	23.3	
40	1	Barhi D	Hazaribhag	17.5	5.348	23.3	
41	1	Barhi D	KTPP	-27.4	4.937	34.7	
42	1	Konar	BTPS-B-D	-25.7	-0.01	31.6	
43	2	Ramkanali D	Panchet	-25.3	1.842	15.6	
44	1	CTPS-B	Ramkanali D	-23.5	0.53	26	
45	1	CTPS-B	Jamuria	-3.5	-4.791	6.5	
46	2	Mosabani D	Kharagpur D	-50.3	-2.597	28.1	
47	2	Koderm D	KTPP	-90.0	-37.291	60.6	
48	1	Sindri D	Pradhankhanda	2.1	-0.232	2.8	
49	1	Sindri D	Pradhankhanda	2.1	-0.232	2.8	
50	2	Dhanbad	Govndr D	29.7	5.753	18.6	
51	1	CTPS-A	BSL-DVC	33.5	12.337	38.9	
52	1	CTPS-A	BSL-DVC	33.5	12.337	38.9	
53	1	CTPS-A	Rajbera DVC	9.1	4.111	11	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
54	2	CTPS-B	Biada DVC	20.8	4.589	11.8	
55	2	Putki	Balhr DVC	-11.7	2.34	6.7	
56	1	Ramgarh	ECR Barkakana	0.0	0	0	
57	2	EC-Rly DVC	North karnpura D	-9.1	-4.291	5.5	
58	1	Klyaneshwari	Maithon D	54.1	17.85	61.6	
59	1	CTPS-A	CTPS-B	0.0	0	0	
60	1	BSLG D	CTPS-B	-33.4	-12.482	44.3	
61	1	Patherdhi D	Balhr DVC	11.7	-3.412	13.6	
62	2	Gola D	SER Muri	10.3	1.524	6.1	
63	2	Klyaneshwari	MAL-Impex ferro	34.1	4.133	21	
64	1	Manique D	Manique Rly	12.3	3.755	16.2	
65	1	CTPS-A	Rajbera DVC	9.1	4.111	11	
66	1	Garhwa	Japla	1.5	-6.113	7.8	JUSNL
67	2	Dhalbhumgarh	Dhalbhumgarh Rly	5.4	2.349	3.8	
68	1	Lohardaga	Gumla	8.0	-1.041	10.1	
69	1	Lohardaga	Gumla	8.0	-1.041	10.1	
70	1	Kamdara	Gumla	-3.5	-3.672	6.1	
71	1	Hatia Old	Sikadari	2.8	0.23	4.6	
72	1	Hatia New	Namkum	82.8	3.544	99	
73	1	Hatia Old	Kamdara	10.1	-10.899	18	
74	1	Kamdara	Bakaspur Rly	3.0	0.228	3.8	
75	1	Kamdara	Bano R	0.0	0	0	
76	1	Hatia Old	Hatia New	0.0	0	0	
77	1	Hatia Old	Hatia New	0.0	0	0	
78	1	Namkum	Sikadari	-2.8	-4.208	6.1	
79	1	PTPS	Kanke	47.9	1.284	37.4	
80	1	PTPS	Hatia Old	54.4	0.125	42.4	
81	1	Deoghar	Sultanganj	0.0	0	0	
82	1	Deoghar	Jamtara	9.3	2.43	12	
83	1	Deoghar	Shankarpur Rly	3.0	0.098	3.7	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
84	1	Deoghar	Dumka	-27.6	1.035	33.9	
85	1	Deoghar	Dumka	-27.6	1.035	33.9	
86	1	Dumka	Lalmtiya	-24.9	5.694	32.3	
87	1	Dumka	Lalmtiya	-24.9	5.694	32.3	
88	1	Dumka	Pakur	31.7	1.305	38.1	
89	2	Dumka	Dumka	30.2	3.388	18.2	
90	1	Kendposi	Chaibasa	-26.7	-1.151	32.7	
91	2	Kendposi	Kendposi	7.1	1.905	4.6	
92	1	Manique	Chandil	-16.6	2.504	20.1	
93	1	Adityapur	Ushamartin	7.0	2.214	8.9	
94	1	Adityapur	Ushamartin	7.0	2.214	8.9	
95	1	Golmuri	Jharsuguda	21.1	-6.37	26.6	
96	1	Golmuri	Saljhagiri Rly	0.0	0	0	
97	1	Rajkharsawan	Chandil	-36.2	-7.288	28.8	
98	1	Goelkera	Rajkharsawan	-15.9	-6.982	21.3	
99	1	Rajkharsawan	CKPR	1.0	-0.626	1.4	
100	1	Goelkera	Manoharpur	4.4	0.954	5.7	
101	1	Ramchandapur	APL	18.6	8.874	24.9	
102	1	Nowamundi	Kendposi	0.0	0	0	
103	1	Sikadari	PH1	0.0	0	0	
104	1	Sikadari	PH2	0.0	0	0	
105	1	Chandil	Adityapur	13.2	9.903	20.4	
106	1	Adityapur	Ramchandapur	-50.2	-6.7	61	
107	1	Adityapur	Ramchandapur	-50.2	-6.7	61	
108	1	Dhalbhumgarh	Mosabani D	-23.7	0.052	30	
109	1	Dhalbhumgarh	Mosabani D	-23.7	0.052	30	
110	1	Kanke	Hatia Old	37.3	-1.882	29.3	
111	1	Lathehar	Lohardaga	-	4.083	11.4	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
				13.1			
112	1	Lathehar	Lohardaga	-13.1	4.083	11.4	
113	1	Lathehar	Daltanganj	8.7	-5.645	8	
114	1	Lathehar	Daltanganj	8.7	-5.645	8	
115	1	Garhwa	Tolrah Rly	12.0	5.353	16.4	
116	1	Lalmtiya	Sahebganj	23.3	1.006	27.7	
117	1	Hatia New	Lohardaga	34.1	-8.549	27.2	
118	1	Hatia New	Lohardaga	34.1	-8.549	27.2	
119	1	Namkum	Tatisiloi Rly	5.7	0.852	7.2	
120	1	Namkum	Tatisiloi Rly	5.7	0.852	7.2	
121	1	Namkum	UMIRa	2.8	1.397	3.9	
122	1	Hatia Old	Lodhma Rly	0.5	-0.518	0.9*	
123	1	Hatia Old	Lodhma Rly	0.5	-0.518	0.9*	
124	1	Adityapur	Rajkharsawan	28.3	-6.292	35	
125	1	Golmuri	Chandil	-29.8	-0.162	36	
126	1	Golmuri	Chandil	-29.8	-0.162	36	
127	1	Rajkharsawan	Chakradharpur	6.1	-6.342	10.7	
128	1	Rajkharsawan	Chakradharpur	6.1	-6.342	10.7	
129	1	Hazaribhag Road	Konar	-3.2	-1.03	4.1	
130	1	Hazaribhag Road	Konar	-3.2	-1.03	4.1	
131	1	Tamar	Chandil	-10.5	-3.205	13.2	
132	1	Hatia Old	HEC	6.6	2.521	8.8	
133	2	Jamtara	Madhupur	15.1	1.023	10.1	
134	1	Chaibasa	Rajkharsawan	-28.0	-0.519	34.1	
135	1	Manique	ManiqueD	0.0	0	0	
136	1	ABCILG	Garhwa	0.0	0	0	
137	1	Jamtara	Jamtara Rly	4.0	0.714	5.1	
138	1	Rajkharsawan	Rajkharsawan Rly	6.0	2.646	8.1	
139	1	Hatia Old	HEC	6.6	2.521	8.8	
140	1	Deoghar	Jamtara	9.3	2.43	12	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
141	1	Goelkera	GoelkeraT	8.0	4.113	11.1	
142	1	Maithon D	Jamtara	33.8	-6.232	42.1	DVC & JSEB
143	1	Kendposi	Nowamundi	26.5	0.579	32.6	JSEB
144	2	Patratu D	PTPS	0.0	0	0	JSEB & DVC
145	1	Garhwa	Rihand	-31.0	2.196	39	JSEB & UPPCL
Odisha							
765 kV							
1	1	Jharsuguda	Dharamjaygarh	21.0	-166.604	5.3	PGCIL
2	1	Jharsuguda	Dharamjaygarh	21.0	-166.604	5.3	
3	1	Jharsuguda	Angul	-49.5	34.756	6.2	
4	1	Jharsuguda	Angul	-49.5	34.756	6.2	
400 kV							
1	1	Jaypore	Bolangir	-317.5	57.266	37.8	PGCIL
2	1	Jaypore	Gazuwaka	267.7	-100.249	33.2	
3	1	Jaypore	Gazuwaka	267.7	-100.249	33.2	
4	1	Indravati PG	Jaypore	223.6	-45.634	26.6	
5	1	Indravati OHPC	Indravati PG	-80.8	58.03	11.7	OPTCL
6	1	Rengali	Indravati PG	311.0	-28.159	35.9	PGCIL
7	1	Bolangir	Angul	-273.5	21.562	32.6	
8	1	Angul	JITPL	-563.0	-10.571	65.2	Jindal
9	1	Angul	JITPL	-563.0	-10.571	65.2	
10	1	Angul	Meramundali	518.2	-95.753	61.1	PGCIL

