Ministry of Power
Central Electricity Authority
ERPC, Kolkata

FOREWORD

Like every year, the Annual Administration Report of Eastern Regional Power Committee for the year 2018-19 is being brought out in time. This has been possible with the best concerted efforts of all the constituents and the dedicated officials of ERPC Secretariat. It gives an useful insights into the grid parameters, important incidents and various affairs of Eastern Regional Power Committee This report is a mirror which reflects the health of the power system of the entire Eastern Region. For preparation of this report, voluminous data and information have been collected , compiled and analysed.

Eastern Regional Power Committee (ERPC) was established by Govt. of India vide resolution dated 25th May 2005.Various important functions like regional level operation analysis, inter state/inter regional transfer of power, planning relating to inter state/intra state transmission system, planning of maintenance of generation schedule, operational planning studies etc. were assigned to ERPC. Further, ERPC has to evolve consensus on all cases relating to economy and efficiency in the operation of power system of the region.

Eastern Region is considered to be the power hub of the country. It is connected with all other regions and also international connections exist with neighbouring countries for transfer of electricity. As such, ERPC plays a pivotal role in planning & operation of the regional grid and has to resolve many issues involving operational, technical, economic and regulatory aspects of the grid.

The various profiles of the grid parameters in the Eastern Region have registered significant improvements in the year 2018-19. The upward trend of overall demand in the region is a healthy sign and augurs well for development of the region. After fulfilment of requirement of Eastern Region, the region exported around 27796 MU of energy including export to Nepal and Bangladesh.

Maximum Net demand met in ER was 22733 MW which is 10.53% more than the previous year. Daily net energy consumption in the region was about 399 MU, which was 5.56% more than the previous year.

Around 4808MU energy was exported to Bangladesh through 400 Kv D/C Berhampur(WB) – Bheramara (Bangladesh) transmission line.

Export of power from ER grid to Nepal (apart from Bihar state network) started from February'2016 through 400 kV (charged at 220 kV) Muzaffarpur – Dhalkheber (Nepal) line. The energy exported during the year to Nepal was 1340.43 MU through this line.

I believe that the Annual Administration Report contains valuable data which would prove to be informative and useful for the stakeholders of the Eastern Region. Finally , I would like to thank all the constituents of the Eastern Region for their timely submission of requisite data for this report. ERPC would continuously strive to improve this **Annual Administration Report. For this I would like to invite suggestions for making this report more informative and attractive.**

(J. Bandyopadhyay)
Member Secretary

Index

Annexure

Exhibits

HIGHLIGHTS

Salient features of ER Grid

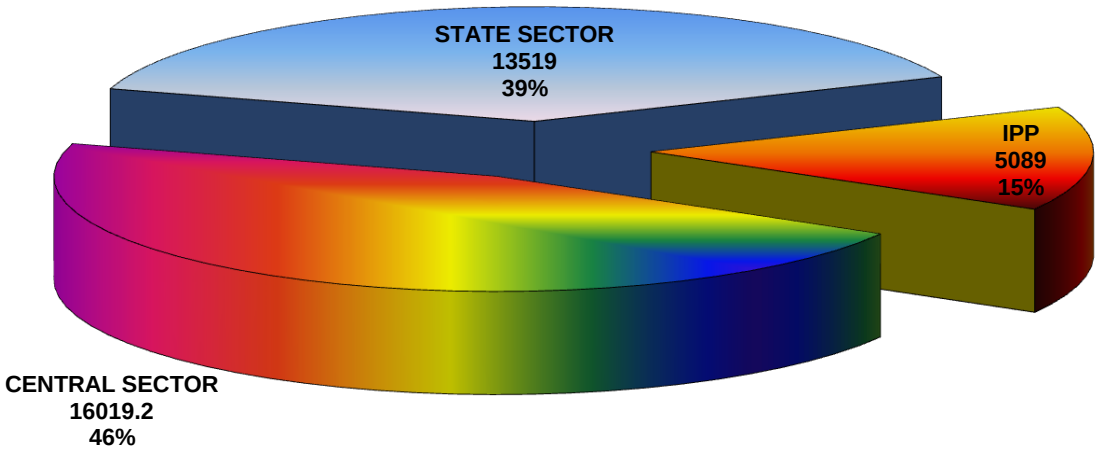
As on 31.03.2019

Installed Capacity	
Thermal	27415 MW
Hydro	5876 MW
Solar	1336MW
Capacity addition/phase out(-) during 2018-19	
Thermal	250/(-)165MW
Hydro	0 MW
Total Installed Capacity (Thermal+Hydro+Solar)	**34627 MW**
Total Effective Capacity (Thermal+Hydro+Solar)	**34552 MW**
Demand	
Peak Demand Met (Max.)	**22733 MW**
Increase Over Previous Year	10.53 %
Peak Demand Met (Min.)	18023 MW
ER System Load Factor (%)	**73.2 %**
Energy Requirement	146848 MU
Energy Generation (Gross) (incl. Bhutan Imp, Excl. CPP)	**177436 MU**
Increase over previous year	3.86 %
Net Energy Met	**145762MU**
Frequency Regime	
% Time frequency remained Below 49.9 Hz	11.75 %
Between 49.9-50.05 Hz (IEGC Band)	**76.27 %**
Above 50.05 Hz	11.98 %
Inter-regional / Outside Country Energy Transfer	
Net Energy export to WR	-14311 MU
Net Energy export to SR	13783 MU
Net Energy export to NR	20491 MU
Net Energy export to NER	1685 MU
Net Energy export to Bangladesh	4808 MU
Net Energy export to Nepal	1340 MU
Total Net Regional Export	**27796MU**
Net Energy Export to Nepal through Bihar System	**1335 MU**
Hydro power import from Bhutan	**4396 MU**

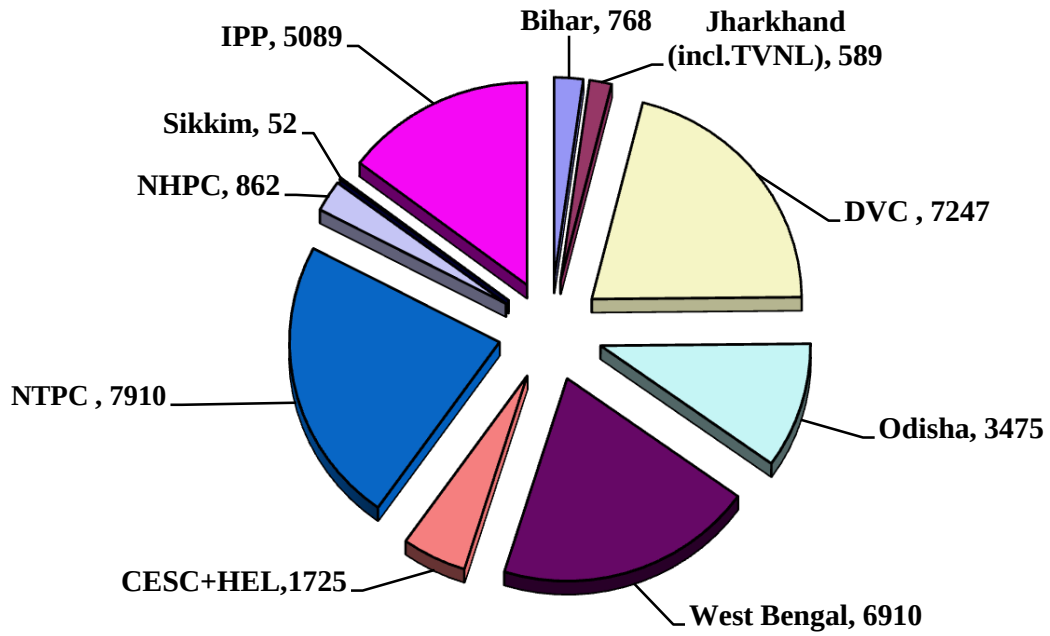
INSTALLED CAPACITY IN EASTERN REGION AS ON 31-03-2019

Figs. In MW

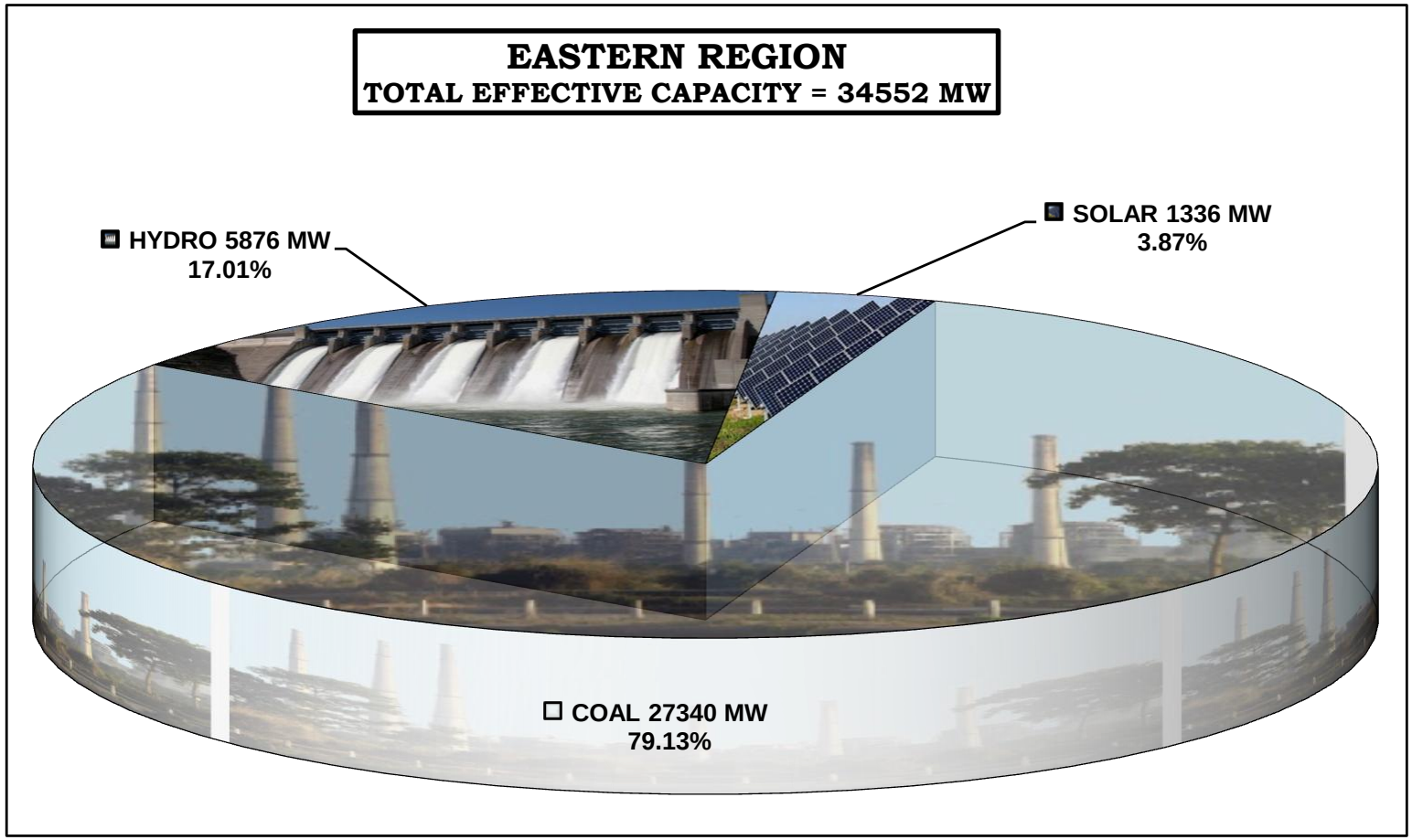
SECTORWISE INSTALLED CAPACITY AS ON 31.03.19



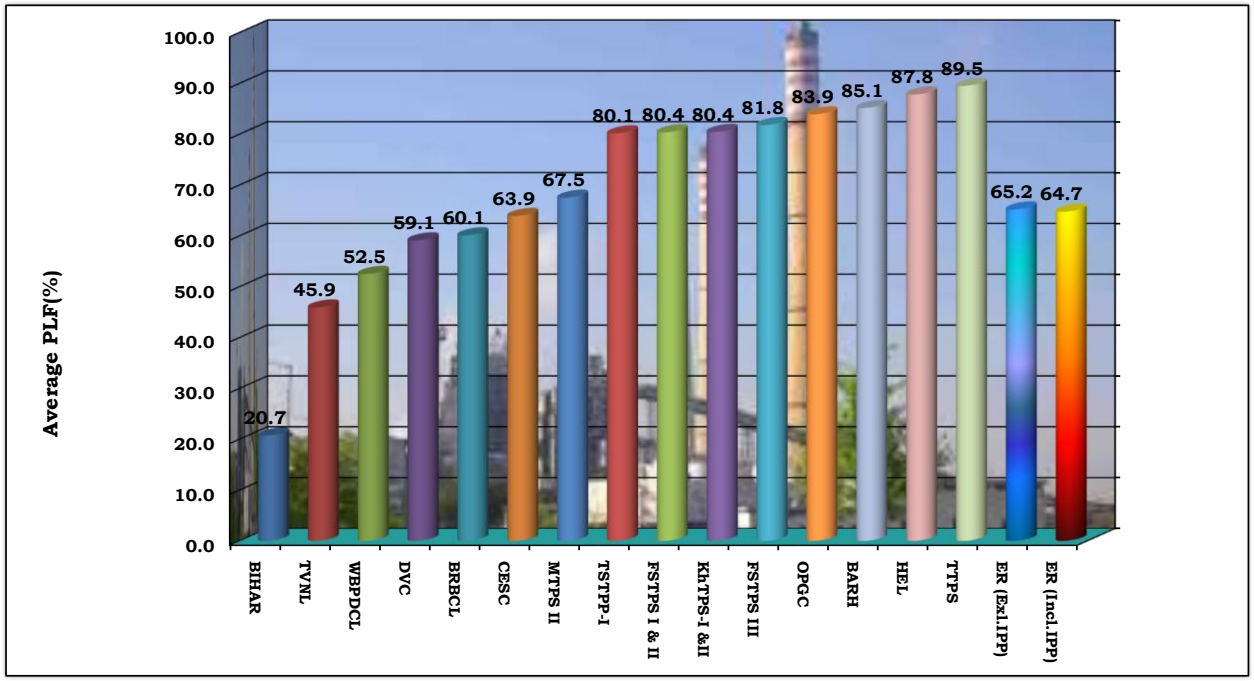
CONSTITUENT WISE INSTALLED CAPACITY AS ON 31.03.19



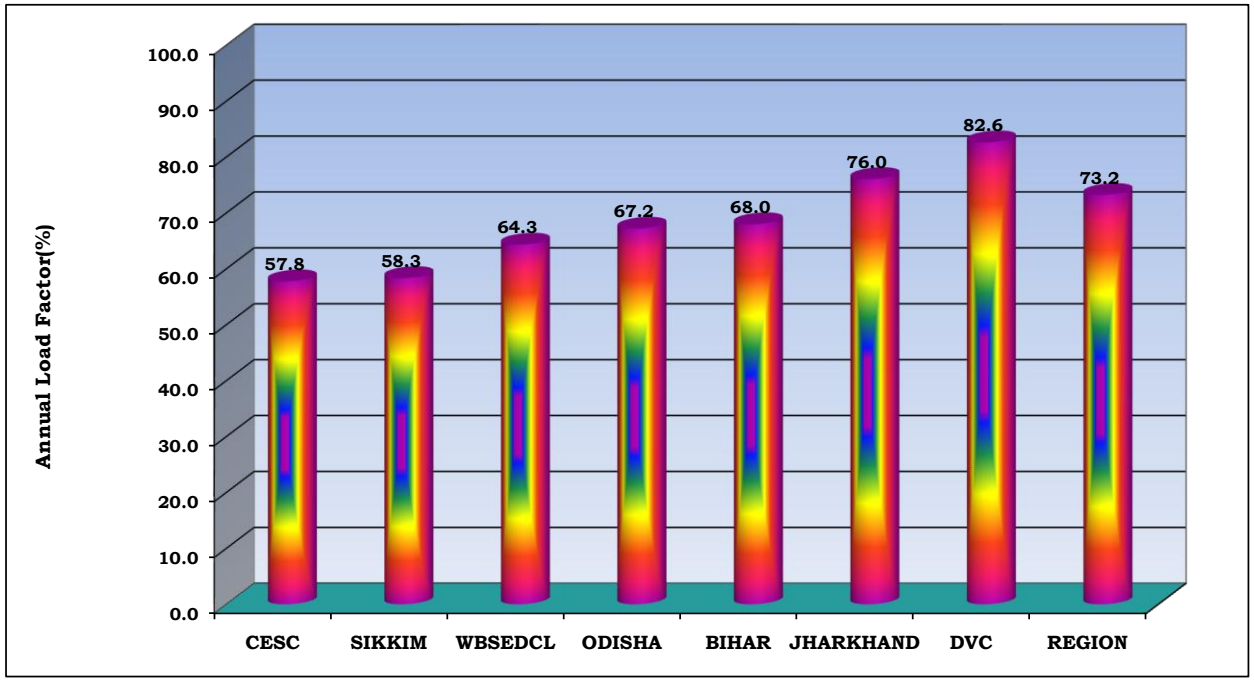
FUEL WISE EFFECTIVE GENERATING CAPACITY AS ON 31-03-2019



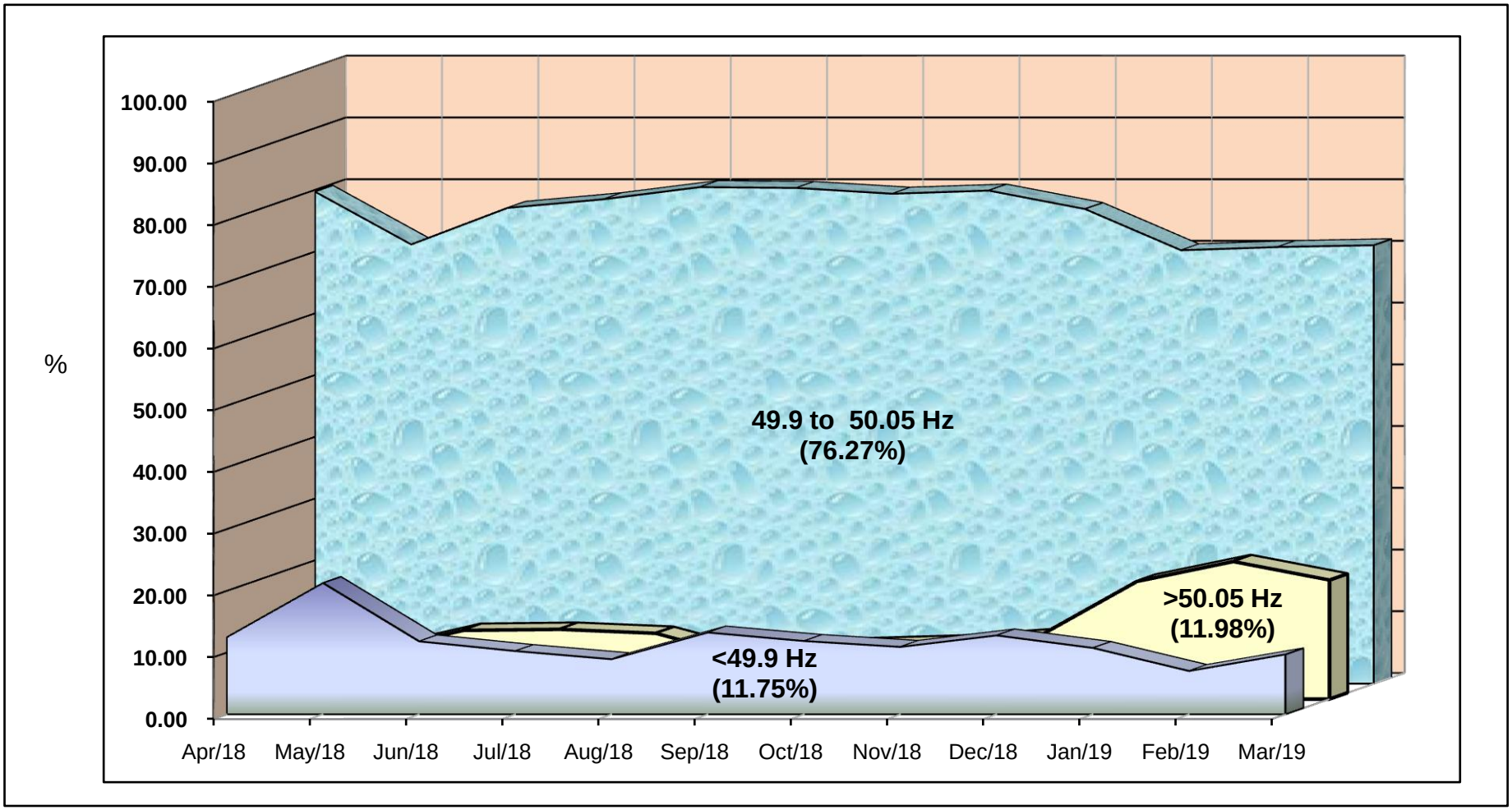
ANNUAL PLF OF THERMAL POWER STATION IN EASTERN REGION DURING 2018-19



ANNUAL LOAD FACTOR OF THE CONSTITUENTS IN EASTERN REGION DURING 2018-19



EASTERN GRID FREQUENCY REGIME DURING THE YEAR 2018-19



CHAPTER-1

CONSTITUTION, FUNCTIONS AND ORGANISATIONAL SETUP

1.1 INTRODUCTION

Growth of Power sector is the key to economic development of the country and is one of the most essential elements for growth of a country and development of modern society. Accordingly, electricity demand is increasing day by day with improvement in living standards as the nation modernizes and its economy develops. To meet the challenges of ever growing demand, power sector has become the key area for reforms as well as to attract investment. Enactment of Electricity Act, 2003, has brought revolutionary changes in almost all the areas of the power sector. Through implementation of this Act conducive environment has been created to promote private sector participation and competition in the sector. This has led to significant investment in generation, transmission and distribution areas.

For efficient & integrated system planning and operational purposes, the power system of the country has been divided into five regions namely Northern Region, Southern Region, Western Region, Eastern Region and North-Eastern Region. Each region has its own regional power grid. Initially, State grids were inter-connected to form the regional grid. The integration of regional grids, and thereby establishment of National Grid, was conceptualized in early nineties. Initially inter-regional links were planned for exchange of operational surpluses amongst the regions. Subsequently felt that synchronisation of all regional grids would help in optimal utilization of scarce natural resources by transfer of power from resource centric regions to load centric regions. Further, this should pave the way for establishment of vibrant electricity market facilitating trading of power across regions. 'One Nation One Grid' should synchronously connect all the regional grids and there would be one national frequency.

The integration of regional grids which began with asynchronous HVDC back-to-back inter-regional links facilitating limited exchange of regulated power subsequently graduated to high capacity synchronous links between the regions. In October, 1991 North Eastern and Eastern grids were connected. In March, 2003 WR and ER-NER were interconnected. On 26th August, 2006 North and East grids were interconnected thereby four regional grids Northern, Eastern, Western and North-Eastern grids were synchronously connected forming Central Grid (NEW GRID) operating at one frequency. On 31st December, 2013 Southern Region was connected to Central Grid (NEW GRID) in synchronous mode with the commissioning of 765kV Raichur-Solapur Transmission line, thereby achieving 'ONE NATION'-'ONE GRID'-'ONE FREQUENCY'.

The Eastern Region comprises of the States of Bihar, Jharkhand, Odisha, West Bengal and Sikkim. The region has an area of 4,25,432 Sq. km which is about 13% of the total area of the country.

The Regional Power Committees have been established by Central Government for a specified region for facilitating the integrated operation of the power system of that region.

The Eastern Regional Power Committee (ERPC) is one out of five (5) Regional Power Committees.

The Organisation Chart of ERPC Secretariat is given at **Exhibit-I** & Power Maps showing transmission system of the Eastern Region are given at **Exhibit - II & III**

1.2 CONSTITUTION

Eastern Regional Power Committee (ERPC) is the present form of erstwhile Eastern Regional Electricity Board (EREB). Initially EREB came into operation on 01.06.1965 in accordance with the Govt. of India's resolution no. EL-II-35 (7)/63 dated 6th March, 1964 in order to promote integrated operation of the power systems in the region and to ensure optimum utilisation of the generation in the region. Government of India, under the provision of Sub-Section 55 of Section 2 of the Electricity Act 2003 vide Resolution F.No.23/1/2004-R&R dated 25th May, 2005 had established Eastern Regional Power Committee comprising the states of Bihar, Jharkhand, Orissa, West Bengal and Sikkim with following members and was subsequently amended from time to time on 29.11.2005, 08.05.2008 and 21.12.2017.

i) Member (Grid Operation), Central Electricity Authority (CEA).
ii) One representative each of Central Generating Companies, Central Transmission Utility (CTU), National Load Despatch Centre (NLDC) and the Eastern Regional Load Despatch Centre (ERLDC).
iii) From each of the States in the region, the State Generating Company, State Transmission Utility (STU), State Load Despatch Centre (SLDC), one of the State owned distribution companies as nominated by the State Government and one Distribution Company by alphabetical rotation out of the private distribution companies functioning in the region.
iv) A representative each of every generating company (other than central generating companies or State Government owned Generating Companies) having more than 1000 MW installed capacity in the region.
v) A representative of the generating companies having power plants in the region [not covered in (ii) to (iv) above] by alphabetical rotation.
vi) One member representing the electricity traders in the region by alphabetical rotation which has trading volume of more than 500 million units during the previous financial year.
via) A representative each of every Nodal Agency appointed by the Government of India for coordinating cross-border power transactions with the countries having electrical inter-connection with the region.
vii) Member Secretary, ERPC – Convenor.

It is further stated in the notification that wherever a member is represented by rotation, the nomination would be for a period of one year. The representative from respective organizations should be either the head of the organization or at least a person not below the rank of a Director on the Board of the company / corporate entity except for Central Public Sector Undertaking (CPSUs) where representative could also be at the level of Executive Director.
Chairperson of the ERPC would represent the States of the region by rotation in alphabetical order. Members of the ERPC from the particular State would nominate the Chairperson of ERPC from amongst themselves. Term of the Chairperson would be for a period of one year.

Shri Hemant Sharma, IAS, Commissioner cum Secretary, Energy Department, Government of Odisha and Chairman-cum-Managing Director, GRIDCO and OPTCL was the Chairperson of ERPC for the year 2018-19. Members of ERPC for the year 2018-19 were as under:

Sl.No.	Name of ERPC Member Organisation	Designation of the Member
1.	GRIDCO Ltd.	Chairman-cum-Managing Director
2.	Odisha Power Transmission Corporation Ltd.	Chairman-cum-Managing Director
3.	Odisha Hydro Power Corporation Ltd.	Chairman-cum-Managing Director
4.	Odisha Power Generation Corporation Ltd.	Managing Director
5.	Bihar State Power Holding Company Ltd.	Chairman-cum-Managing Director
6.	Bihar State Power Transmission Company Ltd.	Managing Director
7.	South Bihar Power Distribution Company Ltd.	Managing Director
8.	Jharkhand Urja Vikas Nigam Limited	Chairman-cum-Managing Director
9.	Jharkhand Urja Sancharan Nigam Limited	Managing Director
10.	Jharkhand Bijli Vitaran Nigam Limited	Managing Director
11.	Tenughat Vidyut Nigam Ltd.	Managing Director
12.	West Bengal State Electricity Distribution Company Ltd.	Chairman & Managing Director
13.	West Bengal State Electricity Transmission Company Ltd.	Managing Director
14.	West Bengal Power Development Corporation Ltd.	Chairman & Managing Director
15.	Durgapur Projects Ltd.	Managing Director
16.	Energy &Power Department, Govt. of Sikkim	Principal Chief Engineer-cum-Secretary
17.	Damodar Valley Corporation	Chairman
18.	Central Electricity Authority	Member (GO&D)
19.	Eastern Regional Load Despatch Centre	Head,ERLDC
20.	National Load Despatch Centre	Head,NLDC
21.	NTPC Ltd.	Director (Commercial)
22.	NHPC Ltd.	Director (Finance)
23.	Power Grid Corporation of India Ltd.	Director (Operations)
24.	PTC India Ltd.	Director (C&O)
25.	NTPC Vidyut Vyapar Nigam Ltd.	Chief Executive Officer
26.	Tata Power Trading Company Ltd.	Managing Director
27.	CESC Ltd.	Managing Director
28.	Maithon Power Ltd.	Chief Executive Officer
29.	Adhunik Power & Natural Resources Ltd.	Managing Director
30.	GMR Kamalanga Energy Ltd.	Chief Operating Officer
31.	Jindal India Thermal Power Ltd.	Chief Executive Officer
32.	Teesta Urja Ltd.	Managing Director
33.	Haldia Energy Limited	Managing Director
34.	India Power Corporation Limited	Managing Director

1.3 FUNCTIONS

The functions of ERPC, as per the resolution of Govt. of India dated 25.05.2005, amended vide resolution dated 29.11.2005 and the revised Indian Electricity Grid Code issued by CERC are given below and are effective from 01.04.2006:

- Clause 29 (4) of the Act provides that "the Regional Power Committee in the region may, from time to time, agree on matters concerning the stability and smooth operation of the integrated grid and economy and efficiency in the operation of the power system in that region."

- As per Para (6) of the MOP Resolution dated 25.5.2005, ERPC shall discharge the following functions:-

    - To undertake Regional Level operation analysis for improving grid performance
      .
    - To facilitate inter-state / inter-regional transfer of power.

    - To facilitate all functions of planning relating to inter-state / intra-state transmission system with CTU / STU.

    - To coordinate planning of maintenance of generating machines of various generating companies of the region including those of inter-state generating companies supplying electricity to the Region on annual basis and also to undertake review of maintenance programme on monthly basis.