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
11	1	Angul	Meramundali	518.2	- 95.753	61.1	
12	2	TSTPS	Angul	- 241.8	44.434	29.3	
13	1	Angul	GMR	- 191.8	- 68.748	11.8	GMR
14	1	Angul	GMR	- 191.8	- 68.748	11.8	
15	1	Sterlite	Meramundali	0.0	0	0	PGCIL
16	1	Sterlite	Meramundali	0.0	0	0	
17	1	JSPL	Meramundali	61.8	27.058	9	OPTCL
18	1	JSPL	Meramundali	61.8	27.058	9	
19	1	GMR	Meramundali	150.8	21.436	17.7	
20	2	Duburi	Meramundali	- 757.8	- 45.149	44.1	
21	1	TSTPS	Meramundali	- 136.3	29.826	17.1	
22	1	Meramundali	Mendhasal	0.0	0	0	OPTCL & PGCIL
23	2	Pandibl	Mendhasal	313.9	26.246	18.8	
24	1	Duburi	Pandiabil	538.0	5.773	62.8	PGCIL
25	1	Duburi	Baripada	0.0	0	0	OPTCL
26	1	Pandibl4	Baripada	0.0	0	0	PGCIL
27	1	Baripada	Jamshedpur	- 110.4	- 56.761	13.9	
28	1	Baripada	TISCO	- 63.6	- 54.065	9.4	
29	1	Baripada	Kharagpur	222.8	- 21.235	25.1	OPTCL & WBSETCL
30	1	Baripada	Keonjhar	- 217.2	85.174	27.9	OPTCL
31	1	Rengali	Keonjhar	219.7	- 81.492	26.9	
32	1	TSTPS	Rengali	239.8	- 89.057	29.5	PGCIL
33	1	TSTPS	Rengali	239.	-	29.5	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
				8	89.057		
34	1	Bisra	TSTPS	-76.4	14.165	11.3	
35	1	Bisra	TSTPS	-76.4	14.165	11.3	
36	1	Bisra	Jamshedpur	189.8	-62.755	22.6	
37	1	Chaibasa	Bisra	-340.9	47.712	39.2	
38	1	Bisra	Ranchi	107.7	-48.678	13.4	
39	1	Bisra	Ranchi	107.7	-48.678	13.4	
40	1	Bisra	Raigarh	-2.0	-40.786	10.1	
41	1	Bisra	Sterlite	-163.5	-30.243	18.8	PGCIL & Sterlite
42	1	Jharsuguda	Bisra	176.2	-59.204	21.1	PGCIL
43	1	Jharsuguda	Bisra	176.2	-59.204	21.1	
44	1	Ind-Bharath	Jharsuguda	119.7	62.898	17.4	
45	1	Jharsuguda	Raigarh	-175.9	191.749	29.5	
46	1	Ind-Bharath	Raigarh	-119.7	-62.898	15.2	
47	1	Sterlite	Raigarh	-173.2	-21.631	20.3	PGCIL & Sterlite
220 kV							
1	1	Balimela	Upper Silleru	0.0	-3.478	1.6	OPTCL
2	1	Budhipadar	Bhusan	1.3	14.115	7.6	
3	1	Upper Kolab	Jaynagar	0.0	0	0.4*	
4	1	Theruvali	Bhanjanagar	-49.2	10.486	27.9	
5	1	Theruvali	Narendrapur	20.8	-4.024	14.5	
6	1	Bhanjanagar	Mendhasal	0.0	0	0	
7	1	Bhanjanagar	Nayagarh	86.9	9.665	41.8	
8	1	Nayagarh	Mendhasal	59.1	6.494	29.6	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
9	1	Rengali PH	TSTPS	68.8	11.522	32.9	
10	1	Rengali PH	Rengali Switching Station	42.0	17.275	21.3	
11	1	Rengali Switching Station	Barkote T	17.7	-10.011	9.5	
12	1	TSTPS	TTPS	50.6	-18.602	25.3	
13	1	New Duburi	Bhadrakh	101.2	-28.018	50.1	
14	1	ITPS	Budhipadar	97.0	3.71	39.8	
15	1	Tarkera	Bishra	40.1	-27.947	20.4	
16	1	Jaynagar	Jaya nagar PG (Jaypore)	-2.5	17.671	8.9	
17	1	Jaynagar	Jaya nagar PG (Jaypore)	-2.5	17.671	8.9	
18	1	Rengali Switching Station	Rengali PG	25.8	24.775	16.8	
19	1	Meramundali	TSTPS	-52.9	2.565	25.2	
20	1	Budhipadar	Raigarh	117.6	13.627	54.9	
21	1	Balimela	Jaynagar	7.2	0.054	7	
22	1	Jaynagar	Balimela	-7.2	-12.998	7	
23	1	Rengali Switching Station	Chandiposh	9.5	-4.894	6.3	
24	1	Tarkera	Chandiposh	8.5	-13.212	7.4	
25	1	Upper Kolab	Jaynagar	0.0	0	0	
26	1	Jaynagar	Theruvalli	-7.9	-11.806	6.7	
27	1	Duburi	NINL	-1.6	-7.521	3.7	
28	1	Bidanasi	Meramundali	0.0	0	0	
29	1	Meramundali	Chandaka	76.3	9.001	37.8	
30	1	TTPS	Meramundali	44.1	31.523	25.8	
31	1	Meramundali	Bhanjanagar	143.7	-7.623	67.6	
32	1	Meramundali	Bhanjanagar	143.7	-7.623	67.6	
33	1	Indravati	Theruvalli	20.8	-15.069	12.1	
34	1	ITPS	Budhipadar	97.0	3.71	39.8	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVar		
35	1	Budhipadar	Tarkera	143.0	-9.513	66.5	
36	1	Budhipadar	SPS	1.0	-0.692	0.6*	
37	1	TSIL	Joda	17.9	0.393	8.5	
38	1	Duburi	New Duburi	72.8	-2.194	34.7	
39	1	ITPS	Budhipadar	97.0	3.71	39.8	
40	1	Budhipadar	SPS	1.0	-0.692	0.6*	
41	1	Balasore	Kuchei	-49.4	-26.094	26.4	
42	1	Indravati	Theruvali	20.8	-15.069	12.1	
43	1	Katapali	Bolangir	0.0	0	0	
44	1	Mendhasal	Chandaka	76.3	9.001	37.8	
45	1	Balasore	New Duburi	-67.2	12.189	34.7	
46	2	New Duburi	Paradeep	150.7	-15.435	32.1	
47	2	Paradeep	Essar	19.1	-1.016	4.6	
48	1	Upper Kolab	Jaynagar	0.0	0	0.4*	
49	1	Theruvali	Bhanjanagar	-49.2	10.486	27.9	
50	1	Theruvali	Narendrapur	20.8	-4.024	14.5	
51	1	Rengali PH	Rengali Switching Station	42.0	17.275	21.3	
52	1	ITPS	Budhipadar	97.0	3.71	39.8	
53	1	Tarkera	BISRA	40.1	-27.947	20.4	
54	1	Rengali Switching Station	Rengali PG	25.8	24.775	16.8	
55	1	Meramundali	TSTPS	-52.9	2.565	25.2	
56	1	Budhipadar	Korba	-14.9	-2.769	12.8	
57	1	Budhipadar	Korba	-14.9	-2.769	12.8	
58	1	Indravati	Theruvali	20.8	-15.069	12.1	
59	1	Indravati	Theruvali	20.8	-15.069	12.1	
60	1	Meramundali	Duburi	85.0	-0.747	39.9	
61	1	Budhipadar	Tarkera	143.0	-9.513	66.5	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
62	1	Duburi	New Duburi	72.8	-2.194	34.7	
63	1	Balasore	Kuchei	-49.4	-26.094	26.4	
64	1	Katapali	Bolangir	0.0	0	0	
65	1	Mendhasal	Chandaka	76.3	9.001	37.8	
66	1	Mendhasal	Chandaka	76.3	9.001	37.8	
67	1	New Duburi	Jindal	-18.6	9.195	10.1	JSL
68	1	New Duburi	Jindal	-18.6	9.195	10.1	
69	1	New Duburi	Visa	-8.2	-11.859	6.9	VISA
70	1	New Duburi	Rohit	20.0	7.273	10.3	Rohit
71	1	Budhipadar	Vedanta	-196.9	-22.574	81.5	VEDANTA
72	1	Budhipadar	Vedanta	-196.9	-22.574	81.5	
73	1	DubriNew	Maithan	0.0	0	0	OPTCL
74	1	Mendha	Bidanasi	72.4	17.132	16.5	
75	1	Bhadrak	Balasore	32.8	-15.246	17.2	
76	1	Balimela	Balimela Splt	15.6	3.689	7.5	
77	1	Theruvali	Lakshmipur	10.5	-8.197	3.6	
78	1	Lakshmipur	Jaynagar	6.4	10.566	6.2	
79	1	Theruvali	Jaynagar	4.3	-4.239	6.4	
80	1	Narendrapur	Aatri	-51.1	9.071	27.2	
81	1	Mendhasal	Aatri	0.0	0	0	
82	1	Tarkera	Barkote	-0.8	-15.343	7.2	
83	1	Rengali Hydro	TTPS	54.2	-6.871	25.5	
84	1	JSPL	Jamshedpur	119.3	-7.128	56.7	
85	1	Joda	Ramchandrapur	-33.7	-25.244	19.9	
86	1	Bolagir New	Bolagir	167.8	12.822	40.2	
87	1	NALCO	Meramundali	151.9	-8.467	35.7	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVar		
88	1	BSSL	Meramundali	- 12.4	13.622	4.4	
89	1	Joda	JSPL	152. 4	4.2	72.1	
90	1	Paradeep	IOCL	0.6	-0.635	0.4*	
91	1	Basundhora	Budhipadar	-2.0	-0.977	2.2	
92	1	Lakshmipur	Utkal Aluminium	0.0	0	0	
93	1	Atri	Pandibil	- 126. 2	31.023	31.8	
94	1	Pandibil	Samangara	90.0	-4.683	21.8	
95	1	Lakshmipur	Aditya Aluminium	0.0	0	0	
96	1	Jayanagar Traction	Jayanagar	7.9	11.806	7	
132 kV							
1	1	Balimela	Upper Silleru	0.0	-3.478	1.6	OPTCL
2	1	Theruvali	Rayagada	0.0	0	0	
3	1	Jayanagar	Damanjodi	38.6	20.88	55.4	
4	1	Theruvali	IMFA	24.0	11.549	32.1	
5	1	Vedanta	Kesinga	60.5	- 11.017	73.4	
6	1	Rayagada	Akhusinghi	22.0	-0.481	28	
7	1	Digha	Berhampore	- 20.6	-7.328	27.7	
8	1	Bhanjanagar	Aska	55.7	-4.085	68.5	
9	1	Bhanjanagar	Phubani	12.3	-9.078	18.7	
10	1	Aska	Berhampore	0.0	0	0	
11	1	Aska	Chatrapur	38.4	-5.181	48.2	
12	1	Chatrapur	Ganjam	20.7	2.681	26.4	
13	1	Chatrapur	IRE	6.4	1.578	8.4	
14	1	Chatrapur	Balugaon	42.5	3.824	53.7	
15	1	Mendhasal	Chandaka	0.0	0	0	
16	1	Chandaka	Bhubaneswar	94.6	14.088	61.1	
17	1	ChandSpl	Bhubaneswar	39.9	- 12.286	53.3	
18	1	Phulnakhara	Bhubaneswar	- 39.4	12.222	53.2	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
19	1	Chandaka	Ranasinghpur	60.3	-0.32	77.1	
20	1	Kalarangi	Duburi	1.7	-4.114	5.5	
21	1	Kalarangi	Kamakhyanagar	-15.9	-0.125	19.7	
22	2	TTPS	Chainpal	62.2	13.322	38	
23	1	TTPS	Angul	31.3	3.598	37.6	
24	1	Angul	Nandira	16.8	-0.356	20.2	
25	1	Chainpal	FCI	0.4	-0.167	0.5*	
26	1	Meramundali	Dhenkanal	48.0	-4.474	58.5	
27	1	Kamakhyanagar	OPCL	-42.3	0.781	52.1	
28	1	Dhenkanal	Nuapatna Tap	0.0	0	0	
29	1	ICCL	Maheswari	-0.1	1.022	2.7	
30	1	Grid Steel (GSAL)	Choudwar	2.7	42.148	51.9	
31	1	Choudwar	Bidanasi	0.0	0	0	
32	1	BPPL	Bidanasi	0.0	0	0	
33	1	Cuttack	Jagatsinghpur	0.0	0	0	
34	1	Duburi	Jambay Ferro	-66.9	2.656	82.8	
35	1	B.C. Mohanty	TISCO (Bamanipal)	18.0	5.273	23.5	
36	1	Duburi	Jajpur Road	18.2	2.079	22.7	
37	1	Chandikhole	Kendapra	-17.8	1.777	22.9	
38	1	Kendapra	Ptamundi	15.2	-3.638	19.7	
39	1	Nuapatna Tap	Arati Steel	-28.6	-9.837	37.5	
40	1	Paradip	PPL	0.0	0	0	
41	1	Jajpur Road	Jajpur Town	0.0	0	0	
42	1	Bhadrak	Soro	0.0	0	0	
43	1	Balasore	Soro	28.9	11.009	38.8	
44	1	Balasore	Basta	42.5	0.984	52.4	
45	1	Balasore	Birla Tyre	3.0	0.024	3.7	
46	1	Balasore	Balasore Alloys	51.1	0.406	63	
47	1	Bhadrak	FACOR	-20.1	-5.314	25.2	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
48	1	Joda	Polasapanga	28.6	-15.102	39.4	
49	1	Polasapanga	Karenjia	-8.8	-3.433	11.5	
50	1	Budhipadar	Kuchei	-45.1	-14.193	56.8	
51	1	Burla	Samblpur	37.1	1.086	44.6	
52	1	Hindalco	Burla	-4.3	-4.683	7.6	
53	1	Budhipadar	Brajaraj Nagar	26.9	9.567	34.4	
54	1	Jharsuguda	L&T Cemco	4.0	-0.751	4.9	
55	1	Rajgangpur	Tarkera	21.5	-10.728	29.1	
56	1	Tarkera	Rourkela	17.8	4.162	22.2	
57	1	Tarkera	RSP	0.0	-15.677	19	
58	1	Rourkela	Bhalulata Tap	13.4	2.265	16.8	
59	1	Burla	Chiplima	4.2	-0.026	5.2	
60	1	Bolangir Old	Saintala	40.9	-5.57	51.1	
61	1	Saintala	Kesinga	38.5	-5.367	48.6	
62	1	Kesinga	Khariar	37.9	-4.922	48.3	
63	1	Kesinga	PowerMax	0.2	-0.623	0.8*	
64	2	Budhipadar	MCL	15.0	-2.117	9.1	
65	1	Tarkera	Chhend	40.5	7.347	49.8	
66	1	Jaleswar	Jaleswar traction	12.7	6.626	18.2	
67	1	Chhend	Adhunik	32.2	5.581	39.7	
68	1	Chhend	NugaonTraction	0.6	-1.619	2.1	
69	1	Tarkera	Chhend	40.5	7.347	49.8	
70	1	Nalda Traction	BeeKay	0.0	0	0	
71	1	Nalda Traction	Barbil	-2.2	-0.703	2.9	
72	1	Kesinga	Bhawanipatna	27.6	-6.823	34.5	
73	1	Jajpur Road	Kendapra	0.0	0	0	
74	1	Jajpur Town	Bhadrak	-22.7	1.744	28.1	
75	1	Kuchinda	SMC	-44.0	10.389	55.5	
76	1	Rajgangpur	Rourkela	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
77	1	Joda	Kendposi	22.8	-3.105	28	
78	1	Chatrapur	Narendra Pur	-27.5	-16.651	40.5	
79	1	Berhampore	Narendra Pur	-21.3	-4.682	27.3	
80	1	Berhampore	Narendra Pur	-21.3	-4.682	27.3	
81	1	Puri	Nimpara	7.1	-0.084	9	
82	1	Sunabeda	Damanjodi	0.0	0	0	
83	1	Jayanagar	Tentulik	21.8	-0.056	27.5	
84	1	Burla	Katapali	55.6	7.257	67.4	
85	1	Theruvali	JK Paper	0.0	-0.478	0.6*	
86	1	Rajgangpur	OCL	-17.0	-2.158	20.7	
87	2	Rajgangpur	Rajgangpur Traction	0.9	0.093	0.6*	
88	1	Paradip	IFFCO	0.0	0	0	
89	1	Boinda	Rairakhole	7.1	-2.545	9.2	
90	1	Mohana	Akhusinghi	-2.9	-1.005	4.2	
91	1	Akhusinghi	Parlakemundi	9.9	0.097	13.5	
92	1	Bolangir Old	Sonepur	40.9	-3.601	50.8	
93	1	Bolangir New	Patnagarh	24.7	6.853	32.3	
94	1	Patnagarh	Padamapur	11.3	2.576	15.4	
95	1	Khurdah	Balugaon Tap	-53.9	1.345	70.1	
96	1	Balugaon Tap	Narendra Pur	10.0	-6.903	15.2	
97	1	Tarkera	Rajgangpur	-20.9	9.413	28.5	
98	1	Nuapatna	Nuapatna Tap	-28.3	-10.783	38.3	
99	1	OPCL	TTPS	-53.4	-2.935	64.7	
100	1	Chainpal	Angul	27.2	2.506	32.7	
101	2	Machkhnd	Vizag	0.0	0	0	
102	1	Joda	FAP Joda	15.6	4.141	19.7	
103	1	Chatrapur	Rambha Traction	11.0	3.442	15.1	
104	1	Digha	Mohana	0.0	0	0	
105	1	Budhipadar	Sundargarh	10.1	1.894	12.8	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
106	1	Boinda	Angul	- 21.1	-1.7	25.5	
107	1	Kurdsplt	Kaipadar traction	7.9	0.808	10	
108	1	Balugaon	Solari Rly	10.1	2.594	13.8	
109	1	Jajpur Road	Chandikhole	0.0	0	0	
110	1	HMSwitch	HindMtl	0.0	-0.025	0.0*	
111	1	Sunabeda	HAL	10.1	4.171	14.1	
112	1	Rayagada	VVC	0.0	0	0	
113	1	Paradip	PPT	0.0	0	0	
114	1	Duburi	Jakhpur Traction	4.0	0.652	5.2	
115	1	Duburi	MESCO	0.0	0	0	
116	1	Bhadrak	Bhadrak Traction	4.8	-0.549	5.9	
117	1	Balasore	Balsore Traction	10.9	2.493	13.9	
118	1	Balasore	Somanthpur	-0.3	-4.418	5.5	
119	1	Bhalulata Tap	Bhulta Traction	5.5	1.626	7	
120	1	Jharsuguda	Jharsuguda Traction	10.0	4.407	13.1	
121	1	Vedanta	Theruvali	- 32.4	19.261	47.1	
122	1	Choudwar	Kendrapara Road(Traction)	5.0	-0.401	6.2	
123	1	Dhenkanal	Joranda traction	5.9	-0.877	7.4	
124	1	ICCL	Mania	27.9	0.202	34.1	
125	1	Meramundali	ML Rungta	0.3	-0.218	0.5*	
126	1	Meramundali	BRG	6.0	0.67	7.4	
127	1	HM Switch	Meramaundali Traction	7.4	1.83	9.3	
128	1	Narendra Pur	Jagannathpur traction	3.9	1.82	5.4	
129	1	Jayanagar	Jayanagar Traction	24.7	3.03	31.4	
130	1	Jayanagar Splt	Machkhnd	- 81.8	5.32	100	
131	1	Machkhnd	Machkund Rd	0.0	0	0	
132	1	MackndRd	Padwa traction	5.0	0.68	6.7	
133	1	Meramundali	Chainpal	0.0	0	0	
134	1	Dhenkanal	Maheswari	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVar		
135	1	Rawmeet	Choudwar	45.2	-25.229	63.8	
136	1	Macknd Road	Manbar Traction	-5.0	-0.68	6.5	
137	1	Manbar Traction	Maliguda Traction	-10.0	-0.589	12.7	
138	1	Jayanagar Traction	Maliguda Traction	15.1	0.915	19.1	
139	1	Jayanagar Traction	Ch Kusumi Traction	0.0	-0.929	1.2	
140	1	Chiplima	Katapali	32.5	4.035	39.4	
141	1	Barpali	Bolangir New	-34.1	-4.329	43.3	
142	1	Rajgangpur	Budhipadar	-35.1	7.416	44.6	
143	1	Rairakhole	Rairakhole Tap	0.0	0	0	
144	1	Samblpur	Rairakhole Tap	0.0	0	0	
145	1	Kendapra	Paradip	-34.4	-1.124	43.2	
146	1	Rairakhole Tap	Katapali	0.0	0	5.2	
147	1	Budhipadar	Budhipadar	62.1	11.238	31.4	
148	1	Bolangir New	Bolangir Old	51.5	-4.405	63.9	
149	1	Phulnakhara	Cuttack	25.1	-9.761	34.5	
150	1	Arya	Bolani	-34.5	-10.788	44.8	
151	1	Karenjia	Rairangpur	-16.2	3.862	21.5	
152	1	Jayanagar	Meenakshi	-39.9	-0.066	50.4	
153	1	Dhmra Port	Bhadrak	-4.8	-0.755	6.6	
154	1	Budhipadar	MSP	0.0	0	0	
155	1	OCL	Salipur	19.9	-1.493	24.6	
156	1	Jajpur Road	Anandpr	11.5	-5.714	15.9	
157	1	Basta	Jaleswar	33.6	6.531	42.6	
158	1	Samblpur	Shyam DRI	-17.0	-6.929	22.2	
159	1	Bhanjanagar	Aska	55.7	-4.085	68.5	
160	1	Chatrapur	IRE	6.4	1.578	8.4	
161	1	TTPS	Chainpal	62.2	13.322	38	
162	1	Angul	Nandira	16.8	-0.356	20.2	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
163	1	Chainpal	FCI	0.4	-0.167	0.5*	
164	1	Tarkera	RSP	0.0	-15.677	19	
165	1	Tarkera	RSP	0.0	-15.677	19	
166	1	Chatrapur	Narendra Pur	-27.5	-16.651	40.5	
167	1	Paradip	IFFCO	0.0	0	0	
168	1	NBVL	HM Switch	9.4	-12.999	19.5	
169	1	Budhipadar	Sundargarh	10.1	1.894	12.8	
170	2	Meramundali	HM Switch	6.8	30.267	19.2	
171	1	Paradip	PPT	0.0	0	0	
172	1	Duburi	BRPL	16.7	4.903	21.5	
173	1	MESCO	BRPL	-3.6	-1.158	4.7	
174	1	Bolangir New	Bolangir Old	51.5	-4.405	63.9	
175	1	Duburi	Jajpur Road	18.2	2.079	22.7	
176	1	Paradip	PPL	0.0	0	0	
177	1	Hindalco	Burla	-4.3	-4.683	7.6	
178	1	Jharsuguda	L&TCemco	4.0	-0.751	4.9	
179	1	Tarkera	Rourkela	17.8	4.162	22.2	
180	1	SMC	Lapanga	-44.2	9.127	54.2	
181	1	Lapanga	Budhipadar	2.6	-0.91	1.6	
182	1	Jayambee Ferro	TTPS	-67.3	2.209	82.8	
183	1	BeeKay Steel	Bhulta Tap	-7.8	-2.558	10.1	
184	1	Chandaka	Nimpara	-7.8	-4.419	11.4	
185	1	Joda	Bansapani	2.3	-1.074	3.1	
186	1	Barbil	Arya	-14.9	-5.294	19.7	
187	1	Saliban	HM Switch	-1.5	-0.497	1.9	
188	1	Jagatsingpur	Goreknata Rly	10.5	4.506	14.9	
189	1	Paradip	Jagatsingpur	33.4	2.268	41.7	
190	1	Aska	Purusattampur	41.6	-6.828	52.5	
191	1	Chatrapur	Purusattampur	-30.5	2.169	38.7	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
192	1	Balugaon	Chandpur	7.3	-2.849	10.2	
193	1	Chandpur	Balugaon Tap	0.0	0	0	
194	1	Balugaon Tap	Atri	-66.0	6.231	83	
195	1	Arati Steel	Rawmeet	67.8	-16.864	85.6	
196	1	Nimapara	Konark	5.8	0.745	7.7	
197	1	Nimapara	Kesura	0.0	0	0	
198	1	Nimapara	Samangara	-43.9	-0.081	55.6	
199	1	Khariar	Nuapara	8.3	0.003	11.5	
200	1	Argul Tap	Shamuka	11.1	-7.223	16.5	
201	1	Sonepur	Boudh	4.9	-0.818	6.5	
202	1	Junagarh	Bhawanipatna	-19.2	1.993	24	
203	1	Shamuka	Puri	0.0	0	0	
204	1	Puri	Samangara	-44.6	1.096	56.4	
205	1	Dabugaon	Tentulikhunti	-11.7	-0.482	15.2	
206	1	Dabugaon	Umerkote	9.1	0.258	12	
207	1	Joda	Bolani	36.6	9.708	46.2	
208	1	Jayanagar	Sunabeda	27.5	7.298	35.9	
209	1	Polasponga	Keonjhar Traction	7.2	-4.131	10.1	
210	1	Rairangpur	Kuchi	-22.9	6.206	29.8	
211	1	Katapali	Bargarh	54.7	14.806	68.6	
212	1	Bargarh	Barpalli	0.0	0	0	
213	1	Bargarh	ACC	0.1	-0.192	0.3*	
214	1	Budhipadar	Kahalgaon	35.9	-9.655	44.4	
215	1	Burla-Rajganpur Tap	Kuchinda	0.0	0.254	4	
216	1	Aryan Steel	Shyam DRI	16.1	-1.991	19.4	
217	1	Baripada	Balasore	0.0	0	0	
218	1	Kendrapra	Marshghai	-19.9	0.652	25.1	
219	1	Arati Steel	Meramundali	-73.9	28.455	98.3	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
220	1	BC Mohanty	Duburi	-36.0	-5.683	45.2	
221	1	Budhipadar	Jharsuguda	17.5	7.515	23	
222	1	Khurdah Split	Argul Tap	11.1	-7.869	17	
223	1	Argul Tap	Argul	0.0	0	0	
224	1	Rayagarh Split	Jayangr splt	-32.2	-3.568	40.6	
225	1	Action Ishpat	Jharsiguda	3.4	-4.359	6.6	
226	1	Rathi	Chiplima	0.0	0	0.3*	
227	1	Adhunik	Sri ganesh	-0.7	-4.496	5.6	
228	1	Kesura	Ranasinghpur	-21.2	-0.565	27.7	
229	1	Grid Steel	ICCL	-2.7	-42.148	51.7	
230	1	Mania	OCL Tap	27.8	0.893	34.2	
231	1	BPPL	Chandaka Split	0.0	0	0.6*	
232	1	Kurda Split	Mendhasal	-19.0	7.061	26.1	
233	1	Aryan Steel	Lapanga	-15.1	0.789	18.1	
234	1	Burla-Rajganpur Tap	Rajganpur	0.0	0	0	
235	1	Burla-Rajganpur Tap	Bamra Traction	0.0	-0.254	0.3*	
236	1	Kalugaon	Tarkera	9.4	-9.846	16.5	
237	1	Somnathpur	EMAMI	-0.3	-4.272	5.3	
238	1	Bhadrak	Dhamra Traction	0.2	-1.689	2.1	
239	1	Marshghai	Paradeep	-30.5	-1.618	38.2	
240	1	Duburi	MSL	3.1	0.342	4	
241	1	BC Mohanty	Tomka Traction	0.0	-0.571	0.7*	
242	1	HM Switch	Samal Metalics	0.0	-0.052	0.1*	
243	1	Arya	BRP-St	13.1	3.81	17.1	
244	1	Argul	Atri	-1.6	0.681	2.8	
245	1	Atri	Baki	6.0	-4.421	9.2	
246	1	Rajganpur	Kuchinda	-33.0	10.596	41.9	
247	1	Duburi	Kamakhyanagar	-11.6	0.672	14.9	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
248	1	Polasponga	MSP	-0.3	-3.869	4.7	
249	1	HM Switch	SGEL	16.7	2.911	20.6	
250	1	Lapanga	Jharsiguda	10.3	3.455	13.3	
Sikkim							
400 kV							
1	1	Teesta-V	Rangpo	164.4	-7.428	18.9	PGCIL
2	1	Teesta-V	Rangpo	164.4	-7.428	18.9	
3	1	Malbase	Tala	0.0	0		
220 kV							
1	1	New Melli	Jorthang	-35.4	-22.26	19.7	PGCIL
2	1	New Melli	Rangpo	35.4	-6.507	16.9	
3	1	Rangpo	Jorthang	-51.1	-5.119	24.1	
132 kV							
1	1	Rangit	Ramam	23.2	-0.943	27.5	PGCIL
2	1	Rangit	Sagbari	47.9	-14.635	59.4	NHPC
3	1	Melli	NJP PG	17.2	-1.218	20.5	PGCIL
4	1	Rangit	Kurseong	29.5	-4.589	35.4	PGCIL
5	1	Rangpo	Chuzechan	-69.9	-3.391	54.1	Gati infra
6	1	Gangtok	Chuzechan	-29.2	-3.782	22.6	Sikkim
7	1	Rangpo	Melli	0.0	0	0	PGCIL
8	1	Gangtok	Rangpo	1.2	-3.282	4.2	
9	1	Rangpo	Rangit	41.8	-23.172	57.1	
10	1	Sagbari	Melli	41.8	-12.192	51.6	
11	1	Sagbari	Geyzing	6.1	-2.443	7.8	
66 kV							
1	1	Mangan	Phudong	-2.2	-0.429	4.5	Sikkim Gov
2	1	Geyzing	Namchi	3.7	-2.535	8.7	
3	1	Bulbuley	Sichey	3.8	0.841	7.9	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by	
				MW	MVAr			
4	1	Bulbuley	Gangtok	-7.6	-1.83	15.7		
5	2	Ranipool	LLHP	0.0	-0.005	0.0*		
6	1	Rongli	Pakyong	-2.4	-0.464	5		
7	1	Mamring	Melli	-5.1	-1.39	10.4		
8	1	Rangit	Rabangla	1.6	0.302	3.3		
9	1	Ranipool	Pakyong	6.2	1.185	6.8		
10	1	Melli	Namchi	-2.8	2.243	7.4		
11	1	Pelling	Geyzing	-1.6	-0.461	3.3		
12	1	Purani Namchi	Rothak	1.6	0.189	3.2		
13	1	Rothak	Soreng	0.8	0.081	1.6		
14	2	Melli	Kalingpong	16.3	-15.846	22.2		
15	1	Melli	Melli	24.0	-11.423	51.9		
16	1	Melli	Purani Namchi	3.8	0.521	7.6		
17	1	Gangtok	Tadong	9.7	2.132	20		
18	1	Ranipool	Gangtok	-10.5	-2.139	21.5		
19	1	Tadong	Sichey	2.7	0.839	5.7		
20	1	Tadong	Phudong	3.3	0.297	6.6		
21	1	Rongli	Rhenock	1.6	0.31	3.4		
22	1	Geyzing	Geyzing	4.5	-2.318	9.9		
23	1	Ranipool	Topakhani	2.2	0.396	4.5		
24	1	Mangan	Meyong HEP	0.0	-0.137	0.3		
25	1	Rongli	RongliH	0.0	-0.057	0.1		
West Bengal								
400 kV								
1	1	Malbase	Binaguri	240.0	5	28.1		PGCIL
2	1	Rangpo	Binaguri	222.1	-60.897	26.4		
3	1	Rangpo	Binaguri	222.1	-60.897	26.4		
4	1	TALA	Binaguri	225.9	-33.08	26		
5	1	TALA	Binaguri	225.9	-33.08	26		

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
6	1	TALA	Binaguri	225.9	-33.08	26	
7	1	Binaguri	Bongaigaon (NER)	155.2	-77.674	19.9	
8	1	Binaguri	Bongaigaon (NER)	155.2	-77.674	19.9	
9	1	Binaguri	Bongaigaon (NER)	155.2	-77.674	19.9	
10	1	Binaguri	Bongaigaon (NER)	155.2	-77.674	19.9	
11	1	Farraka	Malda PG	425.1	53.227	48.1	
12	1	Farraka	Malda PG	425.1	53.227	48.1	
13	1	Farraka	Parulia (PGCIL)	115.4	-28.031	13.3	
14	1	Farraka	Parulia (PGCIL)	115.5	-75.205	15.5	
15	1	Farraka	Behrampur	383.9	-32.911	43.2	
16	1	Farraka	Sagardighi	358.5	-33.184	40.4	
17	1	Sagrdghi	Behrampur	153.9	-12.472	17.3	
18	1	Sagrdghi	Behrampur	153.9	-12.472	17.3	
19	1	Sagrdghi	Parulia (PGCIL)	-40.1	-69.858	9.1	WBSETCL
20	1	Sagrdghi	Parulia (PGCIL)	-40.1	-69.858	9.1	WBSETCL
21	1	Subhashgram	Sagardighi	-266.2	-42.809	30.8	PGCIL
22	1	Behrampur	Behramara (Bangladesh)	209.6	-4.889	23.8	
23	1	Behrampur	Behramara (Bangladesh)	209.6	-4.889	23.8	
24	1	Behrampur	Jeerat	270.5	-0.032	30.4	
25	1	Haldia	Subhashgram	267.5	-39.004	31.4	CESC
26	1	Haldia	Subhashgram	267.5	-39.004	31.4	
27	1	Jeerat	Subhashgram	105.4	10.453	13.6	PGCIL
28	1	Jeerat	Bakreswar	-256.0	5.06	29.5	WBSETCL