    - To undertake planning of outage of transmission system on monthly basis.

    - To undertake operational planning studies including protection studies for stable operation of the grid.

    - To undertake planning for maintaining proper voltages through review of reactive compensation requirement through system study committee and monitoring of installed capacitors.

    - To evolve consensus on all issues relating to economy and efficiency in the operation of power system in the region.

- Besides, as per the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010, following specific functions have been entrusted to RPC:

    - RPC Secretariats shall carry out all Regional Energy Accounting calculations.
    - Regional Energy Accounts on monthly basis shall be prepared and issued by the RPC Secretariats for the purpose of billing and payment of various charges.

- RPC shall prepare and issue the Unscheduled inter-change (UI) account [newly terminology ‘ Deviation Settlement Mechanism (DSM)] for which RLDC will provide actual net injection / drawal of concerned regional entities, 15 minute-wise, based on the above meter readings on a weekly basis by each Thursday noon for the seven day period ending on the previous Sunday mid-night.

- RPC shall monitor the status of UI payment and installation of capacitor.

- RPC shall prepare and issue monthly Regional Transmission Accounts (RTA) and Regional Transmission Deviation Accounts (RTDA) based on data supplied by NLDC and ERLDC respectively.

- RPC Secretariats shall also issue the weekly statement for VAR charges, to all regional entities who have a net drawal / injection of reactive energy under low/high voltage conditions.

- RPC shall decide from time to time to utilize the money remaining in the regional reactive account after payout of all VAR charges upto 31st March of every year for training of the SLDC operators and other similar purposes which would help in improving/streamlining the operation of the respective regional grids

- The Regional Power Committee (RPC) in the region shall continuously monitor the instances of non-compliance of the provisions of IEGC and try to sort out all operational issues and deliberate on the ways in which such cases of non-compliance are prevented in future by building consensus.

- RPC shall decide on installation of capacitors by states vis-à-vis the requirement/targets.

- RPC in consultation with RLDC finalise the quantum and time frame for reactive compensation.

- RPC shall regularly monitor the status regarding the installation and healthiness of the reactive compensation equipment.

- RPC shall finalise action plan and give instructions to restore power system elements under prolonged outage in a specified time period.
- RPC will be allowed to carry out checking of Power System Stabilizers (PSS) in AVRs of generating units and further tuning it, whenever considered necessary.

- RPC will finalise the plan for providing automatic under-frequency and df/dt relays for load shedding in respective systems, to arrest frequency decline that could result in a collapse/disintegration of the grid and shall ensure that the above under-frequency and df/dt load shedding/islanding schemes are always functional.

- RPC Secretariat shall carry out periodic inspection of the under frequency relays and maintain proper records of the inspection.

- RPC shall decide and intimate the action required by SEB, distribution licensee and STUs to get required load relief from Under Frequency and df/dt relays.

- RPC shall finalise the voltage control measures through voltage relay to prevent voltage collapse / cascade tripping.

- RPC shall finalise the loads to be shed through under frequency relays / df/dt relays and System Protection Scheme in order to maintain the frequency within the stipulated band and maintaining the network security.

- RPC shall monitor the forced outages of important network elements in the grid.

- The RPC Secretariat shall be primarily responsible for finalization of the annual outage plan for the following financial year by 31st January of each year and reviewed during the year on quarterly and Monthly basis.

- RPCs shall submit quarterly, half-yearly reports to the Commission indicating deviation in outages from the plan along with reasons.

- RPC Secretariat shall provide assistance for finalising detailed plans and procedures for restoration of the regional grid under partial/total blackout and shall be reviewed / updated annually.

- RPC shall initiate investigation/action whether any of the regional entities are indulging in unfair gaming or collusion if such practice is detected and reported.

- RPC shall discharge any other responsibilities assigned by CERC.

Subsequently through further amendments following works were also entrusted to RPCs:

IEGC 2010, 1st Amendment:
The RPC Secretariat shall be primarily responsible for finalization of the Annual Load Generation Balance Report (LGBR) and the annual outage plan for the following financial year by 31st December of each year. The LGBR shall be prepared by the respective RPC secretariat for peak as well as off-peak scenarios.

IEGC 2010, 4th amendment:

The RPCs shall calculate Compensation for generating stations for degradation of Station Heat Rate (SHR), Auxiliary Energy Consumption and Secondary Fuel Consumption due to low unit loading operation as per the mechanism framed by the CERC.

Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015:

The Regional Power Committees shall issue an Ancillary Services Statement along with the Deviation Settlement Mechanism Account.

1.4 ORGANISATIONAL STRUCTURE

Chairperson of ERPC would represent the states of the region by rotation in alphabetical order. Members of ERPC of that particular state would nominate the Chairperson of ERPC from amongst themselves. Term of the Chairperson would be for a period of one year.

Member Secretary who is an officer of Central Power Engineering Services (Group-A), is the administrative and technical head of ERPC Secretariat with the powers of the Head of Department. The other Group-A officers in the ERPC Secretariat also belong to Central Power Engineering Service (Group-A) Cadre.

Group-B officers in ERPC Secretariat are borne on the strength of CPES (Group-B) Cadre of the Govt. of India, while Group – B, C and D (reclassified as Group-C) staff are on the strength of General Central Service of the Govt. of India.

The details regarding the present ERPC Secretariat officers and staff as on 31.3.19 are given at **Annexure-I**.

Names of the Chairpersons and Member Secretaries of the ERPC and erstwhile EREB, since inception, are shown in **Annexure-II** and **Annexure-III** respectively.

1.5 DETAILS OF BUDGET & EXPENDITURE FOR 2018-19

The sanctioned budget (RE) of ERPC for the year 2018-19 vis-à-vis actual expenditure for the same period is given in table (A) & (B):

(A) Major Head 2801 (Non-plan): Regional Co-ordination(RCC)

(Figures in Lac of Rs.)

Sl. No.	Sub-Head	Item	Sanctioned Budget (RE) for 2018-19	Actual Expenditure (RE) for 2018-19
1	07.01.01	Salaries	92.50	89.55
2	07.01.03	OTA	0.00	0
3	07.01.06	Medical Treatment	2.80	0.17
4	07.01.11	Domestic TE	6.00	5.99
5	07.01.13	Office Expenses	5.00	5.00
6	07.01.14	Rent/Rates/Taxes	2.00	1.80
7	07.01.27	Minor Works	6.00	5.78
Total			**114.3**	**108.29**

(B) Major Head 2801 (Non-plan): Regional Load Despatch Station (RLDS)

(Figures in Lac of Rs.)

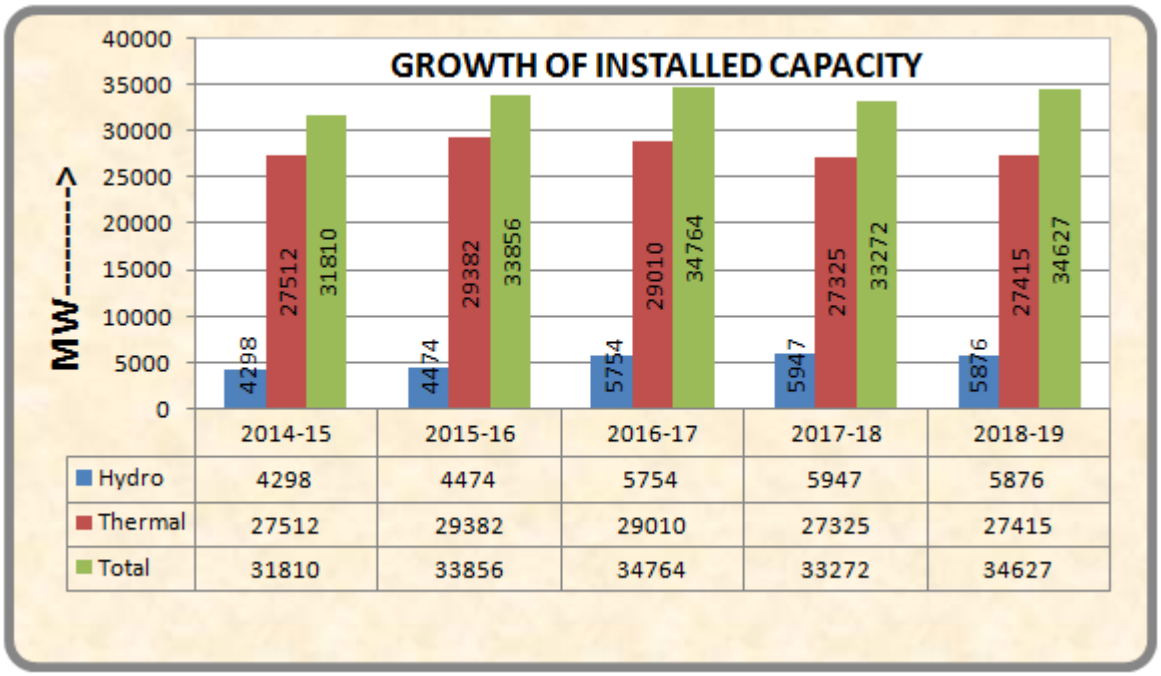
Sl. No.	Sub-Head	Item	Sanctioned Budget (RE) for 2018-19	Actual Expenditure (RE) for 2018-19
1	07.01.01	Salaries	83.58	83.89
2	07.01.03	OTA	0.00	0.00
3	07.01.06	Medical Treatment	3.40	0.31
4	07.01.11	Domestic TE	7.00	6.98
5	07.01.13	Office Expenses	39.90	25.54
6	07.01.50	Other Charges	5.00	3.72
Total			**138.88**	**120.44**

CHAPTER-2

GRID PERFORMANCES

2.1 INSTALLED CAPACITY

The installed capacity of the power generating units in Eastern Region connected to Eastern grid as on 31st March 2019 was 34627 MW, comprising 27415 MW (79 %) of thermal, 5876 MW (17 %) of hydel, 1336 MW(4%) RES . The total effective capacity of the Region as on 31.03.2019 was 34552 MW. In addition to this, Chukkha HEP, Kurichhu HEP, Tala HEP and Daghachu HEP of Bhutan contributed about 360 MW, 60 MW, 1020 MW and 126 MW respectively of hydel power to Eastern Region. PTC is the nodal agency for facilitating power purchase from Chukha, Kurichhu & Tala HPS and Tata Power Transmission Company Limited is the nodal agency for facilitating power purchase from Dagachu HPS in Bhutan. Constituent-wise installed and effective capacity as on 31.03.2019 are shown in **Annexure-IVA. BRBCL of NTPC/Railways U#3 capacity 250 MW commissioned during 2018-19 whereas BTPS U#3 & U#4 each 82.5 MW of WBPDCL (Total= 165 MW) de-commissioned during 2018-19.** The growth in installed capacity in Eastern Region for last five years (i.e. 2014-2015 onwards) is shown in the diagram below:



	2014-15	2015-16	2016-17	2017-18	2018-19
Hydro	4298	4474	5754	5947	5876
Thermal	27512	29382	29010	27325	27415
Total	31810	33856	34764	33272	34627

The Compounded Annual Growth Rate of installed capacity during the last 5 years was of the order of 2.14 %.

2.2 POWER SUPPLY POSITION

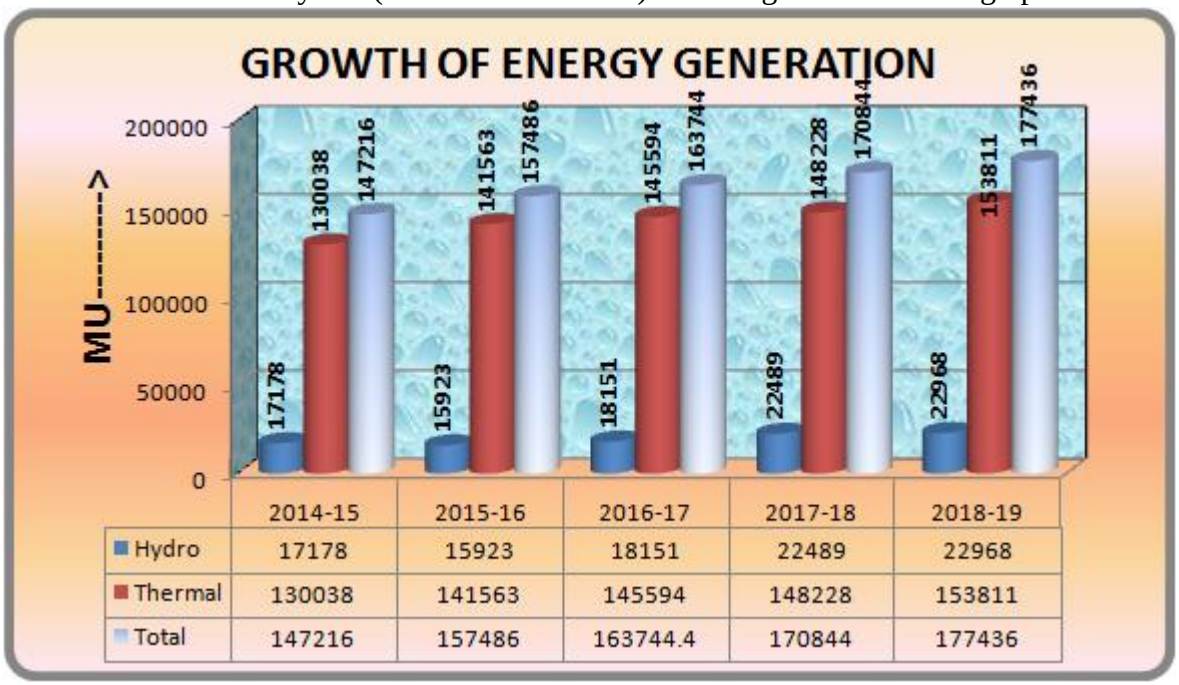
2.2.1 GENERATION:

During the year 2018-19, the total generation availability in ER (excluding generation/import from CPPs but including import from Bhutan) was 177436.16 MU (Gross) comprising of 153810.59 MU of thermal (86.69 %) and 22968.09 MU of hydel (12.94 %) and RES 657.48 MU(0.37 %) compared to total generation of 170844.42 MU in 2017-18 comprising 148227.73 MU thermal and 22489.43 MU hydel and 127.27 RES. The total generation was

6591.74 MU more than that of 2017-18. Details of constituent-wise generation and auxiliary consumption are given in **Annexure-V**.

As regards to regional thermal generation, the generation of DVC,HEL,IB TPS and NTPC have increased reasonably but that of WBPDCL,TVNL and IPP have been declined considerably as compared to last year. Hydro generation of Odisha has been increased significantly as compared to last year.

Generation of last five years (2014-15 to 2018-19) in the region is shown in graph below:



	2014-15	2015-16	2016-17	2017-18	2018-19
Hydro	17178	15923	18151	22489	22968
Thermal	130038	141563	145594	148228	153811
Total	147216	157486	163744.4	170844	177436

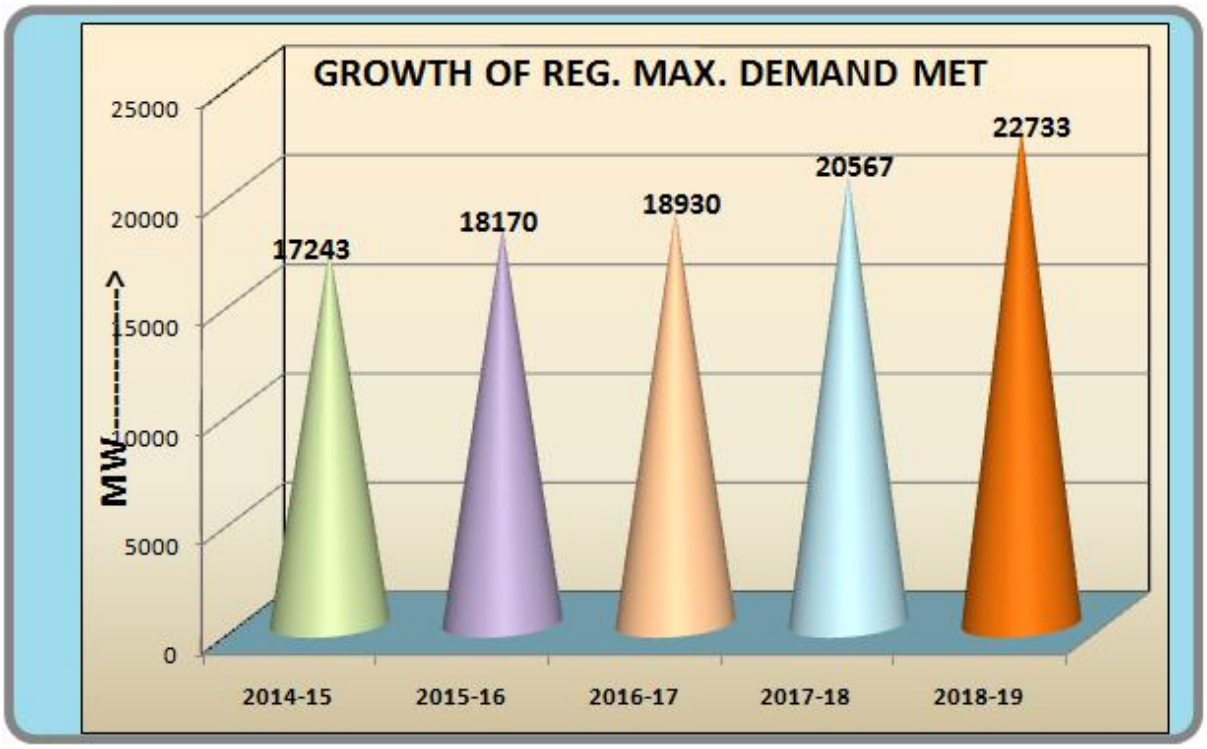
As against Compounded Annual Growth Rate *(CAGR)* of installed capacity of 2.14 %, the same of energy generation of the last 5 years is 3.86 % including energy import of 4395.87 MU from Bhutan. The growth in generation was mainly due to commissioning of new generating units of 250 MW of BRBCL and improved generation of NTPC Stations in Eastern Region in 2018-19. Maximum utilisation of available hydel power from Tala, Kurichhu, Chukha and Daghachu Hydel Power Station of Bhutan was made by import through PTC & TPTCL as nodal agency as per international agreement between Government of India and Royal Government of Bhutan.

2.2.2 MAXIMUM DEMAND

During the year 2018-19, the maximum coincident demand met in the Eastern Region was 22733 MW (net) compared to demand of 20567 MW (net) during the preceding year. It was 2166 MW (10.53 %) more than the maximum demand of last year. Maximum demand met by the constituents during 2018-19 is given below:

SYSTEM	MW	SYSTEM	MW
BSPHCL	**5084**	**WBSEDCL**	**7009**
JUVNL	**1291**	**DPL**	**289**
DVC	**3098**	**CESC**	**2120**
GRUDCO	**5434**	**SIKKIM**	**106**
EASTERN REGION: - 22733			

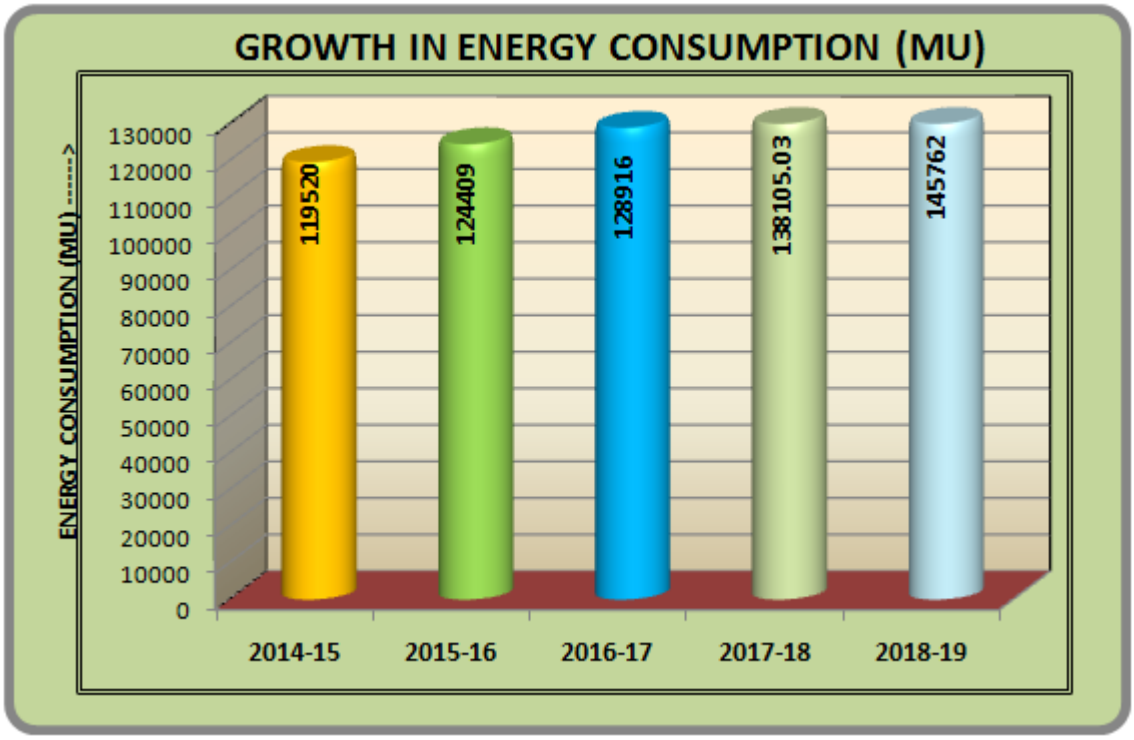
The growth in the maximum demand was somewhat restricted mainly due to bottlenecks in sub-transmission and distribution system of respective utility of E.R. The growth in maximum demand in Eastern Region for the last five years is shown below:



Compounded Annual Growth Rate (CAGR) of Peak Demand in ER of last five years was 6.12 %. Constituent & month wise peak demand (MW) met are shown in **Annexure-VI**.

2.2.3 ENERGY CONSUMPTION

During the year 2018-19, the total energy consumption (net) in Eastern Region was 145762 MU compared to consumption of 138105 MU during previous year i,e 7657 MU (5.54 %) more than last year's consumption. The growth in regional energy consumption is mainly due to cosiderable increase in energy consumption by Bihar, Jharkhand, DVC, Odisha & DPL. The daily average energy consumption in the region was about 399 MU/day compared to about 378 MU/day during the previous year. These figures exclude consumption of different industries from their respective captive power plants.



The energy consumption in Eastern Region for the last five years is shown in the above graph. Compounded Annual Growth Rate (CAGR) of energy consumption of the last five years works out as 5.09 % as compared to the growth of peak demand figure of 7.15 %. Constituent-wise yearly energy consumption has been shown in **Annexure-V** and monthly energy consumption has been shown in **Annexure-VII**.

2.2.4 EXPORT TO OUTSIDE REGION

During the year 2018-19, the total net export of energy outside the region was 27796 MU compared to export of 29297 MU in the last year, which is 1501 MU less than the last year's export. Decrease in export is due to increased in energy consumption of Eastern Region. As per decision of the MoP, GoI, the power export to Bangladesh has been undertaken and regular supply has been commenced from October'2013 through 400 kV Berhampur – Bheramara line with HVDC (B-t-B 2x500) station at Bheramara (Bangladesh). Also power flow from ER grid to Nepal has been started from February'2016 through 400 kV (charged at 220 kV) Mazaffarpur -Dhalkheber (Nepal) line. Growth of net export of Energy (MU) outside Eastern Region including transmission loss during last five years is given below:

EXPORT OF NET ENERGY (MU) FROM ER GRID								
Year	**NR**	**SR**	**WR**	**NER**	**B'DESH**	**NEPAL**	**TOTAL EXPORT**	**Growth**
2014-15	**11848**	**6254**	**780**	**2368**	**3346**		**24597**	**-5.7%**
2015-16	**12435**	**7037**	**1777**	**1182**	**3764**	**76**	**26271**	**6.8%**
2016-17	**20093**	**5676**	**-386**	**2124**	**3782**	**666**	**31955**	**21.6%**
2017-18	**19054**	**10247**	**-8666**	**3753**	**3964**	**945**	**29297**	**-8.32**
2018-19	**20491**	**13783**	**14311**	**1685**	**4808**	**1340**	**27796**	**-5.12**

2.2.6 VOLTAGE

During the year 2018-19, the voltage profile except a few important 400 kV sub–stations and 220 kV sub-stations remained satisfactory. Maximum & Minimum Voltage touched during 2018-19 at some of the important 765 kV & 400 kV sub-stations are shown below:

SUB-STATION	MAXIMUM VOL (kV)	MINIMUM VOLTAGE (kV)
NEW RANCHI 765 KV	805	752
BINAGURI	431	375
SUBHASGRAM	434	372
JEERAT	430	372
BIHARSHARIFF	427	384
MUZAFFARPUR	422	371
JAMSHEDPUR	429	388
ROURKELA	426	386
JEYPORE	430	372
MAITHON	426	393
MERAMUNDALI	417	386
SASARAM	434	378

2.3 PLANT LOAD FACTOR

The average annual Plant Load Factor (PLF) of the thermal power stations in the Eastern Region for the year 2018-19 was 64.74% against 62.12% for 2017-18 The PLF has been calculated based on the capacity and generation of the commercially declared units only. Infirm generation and their injection period have not been considered for PLF calculations. As the IPPs were generating with restrictions for transmission & other constraints, the regional PLF has been reduced while those IPPs are being taking into account for Regional PLF calculations. Details of PLF have been shown in **Annexure - X**.

The average PLF (excluding IPP) of ER for the last five years is shown below:-

Period	PLF (in %)
2014-15	63.00
2015-16	59.78
2016-17	60.19
2017-18	62.12
2018-19	**64.74**

2.4 SYSTEM LOAD FACTOR

The Annual Load Factor of the Eastern Region during 2018-19 was 73.2 % compared to 76.65 % in the preceding year. The load factor was highest in DVC areas (82.61 %) due to mostly industrial flat load and the load factor was lowest in CESC (57.75 %) mainly due to domestic & commercial load.

2.5 INTERNATIONAL EXCHANGE

Eastern Region has a unique geographical advantage of having inter-Regional links with all the regions of the country along with international lines to neighbouring countries namely Nepal, Bhutan and Bangladesh. Eastern Region exports power to the rest of the country.

Eastern Region receives power from Chukha, Kurichhu, Tala and Daghachu HPS of Bhutan and exports power to Nepal & Bangladesh. Power export to Bangladesh is through 400 kV D/C Berhampur(WB) – Bheramara (Bangladesh) line. Power export from ER grid to Nepal is through 400 kV (charged at 220 kV) Mazaffarpur-Dhalkheber (Nepal) line. Also power to Nepal is supplied from Bihar state network which has been shown separately.

The table below depicts quantum of power import from Bhutan and exchange (net) with Nepal & Bangladesh in last five years:

YEAR	IMPORT FROM BHUTAN (CHPC, KHPC, TALA & DAGHACHU) IN MU	NET EXPORT TO NEPAL IN MU		NET EXPORT TO BANGLADESH IN MU
		Through Bihar State network by BSPHCL	Through CTU network by NVVN	
2014-15	4926.04	1009.79		3346.60
2015-16	5427.04	1210.57	76.0	3764.0
2016-17	5810.27	1197	666.0	3782.0
2017-18	5072.08	1362.87	944.74	3964.3
2018-19	**4395.87**	**1335.62**	**1340.43**	**4808.11**

Though all the international lines are not operational all the times however, details of existing lines are indicated below:

1. **Between ER – NEPAL**

   (a) **Through Bihar System**

   132 kV Balmiknagar (Bihar) - Surajpura (Nepal)
   132 kV Kataiya (Bihar) - Duhabi (Nepal)
   132 kV Valmikinagar-Surajpura
   132 KVD/C Kataiya – Kusaha
   132 kV Raxual-Parwanipur line
   33 kV Thakurganj (Bihar) - Bhadarpur (Nepal)
   33 kV Raxaul (Bihar) - Birganj (Nepal)
   33 kV Kataiya (Bihar) - Biratnagar (Nepal)
   33 kV Jaynagr (Bihar) - Siraha (Nepal)
   33 kV Kataiya (Bihar) - Rajbiraj (Nepal)
   33 kV Sitamari (Bihar) - Jaleswar (Nepal)
   11 kV Jogbani (Bihar) - Biratnagari (Nepal)
   11 kV Bargania (Bihar) - Gaur (Nepal)

   (b) **Through CTU System**

   400 kV (charged at 220 kV) Mazaffarpur-Dhalkheber (Nepal)

2. **Between ER – BHUTAN**

   400 kV Binaguri (PGCIL) - Tala-I (Bhutan)
   400 kV Binaguri (PGCIL) -Tala- II (Bhutan)
   400 kV Binaguri (PGCIL) -Tala- IV (Bhutan)
   400 kV Binaguri (PGCIL) -Malbase-III (Bhutan)
   220 kV Birpara (PGCIL) - Chukha - I (Bhutan)

220 kV Birpara (PGCIL) -Chukha - II (Bhutan)
220 kV Birpara (PGCIL) - Malbase (Bhutan)
11 kV Kalchini (WBSETCL) - Phuntsholing (Bhutan)
11 kV Jaldhaka (WBSETCL) -Sibsoo (Bhutan)
11 kV Banarhat (WBSETCL) - Samchi (Bhutan)

3. Between ER – BANGLADESH

400 kV D/C Berhampur (PGCIL) - Bheramara (Bangladesh)

4. Between NER - BHUTAN

Power is also exchanged between Bhutan and India through the following lines of NER, but the exchange of power is booked against/from ER only.