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
29	1	Jeerat	KTPS	- 296.8	- 93.869	36	
30	1	KTPS	Kharagpur	- 17.1	- 18.399	4.3	
31	1	KTPS	Kharagpur	- 17.1	- 18.399	4.3	
32	1	KTPS	Chaibasa	- 403.0	-0.888	45.4	PGCIL
33	1	Arambag	KTPS	- 106.0	9.303	13.3	WBSETCL
34	1	Arambag	Bidhannagar	- 262.4	- 25.733	29.5	
35	1	Arambag	Bakreswar	- 77.8	33.403	10.4	
36	1	PPSP	Arambag	148.2	- 18.152	19.7	
37	1	PPSP	Arambag	148.2	- 18.152	19.7	
38	1	PPSP	Bidhannagar	1.5	-8.658	11.1	
39	1	PPSP	Bidhannagar	1.5	-8.658	11.1	
40	1	Parulia (PGCIL)	Bidhannagar	262.8	- 16.022	29.3	
41	1	Parulia (PGCIL)	Bidhannagar	262.8	- 16.022	29.3	
42	1	Khargpur	Chaibasa	- 166.1	- 42.787	19.3	PGCIL
43	1	Durgapur (DSTPS)	Raghunathpur	36.9	39.143	9.8	DVC
44	1	Durgapur (DSTPS)	Raghunathpur	36.9	39.143	9.8	DVC
220 kV							
1	1	STPS	Asansol	27.5	9.515	15.4	WBSETCL
2	1	Subhasgram PG	CLC	63.0	2.85	30.4	
3	1	Kasba	Subhasgram WB	- 20.9	6.736	11.1	
4	1	Jeerat	Satgachia	2.1	-0.433	5	
5	1	Arambag	Domjur	100.4	9.878	47	
6	1	Arambag	Domjur	100.4	9.878	47	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
7	1	Arambag	Midnapur	8.5	-2.91	5.2	
8	1	Arambag	Midnapur	8.5	-2.91	5.2	
9	1	Bakreshwar	Bidhanagar	16.1	-3.379	7.8	
10	1	Bakreshwar	Bidhanagar	16.1	-3.379	7.8	
11	1	Bidhanagar	DPL	-27.7	75.297	38.4	
12	1	Bidhanagar	DPL	-27.7	75.297	38.4	
13	1	Howrah	KTPS	-174.4	-11.324	83.6	
14	1	Howrah	KTPS	-174.4	-11.324	83.6	
15	1	Jeerat	Kasba	55.9	0.732	26.9	
16	1	Jeerat	Kasba	55.9	0.732	26.9	
17	1	Parulia WB	Parulia D	121.8	56.02	62.8	
18	1	Parulia WB	Parulia D	121.8	56.02	62.8	
19	1	Bidhanagar	DTPS-D	6.4	-3.683	3.5	
20	1	Bidhanagar	DTPS-D	6.4	-3.683	3.5	
21	1	STPS	Hura	67.6	-33.798	35.2	
22	1	BishnupurNew	Arambag	-33.6	-7.328	16.1	
23	1	BishnupurNew	Arambag	-33.6	-7.328	16.1	
24	1	Laxmikantapur	Subhasgram WB	-135.5	-15.688	66.2	
25	1	Laxmikantapur	Subhasgram WB	-135.5	-15.688	66.2	
26	1	Bakreshwar	Satgachia	128.7	-6.73	60.7	
27	1	Bakreshwar	Satgachia	128.7	-6.73	60.7	
28	1	Subhasgram PG	Subhasgram WB	180.9	17.068	77.5	
29	1	Subhasgram PG	Subhasgram WB	180.9	17.068	77.5	
30	1	Kasba	Subhasgram WB	-20.9	6.736	11.1	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
31	1	Kharagpur	Midnapur	66.0	-2.382	30.7	
32	1	Kharagpur	Midnapur	66.0	-2.382	30.7	
33	1	Subhasgram PG	NTAA	38.4	-1.314	18.4	
34	1	NTAA	Jeerat	- 85.2	- 10.878	41.1	
35	1	TLD	NJP	0.0	0	5.4	
36	1	NJP	TLD	0.0	-20.72	9.7	
37	1	NJP	TLD	0.0	-20.72	9.7	
38	1	Gokarna	Bakreshwar	- 126.8	-4.231	60.6	
39	1	Gokarna	Bakreshwar	- 126.8	-4.231	60.6	
40	1	Gokarna	Sagardighi	- 173.7	- 28.861	83.9	
41	1	Gokarna	Sagardighi	- 173.7	- 28.861	83.9	
42	1	Foundry Park	Domjur	-9.9	-3.603	5	
43	1	Foundry Park	Domjur	-9.9	-3.603	5	
44	1	Howrah	Foundry Park	0.0	0	0	
45	1	Howrah	Foundry Park	0.0	0	0	
46	1	Krishnanagar	Satgachia	- 56.0	- 18.885	28.6	
47	1	Krishnanagar	Satgachia	- 56.0	- 18.885	28.6	
48	1	Asansol	Bidhanagar	- 28.5	-0.339	15.2	
49	1	NTAA	CLC	19.2	2.531	9.6	
50	1	Bishnupr New	STPS	- 64.0	-0.106	31.1	
51	1	New Haldia	KTPS	- 44.8	2.932	21.5	
52	1	New Haldia	KTPS	- 44.8	2.932	21.5	
53	1	Bishnupr New	Hura	- 48.4	-10.29	23.1	
54	1	Subhasgram PG	EMSS	219.0	-3.719	43	
55	1	Subhasgram PG	EMSS	219.0	-3.719	43	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
56	1	NTAA	Jeerat	- 85.2	- 10.878	41.1	
57	1	Jeerat	Satgachi	2.1	-0.433	5	
58	1	Jeerat	Rishra	0.0	0	0	
59	1	Jeerat	Dharampur	119. 8	- 15.682	28.8	
60	1	Arambag	Rishra	133. 7	18.878	62.9	
61	1	Dharampur	Rishra	35.1	- 13.367	9	
62	2	Gokarna	Kishnanagar	176. 2	- 13.657	42.3	
63	2	Vidyasagar WB	Kharagpur	- 104. 2	- 24.245	25.2	
64	2	New Haldia	IPCLG	0.0	-0.909	0.2*	
65	1	Parulia	Parulia	0.0	0	0.0*	
66		Kharagpur	Egra	0.0	0	0	
67	1	STPS	JK nagar	2.5	6.809	8.2	WBSETCL/IP CL
68	1	JK Nagar	Bidhanagar	- 44.1	11.7	22	
69	1	Dalkhola PG	Malda PG	- 69.5	-5.129	33.2	PGCIL
70	1	Dalkhola PG	Malda PG	- 69.5	-5.129	33.2	
71	1	Binaguri	Birpara PG	-5.3	-6.58	4	
72	1	Binaguri	Birpara PG	-5.3	-6.58	4	
73	1	Binaguri	Sliguri PG	68.6	2.41	32.1	
74	1	Binaguri	Slligur PG	68.6	2.41	32.1	
75	1	NJP	Binaguri	- 33.6	10.179	16.6	
76	1	NJP	Binaguri	- 33.6	10.179	16.6	
77	1	Birpara PG	Malbase	- 65.7	23.483	33.6	
78	1	Birpara PG	Chukha	- 117. 7	-1.769	55	
79	1	Birpara PG	Chukha	- 117. 7	-1.769	55	
80	1	Birpara PG	Salakati_NER	74.8	- 17.212	35.9	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
81	1	Birpara PG	Salakati_NER	74.8	- 17.212	35.9	
82	1	Dalkhola PG	Purnea	41.8	8.116	20.9	
83	1	Dalkhola PG	Purnea	41.8	8.116	20.9	
84	1	Dalkhola PG	Dhalkhola WB	78.8	9.25	37.7	
85	1	Dalkhola PG	Dhalkhola WB	78.8	9.25	37.7	
86	1	Farakka	Lalmatiya	40.5	-6.436	18.9	
87	1	Siliguri	Krishanganj	51.6	-4.128	24.6	
88	1	Siliguri	Krishanganj	51.6	-4.128	24.6	
89	2	Dhalkhola	Krishanganj	- 102.2	- 24.473	25	
90	1	JK Nagar	JK Nagar	2.4	17.329	9.2	
91	1	JK Nagar	JK Nagar	- 44.1	9.811	21.5	IPCL
92	1	Burnpur D	Mejia D	- 66.1	16.825	33	DVC
93	1	Burnpur D	Kalyaneshwari	- 35.0	-6.239	16.6	
94	2	Mejia	Durgapur	72.6	- 13.668	17.4	
95	2	Parulia D	Durgapur	35.0	45.117	14.2	
96	2	Barjora	Mejia	- 140.8	- 14.385	33.3	
97	1	DTPS-D	Mejia	- 50.0	0.374	23.7	
98	1	DTPS-D	Mejia	- 50.0	0.374	23.7	
99	1	Parulia-D	Tamla D	7.0	1.456	3.5	
100	1	Parulia-D	Tamla D	7.0	1.456	3.5	
101	1	Parulia-D	Tamla	7.0	1.456	3.5	
102	2	DTPS-D	Parulia D	- 111.0	- 36.703	27.5	
103	2	IISCO D	Burnpur D	- 99.4	10.421	23.4	
104	1	EMSS	NCGS	0.0	0	0	CESC
105	1	EMSS	NCGS	0.0	0	0	
106	1	EMSS	EMSS	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA _r		
107	1	BBGS	BBG	134.1	14.266	53.3	
108	1	BBGS	BBG	134.1	14.266	53.3	
109	1	BBG	EMSS	133.1	18.136	51.5	
110	1	BBG	EMSS	133.1	18.136	51.5	
111	1	EMSS	Kasba	0.0	0	0	
112	1	EMSS	EMSS	0.0	0	0	
132kV							
1	1	Howrah	B. Garden	26.5	-0.018	54.6	WBSETCL
2	1	Howrah	B. Garden	26.5	-0.018	54.6	
3	1	Howrah	SRS	0.0	0	0	
4	1	Lilooah	Belur	41.6	-16.017	92.5	
5	1	Lilooah	Belur	41.6	-16.017	92.5	
6	1	Lilooah	Belur	41.6	-16.017	92.5	
7	1	Titagarh	Titagarh	0.0	0	0	
8	1	Titagarh	Titagarh	0.0	0	0	
9	1	Kasba	EMSS	6.6	-14.554	10.2	
10	1	Kasba	EMSS	6.6	-14.554	10.2	
11	1	Howrah	B. Garden	26.5	-0.018	54.6	
12	1	Rishra	Rishra	40.6	-3.054	26.1	
13	1	Rishra	Rishra	40.6	-3.054	26.1	
14	1	Alipurduar	Birpara	-54.6	8.13	68.6	
15	1	Midnapur	Balichauk	43.1	6.94	52.6	
16	1	Pingla	Balichauk	-20.4	-0.578	25.1	
17	1	CK Road	Midnapur	0.0	0	0	
18	1	Leobong	NBU	29.6	-3.061	35.7	
19	1	Leobong	Ramam	-33.3	1.646	40.1	
20	1	Dharampur	Kalyani	23.4	-8.564	30.7	
21	1	Dhulian	Farakka	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
22	1	Joka	Sonarpur	0.0	0	0	
23	1	Lalgola	Raghunathpur	30.5	5.169	39.4	
24	1	Gokarna	Rampurhat	52.8	4.027	66.3	
25	1	Gokarna	Kuli GIS	30.7	4.539	38.8	
26	1	HM	Dankuni	-5.0	2.988	7.5	
27	1	Dankuni	Lilooah	-5.0	3.315	7.8	
28	1	HM	Rishra	0.0	0	0	
29	1	Khanyan	Satgachia	-30.1	11.642	40.3	
30	1	Malda	Samsi	47.8	11.747	60.9	
31	1	Satgachia	Dhatri Rly	4.5	1.34	6.1	
32	1	NBU	TCF-1	4.4	-2.293	6.1	
33	1	NJP	TCF-1	-4.4	0.61	5.7	
34	1	Samsi	Raigunj	0.0	0	0	
35	1	Saintia	Rampurhat	0.0	0	0	
36	1	TCF-1	TCF-2	0.0	0	0	
37	1	TCF-1	TCF-3	0.0	0	0	
38	1	TCF-2	TCF-3	0.0	0	0	
39	1	NBU	NJP	15.1	-5.155	19.4	
40	1	New Haldia	Haldia	7.3	-5.127	10.7	
41	1	New Haldia	HPCL	8.5	-0.33	10.2	
42	1	Haldia	HPCL	0.8	3.121	4	
43	2	Rishra	CTOLA	0.0	0	0	
44	1	Raigunj	Gangarampur	34.6	-5.377	43.7	
45	1	Cooch Bihar	Alipurduar	-21.1	4.464	27	
46	1	Chalsa	Maynaguri	11.9	-0.394	14.8	
47	1	Chalsa	NJP	-13.5	-3.538	17.2	
48	1	Contai	New Haldia	-31.1	-6.757	38.6	
49	1	Contai	Egra	-45.1	-13.253	57.8	
50	1	Gokarna	Raghunathpur	52.0	7.661	65.8	
51	1	CLC	Kasba	-	-	40.6	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
				30.7	11.686		
52	1	Kasba	Joka	0.0	0	0	
53	1	TMBLK	RMBLK	-45.0	-15.323	59	
54	1	RMBLK	Midnapur	0.0	0	0	
55	1	CK Road	Bishnupur Old	-39.6	-2.069	48.9	
56	1	Basirhat	Ashoknagar	-24.5	-3.913	31	
57	1	Basirhat	Ashoknagar	-24.5	-3.913	31	
58	1	Arambag	Raina	48.1	7.214	58.9	
59	1	Arambag	Raina	48.1	7.214	58.9	
60	1	Arambag	Tarakeshwar	55.4	-8.048	67.7	
61	1	Arambag	Tarakeshwar	55.4	-8.048	67.7	
62	1	Ashoknagar	Jeeerat	-53.7	-6.701	67.4	
63	1	Ashoknagar	Jeeerat	-53.7	-6.701	67.4	
64	1	Bankura	Bishnupur New	-22.4	-3.881	27.7	
65	1	Bankura	Bishnupur New	-22.4	-3.881	27.7	
66	1	Barasat	Jeeerat	-40.8	-15.435	54.4	
67	1	Barasat	Jeeerat	-40.8	-15.435	54.4	
68	1	Birpara	BRP PG	-70.3	-8.025	85.8	
69	1	Birpara	BRP PG	-70.3	-8.025	85.8	
70	1	Birpara	Maynaguri	0.0	0	0	
71	1	Birpara	Mathabhanga	0.0	0	0	
72	1	Bolpur	Saintia	27.0	-5.213	34.6	
73	1	Bolpur	Saintia	27.0	-5.213	34.6	
74	1	Bongaon	Krishnanagar	0.0	0	0	
75	1	Bongaon	Krishnanagar	0.0	0	0	
76	1	Dikhola	Raigunj	29.6	-2.152	33.7	
77	1	Dikhola	Raigunj	29.6	-2.152	33.7	
78	1	Debagram	Katwa	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
79	1	Debagram	Katwa	0.0	0	0	
80	1	Debagram	Debagram TSS	3.8	0.022	4.9	
81	1	Dharampur	Titagarh	58.6	4.326	72.5	
82	1	Dharampur	Titagarh	58.6	4.326	72.5	
83	1	Domjour	Uluberia	42.4	1.018	52	
84	1	Domjour	Uluberia	42.4	1.018	52	
85	1	Bidhannagar	DPL	1.4	25.233	31.4	
86	1	Bidhannagar	DPL	1.4	25.233	31.4	
87	1	Bidhannagar	Mankar	53.8	-0.867	65.6	
88	1	Bidhannagar	Mankar	53.8	-0.867	65.6	
89	1	Falta	Laxmikantapur	-44.2	0.388	56.8	
90	1	Falta	Laxmikantapur	-44.2	0.388	56.8	
91	1	Gokarna	Katwa	24.4	-1.377	30.6	
92	1	Gokarna	Katwa	24.4	-1.377	30.6	
93	1	Joka	Sirkl	-40.9	-4.223	53.1	
94	1	Jeeerat	Bongaon	15.7	0.448	19.5	
95	1	Jeeerat	Bongaon	15.7	0.448	19.5	
96	1	NTAA	SaltLak	0.0	0	0	
97	1	Kasba	SaltLak	41.7	10.453	53.1	
98	1	Katwa	Satgachia	0.0	0	0	
99	1	Katwa	Satgachia	0.0	0	0	
100	1	KTPS	Kolaghat WB	78.7	7.123	95.5	
101	1	KTPS	Kolaghat WB	78.7	7.123	95.5	
102	1	KTPS	TMLK	19.7	-2.119	24	