132 kV Salakati (Assam, PG) – Gelephu (Bhutan)
132 kV Rangia (AEGCL) – Deothang (Bhutan)
11 kV Bongaigaon (AEGCL) -Gaylegphug (Bhutan)
11 kV Tamalpur (AEGCL) -SamdrupJongkhar (Bhutan)
11 kV Dampuri (AEGCL) -Daifan (Bhutan)

2.6 SALIENT FEATURES OF HYDRO RESERVOIR

Salient data regarding FRL, MDDL and the water level reached on the last day of the month in respect of major hydro reservoirs are given in **Annexure - XI.**

2.7 POWER CUTS IN THE REGION

Power supply position in Eastern Region was by and large satisfactory except for sub-transmission and distribution constraints in some of the constituents and perpetual shortage in area served by SBPDCL, NBPDCL and JBVNL during peak hours.

2.8 UNITS AND TRANSMISSION ELEMENTS COMMISSIONED DURING THE YEAR

Generating units and transmission elements commissioned during the year 2018-19 are given at **Annexure – IV B and IV C** respectively.

2.9 PROGRESS OF CONSTRUCTION OF GENERATING UNITS & TRANSMISSION LINES

List of ongoing Power Projects / Generating Units and progress of construction of ongoing transmission lines are given at **Annexure – XVIII and XIX** respectively**.**

2.10 ALLOCATION OF POWER FROM CENTRAL GENERATING STATIONS.

Allocation of power from Central generating stations in Eastern Region including Chukha HEP, Kurichu HEP, Tala HEP & Daghachu HEP of Bhutan during 2018-19 is given at **Annexure – XII.**

CHAPTER-3

GRID DISTURBANCES

Grid disturbances which occurred during the year 2018-19 are as follows:

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
1	DMTCL	07-04-2018	09:56	160	0	GD - I	At 09:48 hrs 400 KV Motihari – Gorakhpur I and II tripped on Y-N and B-N fault respectively. Thereafter tripping of 400 kV Motihari – Gorakhpur D/C at 09:56 hrs in R-Y-B fault resulted total power failure at 400/132 kV Motihari S/S and other radially connected areas (Birganj, Surajpura, Parwanipur in Nepal; Ramnagar, Betiah, Raxaul, Motihari, Dhaka in Bihar).
2	DVC	11-04-2018	20:10	700	0	GD - I	Unit 7 & 8 at CTPS – B, 220 kV Bokaro B – CTPS B D/C, 220kV Dhanbad – Giridih D/C and 132kV CTPS A – Putki – Patherdhi link were open prior to the disturbance. At 19:40 hrs 220 kV Maithon – Dhanbad - I tripped on B-N fault. While restoration of this circuit, 220 kV Maithon – Dhanbad – II also tripped at 20:10 hrs resulting Dhanbad radial with Kalyaneswari through 220 kV Kalyaneswari – CTPS A – CTPS B – Dhanbad section (220 kV Bokaro B – CTPS B D/C was kept open). At 20:15 hrs 220 kV Kalyaneswari – CTPS – I tripped due to jumper snapping (suspected) and at 20:18 hrs 220 kV Kalyaneswari – CTPS – II tripped on overload. At the same time 220 kV Joda – Jindal S/C tripped from Joda end resulting load loss at radially fed area i.e. Jamshedpur (DVC) through 220 kV Joda – Jindal – Jamshedpur section.

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
3	ISTS	15-04-2018	06:43	0	50	GD - I	At 06:43 hrs, 220 kV Tashiding Rangpo S/C and 220 kV Tashiding New Melli S/C tripped in Y-N fault resulting tripping of running unit due to loss of evacuation path. At the same time 220 kV Jorethang New Melli - I tripped from Jorethang end (successful A/R operation at New Melli end) in earth fault protection.
4	CESC	17-04-2018	10:37	500	0	GD - I	At 10:37 hrs, 220 kV Subhasgram - EMSS D/C tripped due to operation of line differential relay at EMSS end (R phase for Circuit II and B phase for Circuit I) resulting load loss at radially connected area i.e. New Cossipore, Kasba, Dum Dum and B/T road.
5	BSPTCL	30-04-2018	05:48	60	0	GD - I	220 kV Purnea - Madhepura II was in opened condition due to O/V. At 05:48 hrs 220 kV Purnea - Madhepura I tripped on B-N fault causing load loss at Madhepura, Supaul and Lahan (Nepal).
6	BSPTCL	08-05-2018	20:38	310	0	GD - I	At 20:38 hrs, HV side CT in B phase connected to 150 MVA ICT-II blasted, leading to a suspected bus bar protection operation at 220 KV Main bus and subsequent voltage loss at Bodhgaya.
7	ISTS	10-05-2018	06:11	0	900	GD - I	At 06:11 hrs, 400 kV Andal - RTPS D/C and 400 kV Andal Jamshedpur D/C tripped resulting total power failure at Andal S/S
8	BSPTCL	11-05-2018	18:38	240	0	GD - I	220 kV Muzaffarpur - Hazipur - II was under shutdown. At 18:38 hrs 220 kV bus I at Muzaffarpur tripped resulting outage of 220 kV Muzaffarpur - Hazipur - I, 400/220 kV ICT - I & II at Muzaffarpur, 220/132 kV ICT at Muzaffarpur and 220 kV Muzaffarpur - MTPS - I. Though other elements are in service at 220 kV level of Muzaffarpur, both the incoming feeders of Hazipur S/S tripped resulting total power failure at Hazipur, Chapra, Jandaha. Interruption of supply of power occurred at Dhalkebar due to tripping of 220/132 kV

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
							ICT at Muzaffarpur.
9	OPTCL	25-05-2018	16:30	98	428	GD - I	At 16:30 Hrs R ph LA blasted in 220 KV Jaynagar-Laxmipur ckt I at Jaynagar yard, which led to remote end tripping of some 220 KV ckts and backup overcurrent/reverse zone clearing of some ckts from Jaynagar end. As a result, 220 KV Jaynagar substation became dead and due to loss in evacuation paths,160 MW in Upper Kolab(unit 1 and 3) and 268 MW in Balimela(Unit 3,4,5,6,7,8) tripped.
10	BSPTCL	26-05-2018	12:06	248	0	GD - I	At BODHGAYA GSS, Total power failed after tripping of both 220 KV Gaya(PG)-Bodhgaya ckt-1 and 2 at 12:06 Hrs from Gaya (PG) end. There was no any tripping at GSS Bodhgaya end.
11	BSPTCL	28-05-2018	21:41	205	0	GD - I	220 KV Gaya Bodhgaya d/c tripped from Gaya(PG) end only on 3-Ph Fault, zone III . Actually fault was in 220 KV Bodhgaya-Khizersarai-I line. During anti-theft charging of the said line 220 KV Gaya Bodhgaya d/c tripped from Gaya(PG) end. Fault was not cleared by Boghgaya.
12	WBSETCL & BSPTCL	28-05-2018	19:04	410	0	GD - I	At 19:04 hrs R-N fault took place in 400 KV Malda-Purnea-2 line and during A/R attempt Bus bar protection operated at Malda 400 KV and all the element tripped. Then Dalkhola B/C tripped in O/C and 220 kV Purnea-Purnea D/C and 220 kV Kishangunj-Dalkhola D/C tripped in DEF leading to wide spread blackout at Malda,Dalkhola and Purnea
13	ISTS	30-05-2018	18:22	60	0	GD - I	220 kV Ranchi - Hatia D/C tripped in R-B fault at 18:22 hrs. At same time 220 kV Hatia - Patratu D/C tripped on overreaching the fault resulting interruption of power at 220/132 kV Hatia S/S and its surrounding areas

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
14	ISTS	31-05-2018	18:43	30	0	GD - I	Total power failure occurred at Daltongunj after tripping of 400 kV Sasaram - Daltongunj D/C at 18:43 hrs on R-N and B-N fault respectively.
15	BSPTCL	05-06-2018	10:20	133	0	GD - I	Tripping of 220 kV New Purnea - Madhepura D/C on R-N fault resulted total power failure at Madhepura, Supaul and Lahan (Nepal)
16	BSPTCL	05-06-2018	16:32	160	0	GD - I	220 kV New Purnea - Madhepura I was out of service since GD at Madhepura at 10:20 hrs on same day. At 16:32 hrs 220 kV New Purnea Madhepura II tripped on Over current resulting total power failure at Madhepura Supaul and Lahan (Nepal)
17	WBSETCL	10-06-2018	21:52	0	550	GD - I	400 kV HEL - Subhasgram D/C tripped on B-N fault resulting station black out at Haldia due to loss of evacuation path
18	BSPTCL	15-06-2018	10:58	328	0	GD - I	At 10:58 hrs, 220 kV Patna - Sipara T/C, 220 kV Sipara Khagul S/C, 220 kV Sipara Fatuah S/C, 220/132 kV ICT - I, II & III at Sipara tripped on bus bar relay operation at Sipara resulting load loss at Sipara and its surrounding area.
19	BSPTCL	26-06-2018	04:39	150	0	GD - I	At 04:39 Hrs 220 kV Purnea - New Madhepura D/C tripped on R-N fault resulting load loss at surrounding area
20	ISTS	04-07-2018	10:52	200	0	GD - I	400 kV Motihari - Barh D/C and 400 kV Motihari - Gorakhpur - II were under breakdown. 400 kV Motihari - Gorakhpur - I tripped at 10:52 hrs on O/V resulting total power failure at Motihari S/S as there is no other source.
21	WBSETCL	04-07-2018	19:00	0	136	GD - I	At 19:00 hrs 220 kV NJP - TLDP - III S/C tripped resulting total power failure at TLDP - III
22	ISTS	10-07-2018	08:14	0	890	GD - I	At 08:14 hrs, 400 KV Binaguri Rangpo I tripped on RBN fault. 400 KV Teesta III Rangpo tripped at 08:14 hrs on SPS-2 operation. All running units of Teesta III and Dikchu tripped due to loss of evacuation path.

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
23	BSPTCL	19-07-2018	13:31	150	0	GD - I	At 13:15 Hrs , 220 kV Madhepura-New Purnea-II tripped on BN fault. At 13:31 Hrs Purnea –Madhepura I also tripped duet to Y-B phase fault resulting total power failure at Madhepura S/S.
24	JUSNL	20-07-2018	09:10	78	0	GD - I	At 08:44 hrs 220 kV Ranchi - Hatia - I tripped on B-N fault along with 220/132 kV ICTSs at Hatia resulting loss of power supply at nearby area. Power was restored back at 09:02 hrs by charging ICTs. But 220 kV Ranchi - Hatia - II along with 220 kV Patratu - Hatia D/C tripped at 09:10 hrs resulting total power failure at Hatia S/S as well as nearby area.
25	ISTS	20-07-2018	19:00	280	0	GD - I	400 kV Motihari - Barh D/C and 400 kV Motihari - Gorakhpur - II were under breakdown. 400 kV Motihari - Gorakhpur - I tripped at 19:00 hrs on gas compartment zone protection due to mal-operation of gas monitoring relay which shows low indication despite proper level being maintained.
26	ISTS	21-07-2018	07:11	110	0	GD - I	400 kV Motihari - Barh D/C and 400 kV Motihari - Gorakhpur - II were under breakdown. 400 kV Motihari - Gorakhpur - I tripped at 07:11 hrs on gas compartment zone protection due to mal-operation of gas monitoring relay which shows low indication despite proper level being maintained.
27	ISTS	30-07-2018	20:48	0	878	GD - I	At 20:48 Hrs, 400 KV Binaguri-Rangpo II tripped on Y-B-N fault. Inspite of operation of SPS -I, SPS II operated and 400 KV Teesta III-Rangpo tripped. At the same time, breaker of 400 KV Teesta III Dikchu S/C opened from Dikchu end.
28	BSPTCL	15-08-2018	13:35	98	0	GD - I	There is only one source for 220 kV Darbhanga (BSPTCL) S/S i.e. 220 kV Darbhanga – Darbhanga - I. At 13:35 hrs, 220 kV Darbhanga- Darbhanga-I tripped on B-N fault. After patrolling it was found that B-ph jumper was snapped at the distance of 2KM from

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
							220KV Darbhanga (BSPTCL) GSS.
29	OPTCL, DVC	31-08-2018	13:57	450	0	GD - I	220 kV Joda Ramchandrapur S/C and 220 kV Bokaro Jamshedpur were not in service. 220 kV Joda - TTPS D/C tripped on Y-B-N fault resulting increase in power flow through 220 kV Jamshedpur Jindal S/C. As a result 132 kV Jamshedpur - Chandil D/C and 132 kV Purulia - CTPS D/C tripped due to overload.
30	JLHEP	04-09-2018	12:00	0	97	GD - I	At 12:00 hrs , 220 kV Jorethang - New Melli D/C tripped on RYBN fault resulting tripping of all running units of Jorethang due to loss of evacuation path. 220 Kv Tashiding New Melli S/C tripped at same time on R-Y-B-N fault.
31	JLHEP	16-09-2018	11:13	0	97	GD - I	220 kV Jorethang - New Melli D/C & 220 Kv Tashiding New Melli S/C tripped at 11:13 hrs resulting tripping of all running units of Jorethang due to loss of evacuation path.
32	BSPTCL	16-09-2018	15:38	178	0	GD - I	220 kV Purnea - Purnea D/C tripped from New Purnea end along with 220/132 kV ICTs and 132 kV Purnea - Purnea T/C at Old Purnea (PG) S/S. Failure of Y phase CT of 132 kV Purnea - Tribenigunj S/C at Tribenigunj reported at same time.
33	BSPTCL	16-09-2018	20:52	407	0	GD - I	220 kV Purnea - Purnea D/C tripped from New Purnea end along with 220/132 kV ICTs and 132 kV Purnea - Purnea T/C at Old Purnea (PG) S/S. At the same time, 220/132 Kv ICTs at Kishangunj tripped leading to a load loss around 212 MW at Kishangunj and its surrounding area
34	OPTCL	17-09-2018	10:59	121	0	GD - I	At 10:52 hrs 220 kV Katapalli Sadaipalli S/C tripped. While taking charging attempt of this line, 220 kV Bolangir-Sadaipalli S/C tripped resulting load loss at Sadaipalli.

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
35	TPTL	22-09-2018	14:38	0	96	GD - I	400 kV Teesta III Dikchu S/C tripped at 14:38 hrs on B-N fault. Relay indication at Teesta III: B-N, F/C 9.1 KA, 15.6 km from Teesta III; at Dikchu: B-N, Z-IV, E/F, F/C 9.195 KA, -700 m from Dikchu. On Investigation it was found some of the bushes/plantation came in to contact with B phase conductor in the out yard between ICT & GIS at Dikchu. Both units at Dikchu tripped on differential protection though overvoltage and over speed protection operated correctly. O/C earth fault protection of 400/132 kv ICT picked up but did not tripped as time delay (1.2 s) was more than fault clearing time.
36	TVNL	27-09-2018	13:14	0	159	GD - I	220 kV TVNL - PTPS S/C and 220 kV TVNL - Biharshariff S/C tripped on same time resulting tripping running unit (unit #1) at Tenughat end.
37	JUSNL	03-10-2018	17:23	200	52	GD-I	220 kV PTPS - Hatia D/C were under shutdown. 220 kV Hatia - Ranchi D/C tripped from Hatia end due to suspected bus fault at Hatia
38	JUSNL	04-10-2018	00:18	130	52	GD - I	220 kV PTPS - Hatia D/C were under shutdown. 220 kV Hatia - Ranchi D/C tripped from Hatia end due to suspected bus fault at Hatia
39	ISTS	07-10-2018	16:56	160	0	GD - I	220 kV Purnea - Purnea D/C and 220 kV Purnea - Dalkhola D/C tripped due to Y phase CVT failure of 220 KV Purnea - I at Purnea Old end
40	BSPTCL	20-10-2018	09:48	62	0	GD-I	220 KV New Purnea-Madhepura I was kept open due to high voltage condition. At 09:48 hrs 220 kV Purnea - Madhepura - II tripped on R-N fault resulting total power failure at Madhepura.
41	WBSETCL	27-10-2018	10:24	0	134	GD-I	At 10:24 Hrs, 220 KV TLDP-III – NJP tripped due to Y-B-N fault leading to tripping of all 4 units at TLDP III due to loss of evacuation path

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
42	ISTS	14-11-2018	16:31	0	90	GD-I	At 16:30 hrs, 400 kV Teesta III – Dikchu S/C tripped from Teesta III end along with 400/132 kV ICT at Dikchu resulting tripping of all running units at Dikchu due to loss of evacuation path. As per DR received, ICT tripped in E/F (132 kV side current: IA = 387 A, IB = 316 A, IC = 525 A, IN = 171 A). At the same time, 400 kV Teesta III – Dikchu S/C tripped from Teesta III end due to operation of cable directional O/C protection (IB = 1.695 kA, IN = 1.6 kA).
43	BRBCL, ISTS	25-11-2018	16:31	0	230	GD-I	At 16:31 hrs bus II at BRBCL tripped on bus bar protecton due to mal-operaton of bus bar differential relay. At the same time tie CB between ICT I & GT I tripped on operation of master trip signal due to logic error from Bus bar relay of Bus II, which again led to erroneous LBB retrip signal to main CB no. 401 connected to GT I leading to tripping of unit 1 generating 230 MW and ICT I. At same time, main bay 400 kV Sasaram BRBCL - I at BRBCL tripped on logic error and DT was sent to Sasaram end.
44	OPTCL	29-11-2018	07:23	0	200	GD-I	At 07:23 Hrs, 220 KV Bus II tripped alongwith 2*110 MW U#5,U#6, 160 MVA 220/132 KV ICT I, ICT II, 220 KV TTPS-TSTPP S/C, 220 KV TTPS-Joda D/C, 220 KV TTPS-Rengali S/C, 220 KV TTPS-Meramundali II.
45	DVC	18-12-2018	02:57	250	0	GD-I	Due to burst of Y phase LA of 132 kV Kalyaneswari - Maithon - II at Kalyaneswari end, 220 kV bus tie at Kalyaneswari, 220/132 kV ATR I, II & III at Kalyaneswari, 132 kV Kalyaneswari - Kalipahari D/C, 132 kV Kalyaneswari - Maithon D/C tripped resulting total power failure at Kalyaneswari S/S.
46	BSPTCL	24-12-2018	23:28	115	0	GD-I	220 kV Gaya Sonenagar D/C tripped on R-N fault leading to a load loss at Sonenagar and its nearby area.

Sl No	Owner/Agency	Date	Time	Load loss (MW)	Gen. loss (MW)	Category	Reasons
47	OPTCL	25-12-2018	12:47	30	370	GD-I	At 12:47 hrs disk insulator of y phase transfer bus snapped and fell on 220 kV Budhipadhar - Lapanga - II resulting tripping of all lines emanating from Budhipadhar.
48	OPTCL	05-01-2019	10:51	100	0	GD-I	220 kV New Bolangir - Bolangir (PG) was under shutdown. 220 kV New Bolangir - New Bargarh S/C was the only source to New Bolangir S/S. At 10:52 hrs,160 MVA 220/132 kV ATR - I tripped on REF, differential protection at New Bargarh S/S. Simultaneously B/B protection operated at New Bargarh S/S which led the tripping of 220 kV New Bargarh - New Bolangir S/C, 220 kV New Bargarh - Katapalli S/C and 220/132 kV 160 MVA ATR - II followed by station black out of 220 kV New Bargarh and New Bolangir S/S
49	BSPTCL	05-01-2019	11:20	150	0	GD-I	220 kV Gaya - Bodhgaya D/C and 220 kV Gaya Khijasarai D/C tripped on Y-B fault on both sides. At the same time, 220 kV Bodhgaya- Khijasarai D/C tripped from Khijasarai end.
50	OPTCL	07-01-2019	15:40	0	0	GD-I	220 kV Katapalli - Bolangir S/C along with 220 kV Katapalli - Hindalco D/C, 132 kV Katapalli - Burla D/C and 132 kV Katapalli Chiplima D/C tripped due to snapping of R phase jumper of 220 kV Katapalli - Bolangir S/C
51	WBSETCL	21-01-2019	02:29	0	0	GD-I	220 kV bus II along with 400/220 kV ICT II at Bakreswar, 220 kV Bakreswar - Bidhannagar - II, 220 kV Barkreswar - Sadai - II, 220 kV Bakreswar - Bidhannagar - II tripped due to CT burst of 220 kV Bakreswar - Bidhannagar - II at Bidhannagar end.
52	BSPTCL	23-01-2019	12:33	124	0	GD-I	All lines emanating from Hazipur tripped due to fire hazard in 220 kV GIS bay of Amnour at Hazipur due to SF6 gas leakage.

CHAPTER-4

COMMERCIAL

4.1 REGIONAL ENERGY ACCOUNTING (REA)

CERC Regulations on Availability Based Tariff (ABT), applicable for accounting of Capacity charges and Energy charges of Central Sector Generating Stations; transmission charges of Central Sector Transmission Systems and transactions of interstate power through exchange and bilateral mechanisms, was implemented in ER w.e.f 01.04.2003. CERC has issued "*CERC Tariff Regulations, 2014 (Terms and Conditions of Tariff)*" which has come into force on and from 01.04.2014. This regulation shall remain in force for a period of five years, i.e up to March, 2019 from the date of commencement unless reviewed earlier or extended by the Commission.

The following are the major components of Availability Based Tariff (ABT):

a) Capacity Charge inclusive of incentive (for recovery of Annual fixed cost)
b) Energy Charge (for recovery of primary fuel cost)
c) Transmission Charges (for recovery of Annual fixed cost of Tr. system)
d) Deviation Settlement Mechanism, etc

The first three topics would be dealt with in this section and the fourth topic would be dealt in the next section. The regional energy accounts bring out the transactions/accounts for Central Generating Stations (CGS), IPPs, LTA, MTOA & STOA, etc.

4.1.1 SHARE ALLOCATION FROM EASTERN REGIONAL CENTRAL GENERATING STATIONS

Regional Energy Accounting for CGS is based on the allocations from MoP/CEA. The percentage share of total capacity of each ISGS in ER is allocated to the beneficiaries of Eastern, Northern, Western, Southern and North Eastern Region, which is revised from time to time. Allocations of shares from each ISGS in Eastern Region during 2018-19 are given at **Annexure-XII.**

In case of Un-requisitioned surplus (URS) power of generator, there would be a statement of URS is being issued based on the data of surrender/avail of URS power by beneficiaries.

4.1.2 ACCOUNTING OF CENTRAL GENERATING STATIONS

Capacity Charges:

The capacity charge (inclusive of incentive) in the 2014-19 Tariff regulations payable to a thermal or hydro generating station for a calendar month is ensured if availability of 85 % or more is achieved.

For hydro generating stations the Annual Capacity charge is recoverable from the beneficiaries as per percentage share allocation of each beneficiary after adjustment of 12 % free share of home

state. The payment of capacity charge is independent of the energy drawn by the beneficiary and is dependent only on the Plant Availability Factor for the Month (PAFM). To minimize the cost of power procurement, the beneficiary has the option of lower drawal of energy (paying full capacity charge for its share) and meet demand from other source such as bilateral and power exchange.

The indicative annual capacity charges per year for the thermal and hydro power stations of the Central Sector Generating stations in Eastern Region as on 31.03.2019 for all the ISGS are as under (as per CERC orders).

Sl. No	Station Name	Annual Fixed Charges (in Lakhs)
Thermal		
1	Talcher STPS Stage I	₹ 59041.24
2	Kahalgaon-I STPS	₹ 55284.37
3	Kahalgaon-II STPS	₹ 127063.80
4	Farakka STPS Stage I & II	₹ 90876.06
5	Farakka STPS Stage III	₹ 56250.28
6	Barh	₹ 176098.00
Hydro		
1	Rangit HPS	₹ 8134.24
2	TEESTA Stage-V HPS	₹ 49709.79

Energy Charges:

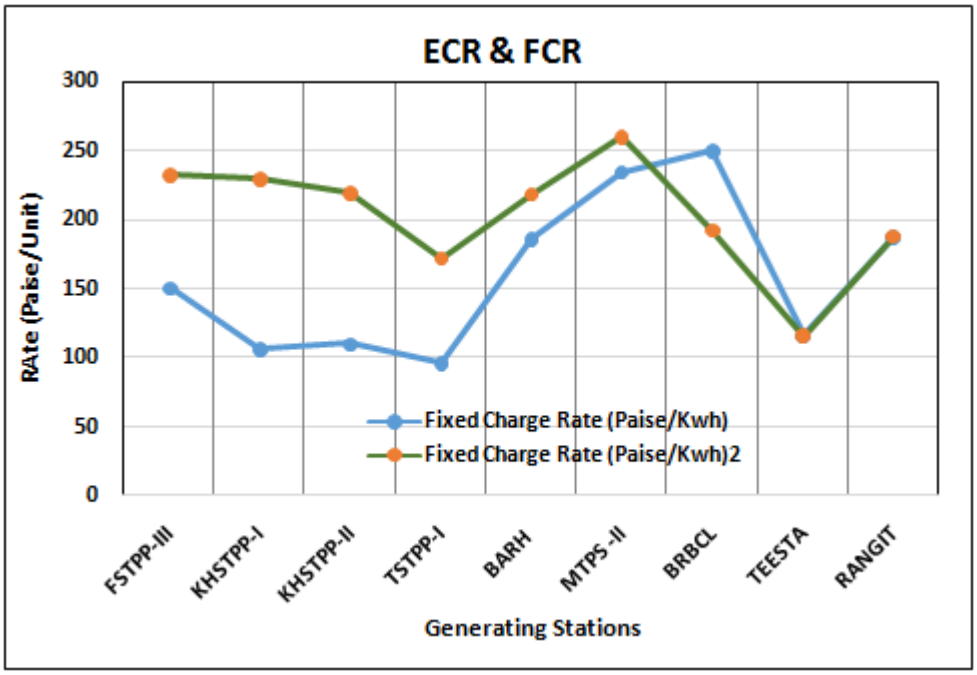
The Energy charges of the Central Generating Thermal Power Stations cover primary fuel cost and monthly fuel price adjustment (FPA). From July, 2011 onwards, the Fuel Price Adjustment has been included in the energy charges. The energy charges payable by every beneficiary, in case of a hydro station, on ex-power plant basis is at the computed Energy Charge Rate (ECR).

The indicative average energy rates for C.S Thermal stations in ER for the year 2018-19 were as under:

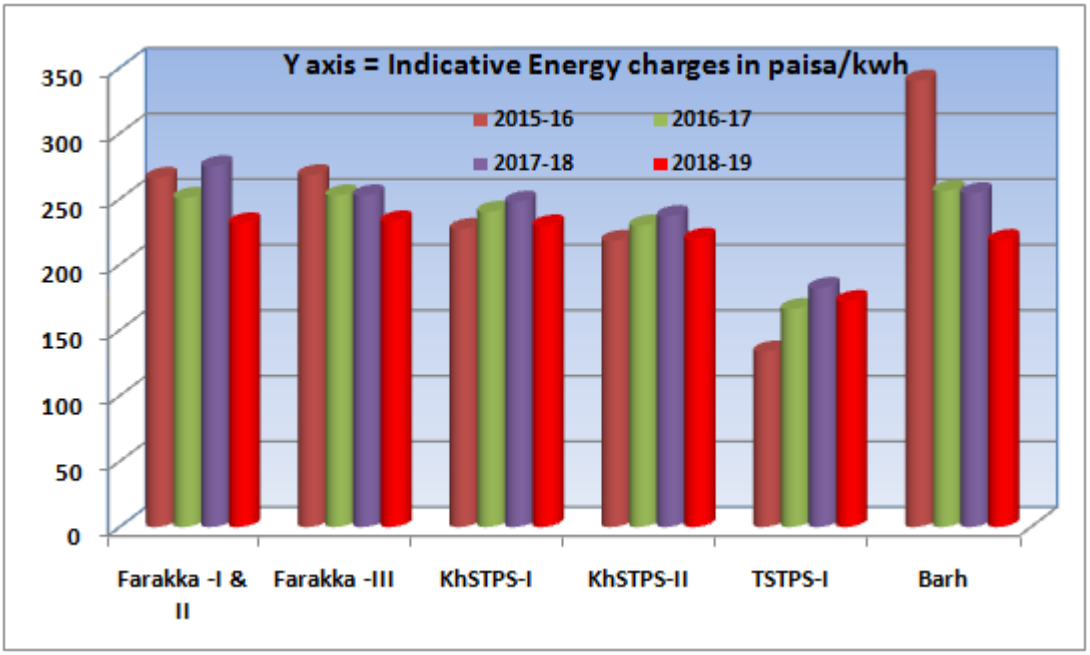
Average Fixed Charge Rate & Energy Charge rate during 2018-19:

Station	Fixed Charge Rate (Paise/Kwh)	Energy Charge Rate (Paise/Kwh)
FSTPP- I&II	83.77	231.41
FSTPP-III	150.75	232.89
KHSTPP-I	105.93	229.73
KHSTPP-II	109.83	219.62
TSTPP-I	95.90	172.16
BARH	186.50	218.58
MTPS -II	234.90	260.40
BRBCL	250.62	192.78
RANGIT	188.25	188.25
TEESTA-V	116.00	116.00

The Energy charge rate and fixed charge rate for all generators for 2018-19 has shown below.



The year wise variation in energy charges for year 2014-15, 2015-16, 2016-17 and 2018-19 is given below for reference.



For Rangit HPS & Teesta HPS the indicative energy charge rates were 188.25 Paise /kWh and 116 paise /kWh respectively for 2018-19 as computed in line with existing CERC Regulation.

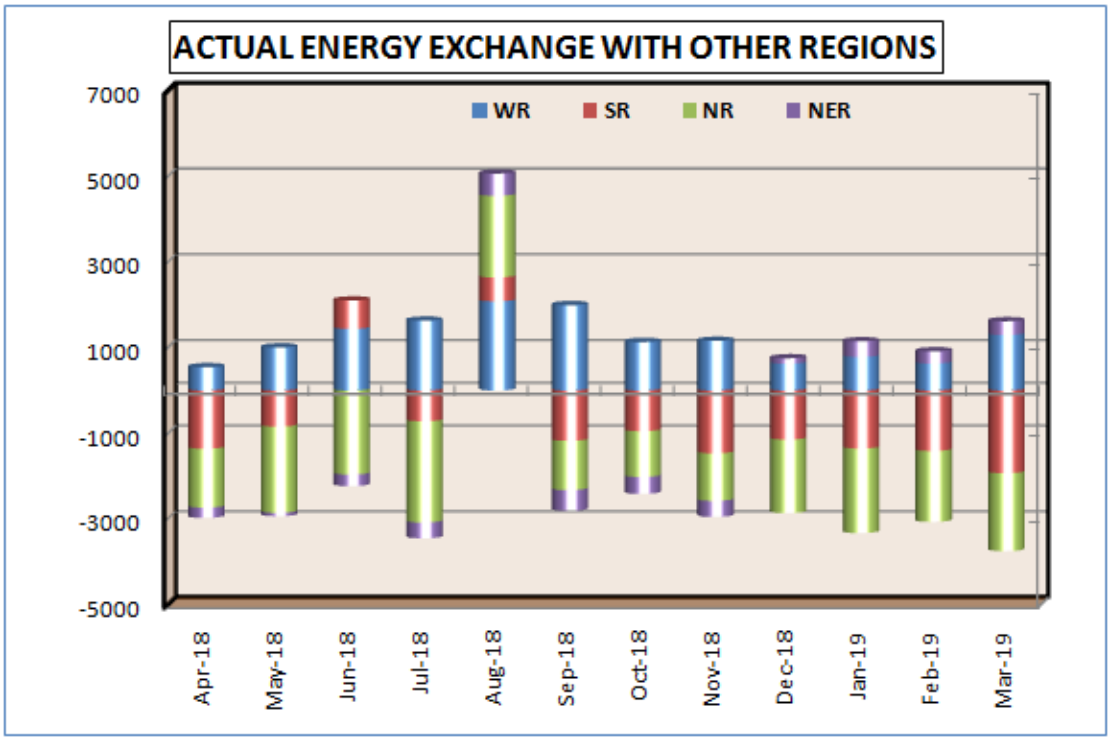
Annual Generation of NTPC and NHPC stations in ER during the year 2018-19:

Generating Station(ISGS)	Scheduled Generation (Ex-Bus) in MU	Actual Generation (Ex-Bus) in MU
FSTPS - I & II	10611.74	10493.32
FSTPS -III	3397.44	3337.94
KHSTPP- I	5521.76	5479.33
KHSTPP- II	9864.94	9825.81
TSTPS - I	6439.53	6449.85
BARH- II	9388.89	9333.75
BRBCL	2534.7	2578.01
MTPS-II	2136.5	2058.45
RANGIT	334.44	345.13
TEESTA-V	2592.25	2677.83

- Net scheduled power to other regions (MU) for 2018-19 from NTPC Stations in Eastern Region [Imp. Sch.(+) / Exp. Sch.(-)] including transmission loss :

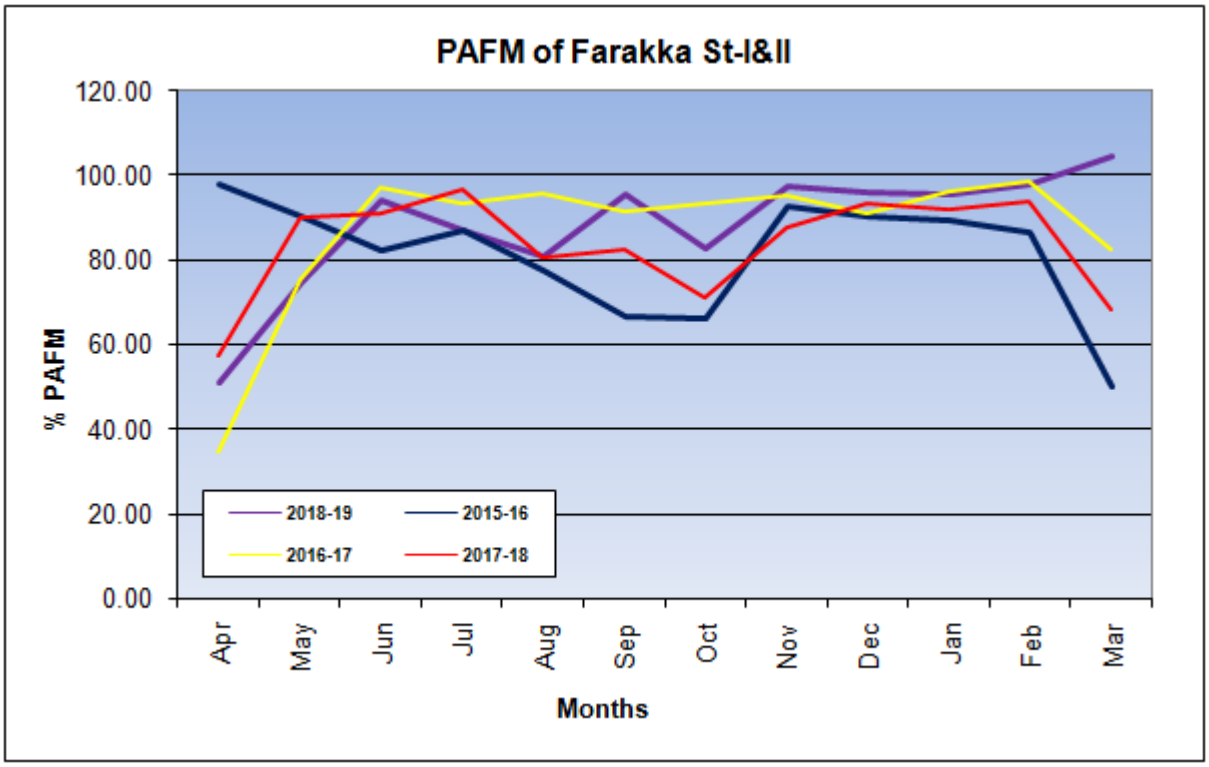
All figures in MWH

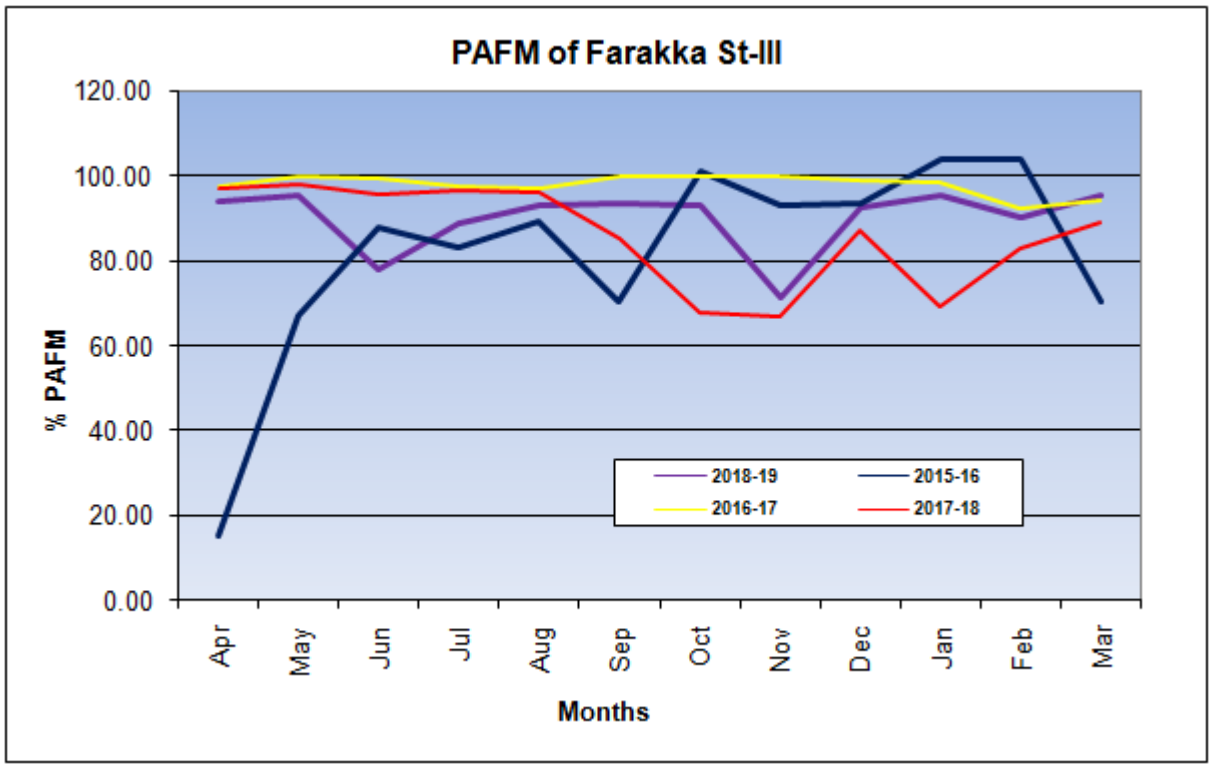
WR	SR	NR	NER	TOTAL
14311.46	-13782.82	-20491.45	-1684.97	-27796.32

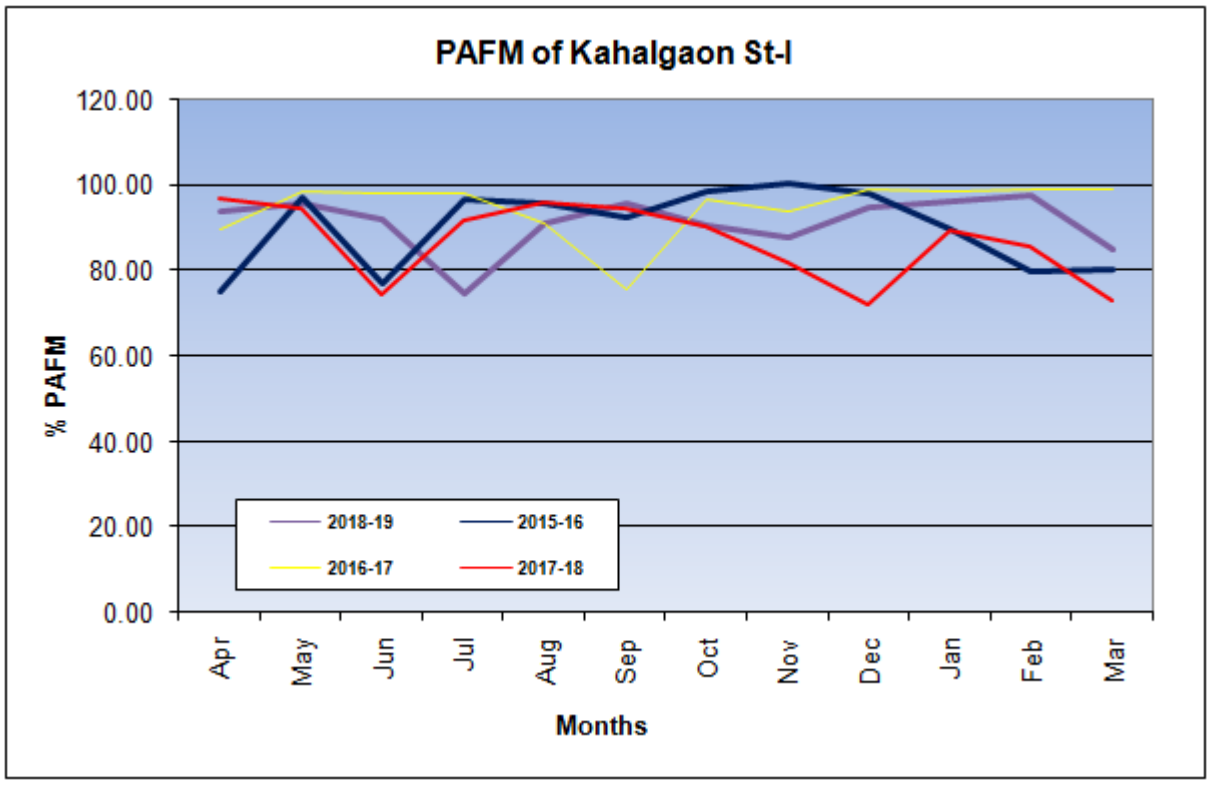


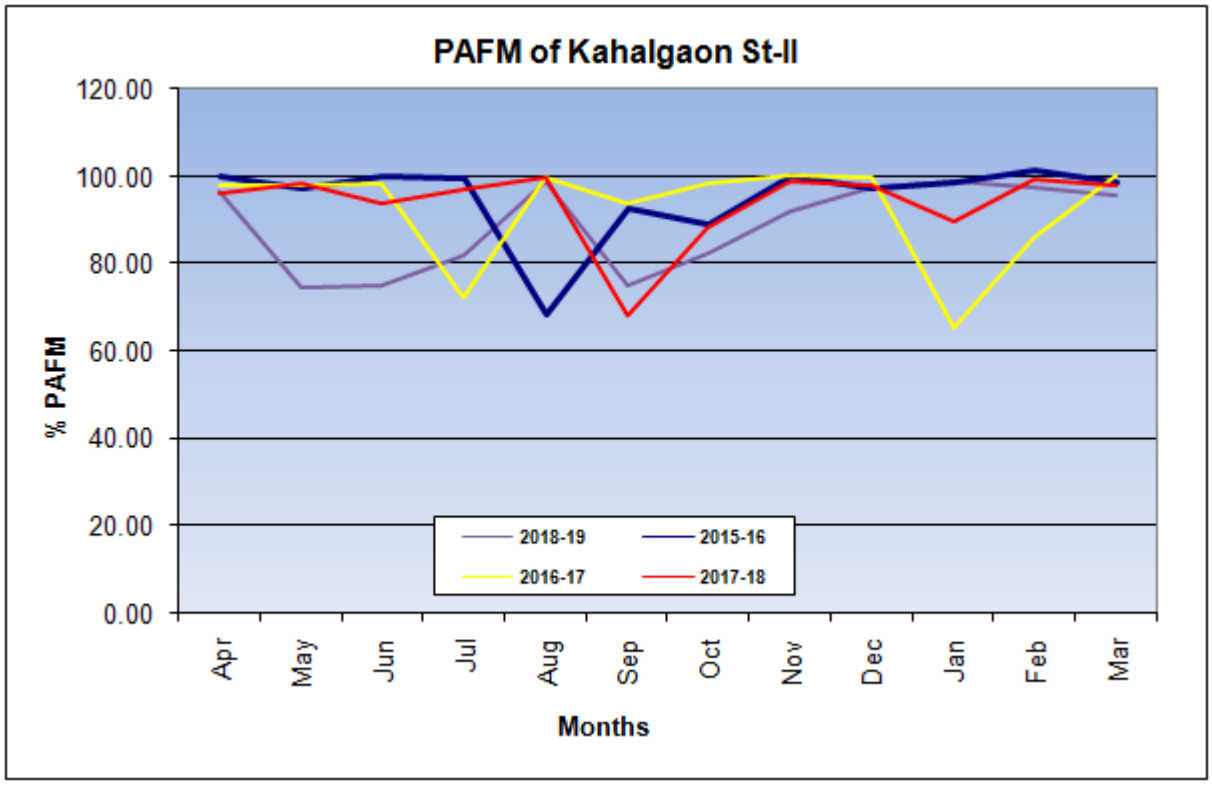
Performance of NTPC Thermal Generating Stations in ER:

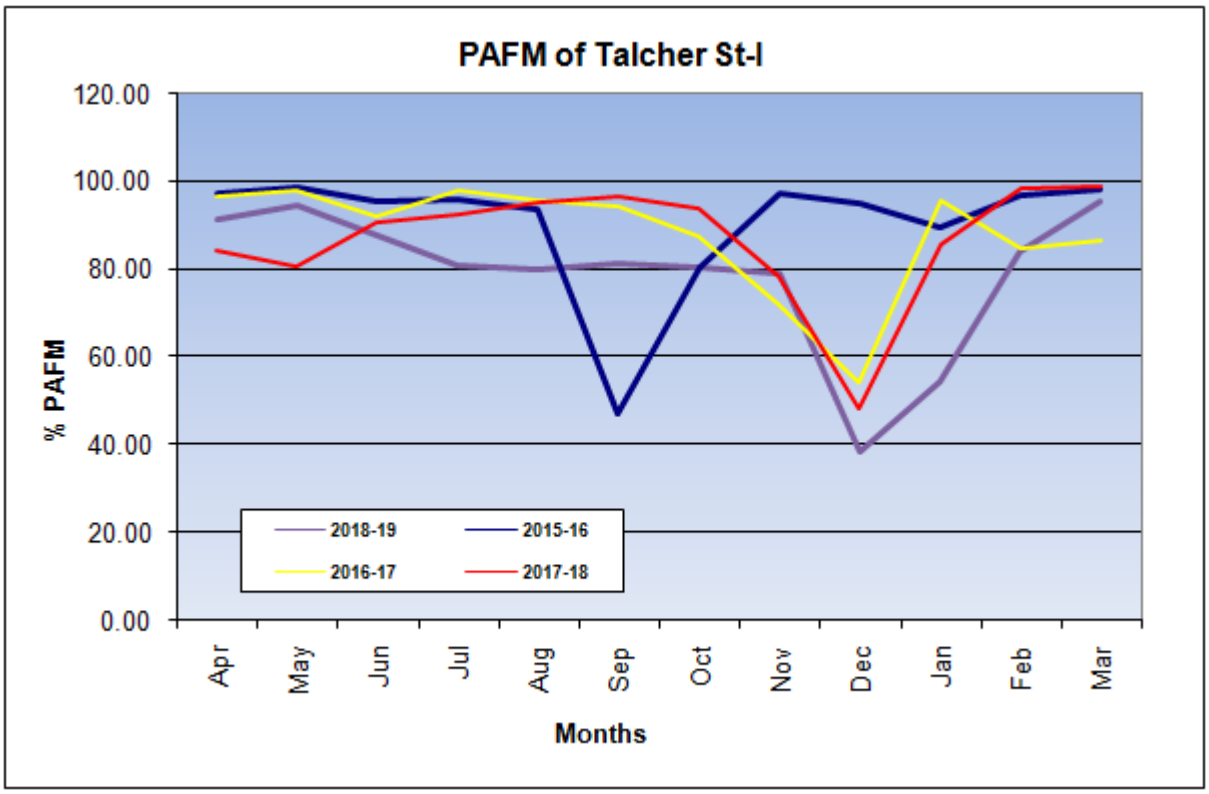
The month wise Plant Availability Factor (PAF) for years 2015-16, 2016-17, 2017-18 & 2018-19 for NTPC stations in Eastern Region is illustrated below:

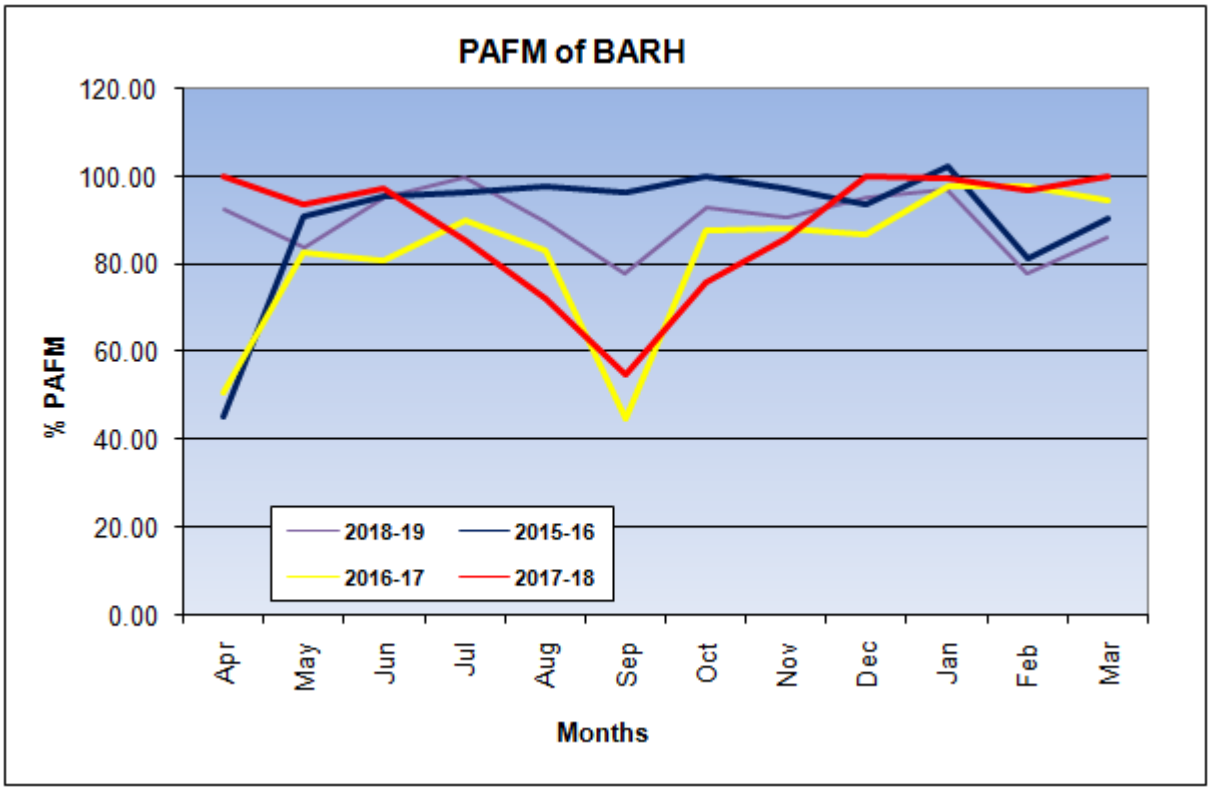





PAFM of Kahalgaon St-I
120.00
100.00
80.00
60.00
40.00
20.00
0.00
% PAFM
2018-19
2015-16
2016-17
2017-18
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Months


PAFM of Kahalgaon St-II
120.00
100.00
80.00
60.00
40.00
20.00
0.00
% PAFM
2018-19
2015-16
2016-17
2017-18
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Months


PAFM of Talcher St-I
120.00
100.00
80.00
60.00
40.00
20.00
0.00
% PAFM
2018-19
2015-16
2016-17
2017-18
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Months


PAFM of BARH
120.00
100.00
80.00
60.00
40.00
20.00
0.00
% PAFM
2018-19
2015-16
2016-17
2017-18
Apr
May
Jun
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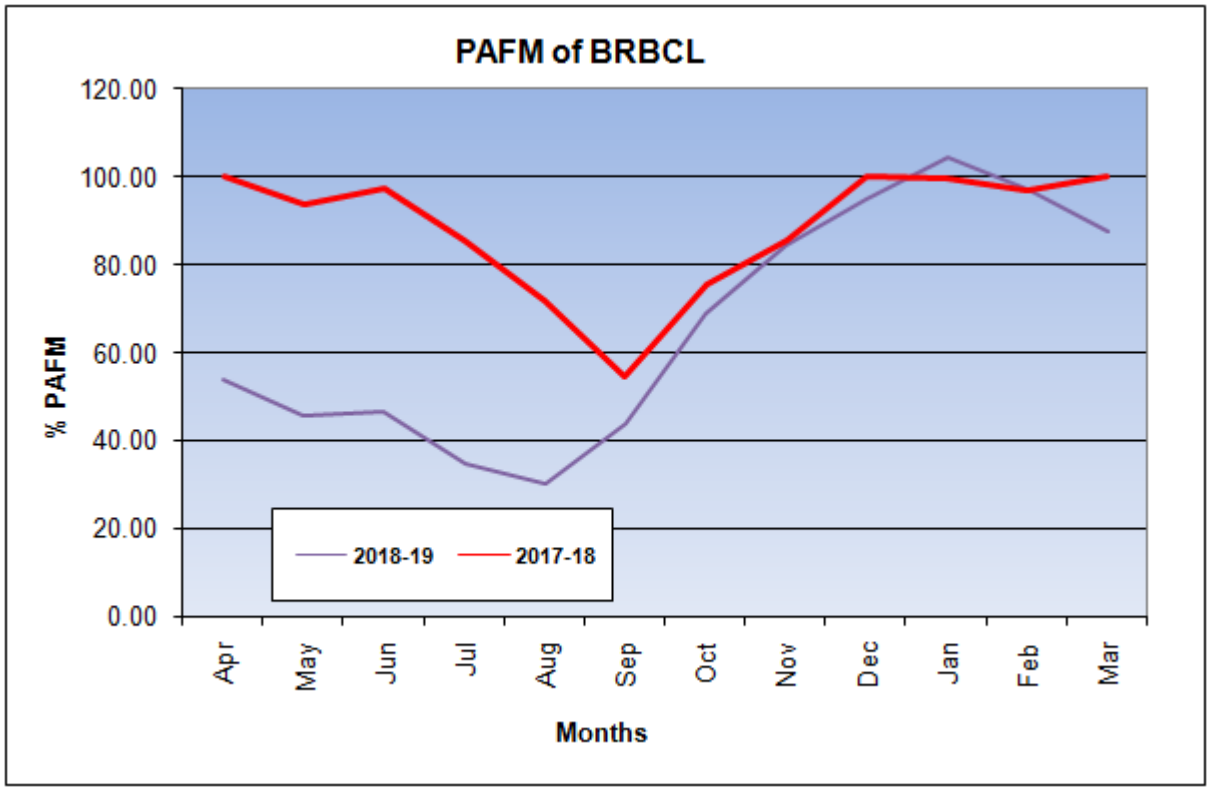
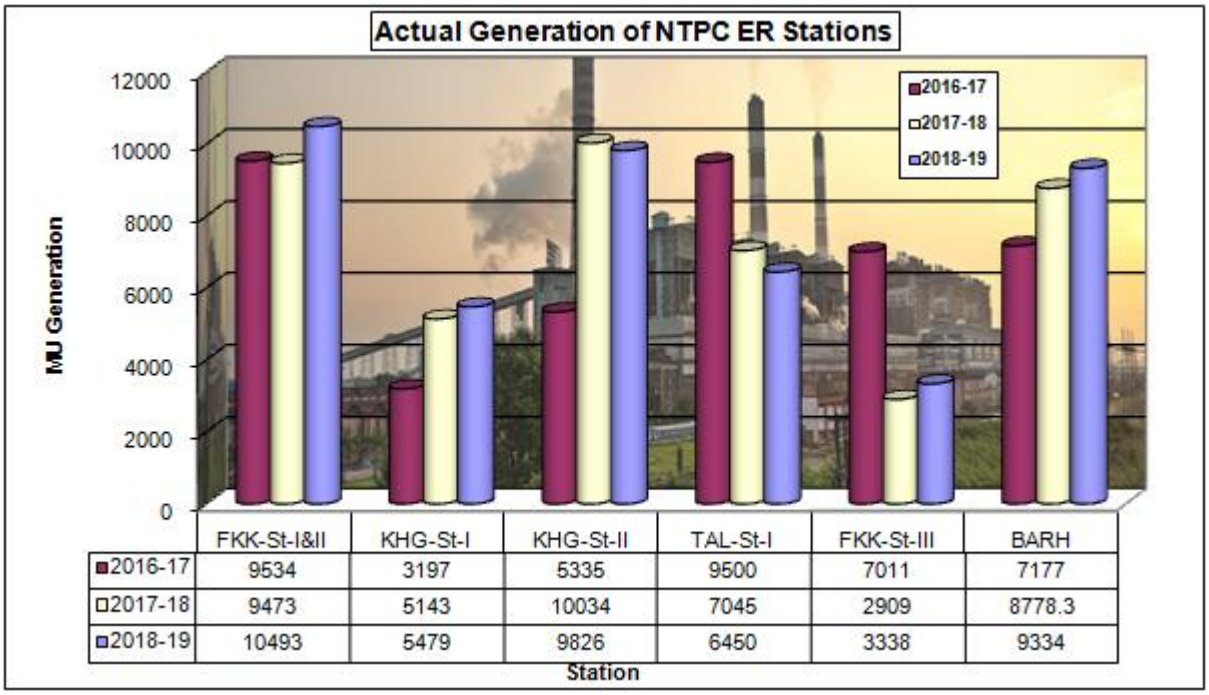
Dec
Jan
Feb
Mar
Months