103	1	KTPS	TMLK	19.7	-2.119	24	
104	1	KTPS	Uluberia	0.0	0	0	
105	1	KTPS	Bagnan	40.7	-1.099	49.2	
106	1	Lilooah	Rishra	0.0	0	0	
107	1	Lilooah	Howrah	-41.6	3.994	52.3	
108	1	NJP	Siliguri	16.9	3.255	21.1	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
109	1	NJP	Siliguri	16.9	3.255	21.1	
110	1	STPS	Purulia WB	25.4	-6.341	31.2	
111	1	STPS	Purulia WB	25.4	-6.341	31.2	
112	1	NJP PG	Kurseong	- 27.9	1.791	33.9	
113	1	Domjour	Jangipara	11.2	-0.544	13.8	
114	1	Domjour	Jangipara	11.2	-0.544	13.8	
115	1	Arambag	Birsingha	21.8	4.007	27.1	
116	1	Arambag	Birsingha	21.8	4.007	27.1	
117	1	Tarakeshwar	Belmuri	31.8	-7.176	39.9	
118	1	Tarakeshwar	Belmuri	31.8	-7.176	39.9	
119	1	Bishnupur New	Borjora	6.3	-0.443	7.9	
120	1	Bishnupur New	Borjora	6.3	-0.443	7.9	
121	1	Borjora	Bidhannagar	0.0	0	0	
122	1	Borjora	Bidhannagar	0.0	0	0	
123	1	RGP	Bankura	0.0	0	0	
124	1	RGP	Bankura	0.0	0	0	
125	1	Mankar	Mahachanda	30.2	-2.048	37.4	
126	1	Mankar	Mahachanda	30.2	-2.048	37.4	
127	1	Mahachanda	Satgachia	0.0	0	0	
128	1	Mahachanda	Satgachia	0.0	0	0	
129	1	TATA Power	Haldia	25.9	5.591	31.8	
130	1	TATA Power	Haldia	25.9	5.591	31.8	
131	1	Crescent	Asansol	17.4	5.535	22.5	
132	1	Crescent	Asansol	17.4	5.535	22.5	
133	1	Krishnanagar	Ranaghat	44.1	4.586	56	
134	1	Krishnanagar	Ranaghat	44.1	4.586	56	
135	1	Debagram	Amtala	37.7	-4.063	48.6	
136	1	Debagram	Amtala	37.7	-4.063	48.6	
137	1	Berhampur	Amtala	0.0	0	0	
138	1	Berhampur	Amtala	0.0	0	0	
139	1	Hizli	Midnapur	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
140	1	Hizli	Midnapur	0.0	0	0	
141	1	Midnapur	Pingla	36.5	4.127	44.2	
142	1	Jhargram	Midnapur	-15.2	0.07	18.7	
143	1	Jhargram	Midnapur	-15.2	0.07	18.7	
144	1	NTAA III	SaltLak	0.0	0	0	
145	2	NTAA III	Barasat	43.9	0.322	27.4	
146	1	Ukhra	Bidhannagar	-24.3	2.714	30.1	
147	1	Ukhra	Bidhannagar	-24.3	2.714	30.1	
148	1	TCF-3	Dikhola	0.0	0	0	
149	1	TCF-3	Dikhola	0.0	0	0	
150	1	Rishra	Bighati	14.3	1.666	17.8	
151	1	Rishra	Bighati	14.3	1.666	17.8	
152	1	Bishnupur New	Bishnupur Old	26.5	2.195	32.1	
153	1	Bishnupur New	Bishnupur Old	26.5	2.195	32.1	
154	1	Bishnupur New	Bishnupur Old	26.5	2.195	32.1	
155	1	Howrah	Lilooah	72.0	-6.443	89.6	
156	1	Howrah	Lilooah	72.0	-6.443	89.6	
157	1	Howrah	Lilooah	72.0	-6.443	89.6	
158	1	Dhulian	Khejuria GIS	0.0	0	0	
159	1	Khejuria GIS	Malda	-29.7	-5.674	37.5	
160	1	Bishnupur Old	Khatra	11.9	1.025	15.3	
161	1	Bishnupur Old	Khatra	11.9	1.025	15.3	
162	1	Satgachia	Kalna	19.4	-2.132	23.8	
163	1	Satgachia	Kalna	19.4	-2.132	23.8	
164	1	Laxmikantapur	Kakdwip	15.8	0.42	20.2	
165	1	Laxmikantapur	Kakdwip	15.8	0.42	20.2	
166	1	Dharampur	Jeeerat	-40.9	22.161	57.7	
167	1	Dharampur	Jeeerat	-40.9	22.161	57.7	
168	1	Hura	Purulia WB	0.0	0	0	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
169	1	Hura	Purulia WB	0.0	0	0	
170	2	Hura	RGP	12.6	-7.707	3.4	
171	1	Bagnan	Uluberia	0.0	0	0	
172	1	Kharagpur	Hizli	0.0	0	0	
173	1	Saintia	Kuli GIS	1.9	-3.607	5.2	
174	1	Malda	Khejuria GIS	30.0	4.764	37.5	
175	1	Raghunathpur	Farakka	0.0	0	0	
176	1	Bengal Energy	Egra	-44.2	-2.798	54.7	
177	1	SonarLal	Lalgola	0.0	0	0	
178	2	Ambuja FR	Raghunathpur	0.0	0	0	
179	1	Raghunathpur	Dhulian	22.0	0.54	28.3	
180	1	Malda PG	Malda	122.0	12.148	58.8	
181	1	Malda PG	Malda	122.0	12.148	58.8	
182	1	Berhampur	Gokarna	-55.0	-7.425	70.2	
183	1	Berhampur	Gokarna	-55.0	-7.425	70.2	
184	1	Berhampur	Cossim bazar TSS	0.4	-0.383	0.7*	
185	1	Ranaghat	Dharampur	0.0	0	0	
186	1	Ranaghat	Dharampur	0.0	0	0	
187	1	NTAA III	NTAA	91.6	13.588	57.8	
188	1	Bidhannagar	Bolpur	53.5	-2.495	65.3	
189	1	Bidhannagar	Bolpur	53.5	-2.495	65.3	
190	1	Ujanoo	NBU	-35.4	-1.666	43.3	
191	1	NJP PG	NBU	25.3	7.739	32.3	
192	1	Ujanoo	Siliguri	6.5	-0.951	8	
193	1	Adisaptagram	BTPS	-45.6	-20.104	61	
194	1	Adisaptagram	BTPS	-45.6	-20.104	61	
195	1	Lilooah	Rishra	0.0	0	0	
196	1	NJP PG	NJP	53.2	7.101	64.9	
197	1	NJP	Maynaguri	38.6	3.716	47.2	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
198	1	Balurghat	Balurghat Tap	- 19.1	4.147	26	
199	1	Balurghat	Gangarampur	0.0	0	0	
200	1	Gokarna	SonarLal	19.0	1.095	24.1	
201	1	Debagram	Krishnanagar	- 55.2	10.385	72.5	
202	1	Debagram	Krishnanagar	- 55.2	10.385	72.5	
203	1	Haldia	Hizil	12.0	2.095	14.9	
204	1	Haldia	Hizil	12.0	2.095	14.9	
205	1	TMLK	Hizil	0.0	0	0	
206	1	TMLK	Hizil	0.0	0	0	
207	1	Falta	Joka	13.0	1.577	17.1	
208	1	Falta	Joka	13.0	1.577	17.1	
209	1	Ramam	NBU	38.2	-3.164	45.7	
210	1	Sonarpur	Kasba	- 60.0	- 16.392	77.5	
211	1	New Haldia	Egra	9.8	-2.304	12.1	
212	1	Bengal Energy	Hizli	29.2	2.83	36.3	
213	1	Raigunj	Balurghat Tap	- 20.5	2.94	26.7	
214	1	Lalgola	Gokarna	- 19.9	-3.533	25.7	
215	1	Lalgola	Gokarna	- 19.9	-3.533	25.7	
216	1	PuruliaW	Bagmundi	2.6	-7.57	9.6	
217	1	Belmuri	Adisaptagram	22.7	-7.584	29.4	
218	1	Belmuri	Adisaptagram	22.7	-7.584	29.4	
219	1	Balurghat Tap	Malda	- 40.3	13.692	52.8	
220	2	Hizil	Rohit Ferro	0.0	0	0	
221	1	Hizil	Mankar	0.0	0	0	
222	1	CK Road	CK Road-Rly	2.4	0.534	3.1	
223	2	Sirkol	Laxmikantapur	- 67.4	0.519	43.1	
224	1	Maynaguri	Mathabhanga	21.7	3.358	27.8	
225	2	Amtala	Najirpur	23.9	-4.303	15.8	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
226	1	SaltLak	CLC	-36.1	-5.57	45.6	
227	1	Bankura	Bengal concast	0.0	0	0	
228	1	Cooch Bihar	Birpara	-52.5	-3.553	25.3	
229	1	Katwa	Katwa Tss	0.2	-0.045	0.3*	
230	1	Bankura	Bankura T	11.2	5.086	15.1	
231	1	Bishnupur Old	Midnapur	0.0	0	0	
232	1	Bishnupur Old	Modern	10.5	4.827	14.1	
233	1	Bishnupur Old	Rohit Ferro	0.0	0	0	
234	1	Midnapur	WBIDC	0.0	0	0	
235	1	Barasat	Barsat Tap	8.9	4.169	12.4	
236	1	Kolaghat WB	Madras cement	4.4	0.863	5.6	
237	1	TMBLK	WBIDC	38.8	13.299	51	
238	1	Chanditola	BTPS	-30.4	0.008	37.3	
239	1	Raghunathpur	Khejuria GIS	0.0	0	0	
240	1	Bolpur	Bolpur Trac	1.2	0.331	1.6	
241	1	Rishra	Jayshree	0.0	-0.102	0.1*	
242	1	Howrah DVC	Foundry Park Tap	6.5	-0.363	8	
243	1	Foundry Park Tap	Kolaghat DVC	-15.2	-6.992	20.6	
244	1	Vidyasagar Park	BRG Steel Tap	0.0	-4.78	5.8	
245	1	BRG Steel Tap	BRG Steel	0.0	-0.423	0.5*	
246	1	BRG Steel Tap	Midnapur	0.0	0	0	
247	1	Vidyasagar Park	Hizli	0.0	0	0	
248	1	Vidyasagar Park	HIZLI TSS	28.7	-1.471	35.1	
249	1	Hizli TSS	Hizli	13.4	-5.477	18.2	
250	1	Khejuria GIS	Farakka Switching	40.2	12.939	26.5	
251	1	Farakka Switching	Ambuja Cement Tap	40.2	13.128	53.1	
252	1	Ambuja Cement Tap	Raghunathganj	0.0	0	0	
253	1	Ambuja Cement Tap	Ambuja Cement	40.0	13.149	53.2	
254	1	Kharagpur DVC	Kharagpur Traction	0.1	0.028	0.1*	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
255	1	Foundry Park Tap	Food Park	21.7	7.589	28.4	DVC
256	1	BTPS	Kalyani	26.2	13.956	36.7	
257	1	BTPS	Lilooah	25.9	7.766	34	
258	1	BTPS	Khanyan	-2.3	8.39	11.6	
259	1	BTPS	Satgachia	-23.7	11.293	33.5	
260	1	BTPS	Bighati	0.0	0	0	
261	1	BTPS	Bighati	0.0	0	0	
262	3	BTPS	Dharampur	39.0	44.487	25.2	
263	1	Kolaghat D	Kolaghat WB	-53.5	-5.189	65.3	
264	1	Kolaghat D	Kolaghat WB	-53.5	-5.189	65.3	
265	1	DTPS-D	ASP	21.0	5.638	23.5	
266	1	DTPS-D	Kalipahari	16.1	2.546	18	
267	1	DTPS-D	Kalipahari	16.1	2.546	18	
268	1	DTPS-D	ASP	21.0	5.638	23.5	
269	1	Kharagpur D	Kolaghat D	-25.8	1.75	28.6	
270	1	Kharagpur D	Kolaghat D	-25.8	1.75	28.6	
271	1	Kolaghat D	Kolaghat Tap	31.5	10.558	35.7	
272	1	Kolaghat D	Howrah D	7.6	2.583	10	
273	1	Howrah D	Belmuri D	-2.1	3.419	6.7	
274	1	Howrah D	Belmuri D	-2.1	3.419	6.7	
275	1	Belmuri D	Burdwan	-9.9	2.383	12	
276	1	Belmuri D	Burdwan	-9.9	2.383	12	
277	1	Burdwan	DTPS-D	-35.5	8.668	40.7	
278	1	Burdwan	DTPS-D	-35.5	8.668	40.7	
279	1	Kalipahari	Klyaneshwari	-9.7	-6.492	14.4	
280	1	Kalipahari	Klyaneshwari	-9.7	-6.492	14.4	
281	2	Purulia D	Jamshedpur	0.9	3.603	7.4	
282	1	Jamur	DTPS-D	-42.7	10.651	48.1	
283	1	DTPS-D	Ramkanali D	5.6	-2.093	7.3	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVA		
284	1	SonicTD	Barjora	-56.9	-2.132	61	
285	1	Kolaghat Tap	Howrah D	-5.1	-0.612	5.7	
286	1	Kolaghat Tap	Badrinarayan AS	36.4	11.656	41.5	
287	2	DPL	DTPS-D	-1.4	-29.241	15.8	DVC/DPL
288	1	B. Garden	SRS	0.0	0	0	CESC
289	1	B. Garden	SRS	0.0	0	0	
290	1	SRS	Majerhat	0.0	0	0	
291	1	SRS	Majerhat	-28.1	0.287	28.4	
292	1	Majerhat	Taratala	-16.7	-12.342	15.9	
293	1	Majerhat	Chakmir	-94.3	14.309	73.5	
294	1	Majerhat	Chakmir	-94.3	14.309	73.5	
295	1	Majerhat	Jadavpur	28.0	-4.086	21.6	
296	1	PRS	PLN	0.0	0	0	
297	1	Taratala	Chakmir	-103.9	18.667	81.2	
298	1	Taratala	Chakmir	-103.9	18.667	81.2	
299	1	Taratala	PRS	96.5	-25.606	76.2	
300	1	Taratala	BBD Bag	94.5	-23.381	74.3	
301	1	Chakmir	BBGS	-107.5	14.167	59.8	
302	1	Chakmir	BBGS	-107.5	14.167	59.8	
303	1	Chakmir	BBGS	-107.5	14.167	59.8	
304	1	Chakmir	BBGS	-107.5	14.167	59.8	
305	1	EMSS	PKL	72.3	21.377	49.8	
306	1	Jadavpur	EMSS	-72.1	14.7	59.6	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
307	1	BBD Bag	PRS	57.2	- 25.247	47.8	
308	1	BBD Bag	PRS	- 37.1	-9.605	30.2	
309	1	Titagarh Gen	BT Road	0.0	0	0	
310	1	Titagarh	NCGS	- 55.0	-1.437	57.5	
311	1	NCGS	BT Road	40.9	16.688	29.2	
312	1	BT Road	East Calcutta	- 27.0	40.554	42.1	
313	1	PRS	PRS	0.0	0	0	
314	1	East Calcutta	EMSS	0.0	0	0	
315	1	East Calcutta	PRS	- 116. 2	45.757	96.9	
316	1	EMSS	Kasba	-6.6	14.126	10.2	
317	1	Park Circus	PRS	62.1	-9.225	40.2	
318	1	SRS	SRS	0.0	0	0	
319	1	B. Garden	SRS	0.0	0	0	
320	1	BT Road	Dumdum	- 25.8	19.099	24.1	
321	1	Park Circus	EMSS	- 79.2	3.051	50.9	
322	1	EMSS	Patuli	26.0	3.022	18	
323	1	NCGS	BT Road	39.8	10.338	53.9	
324	1	NCGS	NCGS	- 95.0	44.406	30.9	
325	1	BBD Bag	BBD Bag	0.0	0	0	
326	1	Titagarh	Titagarh	19.0	8.987	9.5	
327	1	EMSS	EMSS	131. 6	56.303	64.1	
328	1	East Calcutta	EMSS	0.0	0	6.8	
329	1	EMSS	Dumdum	64.0	- 28.018	45.2	
330	1	EMSS	Dumdum	0.0	0	0	
331	1	BT Road	BT Road	0.0	0	0	
332	1	PRS	Majerhat	0.0	0	0	
333	1	Majerhat	Majerhat	- 47.1	12.999	21.2	