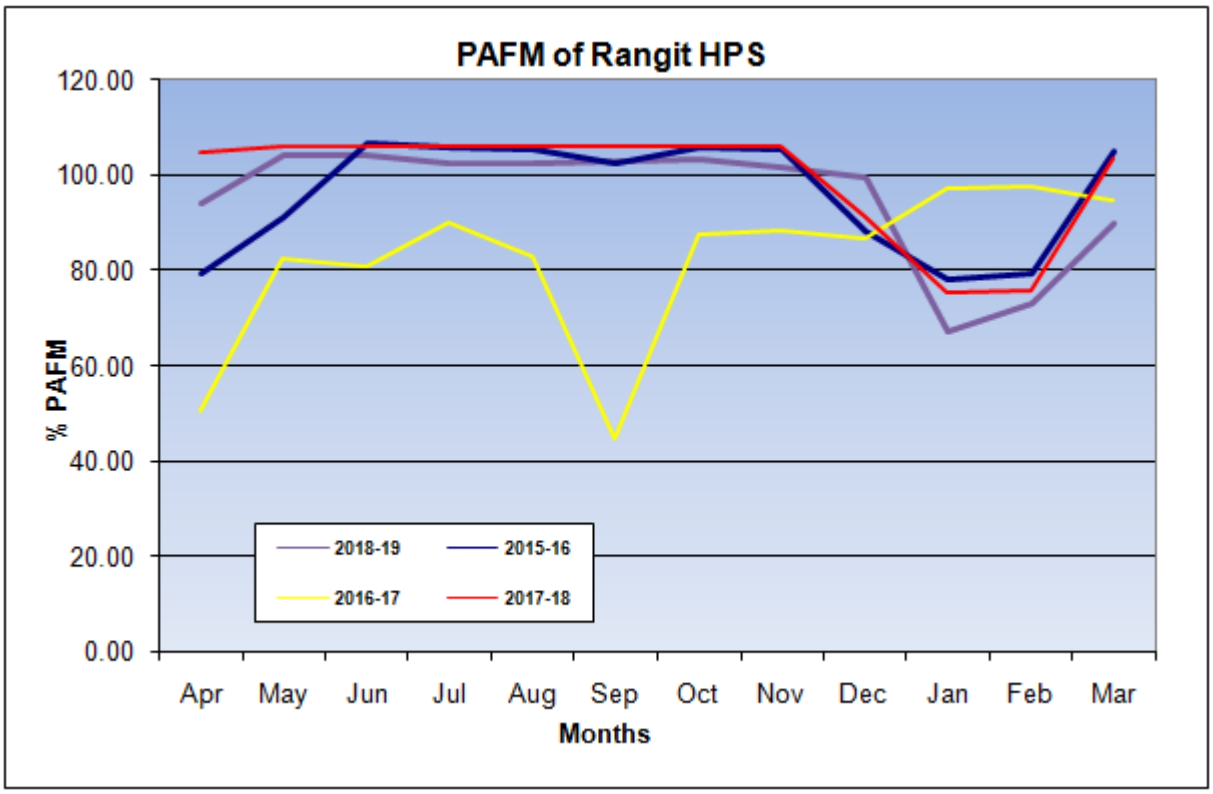
The year on year Actual Generation of NTPC ER Stations are as under:

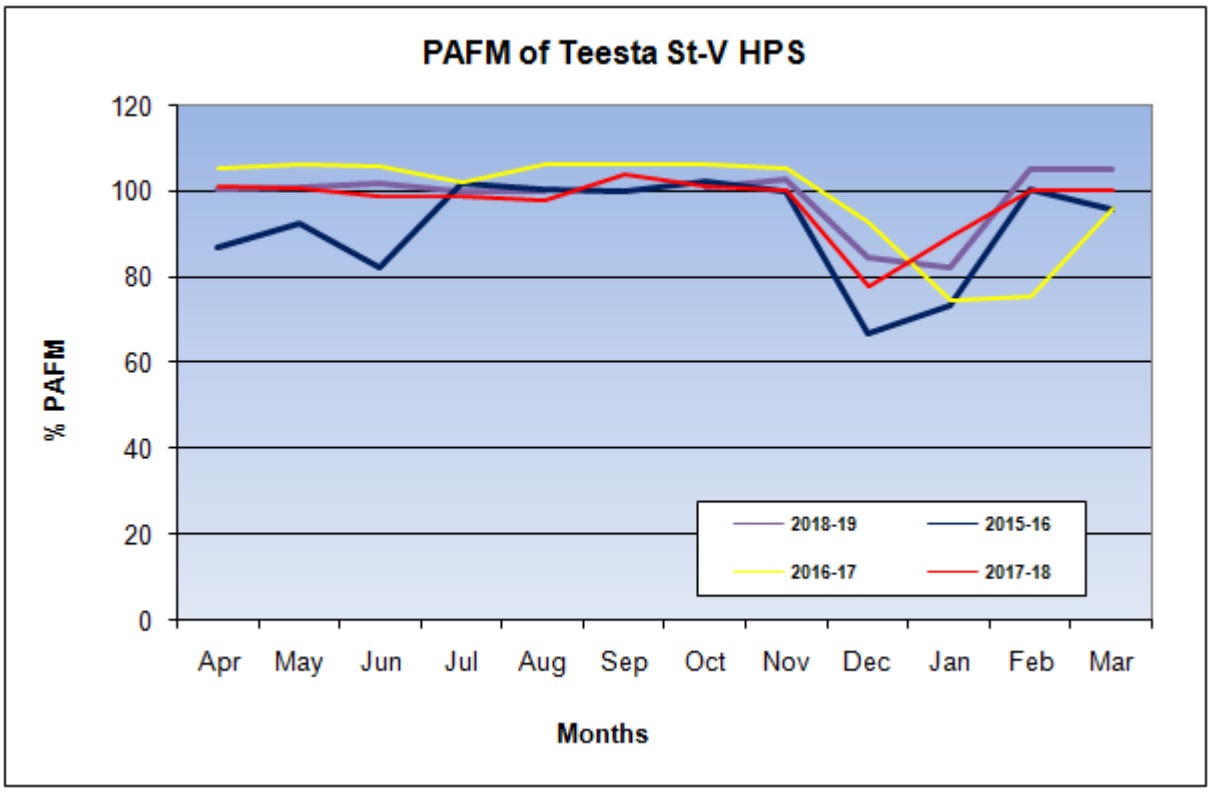


	FKK-St-I&II	KHG-St-I	KHG-St-II	TAL-St-I	FKK-St-III	BARH
2016-17	9534	3197	5335	9500	7011	7177
2017-18	9473	5143	10034	7045	2909	8778.3
2018-19	10493	5479	9826	6450	3338	9334

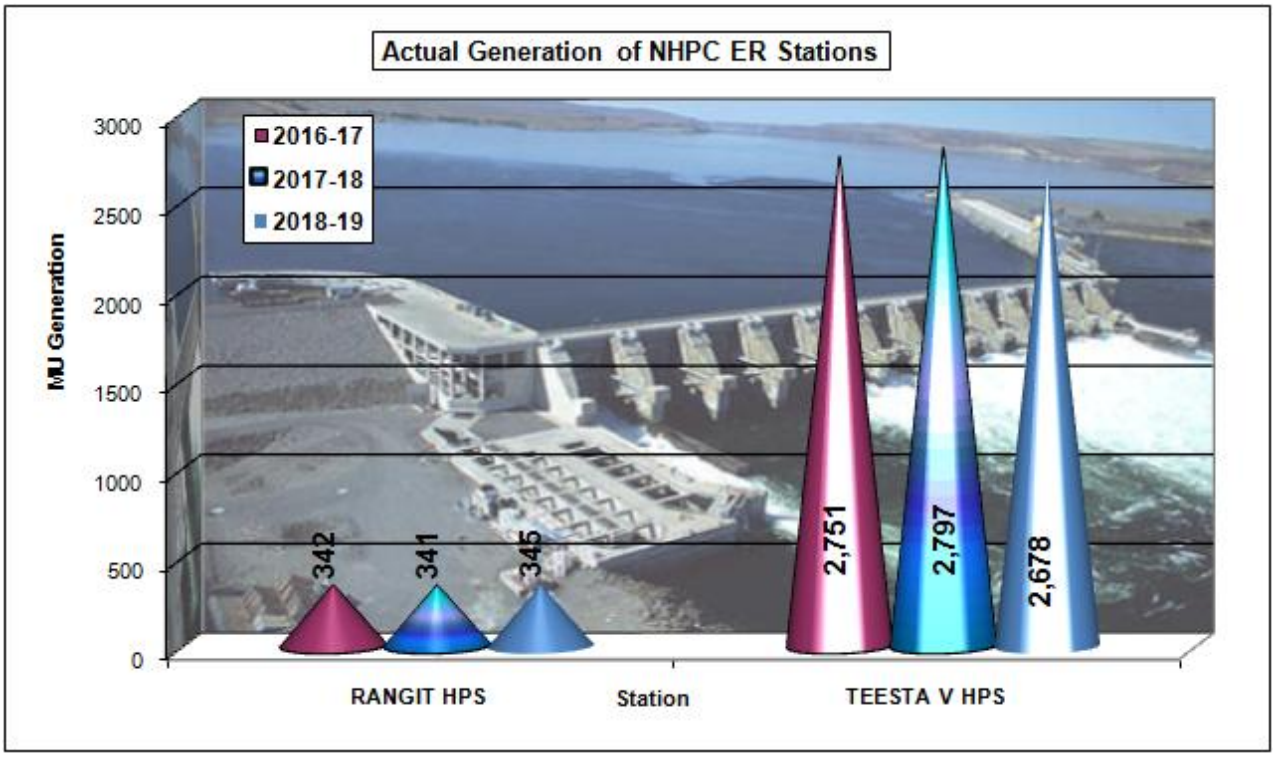
Performance of NHPC stations in ER:

The month wise Plant Availability Factor (PAF) for years 2015-16, 2016-17 ,2017-18 & 2018-19 for NHPC stations in Eastern Region is shown below:





The year on year Actual Generation of NHPC ER Hydro Stations are as under:



4.2 TRANSMISSION CHARGE

4.2.1 Regional Transmission Accounts:

From July, 2011 onwards the transmission charges of the beneficiaries is calculated based on CERC (Sharing of Inter State Transmission Charges & Losses), Regulations, 2010. This has brought a new paradigm change in the transmission sector of the country and attempts to make transmission charges sensitive to distance, direction and use.

The objective of the new regulations is to remove pan caking in transmission charges. The new methodology uses load flow studies and point of connection charging method so as to get one injection PoC charge rate and one drawl PoC charge rate for each 400 KV nodes considering the Indian Power system as a whole and does away with the Regional Postal Stamp method used earlier. The above rates are reviewed/revised and approved on quarterly basis by the central Commission and applicable rates as on 31.03.2019 is given at **Annexure - XIII**

The usage of lines by the nodes is calculated based on Hybrid method, which combines Marginal participation and Average Participation approaches. The electrically and physically proximate nodes are then combined to get one injection PoC rate and one drawl PoC rate for each state.

It is expected that the new system would provide signals for generators and bulk consumers and transmission licensees to create infrastructure in profitable locations.

Regional Transmission Accounts is being prepared by ERPC Secretariat based on the new methodology as per the data furnished by NLDC, which is also the Implementing Agency for these new regulations. The Regional Transmission Accounts is issued for the recovery of transmission charges corresponding to Long term open Access and Medium term open Access transactions.

4.2.2 Transmission Charges for Short Term transactions:

In case of bilateral and collective transactions, transmission charges for the energy approved for transmission separately for each point of injection and for each point of drawal, shall be payable in accordance with the provisions of Central Electricity Regulatory Commission (Sharing of Inter State Transmission Charges and Losses) Regulations, 2010 and as amended from time to time.

The intra-State entities shall pay the transmission charges for use of the State network as fixed by the respective State Commission in addition to the charges specified under clauses (1) of the above regulation. Where the State Commission has not determined the transmission charges, the charges for use of respective State network shall be payable at the rate of Rs.80/MWh for the energy approved.

4.3 COLLECTION & DISBURSEMENT OF SHORT TERM TRANSMISSION CHARGES:

The Transmission charges and the operating charges payable by the persons allowed short-term open access shall be indicated by nodal agency while approving the Open Access. The Transmission charges payable for Inter-State Transmission system and Transmission Charges for State network shall be indicated separately. The Transmission Charges and the Operating Charges shall be collected by the nodal agency except for transmission charges for State network in the case of collective transaction.

The transmission charges collected by the nodal agency for use of the transmission system other than State network, for a bilateral or collective transaction for each point of injection and each point of drawl shall be given to Central Transmission Utility (CTU) for disbursement. The CTU shall disburse these transmission charges to the long-term customers of the synchronously connected grid where the point of injection or point of drawal is situated, as the case may be, in proportion to the monthly transmission charges payable by them after making adjustments against Long-term Access to target region in accordance with the Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010 as amended from time to time. The transmission charges for use of State network shall be disbursed to the State Transmission Utility concerned.

4.4 OPEN ACCESS AND BILATERAL POWER TRANSACTION

4.4.1. Bilateral Trading 2018-19

Short term transactions are governed by "Central Electricity Regulatory Commission (Open Access in inter-State Transmission) Regulations, 2008" as amended from time to time for exchange of energy (MWh) between a specified buyer and a specified seller, directly or through a trading licensee or discovered at power exchange through anonymous bidding.

Trading of power in line with the CERC regulations on Short Term Open Access in transmission system started in Eastern Region with effect from 06.05.2004, and over the years the volume of bilateral trade has seen continuous increase. The number of traders and utilities indulging in bilateral trade and collective transactions through the IEX and PXI has also seen healthy growth. The indicative volume of trade in Eastern Region during 2018-19 by various traders is provided in Table below:

(All Figures in MWH)

TRADERS/LTOA/MTOA/STOA	EXPORT	IMPORT	TOTAL
BESCOM	2631625		2631625
BSES YM(DTL)_NR	121514		121514
BYPL	463388		463388
DDR_SOLAR	0	1284	1284
DELHI	2024303		2024303
DTL-NR	306487		306487
DVC	983779		983779
FARIDABAD_SOLAR	0	6830	6830
GMR	1885399		1885399
HARYANA	1255385		1255385
HIRAKUD HEP	15900		15900
JITPL	1107913		1107913
Kerala_Beneficiary	506797		506797
KSEB	2296450		2296450
NVVNL	483888	82872	566759
ODISHA	0	6216	6216
PSPCL	267245		267245
PTC	3972213	279172	4251385
PUNJAB	2806500		2806500
RAJ_SOLAR	0	153974	153974
SECI_Trader	0	123474	123474
TAL SOLAR	13794		13794
TISCO	1082033		1082033
TPDDL	1934664		1934664
Tuticorin_Mytrah		11293	11293

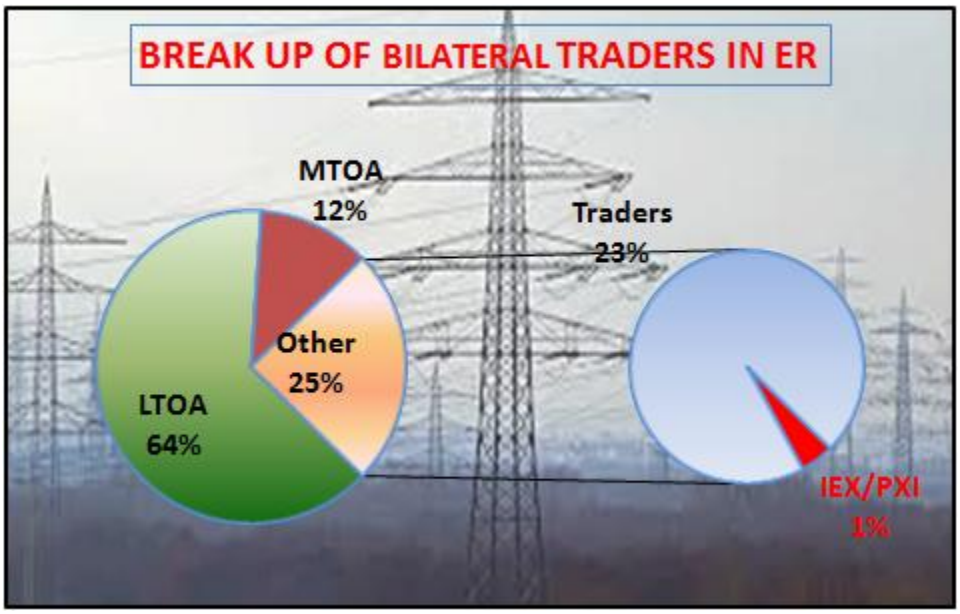
TRADERS/LTOA/MTOA/STOA	EXPORT	IMPORT	TOTAL
Tuticorin_Orange		4758	4758
UNCH_SOLAR		3051	3051
WEST_BENGAL	2187733		2187733
AARTI STEEL_NR	9387	0	9387
JITPL	1661482	0	1661482
PTC	0	684142	684142
AACK	2839	2400	5239
AEL_Trader	0	1638	1638
APPCPL_Trader	463158	594585	1057743
BANGLADESH		17564	17564
BRPL	4122	0	4122
CESC	0	3347	3347
CHUZACHEN	313009	0	313009
DVC	480	0	480
ECRD	1583	0	1583
ESIL_WR_Beneficiary	136662	0	136662
GMR	191648	89654	281301
IEXL_Trader	88558	368877	457434
IPCL_WB	0	19200	19200
ITC_Munger	0	1320	1320
ITCWIND	0	611	611
JBVNL	1345820	0	1345820
JITPL	894500	0	894500
JLHEP	336744	0	336744
JPL-Stg-I	1392	0	1392
KSEB	0	74000	74000
MANIKARAN	117144	72399	189543
MKPL	0	144165	144165
MPL	7761	125	7886
MPPL Trader	225826	485900	711727
NCR_IR_NR	1800	0	1800
NEPAL_ER	5452	13312	18763
NEPAL_NVVN	0	2906	2906
NHPC	0	27408	27408
NPCL(UP)	6518	0	6518
NR-UP	27406	0	27406
NVVNL	1918518	1284701	3203219

PXIL	92923	180923	273846
PTC	1673708	743561	2417269
SAIL-RSP	0	70079	70079
SEPL	69	0	69
SGPLNLR	0	256752	256752
TATAHALDIA	83639	0	83639
TRADERS/LTOA/MTOA/STOA	**EXPORT**	**IMPORT**	**TOTAL**
TATASTEEL	65593	0	65593
THEP	337994	0	337994
TISCO	1056	0	1056
TNEB	100	0	100
TPDDL	77622	0	77622
TPTCL_DHPPB	0	2880	2880
TPTCL_Trader	561015	265179	826194
TSL Joda	25205	0	25205
TSKPO	13510	0	13510
WBSEDCL	935760	0	935760

The bilateral transactions consist of long term, medium term and short term trades through traders, direct or via IEX/PXI. The participants in the short term market trade electricity to meet short term demand or surplus situation or peaks requirement. It is also helpful in evacuation of generators for which LTA have not yet operationalized due to various constraints.

While short term market helps in balancing the energy pool by making small adjustments, it suffers from lack of assured access in case of congestion and depleted network scenario.

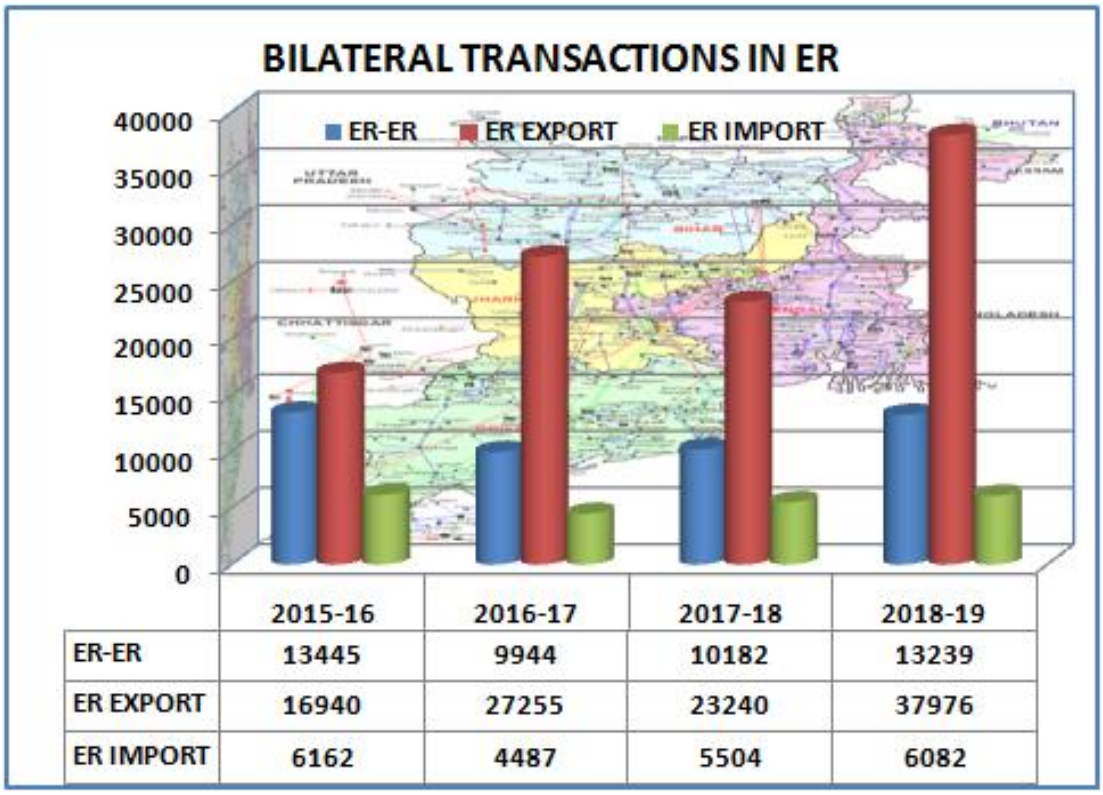
The breakup of bilateral trades in LTOA, MTOA, IEX/PXI, Direct and via Traders in Eastern Region is provided in the Pie-Chart as given below:



Figures in MU

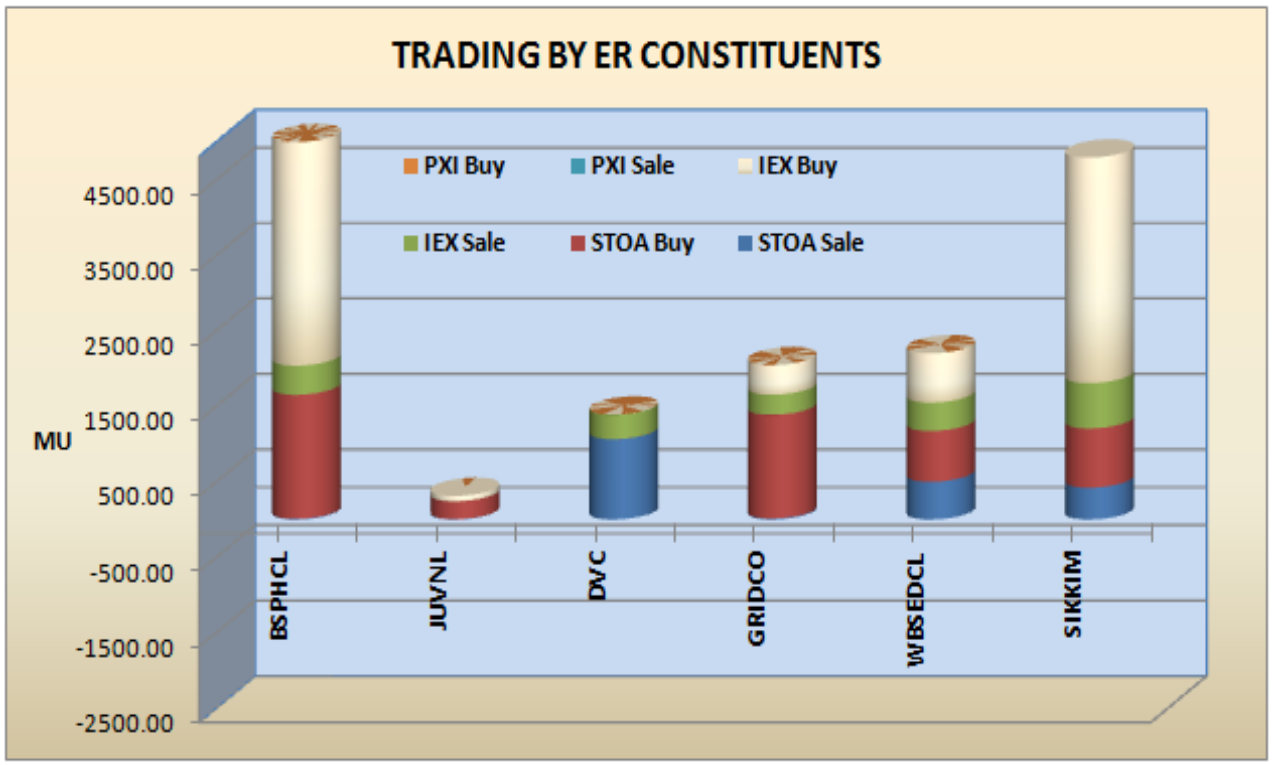
Long Term & Medium Term		Short Term Bilateral Transactions	
LTOA	MTOA	IEX/PXI	Traders
24832	4543	457	9094

During 2018-19, scheduled bilateral transaction of power through ER was to the tune of 38,927 MU. The breakup of year on year scheduled bilateral transactions has been indicated below for years 2014-15, 2015-16, 2016-17 & 2018-19:



	2015-16	2016-17	2017-18	2018-19
ER-ER	13445	9944	10182	13239
ER EXPORT	16940	27255	23240	37976
ER IMPORT	6162	4487	5504	6082

During the year substantial amount of transaction took place through IEX/PXI by means of anonymous bidding. Participation of ER states in short term bilateral and anonymous power transaction through exchange for 2018-19 was as follows:



4.4.2 International Trades for year 2018-19

4.4.2.1 Trading of Power with Bangladesh:

Based on MoU between the two countries, MoP, Govt. of India decided to allocate 250 MW power round the clock (in Stages) from coal based different NTPC stations in the country to Bangladesh. NTPC Vidyut Vyapar Nigam Ltd. (NVVN) as nodal agency has entered into a Power Purchase Agreement (PPA) with Bangladesh counterpart (BPDB) for cross border trading of power and to facilitate delivery of such power.

Accordingly, export of power from India (through 400 kV Behrampur (West Bengal) – Bheramara (Bangladesh) D/C line and 500 MW HVDC back-to-back at Bheramara) to Bangladesh through BPDB commenced from 05.10.2013. The 2nd 500MW Back-to-Back HVDC block was commissioned in June'2018. Thereafter the total, contracted export increased to around 1000 MW by 31.03.2019, comprising 250 MW GOI allocation from different NTPC stations, 300 MW Long Term Power from DVC through NNVN, 198 MW Short-Term Power from WBSEDCL through PTC and 246 MW Short-Term Power from SEMBCROP Energy India through NVVN. The energy exported (scheduled) to Bangladesh during 2018-19 was to the tune of 4808.11 MU from Eastern Region.

4.4.2.2 Trading of power with Bhutan:

Over and above the availability of power from NTPC and NHPC stations in ER, the region has imported power from Govt. of Bhutan through PTC as below:

POWER STATION	2015-16 (MU)	2016-17 (MU)	2017-18 (MU)	2018-19 (MU)
Chukha HPS (Receipt at Birpara)	1729.2	1805	1580.65	1348.07
Kurichhu HPS	101.3	368	347.31	285.57
Tala HPS	3319.1	3248	2702.48	2411.73
Daghachu	270.8	403	441.65	350.49

4.4.2.3 Trading of power with Nepal:

Power was traded to Nepal to the tune of 1340.43 MU. Power was traded through mainly NVVN Trader.

4.5 LONG TERM AND MEDIUM TERM ACCESS

Long term transactions are governed by "Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) Regulations, 2009" on 07.08.2009.

S. No.	Name of LTA Customer (Injecting utility)	Generator/ Load/ Trader	Region	Quantum of LTA granted	LTA with tied up beneficiaries	Name of the beneficiaries
1	BRPL (DVC Power)	Load	ER	31	31	BRPL
2	BYPL (DVC Power)	Load	ER	19	19	BYPL
3	DVC (DVC Durgapur U#2)	Generator	ER	100	100	PSPCL
4	DVC (DVC Koderma U#1)	Generator	ER	100	100	Haryana
5	DVC (DVC Mejia U#7)	Load	ER	12.5	12.5	DVC
6	DVC (DVC Mejia U#8)	Load	ER	12.5	12.5	DVC
7	DVC (MPL U#1)	Load	ER	140.5	140.5	DVC
8	NDPL (DVC Power)	Load	ER	20	20	NDPL
9	WBSEDCL (MPL U #1&2)	Load	ER	141.375	141.375	WBSEDCL
10	WBSEDCL (MPL U#1&2)	Load	ER	141.375	141.375	WBSEDCL
11	Adhunik Power & Natural Resources Ltd	Generator	ER	100	100	WBSEDCL
12	Tata Steel Ltd (DVC, Mejia B)	Load	ER	100	100	Tata Steel
13	Tata Steel Ltd (DVC, DSTPS)	Load	ER	100	100	Tata Steel
14	Ind-Barath Energy (Utkal) Ltd, Odisha	Generator	ER	500	500	TANGEDCO, TN
15	KSEB (Maithon Power Ltd-RBTPP)	Load	ER	141.375	141.375	KSEB
16	BESCOM, Karnataka (Mejia 7&8, DVC)	Load	ER	200	200	BESCOM, Kar
17	Adhunik Power & Natural Resources Ltd	Generator	ER	100	100	TANGEDCO, TN
18	DVC, Raghunathpur (Unit-1 & 2)	Generator	ER	100	100	Haryana (U1-50MW & U2-50MW)
19	GMR Kamalanga Energy Ltd	Generator	ER	387	312	Haryana (312 MW)
20	DVC, Raghunathpur (Unit-1 & 2)	Generator	ER	300	300	Punjab (U1-150 MW & U2-150 MW)

S. No.	Name of LTA Customer (Injecting utility)	Generator/ Load/ Trader	Region	Quantum of LTA granted	LTA with tied up beneficiaries	Name of the beneficiaries
21	KSEB (Maithon Power Ltd-RBTPP)	Load	ER	141.375	141.375	KSEB
22	GMR Kamalanga Energy Ltd	Generator	ER	260	260	Bihar (260 MW)
23	Bhartiya Rail Bijlee Company Limited(BRBCL)	Generator	ER	919	919	ECR (Bihar-50 MW, Jharkhand-70,West Bengal-95 MW, DVC- 75 MW,Chattisgarh-95 MW, Gujarat-25 MW, Maharashtra-120 MW, MP-154 MW, UP-135 MW) & BSP(H)CL, Bihar (100 MW)
24	Jndal India Thermal Power Ltd (JITPL), Odisha (2x600MW)	Generator	ER	95	95	KSEB Ltd, Kerala
25	WBSEDCL, West Bengal (1000MW State Surplus)	DIC	ER	1000	0	**NA**
26	PSPCL (Bokaro TPS, DVC Power)	Load	ER	200	200	**PSPCL**
27	Kanti Bijlee Utpadan Nigam Ltd.	Generator	ER	121.59	121.59	As per the MoP allocation to be decided by respective RPC
28	PTC (Teesta-III HEP)	Trader	ER	174	174	UP
29	PTC (Teesta-III HEP)	Trader	ER	87	87	RAJASTHAN
30	Jndal India Thermal Power Ltd (JITPL), Odisha (2x600MW)	Generator	ER	228	228	Bihar Discoms
31	NVVNL (injection is from DVC, West Bengal)	Trader	ER	300	300	NVVNL, BPDB
32	Gati Infrastructure Limited,Chuzachen HEP (2x55MW)	Generator	ER	99		
33	Dans Energy Private Limited,Jorethang HEP (2x48MW)	Generator	ER	96		
34	Shiga Energy Private Limite, Tashiding HEP (2x48.5MW)	Generator	ER	97		

Note : ***1. The above information is based on LTA intimation/Letter issued by CTU to different applicants. For billing purpose, the same may be verified by RLDCs/RPCs/NLDC and addition / deletion of LTA/MTOA to the above,***
2. The above does not include the MOP allocation. As per Regulations, ISTS Transmission charges are not applicable for Solar Projects, therefore LTA/MTOA for Solar Projects is not included.

4.6 COMMERCIAL DECLARATION OF NEW GENERATING STATIONS IN ER

The following new generating stations in ER were declared under commercial operation during the year 2018-19.

State	Agency	Name of Power Station	Type	Unit No	Capacity (MW)	Date of COD
BIHAR	NTPC & RAILWAY	BRBCL	THERMAL	U # 3	250	26.02.2019

4.7 SOLAR POWER GENERATION IN THE REGION

The renewable sources of electricity have zero marginal cost and are must run in nature. The development of Solar Power generation in India has been initiated for quite some time. The development of solar power generation process confronts several barriers like financial, investment, technology, institutional and other incidental factors. To overcome these barriers substantial support is required for development of solar power generation. Foremost among them is the relatively high cost of solar generation. Several options were explored to give incentive to the cost of solar power and the option of "bundling" solar power with the power out of the cheaper unallocated quota of Central Coal based Stations and selling this bundled power to state distribution utilities at the CERC regulated price was decided.

In order to facilitate grid connected solar power generation in the first phase, the Mission provides for NTPC Vidyut Vyapar Nigam (NVVN) to be the designated Nodal Agency for procuring the solar power by entering into a Power Purchase Agreement (PPA) with Solar Power Generation Project Developers who will be setting up Solar Projects during the next three years, i.e. Before March 2013 and are connected to a grid at a voltage level of 33 kV and above. For each MW of installed capacity of solar power for which a PPA is signed by NVVN, the Ministry of Power (MoP) shall allocate to NVVN an equivalent amount of MW capacity from the unallocated quota of NTPC coal based stations and NVVN will supply this "bundled" power to the Distribution Utilities.

Solar power bundling implemented in ER at present:

1) Ministry of Power (GoI) has allocated 5 MW of power to Odisha from the un-allocated power of coal based NTPC power stations in Eastern Region for bundling with the power from 5 MW solar PV power project of M/s Aftaab Solar in Odisha [under JNNSM scheme (Phase-I)]. The same has been made effective from 01.05.2012 in the Regional Energy Accounts (REA) of ER.

2) Ministry of Power (GoI) has allocated 5 MW of power to GRIDCO from the un-allocated power of coal based NTPC power stations in Eastern Region for pooling with the power from 5 MW Dadri solar power project of NTPC. The same has been made effective in the Regional Energy Accounts (REA) of ER with effect from 00:00 hrs. of 30.03.2013.

3) Ministry of Power (GoI) has allocated un-allocated power of NTPC stations in ER for bundling with 65 MW of solar power from Rajasthan with effect from 00:00 hrs. of 16.08.2013 in favour of Gridco : 10 MW; West Bengal : 35 MW; DVC : 15 MW; and Assam : 5.

4) Ministry of Power (GoI) has allocated 5 MW of power to DVC from the un-allocated power ofcoal based NTPC power stations in Eastern Region for bundling with the power from 5 MW Talcher solar power project of NTPC. The same has been made effective in the Regional Energy Accounts (REA) of ER with effect from 00:00 hrs. of 28.03.2014.

5) Ministry of Power (GoI) has allocated 10 MW of power to DVC from the un-allocated power of coal based NTPC power stations in Eastern Region for bundling with the power

from Unchahar solar power project of NTPC. The same has been made effective in the Regional Energy Accounts (REA) of ER with effect from 00:00 hrs. of 31.03.2014.

6) Ministry of Power (GoI) has allocated 5 MW of power to Gridco from the un-allocated power of coal based NTPC power stations in Eastern Region for bundling with the power from Faridabad solar power project of NTPC. The same has been made effective in the Regional Energy Accounts (REA) of ER with effect from 00:00 hrs. of 31.03.2014.

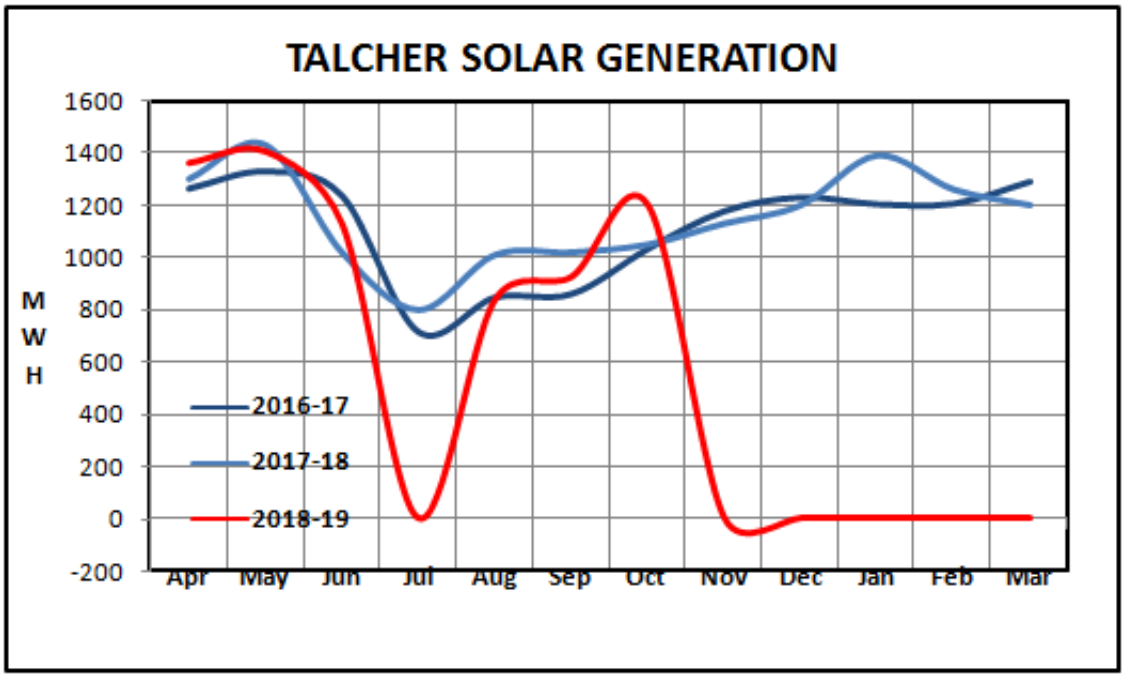
7) 25 MW of Solar Power from Rajasthan (M/s Sun Technique Solar Pvt. Ltd.) under the scheme of JNNSM Phase – I was allocated to West Bengal-15 MW, Odisha-5 MW, DVC-5 MW which which have been implemented w.e.f. 00:00 Hrs. of 05.12.2014.

8) Subsequently, DVC has surrendered its share of 40 MW of coal power from ER NTPC stations and 1.09 MW from MTPS Stg-II, KBUNL w.e.f. 01.12.2017; the same has been allocated to Telengana for bundling with 100 MW of solar power under National Solar Mission Phase-II Batch-II Tranche-I.

9) Ministry of Power (GoI) has allocated 50 MW (41.09 MW surrendered power of DVC and 8.91 MW from Barh STPS) to Telangana for bundling with 100 MW of solar power under National Solar Mission Phase-II Batch-II Tranche-I w.e.f. 00:00 Hrs of 01.12.2017.

10) Total generation from Talcher Solar Station of NTPC for 2018-19 is 13810 MWh.

The variation in Generation of Talcher Solar Station for last three years is as given below:



4.8 FUNDS TRANSFERRED TO POWER SYSTEM DEVELOPMENT FUND FROM EASTERN REGION

The Power System Development Fund (PSDF) Regulations were notified by CERC on 04.06.2010. As per this regulation the following funds are transferred to the PSDF:

1. Congestion charges standing to the credit of the "Congestion Charge Account" after release of amounts payable to Regional Entities entitled to receive congestion charge along with interest, if any, in accordance with the Central Electricity Regulatory Commission (Measures to relieve congestion in real time operation) Regulations, 2009 as amended from time to time;
2. Congestion amount arising from the difference in the market prices of different regions as a consequence of market splitting in power exchanges in accordance with Central Electricity Regulatory Commission (Power Market) Regulations, 2010.

3. Unscheduled Interchange charges standing to the credit of the "Unscheduled Interchange Pool Account Fund" after final settlement of claims of Unscheduled Interchange Charges in accordance with the Central Electricity Regulatory Commission (Unscheduled Interchange Charges and related matters) Regulations, 2009 as amended from time to time;

4. RLDC reactive energy charges standing to the credit of Reactive Energy Charges Account;

5. Such other charges as may be notified by the Commission from time to time during the financial **year 2018-19, amount of ₹ 27.86 Cr**. has been transferred to PSDF from Eastern Region.

4.9 ANCILLARY SERVICES

Power systems require ancillary services to maintain reliability and support their primary function of delivering energy to customers. Ancillary services are principally real-power generator control capacity services the system operator uses over various time frames to maintain the required instantaneous and continuous balance between aggregate generations and load. Ancillary Services consist of services required for:

a) Maintaining load – generation balance (frequency control)
b) Maintaining voltage and reactive power support
c) Maintaining generation and transmission reserves

Renewable energy generation is variable in nature (diurnal & seasonal) and implementation of ancillary services would facilitate integration of renewable energy generation in the country. Ancillary services will certainly help in controlling the variability of renewable generation.

4.9.1 Primary Control

Continuous load changes result in mismatch of generation and load leading to variation in frequency of interconnected power system. Governors free to operate would enable smooth

control of frequency fluctuations as well as security against grid disturbances. Time frame for primary governor control action is about a few seconds i.e. 2- 5 seconds.

4.9.2 Secondary Control

If the load generation imbalance caused by an outage of large generator or load causing sudden variation in frequency of interconnected power system, primary response through governor action described above would help arrest the change fall in frequency. However, the frequency has to be brought back to 50 Hz through corrective action taken by the Control Area within which the generation or load is affected. Supplementary corrective action or secondary control has to be taken to bring frequency back to 50 Hz. For large interconnection system this automatic secondary control is known as Automatic Generation Control (AGC). Time line of secondary control action is a few minutes.

4.9.3 Tertiary Control

Loss of large generator (or load) may cause a large enough system excursion that cannot be handled by regulatory reserve alone. The above secondary control reserves also needs to be restored through tertiary reserves. Tertiary reserve provides significant insurance against wide spread outages.

The ancillary services are a potent tool in the hands of the system operator. The Central Commission is actively considering bringing in regulation to implement full fledged ancillary services in the country.

4.10 DEVIATION SETTLEMENT MECHANISM (DSM)

4.10.1 Introduction

In ABT tariff system apart from Capacity (Fixed) charges and Energy charges the third important component is Deviation charges .It is the payment for deviations from schedule at a rate dependent on system conditions (Frequency) at that time. The deviation from schedule is technically termed as Unscheduled Interchange (UI) in ABT terminology. CERC vide its notification no No.L-1/132/2013/CERC dated 06.01.14 directed for implementation of Deviation Settlement Mechanism w.e.f 17.02.2014 in place of UI regulations. With the implementation of this regulation, the UI regulation stood repealed.

For a generator, Deviation is the difference between Actual generation (ex-bus) and Schedule generation (ex-bus), whereas for a beneficiary, it is equal to Actual drawl (periphery) and Schedule drawl (periphery). Deviation charge is obtained by multiplying the Deviation with deviation rate. Deviation rate is a frequency dependent energy rate notified by Central Electricity Regulatory Commission. A constituent may receive/pay Deviation charge depending on whether it has assisted/undermined the grid frequency.

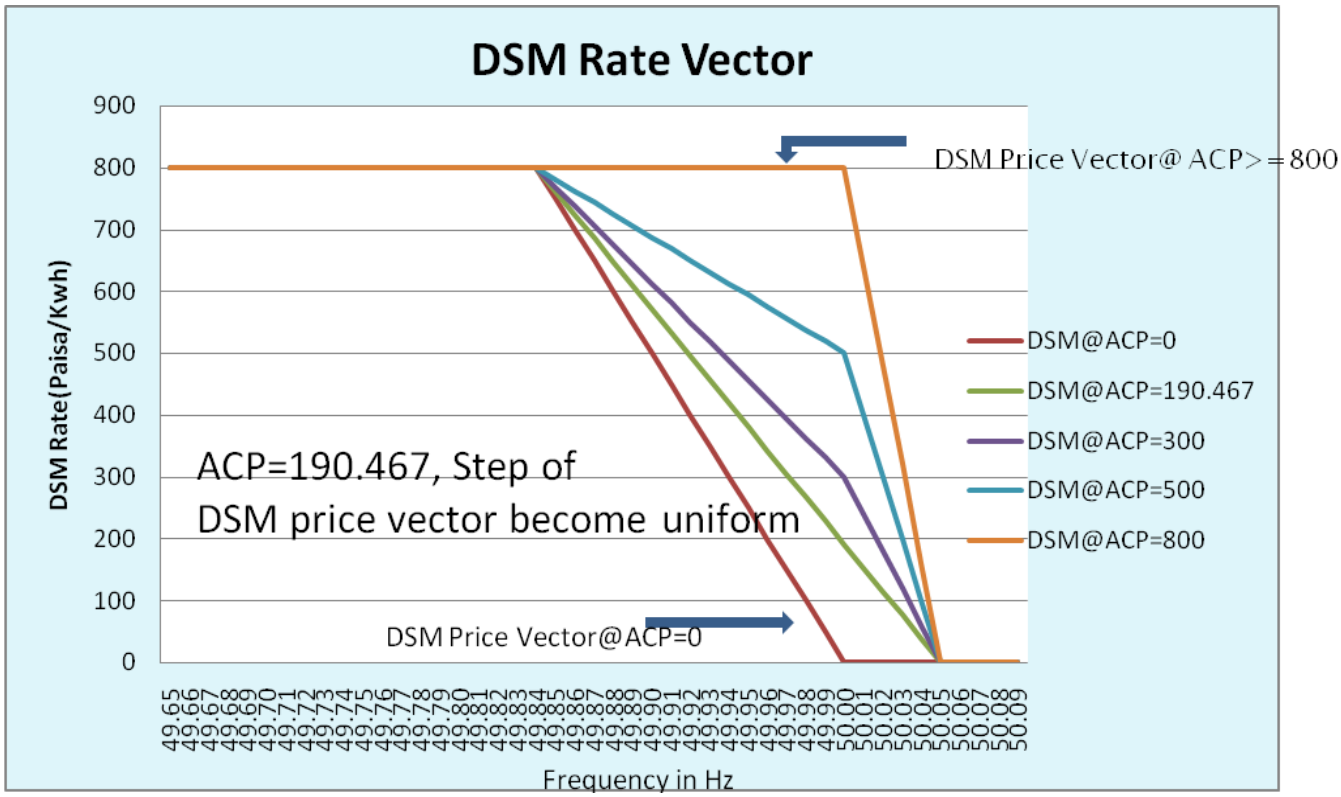
It acts like a financial barometer, which measures a licensee's responsiveness towards healthiness of the regional grid. The DSM mechanism has established a real time balancing market that is workably competitive and provides a powerful force for efficiency and innovation.

4.10.2 Rates for Deviation Charge with effect from 01.01.2019 are as under:-

The Deviation rate is a frequency-actuated signal available at any wall socket. Every utility reacts to this signal in real time and adjusts its generation/ demand and a new equilibrium is achieved. The Deviation curve by virtue of its design empowers every utility that has some means to regulate supply/demand to readjust its interchange with the grid and gain from the migration of frequency/UI rate from the earlier level. The decreasing marginal returns with every additional unit of deviation from the scheduled interchange acts as a counterweight, which forces the utility to seriously weigh the consequences of its actions.

Average freq of the time block (Hz)		Charges for Deviation
Below	Not below	Paise/kWh
	50.05	0.00
50.05	50.04	1x(P/5)
50.04	50.03	2x(P/5)
------	------	------
50.01	50.00	P
50.00	49.99	50.00+15x(P/16)
49.99	49.98	100.00+14x(P/16)
------	-----	------
49.87	49.86	700.00+2x(P/16)
49.86	49.85	750.00+1x(P/16)
49.85		800.00

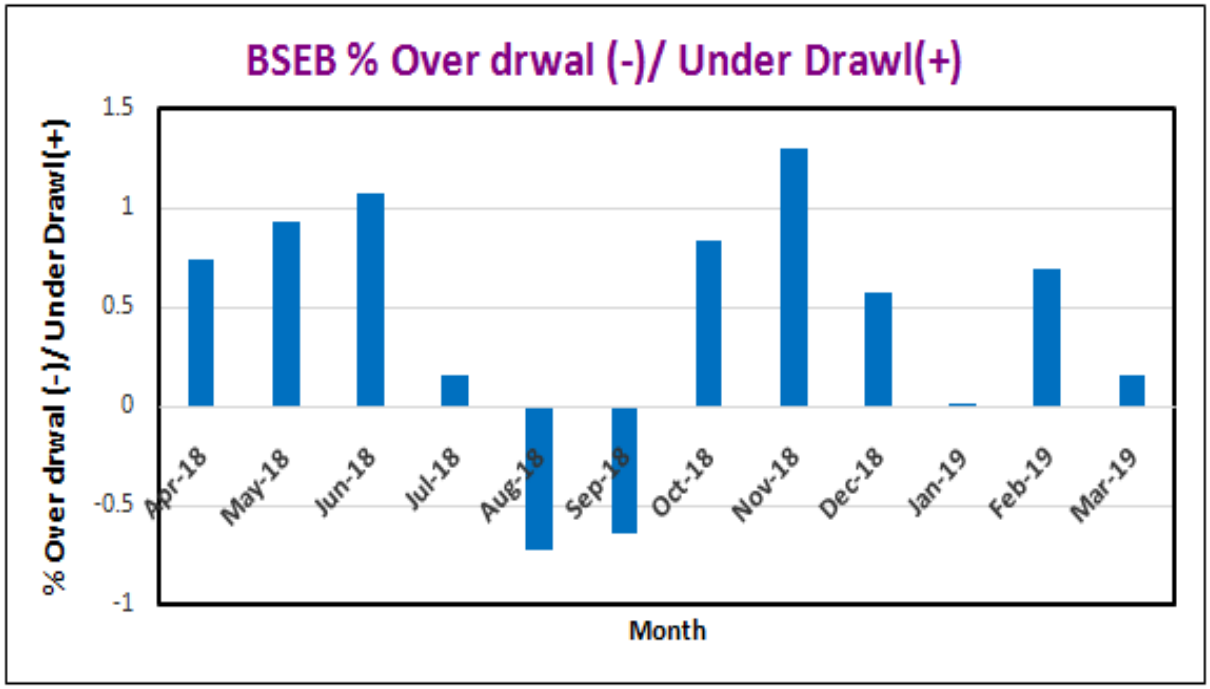
P= Average Area Clearing Price

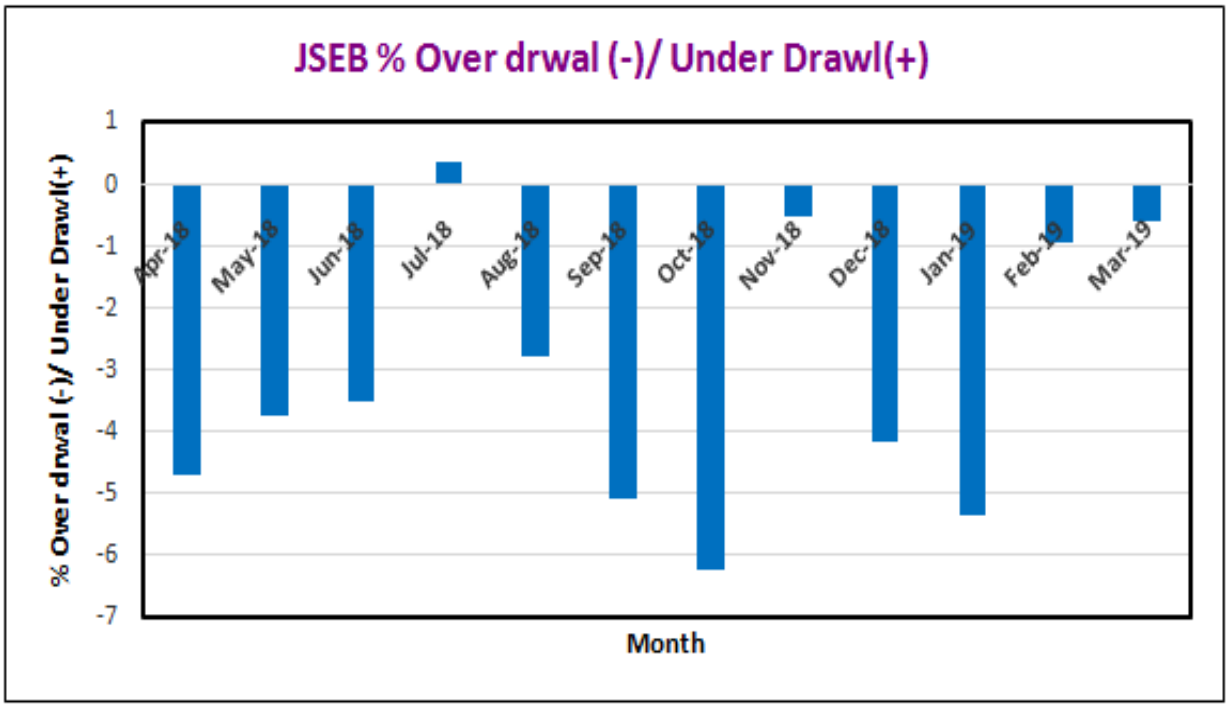


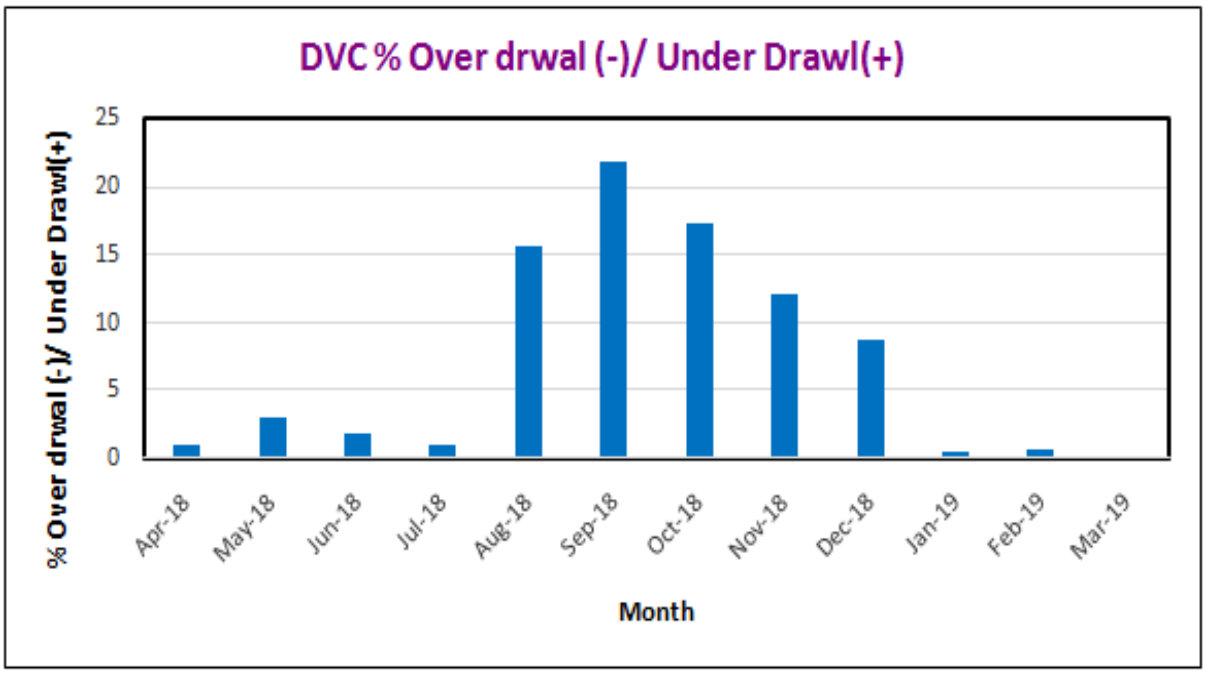
- As per DSM 4th Amendment w.e.f 01.01.2019, Charges for deviation below 49.85 Hz is fixed at 800p/u, for freq 50.05 Hz and above charges for deviation is 0 p/u.
- Charges for deviation at 50.00 Hz will be Daily Average Area Clearing Price (ACP) discovered at DAM (Max ceiling being 800 p/u).
- The Day-ahead market price of the Power Exchange having a market share of 80% or more in energy terms on a daily basis shall be taken into consideration for linking to the DSM price vector.
- If no single Power Exchange is having a market share of 80% or more, the weighted average day-ahead price of power Exchange of having market share of 20% & more shall be used for linking to the DSM price vector.
- DSM rate vector will have a dynamic slope determined by joining the identified price points at 50 Hz(daily avg. ACP),frequency below 49.85 (800p/u) and 50.05 Hz (0p/u) on daily basis.

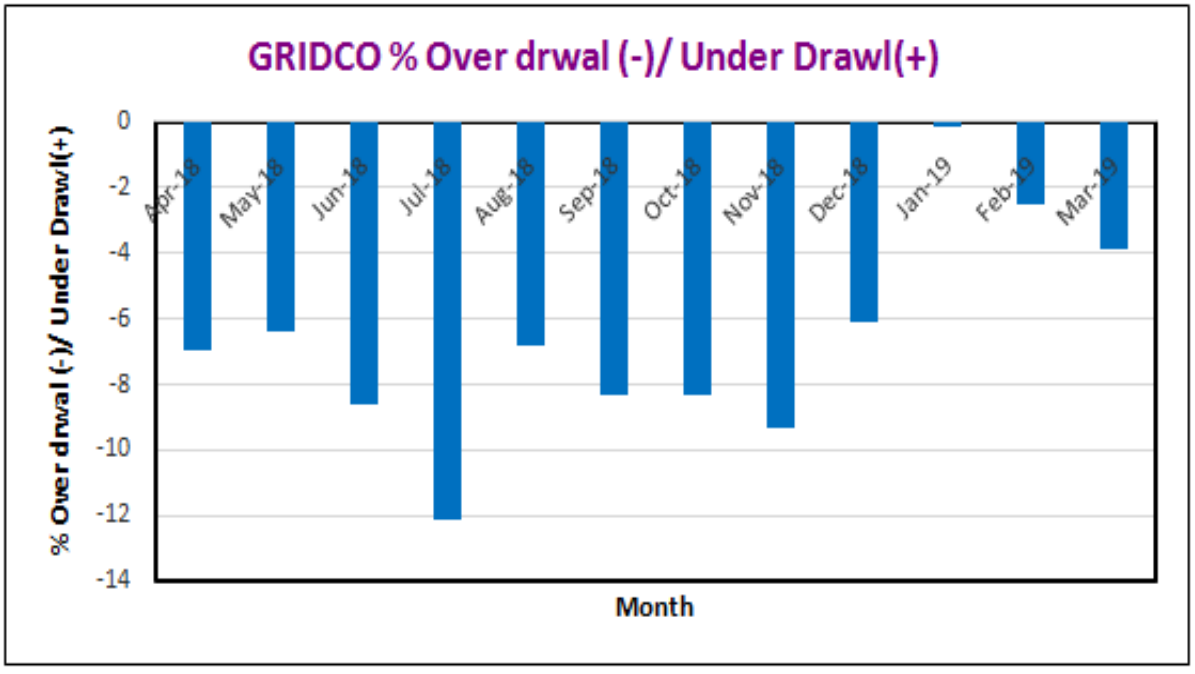
4.10.3 Performance of the constituents:

During the financial year 2018-19, the net Deviation Amount payable by Eastern Region to other regions is **₹ 695.98 Crores**. North Eastern Region, Northern Region and Southern Region have total payable Deviation Charge amount of **₹ 197.186 Crores**, **₹ 650.079 Crores** and **₹ 1370.265** Crores to Eastern Region respectively and Western Region has received Deviation Charge amount **₹ 2913.514 Crores** from Eastern Region. Among the constituents of Eastern Region, maximum UI/Deviation Charge has been received by TEESTA III amounting to **₹ 21.385 Crores** and maximum UI/Deviation Charge has been paid by GRIDCO i.e., **₹.191.647 Crores**. Details of Schedule Drawal/Generation, Actual Drawal/Generation, Receivable/Payable of UI/Deviation Charge amount month-wise and year-wise are furnished in **Annexure XIV-A, B**. Graphical representation is given below for ready reference.