Sl. No	No. of Ckts.	From Station	To Station	Power Flow (Forward)		% Loading	Owned by
				MW	MVAr		
334	1	PLN	PKL	-44.1	-26.67	15.1	
335	1	East Calcutta	East Calcutta	0.0	0	0	
336	1	Jadavpur	Jadavpur	0.0	0	0	
337	1	EMSS	EMSS	0.0	0	0	
338	1	PRS	PRS	0.0	0	0	
339	1	EMSS	PRS	37.1	3.299	25.5	
340	1	Titagarh	Titagarh Gen	64.2	30.788	32.2	
341	1	BT Road	Titagarh	79.5	1.289	51.8	
342	1	SRS	Majerhat	0.0	0	0	
343	1	PRS	PRS	-28.0	16.838	14.7	
344	2	DPL	DPLB	60.6	21.899	39.5	DPL
345	1	DPL	DPLA	56.3	20.178	73.3	
346	2	DPL	DPLC	34.3	11.62	22.3	
347	2	DPL	DPLC	25.0	7.993	16.2	
348	2	DPL	DPLAB	42.2	1.888	25.9	
349	2	DPLA	DPL-Bamunara	44.4	16.071	29.2	

ANNEXURE III – SHORT CIRCUITS STUDY RESULTS

Table H: State wise 3-Ph and SLG results of Eastern region grid

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
Bihar						
1	Sasaram	765	10402.9	7.85	7896.8	5.96
		400	14749.9	21.29	10806.4	15.60
		132	2371.1	10.37	1606.1	7.03
2	Gaya	765	25181.8	19.01	17670.7	13.34
		400	25422.7	36.70	18087.4	26.11
		220	8463.8	22.21	8396.7	22.04
3	Purnea_PG	400	16749.0	24.18	10908.0	15.74
		220	5469.0	14.35	5396.0	14.16
		400	6606.0	9.54	9950.2	14.36
4	Purnea old_PG	220	5409.7	14.20	5205.3	13.66
		132	2912.5	12.74	2692.8	11.78
5	Lakhisarai	400	11540.7	16.66	6959.6	10.05
		132	2364.1	10.34	1571.8	6.88
		132	3159.7	13.82	2595.8	11.35
6	Muzzafarpur_PG	400	16550.4	23.89	11470.2	16.56
		220	7356.5	19.31	7557.9	19.83
		132	713.0	3.12	715.8	3.13
7	Patna	400	17133.0	24.73	11310.2	16.33
		220	7841.6	20.58	7275.0	19.09
8	kishanganj	400	13462.8	19.43	8042.2	11.61
		220	3928.9	10.31	2841.1	7.46
		132	1451.9	6.35	945.1	4.13
9	Banka_PG	400	15204.6	21.95	9924.0	14.32
		132	3560.7	15.57	3036.2	13.28
10	Barh	400	16738.2	24.16	15222.5	21.97
		132	2686.4	11.75	2644.3	11.57
11	Biharshariff_PG	400	20254.7	29.24	14636.8	21.13

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
		220	10288.5	27.00	9837.8	25.82
12	Biharshariff_PG	220	10200.5	26.77	9494.7	24.92
		132	4113.8	17.99	3635.4	15.90
13	Kahalgaoon_NTPC	400	29907.5	43.17	28745.8	41.49
		400	30053.3	43.38	28899.7	41.71
		132	4219.4	18.46	3863.8	16.90
14	Bodhgaya	220	7030.7	18.45	5429.4	14.25
		132	4058.8	17.75	3356.8	14.68
15	Dehri	220	4186.1	10.99	2763.8	7.25
		132	3484.9	15.24	2411.5	10.55
16	Fatuha	220	7123.7	18.70	5413.4	14.21
		132	4994.1	21.84	3991.7	17.46
17	Khagaul	220	4980.6	13.07	3434.9	9.01
		132	3089.2	13.51	2373.0	10.38
18	Gopalganj	220	1208.7	3.17	694.1	1.82
		132	1001.8	4.38	608.2	2.66
19	Darbhanga	220	1913.6	5.02	1190.8	3.13
		132	1779.8	7.79	1107.5	4.84
20	MTPS	220	5541.5	14.54	4875.0	12.79
		132	2258.0	9.88	1985.9	8.69
21	Pusauli	220	7931.4	20.81	7621.6	20.00
		132	2799.0	12.24	2483.4	10.86
22	Arrah_PG	220	3837.7	10.07	2430.1	6.38
		132	1895.7	8.29	1451.6	6.35
23	Pusauli New	220	7298.2	19.15	6540.7	17.17
		132	1270.5	5.56	720.0	3.15
24	Sipara	220	7789.9	20.44	7159.2	18.79
		132	4038.1	17.66	3491.5	15.27
25	Madhepura	220	2083.9	5.47	1359.8	3.57
26	Hajipur	220	3103.2	8.14	2171.9	5.70

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
		132	1728.2	7.56	1280.0	5.60
27	Begusarai	220	4106.4	10.78	2627.3	6.90
		132	3033.3	13.27	2117.9	9.26
28	Banka	132	1736.4	7.60	1081.6	4.73
29	Kahalgaoon	132	3356.3	14.68	2401.9	10.51
30	Muzzafarpur	132	1831.9	8.01	1337.1	5.85
31	Purnea	132	2869.6	12.55	2587.4	11.32
32	Sugauli	132	705.2	3.08	380.0	1.66
33	Lauriya	132	389.2	1.70	196.8	0.86
34	Sone nagar	132	2703.0	11.82	1621.4	7.09
35	Karmansa	132	1507.1	6.59	913.7	4.00
36	Jehanabad	132	1896.2	8.29	1069.0	4.68
37	Rafiganj	132	1464.5	6.41	792.6	3.47
38	Hathidah	132	2066.9	9.04	1226.0	5.36
39	Jamui	132	1916.1	8.38	1191.3	5.21
40	Sheikhpura	132	1811.7	7.92	1049.9	4.59
41	Nawada	132	629.5	2.75	335.0	1.47
42	Jamalpur	132	665.8	2.91	357.5	1.56
43	Sultanganj	132	2523.5	11.04	1574.8	6.89
44	Sabour	132	2857.8	12.50	1854.1	8.11
45	Dumraon	132	1226.1	5.36	667.4	2.92
46	Jakkanpur	132	3013.6	13.18	2058.2	9.00
47	Saharsa	132	832.4	3.64	457.6	2.00
48	Khagaria	132	242.3	1.06	116.4	0.51
49	Nuagachhia	132	3031.8	13.26	2116.3	9.26
50	Sitamarhi	132	697.7	3.05	379.0	1.66
51	Samastipur	132	2218.6	9.70	1360.2	5.95
52	Pandauli	132	828.9	3.63	431.2	1.89
53	Hajipur New	132	1767.2	7.73	1333.1	5.83
54	Chhapra	132	760.8	3.33	401.5	1.76

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
55	Siwan	132	736.1	3.22	396.8	1.74
56	Motihari	132	848.8	3.71	464.7	2.03
57	Betiah	132	773.3	3.38	413.7	1.81
58	Ramnagar	132	429.4	1.88	217.3	0.95
59	Rajgir	132	224.5	0.98	99.6	0.44
60	Darbhanga New	132	1775.5	7.77	1112.8	4.87
61	Katihar	132	962.0	4.21	563.9	2.47
62	Belaganj	132	1713.1	7.49	969.2	4.24
63	Vaishali	132	1419.9	6.21	887.9	3.88
64	Sitalpur	132	1365.0	5.97	830.3	3.63
65	Dhaka	132	700.8	3.07	375.1	1.64
66	Jainagar	132	715.3	3.13	367.0	1.61
67	Madhubani	132	735.3	3.22	373.7	1.63
68	Phulparas	132	1403.9	6.14	801.1	3.50
69	Supaul	132	1570.0	6.87	944.8	4.13
70	Mohania	132	1328.6	5.81	769.6	3.37
71	Bikramganj	132	1129.9	4.94	610.8	2.67
72	Forbeshganj	132	1114.3	4.87	598.7	2.62
73	Udakishanganj	132	396.2	1.73	211.1	0.92
74	Baripahari	132	3672.1	16.06	2824.3	12.35
75	Banjari	132	835.3	3.65	447.1	1.96
76	KCL	132	818.9	3.58	437.7	1.91
77	Kataiya	132	1108.2	4.85	597.2	2.61
78	Barauni TPS	132	2252.8	9.85	1422.9	6.22
79	Kudra	132	1475.9	6.46	827.4	3.62
80	Chandauti	132	3605.0	15.77	2532.1	11.08
81	Kochas	132	1374.6	6.01	753.5	3.30
82	Balmikinagar	132	236.7	1.04	118.5	0.52
83	Masaurhi	132	1779.1	7.78	1014.0	4.44
84	Bihta	132	2021.0	8.84	1303.8	5.70

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
85	Gaighat	132	2699.1	11.81	1717.8	7.51
86	Mithapur	132	3018.1	13.20	2059.6	9.01
87	Rafiganj_R	132	1260.6	5.51	674.8	2.95
88	Arrah	132	1734.6	7.59	1268.5	5.55
89	Lakhisarai	132	1768.3	7.73	1083.7	4.74
90	Raxaul	132	454.5	1.99	233.0	1.02
91	Runisaudpur	132	813.9	3.56	457.9	2.00
92	SKMCH	132	1576.5	6.90	1087.1	4.76
93	Buxar	132	831.8	3.64	440.5	1.93
94	Aurangabad	132	1141.2	4.99	610.1	2.67
95	Tekari	132	1023.5	4.48	549.6	2.40
96	Goh	132	659.5	2.88	340.5	1.49
97	Arwal	132	826.8	3.62	428.7	1.88
98	Hulasganj	132	1340.9	5.87	778.9	3.41
99	Wajirganj	132	1037.9	4.54	575.7	2.52
100	Nalanda	132	515.3	2.25	259.5	1.14
101	Ekanagarsarai	132	1419.3	6.21	832.4	3.64
102	Digha	132	1941.4	8.49	1230.4	5.38
103	Katra	132	1651.6	7.22	940.0	4.11
104	Gangawara	132	1277.4	5.59	728.7	3.19
105	Madhepura	132	1670.4	7.31	1142.1	5.00
106	Sonbarsa	132	555.1	2.43	303.7	1.33
107	Mashrakh	132	584.4	2.56	316.8	1.39
108	Dalsingsarai	132	1570.3	6.87	887.2	3.88
109	Kusheshwarnath	132	525.2	2.30	275.7	1.21
110	Jagdispur	132	865.0	3.78	508.3	2.22
111	harbauth	132	1730.1	7.57	977.1	4.27
112	Jandaha	132	1163.7	5.09	665.8	2.91
113	Imamganj	132	638.8	2.79	340.2	1.49
114	Tetha	132	2454.3	10.74	1496.9	6.55

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
115	Sherghati tap	132	1120.9	4.90	626.9	2.74
116	Sherghati	132	692.1	3.03	370.5	1.62
117	Paharpur	132	1508.7	6.60	881.0	3.85
118	Ekma	132	664.9	2.91	347.3	1.52
119	Rail Pahiya karkhana	132	877.4	3.84	495.3	2.17
Jharkhand						
120	Ranchi New_PG	765	18278.9	13.80	12577.4	9.49
		400	22861.8	33.00	14387.5	20.77
121	Jamshedpur_PG	400	21274.5	30.71	18004.6	25.99
		220	6104.9	16.02	6352.5	16.67
122	Maithon	400	32198.7	46.48	25377.9	36.63
		400	31938.6	46.10	25223.8	36.41
		220	9527.6	25.00	9618.4	25.24
123	MPL	400	21155.1	30.54	18581.9	26.82
124	Chaibasa_PG	400	13887.9	20.05	8998.4	12.99
		220	3698.2	9.71	3231.6	8.48
125	Koderma_D	400	16982.6	24.51	15803.0	22.81
		220	4815.3	12.64	5358.5	14.06
		132	2201.8	9.63	2237.2	9.79
126	Ranchi_PG	400	26656.2	38.48	16932.2	24.44
		220	3977.2	10.44	4087.8	10.73
127	Chandawa	400	16005.4	23.10	9186.5	13.26
128	Adhunik	400	21185.6	30.58	17927.2	25.88
129	TISCO	400	10430.9	15.06	8257.8	11.92
		132	4815.1	21.06	5468.8	23.92
130	Ramchandrapur	220	6099.6	16.01	6334.2	16.62
		132	2577.5	11.27	2410.3	10.54
131	Chandil	220	4383.8	11.50	3200.7	8.40
		132	2865.6	12.53	2310.9	10.11
132	Hatia New	220	2910.7	7.64	2636.1	6.92

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
		132	1703.3	7.45	1622.8	7.10
133	PTPS	220	2435.8	6.39	2415.9	6.34
		132	1322.7	5.79	1292.3	5.65
134	TTPS	220	2378.6	6.24	2980.2	7.82
135	Lalmatia	220	1733.9	4.55	1214.8	3.19
		132	2136.3	9.34	1376.3	6.02
136	Chaibasa	220	3659.0	9.60	3178.4	8.34
		132	1526.8	6.68	1436.3	6.28
137	Dumka	220	3246.5	8.52	2069.4	5.43
		132	1990.2	8.71	1474.1	6.45
138	CTPS old	220	7346.1	19.28	7087.6	18.60
		132	3857.0	16.87	3478.1	15.21
139	Kalyanaswari	220	9443.3	24.78	8823.8	23.16
		132	4990.9	21.83	5301.4	23.19
140	Jamshedpur_D	220	2552.7	6.70	2130.5	5.59
		132	2097.1	9.17	2159.1	9.44
141	BTPS_D	220	6474.3	16.99	6739.8	17.69
		132	2248.9	9.84	2184.1	9.55
142	CTPS New	220	7241.9	19.01	7190.6	18.87
143	Giridih	220	2045.5	5.37	1828.4	4.80
		132	1586.3	6.94	1721.5	7.53
144	Dhanbad_D	220	5546.8	14.56	4677.9	12.28
		132	984.8	4.31	953.5	4.17
145	Ramgarh	220	3120.6	8.19	2355.0	6.18
		132	2107.1	9.22	1777.9	7.78
146	Garwah	132	660.1	2.89	340.1	1.49
147	Lahardaga	132	827.6	3.62	558.4	2.44
148	Gumla	132	611.2	2.67	368.0	1.61
149	Kamdara	132	570.4	2.50	334.8	1.46
150	Hatia old	132	952.3	4.17	702.9	3.07

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
151	Namkum	132	946.8	4.14	740.1	3.24
152	Jamatara	132	1341.5	5.87	776.1	3.40
153	Deoghar	132	1041.0	4.55	849.0	3.71
154	Dumka	132	1972.1	8.63	1444.8	6.32
155	Goelkhera	132	513.3	2.25	278.9	1.22
156	Kendposi	132	1005.5	4.40	946.1	4.14
157	Manique	132	2685.7	11.75	2081.3	9.10
158	Adityapur	132	2513.9	11.00	2048.6	8.96
159	Golmuri	132	1408.1	6.16	850.5	3.72
160	Jaduguda	132	803.1	3.51	439.9	1.92
161	Rajkharsawa	132	1597.3	6.99	1073.0	4.69
162	Noamundi	132	594.7	2.60	408.5	1.79
163	Sikidiri	132	772.3	3.38	515.6	2.26
164	Chakradharpur	132	863.3	3.78	494.9	2.17
165	Bakaspur	132	473.5	2.07	269.8	1.18
166	Kanke	132	900.3	3.94	681.0	2.98
167	Chaibasa	132	1159.4	5.07	791.0	3.46
168	Latehar	132	528.3	2.31	327.1	1.43
169	Japla	132	800.6	3.50	410.5	1.80
170	Sahebganj	132	607.8	2.66	324.5	1.42
171	Pakur	132	384.8	1.68	197.2	0.86
172	Hazaribag	132	855.3	3.74	542.7	2.37
173	Daltonganj	132	374.1	1.64	221.2	0.97
174	Kendposi FD	132	959.3	4.20	867.5	3.80
175	Tamar	132	647.7	2.83	353.2	1.55
176	Madhupur	132	715.5	3.13	385.5	1.69
177	Manoharpur	132	457.0	2.00	246.0	1.08
178	ECR-Gomia	132	1650.1	7.22	1274.0	5.57
179	Patratu	132	1205.2	5.27	957.3	4.19
180	Mosabani	132	1349.0	5.90	1171.5	5.12