BSEB % Over drwal (-)/ Under Drawl(+)
% Over drwal (-)/ Under Drawl(+)
1.5
1
0.5
0
-0.5
-1
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Month


JSEB % Over drwal (-)/ Under Drawl(+)
% Over drwal (-)/ Under Drawl(+)
1
0
-1
-2
-3
-4
-5
-6
-7
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Month


DVC % Over drwal (-)/ Under Drawl(+)
% Over drwal (-)/ Under Drawl(+)
25
20
15
10
5
0
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Month


GRIDCO % Over drwal (-)/ Under Drawl(+)
% Over drwal (-)/ Under Drawl(+)
0
-2
-4
-6
-8
-10
-12
-14
Apr-18
May-18
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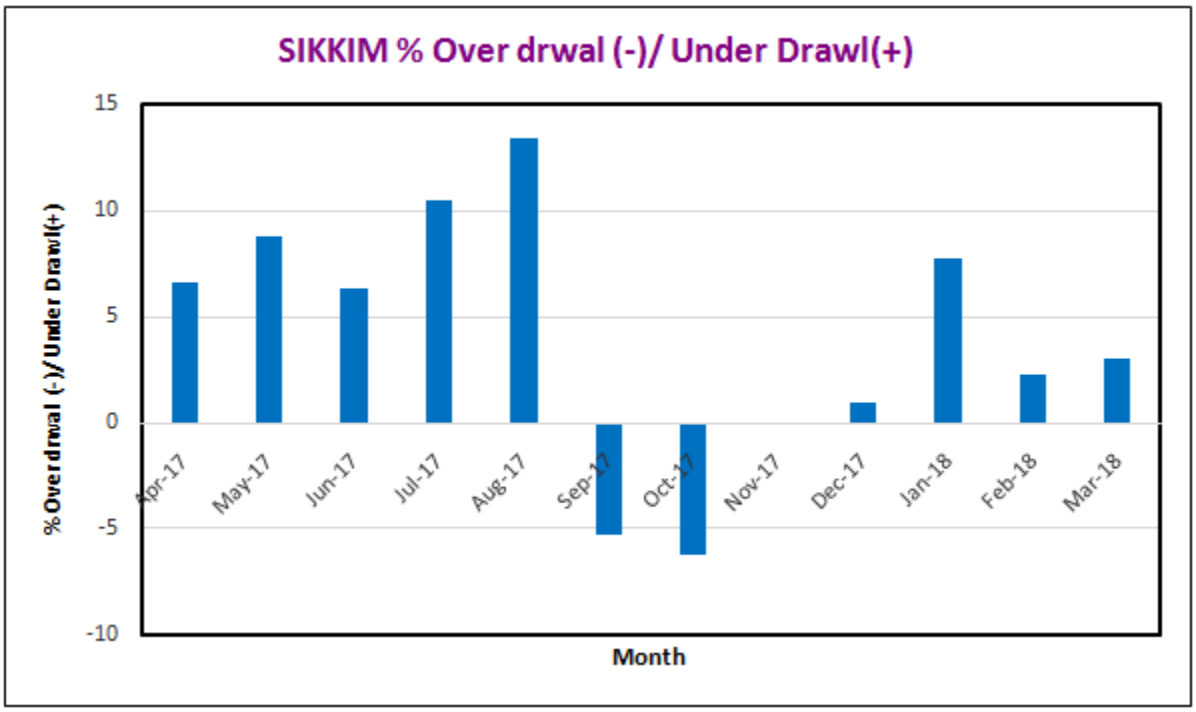
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Month


SIKKIM % Over drwal (-)/ Under Drawl(+)
% Over drwal (-)/ Under Drawl(+)
15
10
5
0
-5
-10
Apr-17
May-17
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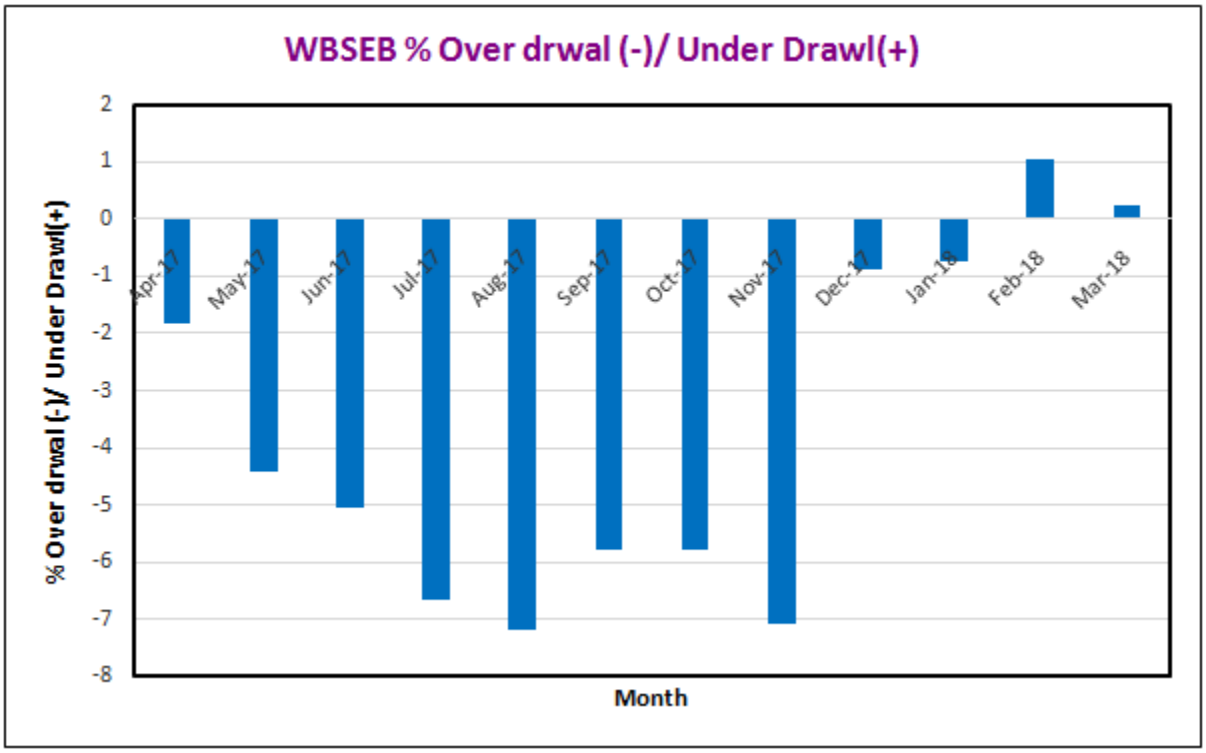
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
Month


WBSEB % Over drwal (-)/ Under Drawl(+)
% Over drwal (-)/ Under Drawl(+)
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
Apr-17
May-17
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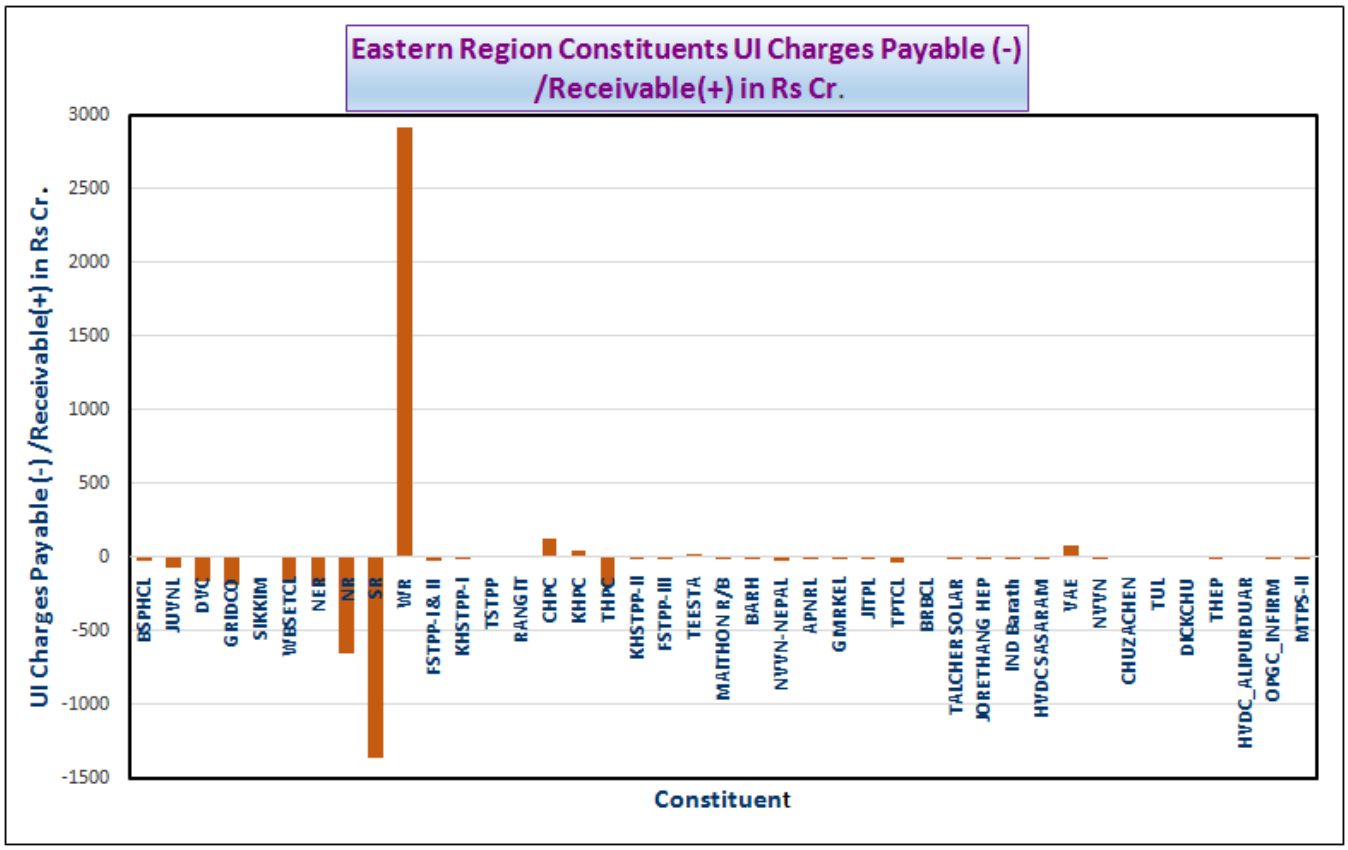
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
Month



4.11 REACTIVE ENERGY CHARGES:

Reactive power compensation should ideally be provided locally, by generating reactive power as close to the reactive power consumption as Possible. The Regional Entities except Generating Stations are therefore expected to provide local VAr compensation/generation such that they do not Draw VArs from the EHV grid, particularly under low-voltage condition. To discourage VAr drawals by Regional Entities except Generating Stations, VAr Exchanges with ISTS shall be priced as follows:

i) The Regional Entity except Generating Stations pays for VAr drawl when voltage at the metering point is below 97%
ii) The Regional Entity except Generating Stations gets paid for VAr return when voltage is below 97%
iii) The Regional Entity except Generating Stations gets paid for VAr drawl when voltage is above103%
iv) The Regional Entity except Generating Stations pays for VAr return when Voltage is above 103%.

Provided that there shall be no charge/payment for VAr drawl/return by a Regional Entity except Generating Stations on its own line emanating directly from an ISGS.

As per IEGC, the beneficiary states of the region are billed for reactive energy exchange with the CTU system. ERPC also prepares reactive energy exchange for interstate system. The procedure for reactive energy charge calculation is governed by clause 1.6 and 1.7 of IEGC. The rate for reactive energy charge was 14 paisa/unit during the year 2018-19.

In the year 2018-19 as on 20.01.2019, WBSETCL has payable amount of ₹ 67.67 Crores, GRIDCO has payable amount of ₹. 24.59 Crores, SIKKIM has payable amount of ₹ 0.063 Crores, BSPHCL has payable amount of ₹ 0.501 Crores, JUVNL has payable amount of ₹ 0.428 Crores, DVC has payable amount of ₹ 0.066 Crores to the ER Reactive Pool Account. The Total amount deposited in ER Reactive Pool Account for the year 2018-19 is ₹. 90.68 Crores and the amount outstanding in the reactive pool account is **Rs.26.45 Crores.** The statement indicating reactive energy charge billing details during the year upto 20.01.2019 is enclosed at **Annexure-XV**.

4.12 REGIONAL TRANSMISSION DEVIATION CHARGES:

As per the CERC (Sharing of Transmission charges and Losses Regulations), 2016, in case the metered MWs (ex-bus) of a power station or the aggregate demand of a Designated ISTS Customer exceeds, in any time block,

(a) In case of generators: The Approved Injection + Approved Additional Medium Term Injection + Approved Short Term Injection or;

(b) In case of demand customers: The Approved Withdrawal + Approved Additional Medium Term Withdrawal + Approved Short Term Demand,

Then for first 20% deviation in any time block, the Designated ISTS Customer shall be required to pay transmission charges for excess generation or demand at the same rate and beyond this limit, the Designated ISTS Customer shall be required to pay additional transmission charges which shall be 25% above the zonal Point of Connection charges determined for zone where the Designated ISTS Customer is physically located. Such additional charges shall not be charged to the generators in case of rescheduling of the planned maintenance program which is beyond the control of the generator and certified to be so by the appropriate RPC. Further, any payment on account of additional charges for deviation by the generator shall not be charged to its long term customer and shall be payable by the generator itself.

4.13 SECURITY CONSTRAINED ECONOMIC DISPATCH

CERC vide Suo-Motu order dated 31.01.2019 in petition no. 02/SM/2019 has directed Implementation of SCED for the Inter-State Generating Stations on pilot basis w.e.f 01.04.2019. RPCs and POSOCO have been directed to conduct stakeholder awareness programs for smooth implementation of SCED pan-India. Hon'ble Commission, vide Order in Petition No. 02/SM/2019 (Suo-Motu) dtd. 31st January, 2019, directed for Pilot on SCED of Inter-State Generating Stations (ISGS) Pan India

The Central Commission observed that there is an overarching objective to optimize the Scheduling and dispatch of the generation resources and reduce the overall cost of Production of electricity without major structural changes in the existing System/framework. SCED is a desired step in the Indian grid operation towards optimization methodologies.

4.14 FAST RESPONSE ANCILLARY SERVICE

Hon'ble CERC vide its order dated 16.07.2018 in petition No.07/SM/2018/Suo-Motu directed for implementation of FRAS on pilot basis. FRAS pilot service implemented w.e.f 26.11.2018. Fast Response Ancillary Services (FRAS) is a Frequency Regulation service. FRAS instruction has been given for every discrete 5-min time block starting from 0000 hrs of the day (e.g. 1000-1005, 1005-1010…). Central sector Hydro Generating Station with pondage/Storage facility will participate in FRAS pilot service(i.e. TEESTA-V & RANGIT of Eastern Region).

For implementing Hydro Power as FRAS, all constraints and commitments declared by the hydro stations shall be honoured and the total energy delivered over the day shall be maintained as declared by the hydro station. The total energy dispatched under FRAS shall be squared off by the end of the day. Triggering of FRAS shall be done on the stack prepared based on the balance energy available in the hydro station. The Schedules of the beneficiaries shall not be disturbed in the despatch of FRAS and the Payment for FRAS shall be based on "mileage" basis. The mileage during the day shall be computed as follows:

Net energy Enet = S(Eup) - S(Edown)(in MWh) (should be zero over the day)

Mileage Em = S | Eupt |+ S | Edownt| (in MWh)

No additional fixed charge or variable charges shall paid for providing FRAS support. Existing fixed charges and variable charges shall continue to be paid by the beneficiaries for the normal schedules as per existing practice. The total energy despatched for hydro under FRAS shall be made zero and hence, no energy charges shall be payable to the hydro stations. Incentive shall be paid from the DSM pool on mileage basis at the rate of 10 paisa per KWH for both "up" and "down" regulation provided by Hydro station.

CHAPTER-5

ISSUES ON OPERATION, PROTECTION, COMMUNICATION AND SYSTEM STUDIES

ERPC Secretariat in general does not involve in day to day real time grid operation. However, it resolves the Operational issues including Protection, Communication, System Study etc. in the meetings of various sub-committees working under ERPC viz Technical Coordination Sub-committee (TCC), Operation Coordination Sub-Committee (OCC), Protection Coordination Sub-Committee (PCC) etc. Further for any emergent operational matters, it is resolved through mutual discussion between the ERPC Secretariat and concerned utilities. Sometimes Special committees/groups are formed comprising members from utilities to resolve/investigate/study such issues. Third Party Protection Audit, Under Frequency Relay (UFR) Audit etc. are such issues which were taken up by the various audit groups as formed by OCC/PCC. In view of smooth functioning of the regional grid and uninterrupted power supply to the core sectors i.e. Railways, Coal etc. healthy protection system has become an integral part of power system operation. Some major operational/protection issues which were taken up are placed below:

5.1 MOCK BLACKSTART EXERCISES IN EASTERN REGION

After any major grid disturbance causing total black out, restoration procedure starts with the Black Start operation of power stations which supply the initial power to neighbouring load centres and the system gradually restored. Mainly the hydro units, due to their flexibility in many fronts, are used as the main source for black start operation. Hence, it is given top priority to keep ready the hydro power stations of the region for any eventuality so that they could be used for black start operation. In line with directives of IEGC, every year OCC plans to conduct mock black start of hydro generating stations. During the year 2018-19, following hydro plants conducted the mock black start exercises.

Sl. No.	Power Plant	Organisation	Date of mock black start
1	Subarnarekha HPS	Jharkhand	10.08.2018 & 09.02.2019
2	Upper Indravati HPS	OHPC	28.10.2018
3	Upper Kolab HPS	OHPC	08.06.2018 & 27.09.2018
4	Rengali HPS	OHPC	18.08.2018 & 12.02.2019
5	Maithon HPS	DVC	06.06.2018
6	Balimela HPS	OHPC	21.10.2018 & 11.03.2019
7	TLDP-IV	West Bengal	10.02.2019
8	Burla HPS	OHPC	07.06.2018 & 07.03.2019
9	Teesta-V	NHPC	03.05.2018
10	Teesta-III	Teesta Urja Ltd.	30.11.2018
11	TLDP-III	West Bengal	10.01.2019
12	Chuzachen	Gati Infra Ltd.	15.01.2019

As per the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010, under clause 5.8 (b) “Diesel Generator sets for black start would be tested on weekly basis and

test report shall be sent to RLDC on quarterly basis".Test run of Diesel Generator sets on weekly basis for black start in Eastern Region were generally conducted and test reports were submitted by the concerned utility to ERLDC. Status reports are being regularly reviewed in OCC meetings.

5.2 RESTRICTED GOVERNOR MODE OF OPERATION (RGMO)

IEGC has made it mandatory that all thermal generating units of 200 MW & above and all hydro units of 10 MW & above, which are synchronized with the grid, irrespective of their ownership, shall be in RGMO at all times, if not exempted for any specific/technical reason by CERC, for taking care of fluctuation of system frequency due to some or other reason and save the system in an emergent condition by contributing automatic control of generation.

Accordingly, performances of eligible generators are regularly reviewed in OCC meeting. Some of the units in Eastern Regions are very old and facing technical difficulties in implementing RGMO. Accordingly, they were advised to seek exemption from CERC. Status of the RGMO of the generating units of Eastern Region is enclosed at **Annexure-XVI.**

5.3 UNDER FREQUENCY RELAY (UFR) OPERATION

In 2nd National Power Committee (NPC) meeting held on 16.07.2013, it was decided that total quantum of load relief based on UFR operation would be 3320 MW for ER. It was also decided that UFR would be operational in 4 (four) stages, where Stage –I would be operated at 49.2 Hz, Stage-II at 49.0 Hz, Stage-III at 48.8 Hz and Stage-IV at 48.6 Hz. Accordingly, OCC distributed and implemented the total quantum of load relief as per existing proportion for ER constituents as given below:

Control Area	Stage-I (49.2 Hz) (MW)	Stage-II (49.0 Hz) (MW)	Stage-III (48.8Hz) (MW)	Stage-IV (48.6Hz) (MW)	Total Relief by Control Area
BSEB	98	99	99	101	397
JSEB	61	62	61	62	246
DVC	134	135.5	136	137	542.5
Odisha	181.5	183.5	184	186	735
WBSETCL & CESC	345.5	350	350	354	1399.5
Total	**820**	**830**	**830**	**840**	**3320**

The operation of UFRs, if any, in the constituent systems is reviewed regularly in the monthly OCC meetings of ERPC.

5.4 INSPECTION OF UNDER FREQUENCY RELAYS (UFR)

The enquiry committee constituted by MoP after the major grid disturbances during 30th & 31st July'2012 recommended in its report (9.3) for ensuring proper function of defence mechanism like UFR etc. Also, as per section 5.2(n) IEGC, RPC Secretariat shall have to carry out periodic testing of

UFR relays. In the 22nd TCC & ERPC meeting it was decided that UFR Audit of the ER constituents would be taken up by the UFR Audit group, nominated by the respective constituents.

Accordingly, a sub-group is constituted and have been carrying out inspection of UFR relays installed in Eastern Region regularly in the following manner:

i. In case secondary injection kit is available, frequency setting and ability of the Under Frequency Relay to actuate may be tested with the injection kit.
ii. In case secondary injection kit is not available, then frequency setting of UFR may be reset within the operating frequency available at the time of testing and the ability of UFR to actuate may be checked.
iii. The previous history of relay operation along with requisite load relief may also be checked from log book register maintained in the sub-station.

Following UFRs were inspected during the year 2018-19.

Sl. No.	Name of the substations	Feeder connected with UFR	Voltage rating (kV)
1	220/33kV Durgapur	Graphite India I & II	33
2		Jai Balaji Industries	33
3		SRB Steel I & II, VSP	33
4		Brahma Alloy	33
5		Venky steel	33

All the inspected UFRs are found in service and working as per the requirement.

5.7 THIRD PARTY PROTECTION AUDIT OF EASTERN REGION

As a follow up of one of the recommendations of Enquiry Committee headed by Chairman, CEA on grid disturbances that took place in Indian grid on 30th and 31st July 2012, Ministry of Power constituted a 'Task Force on Power System Analysis under Contingencies' in December 2012. As per the recommendations of Task force the third party audit of the protection system needs to be carried out periodically.

The checklist of ERPC used in its 1st third party protection audit was modified in line with the recommendation by the Task Force committee and a road map for 2nd Protection Audit of ER was finalized in OCC & PCC meetings.

The latest status of 2nd Third Party Protection audit during the year 2018-19 is as follows:

Sl. No.	Name of the S/Stns /System	Audit Completed on
1)	220kV Mejia TPS (DVC)	29th May, 2018
2)	220/132kV Durgapur TPS (DVC)	30th May, 2018
3)	220/33kV Durgapur (DVC)	30th May, 2018
4)	400kV Bokaro TPS (DVC)	31st May, 2018
5)	220/132/33kV Bokaro TPS B (DVC)	31st May, 2018
6)	220kV Chandrapura TPS A (Old) (DVC)	1st June, 2018
7)	220kV Chandrapura TPS B (New) (DVC)	1st June, 2018
8)	400/132kV Motihari (DMTCL)	11th June, 2018
9)	400/220kV Darbhanga (DMTCL)	12th June, 2018
10)	132/33kV Hazipur old (BSPTCL)	12th June, 2018
11)	132/33kV Samastipur old (BSPTCL)	12th June, 2018
12)	220/132kV Kanti TPS (KBUNL)	13th June, 2018
13)	400/220/132kV Muzaffarpur (PG)	13th June, 2018
14)	132kV Joka (WBSETCL)	26th July, 2018
15)	132kV Sonarpur (WBSETCL)	26th July, 2018
16)	132kV Titagarh (WBSETCL)	27th July, 2018
17)	132kV Dharampur (WBSETCL)	27th July, 2018
18)	132kV Barasat (WBSETCL)	31st July, 2018
19)	132kV Ashoknagar (WBSETCL)	31st July, 2018
20)	132kV Ranaghat (WBSETCL)	7th Aug, 2018
21)	132kV Kalyani (WBSETCL)	7th Aug, 2018
22)	132kV Liluah (WBSETCL)	8th Aug, 2018
23)	132kV Adisaptagram (WBSETCL)	8th Aug, 2018
24)	132kV Kolaghat (WBSETCL)	9th Aug, 2018
25)	132kV CK Road (WBSETCL)	9th Aug, 2018
26)	132kV Haldia (WBSETCL)	10th Aug, 2018
27)	132kV Hijili (WBSETCL)	10th Aug, 2018
28)	132 kV Falta (WBSETCL)	14th Aug, 2018
29)	220/132 kV Lalmatia (JUSNL)	16th Aug 2018
30)	400/220/132kV Kahalgaon (NTPC)	17th Aug 2018
31)	132kV Kahalgaon (BSPTCL)	18th Aug 2018
32)	220/132/33kV Balasore (OPTCL)	31st Aug 2018
33)	220/132/33kV Narendrapur (OPTCL)	29th Aug 2018
34)	220/132/33kV Paradeep (OPTCL)	30th Aug 2018
35)	220/132/33kV Bidanasi (OPTCL)	30th Aug 2018
36)	220/132/33kV Budhipadar (OPTCL)	27th Aug 2018
37)	220/132/33kV New Balangir (OPTCL)	28th Aug 2018
38)	220/132/33kV Katapalli (OPTCL)	27th Aug 2018
39)	132 kV Raiganj(WBSETCL)	31st Aug 2018
40)	132 kV Malda(WBSETCL)	31st Aug 2018
41)	132 kV NBU(WBSETCL)	06th September 2018
42)	132 kV Maynaguri(WBSETCL)	06th September 2018

43)	132 kV Birpara(WBSETCL)	07th September 2018
44)	132 kV Alipurduar(WBSETCL)	07th September 2018
45)	132/66/11 kV Geyzing(Sikkim)	14th March 2019
46)	132 kV Sagbari (Sikkim)	14th March 2019
47)	66/11 kV Soreng(Sikkim)	15th March 2019
48)	132/66/11 Melli (Sikkim)	13th March 2019
49)	66/11 kV Namchi(Sikkim)	13th March 2019
50)	66/11 kV Rohtak(Sikkim)	15th March 2019

5.6 PROTECTION PHILOSOPHY OF EASTERN REGION

Several Special PCC meetings were convened to review the zone settings based on CEA recommendations at ERPC, Kolkata. In the Special meetings of PCC held on 30.12.2014, 10.04.2015 & 20.07.2015 the Protection Philosophy for Eastern Region was agreed upon which is as given below:

Sl. No.	Zone	Direction	Protected Line Reach Settings	Time Settings (in Seconds)	Remarks
1	Zone-1	Forward	80%	Instantaneous (0)	As per CEA
2a	Zone-2	Forward	For single ckt- 120 % of the protected line	0.5 to 0.6 - if Z2 reach overreaches the 50% of the shortest line ; 0.35- otherwise	As per CEA
			For double ckt- 150 % of the protected line		As per CEA
2b	Zone-2 (for 220 kV and below voltage Transmission lines of utilities)	Forward	120 % of the protected line, or 100% of the protected line + 50% of the adjacent shortest line	0.35	As per CEA with minor changes
3	Zone-3	Forward	120 % of the (Protected line + Next longest line)	0.8 - 1.0	As per CEA
4	Zone-4	Reverse	10%- for long lines (for line length of 100 km and above) 20%- for shot lines (for line length of less than 100 km)	0.5	As per CEA

Note:

1) **Zone-2:- Z2 Reach should not encroach the next lower voltage level.**
2) **Zone-3:- If Z3 reach encroaches in next voltage level (after considering "in-feed"), then Z3 time must be coordinated with the fault clearing time of remote end transformer.**
3) **Zone-4:- If utility uses carrier blocking scheme, then the Z4 reach may be increased as per the requirement. It should cover the LBB of local bus bar and should be coordinated with Z2 time of the all other lines.**
4) **The above settings are recommended primarily (exclusively) for uncompensated lines.**

Subsequently, all the constituents were requested to adopt the above philosophy for their inter as well as intra state lines for better protection co-ordination of their systems and Eastern Regional system as a whole. This has been implemented in the constituents systems of ER since 2015.

5.8 ISLANDING SCHEMES

After the last major grid disturbances occurred simultaneously in NR, ER & NER on 30th & 31st July, 2012, the enquiry committee constituted by MoP has made a number of recommendations in its report published on 16.08.2012. One of the recommendations (no. 9.12 of the report) suggested planning for implementation of islanding schemes.

New Islanding schemes for ER were proposed, approved & monitored by the TCC/ ERPC in its meeting. The latest status of the same are placed below:

1. Bakreswar TPS of WBPDCL – Operational w.e.f. 31.03.2015
2. Tata Power, Haldia – Operational w.e.f. 24.04.2015.
3. Chandrapura TPS (132 kV) of DVC - Operational w.e.f. 15.06.2015
4. Farakka STPS of NTPC – Operational w.e.f . 02.04.2017
5. Bandel TPS of WBPDCL- Operational w.e.f. 15.12.2018
6. IB TPS Islanding Scheme of OPGC- Scheme finalized to be implemented by Dec'19
7. Kanti Islanding Scheme of KBUNL – Under planning stage

The Islanding Scheme of CESC system is also operational in Eastern Region and successfully operated in the past.

5.9 SYSTEM (SPECIAL) PROTECTION SCHEME (SPS)

Due to enhanced complexity of electrical grid with the formation of 'NEWS' grid through addition of interconnectivity & use of high capacity transmission lines etc., System (Special) Protection Scheme (SPS) has been envisaged for safety & security of integrated grid operation. SPS is designed to detect abnormal system conditions such as outage of large generating units, high capacity corridors or HVDC interconnections. SPS preserve the integrity of electric system by using predetermined corrective measures that are simple, reliable and safe for the system as a whole and provide acceptable system performance against all possible extreme credible contingencies. SPS has an advantage of wide-area coverage and it is pre-emptively sense the danger in the system and takes corrective actions. SPS has also been evolved to prevent system deterioration i.e. to reduce the impact of power failure and ensure early restoration.