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
181	Maithon	132	4882.1	21.35	4936.9	21.59
182	Kumardubi	132	3570.8	15.62	3005.3	13.15
183	Panchet	132	3368.4	14.73	2838.1	12.41
184	Patherdih	132	2821.3	12.34	1849.9	8.09
185	Putki	132	3233.9	14.15	2385.5	10.43
186	Nimiaghat	132	1703.8	7.45	1650.1	7.22
187	Barhi	132	1889.7	8.27	1566.4	6.85
188	Koderma	132	1494.3	6.54	1233.2	5.39
189	Konar	132	1334.0	5.84	997.7	4.36
190	North karanpur_D	132	819.6	3.59	544.4	2.38
191	Gola	132	2256.5	9.87	1919.0	8.39
192	Hazaribag	132	1036.4	4.53	660.7	2.89
193	Ramkanali_D	132	2709.3	11.85	1961.7	8.58
194	Manique_D_SW	132	1450.1	6.34	976.0	4.27
195	Biada_D	132	2485.1	10.87	1736.9	7.60
196	BSL_D	132	2120.2	9.27	1797.3	7.86
197	Balihari_D	132	3184.9	13.93	2329.9	10.19
Odisha						
198	Angul_PG	765	23614.0	17.82	20001.8	15.10
		400	28569.8	41.24	24499.7	35.36
199	Jharsuguda_PG	765	28314.9	21.37	19521.8	14.73
		400	22238.5	32.10	15346.9	22.15
200	Jaypore_PG	400	4162.0	6.01	4214.9	6.08
		220	4389.4	11.52	5076.4	13.32
201	Indravati_PG	400	3946.9	5.70	4124.1	5.95
202	Indravati_Hydro	400	3883.0	5.61	4137.0	5.97
203	Rengali_PG	400	19512.2	28.16	15939.5	23.01
		220	9111.4	23.91	9239.9	24.25
204	GMR_3rd	400	19148.8	27.64	17253.3	24.90
205	STPS	400	28894.8	41.71	30883.6	44.58

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
		220	11492.2	30.16	11103.4	29.14
206	Bisra	400	23544.0	33.98	15380.8	22.20
		220	7677.1	20.15	7511.7	19.71
207	Baripada	400	9659.2	13.94	7428.7	10.72
		220	4372.7	11.48	4665.1	12.24
		132	1721.1	7.53	1873.8	8.20
208	Meramundali	400	27108	39.01	24817.48	35.82
		220	8989	23.59	8557	22.45
		132	2616	11.44	2647	11.57
		220	12163	31.92	12284	32.23
209	Sterlite	400	5805.8	8.38	5789.9	8.36
		400	3319.9	4.79	3273.4	4.73
		220	9022.9	23.68	8958.9	23.51
210	Dubri New	400	9906.4	14.30	8256.9	11.92
		220	8166.3	21.43	8754.7	22.98
211	Keonjhar	400	5966.6	8.61	4670.1	6.74
		220	2793.2	7.33	3020.9	7.93
212	Bolangir	400	4216.3	6.09	3702.0	5.34
		220	3214.0	8.43	3520.7	9.24
213	Ind Bharat	400	9680.9	13.97	5001.8	7.22
214	JITPL	400	12960.1	18.71	13426.2	19.38
215	GMR	400	18677.3	26.96	16052.3	23.17
216	Mendhasal	400	3087.8	4.46	3537.2	5.11
		220	2235.6	5.87	2878.3	7.55
		132	576.8	2.52	637.8	2.79
217	JSPL	400	15845.7	22.87	14757.2	21.30
218	Pandiabil	400	3299.0	4.76	3794.4	5.48
		220	2632.4	6.91	3299.3	8.66
219	RSP	220	5891.6	15.46	4526.5	11.88
		132	3629.3	15.87	3723.9	16.29

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
220	Balimela	220	5654.7	14.84	6569.8	17.24
		220	5708.4	14.98	6689.2	17.56
221	Upper Kolab	220	4171.8	10.95	4899.7	12.86
222	Usileru	220	7697.5	20.20	6533.2	17.15
223	Jaynagar	220	4658.0	12.22	5488.1	14.40
		132	1103.1	4.83	1291.7	5.65
		132	1318.2	5.77	1340.1	5.86
		220	3956.0	10.38	3920.5	10.29
224	Therunali	220	3793.0	9.95	3629.3	9.52
		132	1331.7	5.82	1353.2	5.92
225	Bhanjanagar	220	2787.2	7.32	2407.3	6.32
		132	1610.8	7.05	1730.4	7.57
226	Indravati	220	3268.0	8.58	4262.8	11.19
227	Nayagarh	220	1759.4	4.62	1665.2	4.37
228	Chandaka	220	2169.9	5.70	2751.6	7.22
		132	1458.2	6.38	1918.5	8.39
		132	1457.7	6.38	1916.9	8.38
229	TTPS	220	13438.4	35.27	11960.8	31.39
		132	3992.1	17.46	4537.3	19.85
230	Tarkera	220	7810.3	20.50	6819.7	17.90
		132	4317.9	18.89	4671.2	20.43
231	Duburi	220	7649.1	20.07	7600.4	19.95
		132	2642.5	11.56	2717.4	11.89
232	Joda	220	3158.3	8.29	2639.9	6.93
		132	1731.7	7.57	1828.9	8.00
233	Chandiposh	220	3508.1	9.21	2241.1	5.88
234	Balasore	220	3099.8	8.14	2882.8	7.57
		132	1444.7	6.32	1737.5	7.60
235	Bidanasi	220	1501.1	3.94	1624.3	4.26
		132	977.7	4.28	1188.5	5.20

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
236	Barkote	220	3296.1	8.65	2612.6	6.86
237	Budhipadar	220	14259.8	37.42	14000.8	36.74
		132	4993.6	21.84	4857.1	21.25
238	Katapali	220	4791.4	12.57	3749.5	9.84
		132	3849.2	16.84	3407.0	14.90
239	Narendrapur	220	1824.4	4.79	1825.5	4.79
		132	1522.6	6.66	1749.3	7.65
240	Bolangir New	220	3083.2	8.09	3322.4	8.72
		132	1331.5	5.82	1603.3	7.01
241	Atri	220	2313.6	6.07	2492.8	6.54
		132	1349.6	5.90	1514.8	6.63
242	Samangara	220	1808.6	4.75	1779.9	4.67
		132	957.0	4.19	1068.0	4.67
243	Bhadrak	220	2498.7	6.56	2318.9	6.09
		132	1419.2	6.21	1703.2	7.45
244	Paradip	220	1945.6	5.11	1801.5	4.73
		132	1337.3	5.85	1523.4	6.66
245	Lakshmipur	220	3057.5	8.02	2601.9	6.83
246	Lapanga	220	7751.8	20.34	6083.9	15.97
		132	5402.0	23.63	4803.2	21.01
247	BPPL	132	1087.6	4.76	1003.5	4.39
248	Damanjodi	132	508.9	2.23	342.2	1.50
249	Chatrapur	132	1301.4	5.69	1423.0	6.22
250	IRE	132	1103.3	4.83	1020.5	4.46
251	Aska	132	1313.2	5.74	1448.1	6.33
252	Berhampur	132	1268.1	5.55	1427.7	6.25
253	Ganjam	132	948.4	4.15	877.1	3.84
254	Mohana	132	154.7	0.68	188.7	0.83
255	Phulbani	132	362.8	1.59	425.3	1.86
256	Balugaon	132	473.2	2.07	532.4	2.33

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
257	Khurda	132	375.0	1.64	481.3	2.11
258	Puri	132	799.4	3.50	957.2	4.19
259	Cuttack	132	524.3	2.29	652.1	2.85
260	Nimapada	132	884.8	3.87	1046.7	4.58
261	Bhubaneswar	132	1330.2	5.82	1675.7	7.33
262	Chowdhwar	132	1507.8	6.60	1683.1	7.36
263	Dhenkanal	132	717.5	3.14	828.3	3.62
264	Chainpal	132	3527.1	15.43	3719.3	16.27
265	Angul	132	2267.2	9.92	2194.9	9.60
266	Nandira (MCL)	132	1430.8	6.26	1027.8	4.50
267	Nuapatna	132	479.4	2.10	544.7	2.38
268	BAMINPL	132	1141.8	4.99	730.3	3.19
269	Jajpur Road	132	1878.0	8.21	1842.2	8.06
270	Kendrapara	132	820.5	3.59	982.4	4.30
271	Jaleswar	132	479.6	2.10	557.7	2.44
272	Baripada	132	1195.0	5.23	1301.2	5.69
273	Rairangpur	132	625.7	2.74	643.4	2.81
274	Palaspanga	132	744.4	3.26	817.4	3.58
275	Nalda_R	132	528.3	2.31	441.5	1.93
276	Rourkela	132	3923.6	17.16	4006.2	17.52
277	Grid_Steel	132	1549.1	6.78	1764.6	7.72
278	Jharsuguda	132	3813.9	16.68	3503.6	15.32
279	Brajrajnagar	132	2084.8	9.12	1746.4	7.64
280	Rajgangpur	132	2783.5	12.18	2749.5	12.03
281	Sambalpur	132	2082.1	9.11	1868.1	8.17
282	Burla	132	5026.6	21.99	5277.7	23.08
283	Somnathpur	132	1329.0	5.81	1456.3	6.37
284	Bolangir	132	1331.5	5.82	1603.3	7.01
285	Saintala	132	619.5	2.71	594.0	2.60
286	Khariar	132	233.9	1.02	308.3	1.35

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
287	Tentulikhunti	132	451.9	1.98	508.4	2.22
288	Kalugaon	132	2017.8	8.83	1736.6	7.60
289	Dighapahari	132	580.8	2.54	604.8	2.65
290	Jagatsinghpur	132	472.9	2.07	507.3	2.22
291	Marshaghai	132	832.4	3.64	903.5	3.95
292	Rairakhol	132	281.5	1.23	288.3	1.26
293	FAP_Joda	132	1664.2	7.28	1683.0	7.36
294	Junagarh	132	199.2	0.87	260.4	1.14
295	Sundargarh	132	1795.4	7.85	1319.5	5.77
296	Boinda	132	729.6	3.19	712.0	3.11
297	Chend	132	3376.6	14.77	3277.9	14.34
298	Chandikhol	132	486.8	2.13	549.0	2.40
299	Umerkote	132	228.7	1.00	276.0	1.21
300	Soro	132	661.3	2.89	728.3	3.19
301	Pattamundai	132	590.4	2.58	648.6	2.84
302	Akhusingarh	132	195.1	0.85	245.4	1.07
303	HM Switch (Kharagprasad)	132	2524.3	11.04	2403.1	10.51
304	Paralakhemundi	132	142.6	0.62	182.6	0.80
305	Sonepur	132	467.2	2.04	535.3	2.34
306	Ranasinghpur	132	788.0	3.45	988.5	4.32
307	Kalarangi	132	1459.7	6.39	1258.3	5.50
308	Kamakhyanagar	132	1436.6	6.28	1212.9	5.31
309	Jajpur	132	618.0	2.70	718.3	3.14
310	Bolani	132	852.6	3.73	769.2	3.36
311	Sunabeda	132	541.8	2.37	574.2	2.51
312	Patnagarh	132	590.2	2.58	680.1	2.98
313	Padampur	132	361.6	1.58	356.4	1.56
314	Bolangir	132	1268.2	5.55	1513.5	6.62
315	EMAMI	132	1278.0	5.59	1345.8	5.89

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
316	Salepur	132	468.5	2.05	502.8	2.20
317	Balugaon_T	132	1030.0	4.51	880.7	3.85
318	Bargarh	132	932.3	4.08	1065.7	4.66
319	Phulnakhara	132	711.6	3.11	786.5	3.44
320	Karanja	132	502.5	2.20	527.0	2.31
321	Banki	132	828.8	3.63	793.4	3.47
322	Kesinga	132	343.6	1.50	438.5	1.92
323		132	374.8	1.64	350.1	1.53
324	Mania	132	868.4	3.80	786.0	3.44
325	Anandpur	132	803.5	3.51	747.3	3.27
326	Barpali	132	445.5	1.95	497.7	2.18
327	Bansapanai	132	1544.2	6.75	1452.0	6.35
328	Barbil	132	587.9	2.57	531.4	2.32
329	Saliban	132	1786.4	7.81	1336.2	5.84
330	Purushottampur	132	1070.2	4.68	999.5	4.37
331	Chandipur	132	350.5	1.53	397.3	1.74
332	konark	132	620.0	2.71	644.8	2.82
333	Samuka	132	256.8	1.12	318.4	1.39
334	Arugul	132	835.1	3.65	853.4	3.73
335	Nuapara	132	162.1	0.71	205.9	0.90
336	Dabugaon	132	306.4	1.34	352.7	1.54
337	Boudh	132	296.6	1.30	303.6	1.33
338	kuchinda	132	2782.4	12.17	2747.2	12.02
339	Bhawanipatna	132	246.8	1.08	305.2	1.34
340	Kesura	132	522.2	2.28	639.7	2.80
Sikkim						
341	Rangpo	400	8849.1	12.77	8857.9	12.79
		220	6017.2	15.79	6940.4	18.21
		132	2538.9	11.11	2555.4	11.18
342	Teesta V	400	8294.2	11.97	8311.8	12.00

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
343	Jorethang	220	3817.2	10.02	3491.4	9.16
344	New Melli	220	3684.4	9.67	3152.2	8.27
345	Chuzachen	132	1700.4	7.44	1725.9	7.55
346	Rangit	132	1792.1	7.84	1552.2	6.79
		66	147.0	1.29	145.1	1.27
347	Sagbari	132	1774.9	7.76	1523.6	6.66
348	Geyzing	132	1087.3	4.76	737.5	3.23
		66	243.0	2.13	205.9	1.80
349	Gangtok	132	1267.8	5.55	960.6	4.20
		66	490.6	4.29	470.7	4.12
350	Melli	132	1040.8	4.55	644.2	2.82
		66	484.4	4.24	374.5	3.28
351	Melli	66	482.4	4.22	372.3	3.26
352	Tadong	66	375.9	3.29	316.0	2.76
353	Bulbuley	66	365.6	3.20	304.1	2.66
354	Sichey	66	358.9	3.14	296.5	2.59
355	Rongly	66	175.0	1.53	117.7	1.03
356	Mamring	66	238.9	2.09	163.7	1.43
357	Namchi	66	285.5	2.50	209.7	1.84
358	Rabangla	66	122.1	1.07	108.2	0.95
359	Rothak	66	173.3	1.52	115.9	1.01
360	Soreng	66	140.5	1.23	93.0	0.81
361	Lower LHP	66	470.9	4.12	449.7	3.93
362	Phodong	66	208.7	1.83	151.2	1.32
363	Geyzing	66	243.0	2.13	205.6	1.80
364	Purano Namchi	66	214.0	1.87	145.2	1.27
365	Pakyong	66	308.3	2.70	222.1	1.94
366	Pelling	66	229.4	2.01	190.5	1.67
367	Rhenock	66	139.6	1.22	92.5	0.81
368	Mangan	66	138.4	1.21	95.4	0.83

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
369	Rnipool	66	473.3	4.14	452.2	3.96
370	Topakhani	66	260.9	2.28	198.7	1.74
371	Meyong	66	115.0	1.01	78.1	0.68
372	Rongli	66	158.7	1.39	105.9	0.93
West Bengal						
373	Jeerat	400	10261.2	14.81	9703.4	14.01
		220	8635.1	22.66	9777.9	25.66
		132	4400.2	19.25	5094.1	22.28
374	Arambag	400	12692.0	18.32	11055.4	15.96
		220	8103.8	21.27	9114.9	23.92
		132	3131.2	13.70	3869.7	16.93
375	Durgapur	400	14484.6	20.91	12134.4	17.51
376	Kharagpur	400	8950.8	12.92	7186.2	10.37
		220	4785.1	12.56	5261.1	13.81
		132	1668.4	7.30	1989.2	8.70
377	Raghunathpur	400	19280.5	27.83	15968.6	23.05
378	Purullia pump storage	400	9800.5	14.15	9864.2	14.24
379	Bidhannagar	400	21978.4	31.72	17065.4	24.63
		220	13268.5	34.82	13621.0	35.75
		132	4799.0	20.99	5452.1	23.85
380	Kolaghat	400	14476.2	20.90	13860.5	20.01
		220	6984.9	18.33	8347.9	21.91
		132	2894.9	12.66	3592.8	15.71
381	Bakreswar	400	8755.2	12.64	8667.1	12.51
		220	10179.9	26.72	11033.3	28.96
382	sagardighi	400	17046.8	24.61	14716.6	21.24
		220	5769.6	15.14	6142.4	16.12
383	Haldia	400	6186.6	8.93	6359.0	9.18
384	Parulia	400	24895.5	35.93	19248.9	27.78
		400	24895.1	35.93	19249.9	27.79

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
		220	10336.7	27.13	10393.5	27.28
		220	10336.7	27.13	10393.5	27.28
385	Malda	400	16733.8	24.15	12517.1	18.07
		220	5119.4	13.44	5593.6	14.68
		132	1852.1	8.10	2298.3	10.05
386	Binaguri	400	21805.5	31.47	15470.2	22.33
		220	7199.3	18.89	7621.5	20.00
387	Subhasgarm_PG	400	8005.9	11.56	8511.8	12.29
		220	6752.5	17.72	8311.1	21.81
388	Mejia	400	15793.1	22.80	14397.1	20.78
389	Farakka	400	29277.9	42.26	29135.7	42.05
		220	4829.0	12.67	5413.5	14.21
390	Dharampur	220	5111.4	13.41	4664.1	12.24
		132	4404.8	19.27	4230.7	18.50
391	Domjur	220	2677.9	7.03	2828.5	7.42
		132	1127.8	4.93	1490.4	6.52
392	Gokarna	220	5273.5	13.84	5247.2	13.77
		132	2678.1	11.71	3398.2	14.86
393	Howrah	220	2610.8	6.85	2828.6	7.42
		132	1957.6	8.56	2533.9	11.08
394	Kasba	220	5759.1	15.11	6101.9	16.01
		132	3795.9	16.60	4950.1	21.65
395	Laxmikantapur	220	2940.7	7.72	3057.7	8.02
		132	1586.9	6.94	2059.5	9.01
396	Midnapur	220	4123.7	10.82	4016.8	10.54
		132	1953.5	8.54	2436.1	10.66
397	New Jalpaigudi	220	6183.4	16.23	6162.9	16.17
		132	3033.8	13.27	3622.6	15.85
398	New Haldia	220	3200.3	8.40	2872.4	7.54
		132	2164.6	9.47	2414.6	10.56

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
399	Rishra	220	3804.6	9.99	3620.1	9.50
		132	1484.1	6.49	1969.9	8.62
400	Satgachia	220	4821.6	12.65	4265.9	11.20
		132	2511.6	10.99	2917.1	12.76
401	Santhaldih	220	4944.9	12.98	5205.9	13.66
		132	1322.4	5.78	1439.0	6.29
402	Asansol	220	2411.3	6.33	2246.8	5.90
		132	1377.0	6.02	1630.1	7.13
403	krishnagar	220	3288.0	8.63	3112.5	8.17
		132	1317.8	5.76	1700.4	7.44
404	Bisnupur	220	3898.4	10.23	3784.5	9.93
		132	1897.2	8.30	2406.3	10.53
405	Calcutta Leather Complex	220	4758.2	12.49	4544.6	11.93
		132	2955.5	12.93	3437.6	15.04
406	Subhasgarm	220	6687.6	17.55	8144.4	21.37
		132	1844.2	8.07	2260.9	9.89
407	New Town Action Area-3	220	5738.6	15.06	5739.7	15.06
		132	2484.1	10.87	2863.6	12.53
408	Hura	220	2245.9	5.89	2191.4	5.75
		132	1177.5	5.15	1484.5	6.49
409	Foundary Park	220	2304.0	6.05	2409.9	6.32
		132	1214.4	5.31	1526.9	6.68
410	Dalkhola	220	4723.9	12.40	4060.4	10.66
		132	2117.7	9.26	2416.3	10.57
411	DTPS (Waria)	220	11844.1	31.08	10467.7	27.47
		132	6038.8	26.41	6262.5	27.39
412	Barjora	220	8256.1	21.67	7797.5	20.46
		132	1860.1	8.14	1835.7	8.03
413	Parullia_D	220	10455.7	27.44	10438.1	27.39
414	J K Nagar	220	3328.8	8.74	3008.8	7.90

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
415	Durgapur (Muchipara)	220	8621.2	22.63	7755.5	20.35
416	Burnpur	220	4780.4	12.55	3521.6	9.24
417	Mejia	220	11664.8	30.61	12944.2	33.97
418	DPL	220	9686.1	25.42	9342.1	24.52
		132	5738.6	25.10	6467.6	28.29
419	BBGS_C	220	2682.1	7.04	2712.0	7.12
		220	3214.0	8.43	3569.3	9.37
		132	3313.2	14.49	4100.4	17.94
		132	2198.2	9.62	2829.0	12.37
420	EMSS_C	220	3617.4	9.49	4287.3	11.25
		220	2682.3	7.04	2715.3	7.13
		132	3787.3	16.57	4940.3	21.61
		132	3787.3	16.57	4940.4	21.61
		132	2063.1	9.02	2728.2	11.93
421	NCGS_C	220	3118.0	8.18	3720.9	9.77
		132	1886.1	8.25	2548.3	11.15
		132	1886.1	8.25	2548.3	11.15
422	Birpara	220	5986.5	15.71	5239.7	13.75
		132	1740.4	7.61	2095.9	9.17
423	Siliguri	220	6492.8	17.04	6322.7	16.59
		132	3095.8	13.54	3431.9	15.01
424	Dalkhola	220	4807.5	12.62	4127.4	10.83
425	Adisaptagram	132	3516.7	15.38	3482.3	15.23
426	Alipurduar	132	699.9	3.06	842.7	3.69
427	AshokNagar	132	2454.3	10.74	2426.5	10.61
428	Balurghat	132	306.4	1.34	353.0	1.54
429	Bankura	132	1049.6	4.59	1124.9	4.92
430	Barasat	132	2578.1	11.28	2533.8	11.08
431	Basithpur	132	1138.7	4.98	1169.5	5.12
432	Joka	132	957.0	4.19	1166.5	5.10

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
433	Berhampore	132	1689.9	7.39	1828.2	8.00
434	Birpara	132	1722.2	7.53	2058.5	9.00
435	Bishnupur	132	1781.3	7.79	2157.4	9.44
436	Bolpur	132	1315.2	5.75	1457.0	6.37
437	Bongaon	132	1517.0	6.64	1435.3	6.28
438	C k Road	132	572.5	2.50	645.8	2.83
439	Lebong	132	1158.2	5.07	773.5	3.38
440	Debagram	132	722.4	3.16	823.1	3.60
441	Dhulian	132	662.1	2.90	719.5	3.15
442	Egra	132	1791.3	7.84	2165.9	9.47
443	Falta	132	1052.1	4.60	1238.3	5.42
444	Haldia	132	2078.2	9.09	2301.3	10.07
445	Hizlee	132	677.4	2.96	788.2	3.45
446	Kalyani	132	2813.5	12.31	2398.7	10.49
447	Katwa	132	929.1	4.06	1019.2	4.46
448	Khanyan	132	2061.8	9.02	1704.6	7.46
449	Kolaghat	132	2698.7	11.80	3087.7	13.51
450	Lilooah	132	1797.8	7.86	2266.0	9.91
451	Malda	132	1658.9	7.26	2018.4	8.83
452	Mankar	132	1722.3	7.53	1719.6	7.52
453	Myanaguri	132	964.3	4.22	1081.6	4.73
454	North Bengal University	132	2636.7	11.53	2791.3	12.21
455	Pingla	132	976.5	4.27	1130.0	4.94
456	Purulia	132	849.8	3.72	981.2	4.29
457	Raiganj	132	1155.7	5.06	1146.4	5.01
458	Raina	132	1413.2	6.18	1408.2	6.16
459	Rampurhat	132	516.2	2.26	613.7	2.68
460	Ranaghat	132	845.6	3.70	1038.9	4.54
461	Mathabang	132	446.1	1.95	530.1	2.32
462	SaltLake	132	2174.8	9.51	2223.5	9.73

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
463	Samsi	132	515.6	2.26	626.8	2.74
464	Siliguri	132	2188.7	9.57	2250.7	9.84
465	Sonarpur	132	1826.5	7.99	1831.5	8.01
466	Tamluk	132	1747.5	7.64	1742.6	7.62
467	Tarkeshwar	132	2228.0	9.75	2045.3	8.95
468	Titagarh	132	1710.4	7.48	1821.0	7.97
469	Ukhra	132	2089.3	9.14	2068.6	9.05
470	Uluberia	132	821.3	3.59	1006.7	4.40
471	Sirakol	132	1051.0	4.60	1212.6	5.30
472	Cossipur	132	1109.2	4.85	855.8	3.74
473	Balichak	132	1061.1	4.64	943.0	4.12
474	TCF-1	132	1903.6	8.33	1484.1	6.49
475	Hind Motor	132	1091.2	4.77	1096.1	4.79
476	Dankuni	132	1337.1	5.85	1352.5	5.92
477	Debagram	132	654.8	2.86	665.8	2.91
478	Balurghat	132	1335.3	5.84	1201.5	5.26
479	Modern	132	1528.1	6.68	1531.3	6.70
480	Jangipara	132	919.9	4.02	1043.9	4.57
481	Chanditala	132	1238.0	5.42	1225.6	5.36
482	Gangarampur	132	352.3	1.54	406.2	1.78
483	Birsingha	132	1654.0	7.23	1625.2	7.11
484	Coochbehar	132	674.6	2.95	847.5	3.71
485	Belmuri	132	2283.6	9.99	2013.0	8.81
486	Barjora	132	950.6	4.16	943.7	4.13
487	Chalsa	132	830.5	3.63	816.9	3.57
488	Mechand	132	887.7	3.88	991.1	4.34
489	Raghunathpur	132	803.9	3.52	884.3	3.87
490	Amtala	132	513.1	2.24	647.9	2.83
491	Contai	132	1059.0	4.63	1104.1	4.83
492	Haldia NIZ	132	1348.4	5.90	1274.3	5.57

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
493	Jhargram	132	921.2	4.03	960.2	4.20
494	Lalgola	132	1164.2	5.09	1162.9	5.09
495	Najirpur	132	472.0	2.07	584.5	2.56
496	Bighati	132	1266.9	5.54	1486.6	6.50
497	RMBLK	132	883.6	3.87	616.5	2.70
498	TMBL	132	785.1	3.43	524.0	2.29
499	Farakka	132	950.8	4.16	1001.2	4.38
500	Khatri	132	739.3	3.23	829.0	3.63
501	Kalna	132	1597.2	6.99	1514.1	6.62
502	Kakdwip	132	785.7	3.44	809.8	3.54
503	Kurseong	132	1255.3	5.49	776.8	3.40
504	Bagnan	132	1369.8	5.99	1377.7	6.03
505	Sonarlal	132	666.6	2.92	391.0	1.71
506	Saintia	132	1143.1	5.00	1224.6	5.36
507	New Town Action Area-1	132	1993.4	8.72	2075.2	9.08
508	Ujanu	132	2044.2	8.94	2074.5	9.07
509	BEL CCp	132	759.6	3.32	827.1	3.62
510	Belmuri	132	1259.9	5.51	1052.1	4.60
511	Burdwan	132	1437.2	6.29	1161.1	5.08
512	Bagmundi	132	349.2	1.53	329.6	1.44
513	Kharagpur	132	1224.7	5.36	761.2	3.33
514	Howrah	132	1523.2	6.66	1075.1	4.70
515	Kalapahari	132	3091.6	13.52	1955.0	8.55
516	Purulia	132	1433.2	6.27	915.8	4.01
517	Bandel	132	4978.1	21.77	5563.7	24.34
518	Jamuria	132	1322.9	5.79	709.9	3.11
519	ASP	132	4452.0	19.47	3587.4	15.69
520	DPL A Zone	132	3066.6	13.41	2553.8	11.17
521	DPL B Zone	132	5243.8	22.94	5541.9	24.24

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
522	DPL AB Zone	132	5306.9	23.21	5456.7	23.87
523	DPL C Zone	132	4331.4	18.95	3995.9	17.48
524	DPL C1 Zone	132	4181.1	18.29	3707.2	16.22
525	Bamunara	132	2709.3	11.85	2093.6	9.16
526	NCGS_C	132	1886.1	8.25	2548.3	11.15
527	SRS_C	132	2247.1	9.83	2830.7	12.38
		132	2163.3	9.46	2735.5	11.97
528	TRS_C	132	1743.8	7.63	2338.6	10.23
		132	1743.8	7.63	2338.6	10.23
529	Majerhat_C	132	2443.6	10.69	3149.7	13.78
530	BT Road_C	132	1710.9	7.48	2150.7	9.41
		132	1885.7	8.25	2551.4	11.16
531	Princep Street_C	132	1793.5	7.84	2327.6	10.18
		132	2966.7	12.98	3780.8	16.54
		132	2966.7	12.98	3780.8	16.54
		132	2195.2	9.60	2828.3	12.37
532	East calcutta_C	132	1967.6	8.61	2518.3	11.02
		132	1788.7	7.82	2317.0	10.13
533	Rishra_C	132	1431.7	6.26	1897.1	8.30
534	Taratala_C	132	2440.0	10.67	3144.2	13.75
535	Chakmir_C	132	2505.6	10.96	3212.6	14.05
536	Jadavpur_C	132	2867.9	12.54	3614.7	15.81
		132	2217.2	9.70	2821.3	12.34
537	BBD Bag_C	132	2147.1	9.39	2757.4	12.06
538	Botanical garden_C	132	1942.5	8.50	2513.6	10.99
539	Belur_C	132	1737.5	7.60	2193.3	9.59
540	Park Lane_C	132	3165.8	13.85	4049.5	17.71
		132	3165.8	13.85	4049.5	17.71
541	DumDum_C	132	1906.4	8.34	2575.4	11.26
542	Patuli_C	132	3165.8	13.85	4049.2	17.71

Sl. No	Substation Name	Rated Voltage (kV)	3-Ph to Ground fault		SLG fault	
			Fault MVA	Fault Current (kA)	Fault MVA	Fault Current (kA)
543	Park Circus_C	132	3373.9	14.76	4362.2	19.08
544	Majerhat_C	132	2443.6	10.69	3149.7	13.78
545	Kalingpong	66	332.0	2.91	231.2	2.02
546	Alipurduar	66	217.8	1.91	59.5	0.52
547	Jali	66	251.0	2.20	321.7	2.81
		66	252.0	2.20	306.5	2.68
548	Chalsa	66	275.4	2.41	267.8	2.34