Eastern Region has also adopted the SPS. Presently there are 4 (four) nos. approved SPS in Eastern Region.

a) Tripping of Talcher - Kolar HVDC Bipole (s) - SPS at Talcher stage-II, NTPC (SPS 450 & SPS 1000)

Talcher Super thermal power station having a capacity of 3000 MW (6x500 MW) is located in Orissa of Eastern Region. The station was commissioned with 2x500 MW capacity and

subsequently its second stage was commissioned and station capacity was augmented to 3000 MW with commissioning of its further 4x 500 MW machines.

The station is the largest capacity station in the region. However, the capacity of the entire stage II (4x500 MW) was allocated to the beneficiaries of southern region.

Subsequently, 10% of the capacity was allocated to the Orissa, in Eastern region. For evacuation of Talcher STPS –II generation to Southern Region, (+/-) 500kV HVDC bipole transmission system was commissioned right upto the load centre of Southern Region at Kolar. The HVDC substation at Talcher has two pole blocks 1000 MW capacity each (subsequently augmented to 1250 MW).

The very basic design of the evacuation system of Talcher stage II to SR poses a major threat to Eastern Region and subsequently to the New Grid as any sudden forced outage of one or both the poles would mean that Eastern Grid has to initially absorb a jerk of load throw off to the tune of 1800-2000 MW. The surplus power would get wheeled through 400kV Talcher- Rourkella D/C and Rengali –Baripada-Kolaghat S/C. During monsoon as such these corridors remain heavily loaded and such contingency of pole block at Talcher would lead to a definite cascade tripping leading to isolation /possible collapse of Orissa system including TSTPP station.

In order to avoid such contingency two automatic special protection schemes were envisaged and have been implemented at Talcher Super Thermal power station. The 1st scheme as commonly known as SPS 450 was first implemented and subsequently a further improvised 2nd scheme was devised as known as SPS 1000 scheme. Both the schemes and their modalities of arming and disarming is described below:

SPS 450: This scheme was originally implemented with a view that Eastern and Western Region would absorb a jerk of 450 MW, therefore rest of the generation as available at Talcher stage II generation must be shed in order avoid a cascade tripping of the network. However, during monsoon, from Eastern Regional point of view at times absorbing even 450MW under N-1 contingency criteria of Talcher-Rourkella 400kV D/C Line becomes critical when major generation at Talcher stage II must be shed in order to avoid further criticality of the Grid. Further under any critical outage condition in the rest of the New Grid outage of HVDC bipole might pose a serious threat when it might necessitate arming of SPS 450 scheme with due coordination with NLDC. Under this mode of SPS the power injection to N-E-W grid is limited to 450 MW. The actual generation by the generators is considered for building the logic.

SPS 1000: Post formation of the NEW Grid this scheme was subsequently envisaged in order to minimise shedding of generation at Talcher STPP. The basic philosophy of this scheme is to absorb 1000MW in place of 450 MW as the Grid size increased. However, as one of the prerequisites for arming this scheme Eastern Regional operator has to ensure that sufficient evacuation margin (approx 1000 MW) is available at the AC evacuation system of TSTPP. Under this mode of SPS the power injection to N-E-W grid is limited to 1000 MW. The actual injection to the HVDC system (by measuring the flow on four a/c lines between TSTPS and Talcher HVDC station) is considered for building the logic. Under SPS 1000 scheme no generation shedding is required for a single pole tripping. For contingencies of both pole tripping and for single pole tripping with the HVDC system going to ground return mode, generation shedding will be done. Extent of generation

shedding depends on the actual power flow through the HVDC link and to limit the actual injection to N-E-W grid to 1000 MW.

b) Modification in Talcher-Kolar SPS in ER Region due to Synchronisation of SR grid with NEW grid (Additional 600MW Gen Reduction)

Background:

In Southern Region, there is a provision for load shedding in three groups depending on the power loss on HVDC (Trip Signal 1 for 800 MW load shedding, Trip Signal 2 for 700 MW additional load shedding, Trip signal 3 for 500 MW additional load shedding considering extended operation of HVDC in the 2000-2500 MW range). So a total of 2000 MW shedding is envisaged in Southern Region.

In the NEW grid side of Talcher-Kolar HVDC bipole, there is automatic reduction/tripping of generation at Talcher Stage-II of NTPC. Two schemes are available at Talcher Stage-II; SPS 450 and SPS 1000 where the number indicates the quantum of power injected into the NEW grid after tripping of Talcher-Kolar HVDC pole or bipole. In SPS 450, three units are tripped at Talcher Stage-II while in SPS 1000, a maximum of one unit is tripped and the balance reduction in generation achieved through fast automatic reduction of generation.

In normal operation, SPS 1000 is armed and in some exceptional cases such as an outage of elements in the NEW grid, SPS 450 is activated. There are instances when a single pole trips on line fault and the other pole goes to ground return. In such cases, the healthy pole retries thrice for going to metallic return and in case it fails, it goes in ground return mode where there is a restriction of 150 MW.

There have been instances when the Talcher-Kolar SPS fails to operate leading to high frequency in the NEW grid and low frequency in the Southern Grid. Post 765 kV Sholapur-Raichur in operation, the impact of any failure of Talcher-Kolar SPS would lead to wheeling of additional power to Southern Region through the NEW grid creating insecure conditions. In fact, even injection of 1000 MW into NEW grid and inadequate load shedding in Southern Region can lead to insecure conditions as the entire power would be wheeled through 765 kV Sholapur-Raichur. So, additional safeguards are required.

Triggering the SPS and SPS action:

In case of single pole or bipole outage or blocking of Talcher-Kolar HVDC sensed at Talcher HVDC terminal, it is proposed that a trip signal be extended to nearby generators such as Vedanta, GMR, JITPL ensuring minimum communication so that the objective of restricting injection to NEW grid to 450 MW is achieved. The reduction in generation to be achieved through these stations is 600 MW so that the injection into NEW grid is restricted to 450 MW. This would be in addition to SPS 1000 already in operation at Talcher-II.
SPS 1000 will be functional as it is with additional relief of 600 MW in the event of Talcher- Kolar pole tripping to ensure grid security.

In 108th OCC held on 17.04.2015 it was decided that the generation relief during HVDC Talcher-Kolar pole tripping will be shared among GMR, Vedanta & JITPL as follows: Vedanta - 200 MW, GMR-200 MW and JITPL- 200 MW.

c) SPS for Chuzachen HPS in Sikkim

Chuzachen HPS is connected with Rangpo through 132 kV Zebra S/C line and with Melli through 132 kV Panther S/C line. Chuzachen was allowed to enhance their generation upto 99 MW with SPS operation of one unit tripping (whichever is generating more). SPS is installed at Chuzachen to reduce generation at hydro power station in event of contingency to avoid high loading and cascading tripping of neighbouring 132 kV transmission lines.

Sl No.	Event	Sensing at	Action
1	Tripping of 132 kV Rangit-Rammam	132 kV Rangit	Trip One unit at CHEP
2	Tripping of 132 kV Rangit-Kerseong	132 kV Rangit	Trip One unit at CHEP
3	Flow of Rangit-Rammam crosses 70 MW or 320 Amps	132 kV Rangit	Trip One unit at CHEP
4	Flow of Rangit-Kerseong crosses 70 MW or 320 Amps	132 kV Rangit	Trip One unit at CHEP
5	Flow of Chuzachen-Melli crosses 75 MW	132 kV Chuzachen	Trip One unit at CHEP
6	Flow of Chuzachen-Rangpo crosses 75 MW	132 kV Chuzachen	Trip One unit at CHEP

Thereafter, the scenario has been changed due to commissioning of LILO of 400 kV Teesta - Binaguri line at Rangpo 400/132 kV sub-station. Chuzachen authority requested for removal of following signals from the schemes as in the present scenario these incidences will not endanger the grid:

i. Tripping of 132 Rangit- Rammam line
ii. Tripping of 132 kV Rangit- Kurseong line
iii. Loading of 132 Melli- Chuzachen line

In 29th PCC held on 20.03.2015, PCC agreed to waive the tripping of one Chuzachen Unit from SPS on following contingencies:

- Tripping of 132kV Rangit – Rammam Line CB at Rangit End
- Tripping of 132kV Rangit – Kurseong Line CB at Rangit End

However, PCC felt that N-2 contingency may occur in North Bengal and Sikkim area and PCC decided to continue the SPS with following conditions:

- Power flow > 70 MW or Line Current > 320 A in Rangit-Rammam Feeder
- Power flow > 70 MW or Line Current > 320 A in Rangit-Kurseong Feeder
- Power flow > 75 MW in Chuzachen –Melli Feeder

d) SPS for Power Export to Bangladesh

As per decision of the MoP, GoI power export to Bangladesh has been explored and regular supply has been commenced from October'2013 through 400 kV Farakka – Berhampur – Bheramara line with HVDC (2x500 MW) station at Bheramara (Bangladesh).

The details of SPS implemented to facilitate power transfer to Bangladesh are provided below for ready reference:

Sl no.	Condition	Action
1	400 kV Bus Voltage at Behrampur < 390 kV	Tripping of 80 MVAR Bus Reactor at Behrampur
2	400 kV Bus Voltage at Behrampur < 380 kV	Automatic Reduction of Behrampur HVDC setpoint to 350 MW with appropriate capacitor switching to improve voltage
3	If Indian Grid Frequency is < 49.5 Hz	Automatic Reduction of Behrampur HVDC setpoint to 350 MW with appropriate capacitor switching to improve voltage
4	If 400 kV Farakka-Behrampur Line Loading> 780 MW	Automatic Reduction of Behrampur HVDC setpoint to 350 MW with appropriate capacitor switching to improve voltage
5	If 400 kV Sagardighi-Behrampur D/C and 400 kV Farakka-Bherampur S/C trips (Sending of CB status at Behrampur)	Automatic Reduction of Behrampur HVDC setpoint to 350 MW with appropriate capacitor switching to improve voltage.

In order to address low Frequency, low voltage and high line loading issue in Indian Side,
SPS has been envisaged to reduce the export quantum to Bangladesh.

5.11 SCADA DATA

For effective management and monitoring of the grid parameters availability of various live data viz generation of power stations, line flows and voltages at important sub-stations are the vital inputs to the grid operators. All the required data should be made available on real time basis in the control room through SCADA system. OCC/TCC advised all constituents to do the needful for restoration of SCADA data at the earliest and the status of availability of SCADA data are monitored regularly by the OCC/SCADA O&M meetings. Apart from the concerned utility, CTU/Powergrid plays a major role in availability of the SCADA data as installation of RTU are done by them.

CHAPTER-6

MEETINGS, REPORTS, CERTIFICATION AND WORKSHOP

6.1 MEETINGS HELD DURING 2018-19

In order to discharge various duties entrusted to ERPC as per Indian Electricity Act, 2003 and IEGC, various meetings were organised during 2018-19 and detail of meetings are given at **Annexure-XVII**.

6.2 REPORTS ISSUED

ERPC has been issuing various reports regarding system operational data, load generation balance data, system studies data, etc. The details of various reports issued during 2018-19 by ERPC are given below:

- Monthly Progress Reports
- Monthly Power Supply Position Reports
- Load Generation Balance Report for the year 2019-20
- Annual Report for the year 2017-18

6.3 CERTIFICATION OF TRANSMISSION AVAILABILITY

In line with CERC order, ERPC Secretariat has certified availability of transmission system for the year 2018-19

6.4 TRAINING / WORKSHOP HELD

As a follow up of one of the recommendations of Enquiry Committee headed by Chairperson, CEA on grid disturbances that took place in India on 30th & 31st July'2012, Ministry of Power constituted a "Task Force on Power System Analysis and Contingencies". The Task Force strongly recommended for training in protection related issues.

Following training programmes/workshops were held during 2018-19:

Training Programme on PDMS by PRDC	26.04.2018 to 27.04.2018	ERPC, Kolkata
Training by PRDC	02.07.2018 to 04.07.2018	ERPC, Kolkata
Simulator Training at Bakreswar TPS, WBPDCL,Bakreswar	06.08.2018 to 11.08.2018	BkTPS,WBPDCL,Bakreswar
Workshop organised by ERPC on emerging issues in power sector, black start and restoration procedure for Odisha System.	26.09.2018 to 27.09.2018	Upperkolab, Odisha
Workshop on Smart Grid.	05.10.2018	ERPC, Kolkata
Training on Substation and Tr. Line Protection	11.02.2019 to 13.02.2019	ERPC, Kolkata
Workshop organised by PRDC on changing trends in Indian power sector and its economics	27.02.2019 to 28.02.2019	Hotel Pride Plaza, New Town, Kolkata
Workshop on Cyber Security	09.05.2018	ERPC, Kolkata

CHAPTER-7

IMPORTANT DECISIONS TAKEN IN VARIOUS MEETINGS OF ERPC DURING 2018-19

1.Issue:Installation of PMUs for observation of the Dynamic performance of the STATCOMS.

Four STATCOMS (Rourkela,Jeypore,Kishenganj,New Ranchi) are being commissioned by Powergrid in the Eastern Region to improve the dynamic VAR compensation in the grid and for the improvement of the transient stability.STATCOM is a dynamic VAR compensation device and provides fast reactive support to the grid during transient as well as steady state operation. The steady state response of STATCOM can be monitored through conventional SCADA data, however, the dynamic response, which comes within milliseconds, cannot be well captured through conventional SCADA system. In order to analyse the dynamic performance of STATCOM(STATCOM+MSR/MSC) during day to day operation, it is desired to install PMU on the Coupling Transformer of the STATCOM as a part of the URTDSM project. This will help the operator in monitoring and analyse the STATCOM dynamic response in real time as well as off-line mode.

Decision: In 38th ERPC meeting, it was decided that Power Grid would first explore the possibilities by diverting the unutilised PMUs under URTDSM project and complete the work on urgent basis. If adequate numbers of PMUs are not available under URTDSM project, balance PMUs will be implemented under project "Upgradation of SCADA/RTUs/SAS in the central sector stations and strengthing of OPGW network"

2.Issue:Replacement of old RTUs in Eastern Region for reporting of RTU/SAS to back up control centres

Decision: In 36th TCC/ERPC meeting, proposal of replacement of RTU (as per Committee constituted in 35th ERPC meeting) was approved. It was also advised that replacement of OPGW on older ULDC lines may be deliberated in lower forum before submitting for TCC/ERPC approval**.** Accordingly, in 37th ERPC meeting implementation of ' Upgradation of SCADA/RTUs/SAS in central sector stations and strengthening of OPGW network in Eastern Region project on tariff rout basis was approved.ERPC authorized Powergrid to undertake the works related to replacement of the old RTUs of the Eastern Region.It was also decided by the ERPC that the investment made in this regard shall be recovered by Powergrid through tariff. However subsequent O &M shall be responsibility of the concerned constituents.

3.Issue: Implementation of differential protection for short distance lines in different substations connected to Powergrid ER-II

Decision: In 68th PCC meeting, it was opined that differential protection should be implemented for all short lines(< 20 Kilometers) to over come relay co-ordination issues with respect to distance and over current protection.PCC in principle agreed and opined that differential protection at both the ends could be implemented by one entity to maintain the relay and communication compatibility.In 38th TCC Meeting, it was decided that the cost relating to implementation of fiber based differential protection scheme for both ends shall be borne by concerned utilities owning the lines. ERPC in its 40th ERPC Meeting approved the implementation of differential protection for the short distance lines except serial numbers 11&12 mentioned in the minutes.

अध्याय–8

पूर्वी क्षेत्रीय विद्युत् समिति में राजभाषा नीति का कार्यान्वयन

वर्ष 2018-19 के दौरान पूर्वी क्षेत्रीय विद्युत् समिति में राजभाषा नीति के अनुपालन में निम्नलिखित कार्य किये गए है :

8.1 हिन्दी पत्राचार

- राजभाषा अधिनियम के नियम-5 के अनुपालन में, हिन्दी में प्राप्त पत्रों के उत्तर हिन्दी में ही दिए जाते हैं |

- ओ.सी.सी., प्रोटेक्शन उप समिति, वाणिज्यिक उप-समिति, तकनीकी समन्वय उप-समिति और इ.आर.पी.सी. की बैठकों के कार्यवृत्त एवं कार्यवाही के अग्रेषण पत्र को द्विभाषी रूप में जारी किये गए |

8.2 राजभाषा कार्यान्वयन समिति की बैठकें

राजभाषा नीति के अनुसार वर्ष 2018-19 में राजभाषा कार्यान्वयन समिति की बैठकें प्रत्येक तिमाही में एक वार, यथा 27-06-18, 24-09-18, 28-12-18 एवं 28-03-19 कुल चार बैठकें का आयोजन किया गया था | इन बैठकों में गृह मंत्रालय, राजभाषा विभाग से प्राप्त हिन्दी के प्रगामी प्रयोग से संबंधित तिमाही प्रगति रिपोर्ट की समीक्षा पर चर्चा की गई, वार्षिक कार्यक्रम को लेकर चर्चा एवं तदनुसार निर्णय लिए गए |

8.3 कार्यशाला का आयोजन

वर्ष 2018-19 में पांच हिन्दी कार्यशाला आयोजित किये गए | कार्यालय में राजभाषा कार्यान्वयन के अनुपालन पर कार्मिकों को हिन्दी में दिन प्रतिदिन कार्यालय कार्य करने की प्रतिवंधकता दूर करना और हिन्दी में काम करना आसान बनाने हेतु विभिन्न विषयों पर चर्चा करने के लिए कार्यशाला का आवश्यकता पर जोर दिया गया |

8.4 प्रोत्साहन योजना

हिन्दी के प्रयोग को बड़ावा देने एवं हिन्दी में काम करने के लिए प्रोत्साहित करने हेतु, इस कार्यालय में सरकारी नियमानुसार विभिन्न प्रकार के प्रोत्साहित योजना लागू है | हिन्दी में टिप्पण-आलेखन करना एबं कंप्यूटर पर हिन्दी में टंकन का काम करने के लिए प्रोत्साहित योजनायें लागू है |

8.5 हिन्दी दिवस / हिन्दी सप्ताह / हिन्दी पखवाड़ा का आयोजन

दिनांक 14 सितम्बर 2018 को इस कार्यालय में हिन्दी दिवस एवं 14-09-18 से 20 -09-18 के दौरान हिन्दी सप्ताह मनाया गया | इस अवसर पर आयोजित विभिन्न प्रकार की प्रतियोगितायों में अधिकारियों और कर्मचारियों ने बड़े उत्साह के साथ भाग लिया | सफल प्रतिभागियों को पुरस्कार देकर प्रोत्साहित किया गया |

8.6 राजभाषा कार्यान्वयन से संबंधित अन्य कार्य

- हिन्दी के प्रगामी प्रयोग से संबंधित तिमाही एवं अर्ध-वार्षिक प्रगति रिपोर्ट नियमित रूप से मुखालय, के.वी.प्राधिकरण, नई दिल्ली एवं राजभाषा विभाग के क्षेत्रीय कार्यालय, कोलकाता को प्रेषित किया गया |

- सेवा पुस्तिकाओं में प्रविष्टियाँ ज्यादा से ज्यादा हिन्दी में किये गए |

- कार्यालय में नियमित रूप से उपयोग होने वाले मानकीकृत प्रपत्र को द्विभाषी रूप में इस्तेमाल किया जाता है|

- इन्टरनेट पर उपलब्ध विभिन्न प्रकार हिन्दी साफ्टवेयर को इस्तेमाल करके कार्यालय में सभी कंप्यूटर पर आधिकारिकों ने आवश्यकता के अनुसार काम करते हैं |

- वर्ष 2018-19 के दौरान कार्यालय में प्रत्येक तिमाही में आयोजित कार्यशाला में सदस्य सचिव के अध्यक्षता में कार्यालयों के दैनिक कामकाज में हिंदी का प्रयोग के वारे में समीक्षा किया गया और कार्यालयों के दैनिक कामकाज में अधिक से अधिक सरल और सहज हिन्दी का प्रयोग के लिए निर्णय लिया गया |

- दिनांक 17-07-2018 को हुई हिन्दी कार्यशाला में राजभाषा विभाग, हिन्दी शिक्षण योजना, कोलकाता से आमंत्रित श्रीमती मंजू शिरीन, सहायक निदेशक द्वारा आधिकरिकों को हिन्दी में दैनिक कार्यालय कार्य करने की प्रतिन्धकता दूर करना और राजभाषा के लिए विभिन्न विषय पर विस्तार से चर्चा किया गया |

- इसके अतिरिक्त प्रत्येक तिमाही में आयोजित कार्यशाला में विभिन्न प्रकार के विषयों को लेकर जैसे (1) "कार्यालय में प्रयोग होने वाला विभिन्न प्रकार की छुट्टीयों के वारे में" (2) "सरकारी कार्यालय में लागू चिकित्सा नियोमों" (3) "यात्रा रियायत भत्ता नियोमों" एवं (4) "केन्द्रीय सरकार के अधिकारियों / कर्मचारियों क्या करें और क्या नही करें" विषयों को लेकर विस्तारित रूप से चर्चा किया गया | अधिकारियों और कर्मचारियों के पास जिनके लिए आलोचित विषयों के बारे में स्पष्ट धारणा नहीं होते उन्होंने विभिन्न प्रश्न के माध्यम से संदेह समाशोधन कर खुद को समृद्ध कर लेते है | विशेष कर नये आधिकारिकों को इस कार्यशाला वहुत ही फायदेमंद रहा |

- राजभाषा विभाग, गृह मंत्रालय द्वारा जारी वर्ष 2018-19 के वार्षिक कार्यक्रम में निर्धारित किये गए लक्ष की प्राप्ति हेतु मुख्यालय, केन्द्रीय विद्युत् प्राधिकरण के द्वारा दिनांक 26-11-2018 को इस कार्यालय का निरीक्षण किये गए |

इस कार्यालय में राजभाषा नीति और नियमों के उपबंधो के अधीन जारी किए गए निदेशों का समुचित रूप से अनुपालन तथा गृह मंत्रालय, राजभाषा विभाग द्वारा जारी वार्षिक कार्यक्रम में निर्धारित लक्ष्यों की प्राप्ति के लिए हर संभव प्रयास जारी है |

- परिवर्तन जन कल्याण समिति, दिल्ली द्वारा वरिष्ठ हिन्दी राजभाषा अधिकारियों के साथ तीन दिवसीय विशेष अखिल भारतीय विशेष राजभाषा हिन्दी कार्यशाला एवं संगोष्ठी में दिनांक 30-05-2019 से 01-06-2019 तक कोवलम, तिरूवनंतपुरम केरला में आयोजित सरकारी काम-काज में हिन्दी आने वाली कठिनाइयों एवं समाधान, संसदीय राजभाषा समिति की निरीक्षण प्रश्नावली भरने में आने वाली कठिनाइयों एवं समाधान और योग और स्वास्थ पर हुई एक राष्ट्रीय कार्यक्रम में इस कार्यालय के श्री देवाशीष जोयारदार, प्रधान लिपिक ने भाग लिया |

ANNEXURE-I

MANPOWER STRENGTH OF ERPC SECRETARIAT

The status of posts of various grades at ERPC Secretariat (**as on 31st March 2019)** is given below:

POST	SANCTIONED	FILLED	VACANT
GAZETTED			
Member Secretary	1	1	0
Superintending Engineer/Director	3	1	2
Assistant Secretary/Executive Engineer	4	4	0
Assistant Executive Engineer/AD-I	4	4	0
Assistant Engineer/ AD-II	2	0	2
Private Secretary	1	0	1
NON-GAZETTED			
Head Clerk	1	1	0
Hindi Translator	1	0	1
Electrician	2	1	1
Upper Division Clerk	3	1	2
Draftsman Gr. II	1	0	1
Stenographer Gr. I	1	0	1
Stenographer Gr. II	1	0	1
Lower Division Clerk	3	2	1
Driver	2	1	1
MTS	6	0	6
TOTAL	**36**	**16**	**20**

Note:

i) One Addl.Gen.Manager of NVVN is posted in ERPC on informal deputation.

ANNEXURE – II (Page-1/2)

CHAIRPERSONS / CHAIRMEN OF EASTERN REGIONAL POWER COMMITTEE (ERPC) & ERSTWHILE EASTERN REGIONAL ELECTRICITY BOARD (EREB) SINCE ITS INCEPTION

Period	Constituent	Name of the Chairmen/Chairpersons
01.06.65 to 31.05.66	BSEB	Sh. R.S. Mishra, IAS Sh. R. Prasad, IAS
01.06.66 to 31.05.67	DVC	Sh. T. Sivasankara, ICS
01.06.67 to 31.05.68	OSEB	Sh. V.V. Ananthakrishnan, IAS
01.06.68 to 31.05.69	WBSEB	Sh. Dutta Mazumdar, IAS
01.06.69 to 31.05.70	BSEB	Sh. H.N. Thakur, IAS
01.06.70 to 31.05.71	DVC	Sh. N.E.S. Raghavachari, ICS
01.06.71 to 31.05.72	OSEB	Sh. A.K. Mazumdar, IAS Sh. A.C. Bandyopadhyay, IAS
01.06.72 to 31.05.73	WBSEB	Sh. S.K. Mukherjee, IAS Sh. J.C. Talukdar, IAS
01.06.73 to 31.05.74	BSEB	Sh. B.N. Ojha
01.06.74 to 31.05.75	DVC	Sh. S.J. Majumdar, ICS Lt. Gen. P.S. Bhagat, VC, PVSM
01.06.75 to 31.05.76	OSEB	Sh. K.C. Gantayet
01.06.76 to 31.05.77	WBSEB	Brig. D.N. Mallick
01.06.77 to 31.05.78	BSEB	Sh. K.P. Sinha, IAS Sh. J.D. Sahay Brig. S.P. Kochar
01.06.78 to 31.05.79	DVC	Sh. A.C. Bandyopadhyay, IAS
01.06.79 to 31.05.80	OSEB	Sh. J.M. Patnaik Sh. B.N. Dash
01.06.80 to 31.05.81	WBSEB	Sh. N.C. Basu
01.06.81 to 31.05.82	BSEB	Sh. Z.S. Haque Sh. S.K. Chaturvedi, IAS Sh. R.P. Khanna, IAS
01.06.82 to 31.05.83	DVC	Sh. P.C. Luthar
01.06.83 to 31.05.84	OSEB	Sh. A. Panda Sh. S.K.Nanda
01.06.84 to 31.05.85	WBSEB	Sh. A. Ghatak
01.06.85 to 31.05.86	BSEB	Sh. S. Kumar Sh. I.C. Kumar, IAS
01.06.86 to 31.05.87	DVC	Lt. Gen. M.M.L. Ghai, PVSM Sh. A. Ghatak
01.06.87 to 31.05.88	OSEB	Sh. P.K. Kar
01.06.88 to 31.05.89	WBSEB	Dr. B.P. Banerjee Dr. D.K. Bose, (from 1.5.89)
01.06.89 to 31.05.90	BSEB	Sh. J.C. Jetli, IAS Sh. J.C. Kundra (from 26.12.89) Sh. P.K. Misra (from 3.4.90)

ANNEXURE – II (Page-2/2)

01.06.90 to 31.05.91	DVC	Sh. P.K. Sarkar, IAS
01.06.91 to 31.05.92	OSEB	Sh. K.C. Mahapatra Sh. S.K. Mahapatra (from 22.12.91)
01.06.92 to 31.05.93	WBSEB	Sh. D.K. Bose Sh. S.K. Dasgupta
01.06.93 to 31.05.94	BSEB	Sh. B. Prasad
01.06.94 to 31.05.95	DVC	Sh.Maj.Gen. Sharad Gupta,V.S.M Sh. A.K. Misra, IAS (from 1.5.95)
01.06.95 to 31.05.96	OSEB	Sh. M.Y. Rao, IAS
01.06.96 to 31.05.97	WBSEB	Sh. S.R. Sikdar
01.06.97 to 31.05.98	BSEB	Sh. R.P. Yadav Sh. A.K. Upadhyay (from 18.5.98)
01.06.98 to 31.05.99	DVC	Sh. A.K. Misra, IAS
01.06.99 to 31.05.00	GRIDCO	Sh. B.C. Jena
01.06.00 to 31.05.01	WBSEB	Dr. G.D. Gautama, IAS
01.06.01 to 31.05.02	BSEB	Sh. C.M. Jha, IAS Sh. N.K. Agrawal (from 22.10.01)
01.06.02 to 31.05.03	DVC	Sh. J.C. Jetli, IAS
01.06.03 to 31.05.04	GRIDCO	Sh. S.C. Mahapatra, IAS
01.06.04 to 31.05.05	JSEB	Sh. B.K. Chauhan Dr. H.B. Lal (from 18.10.2004)
01.06.05 to 31.03.06	WBSEB	Sh. M. K. De, IAS
01.04.06 to 31.03.07	BSEB	Sh. M. M. Singh, IAS Sh. Swapan Mukherjee (from 01.03.07)
01.04.07 to 31.03.08	JSEB	Sh. V. N. Pandey Sh. B. M. Verma (from 29.12.07)
01.04.08 to 31.03.09	OPTCL & GRIDCO	Sh. C.J.Venugopal, IAS
01.04.09 to 31.03.10	Energy and Power Deptt., Govt. of Sikkim	Sh. Pema Wangchen
01.04.10 to 31.03.11	WBSEDCL & WBSETCL	Sh. M. K. De, IAS
01.04.11 to 31.03.12	BSEB	Sh. P. K. Rai
01.04.12 to 31.03.13	JSEB	Sh. S. N. Verma
01.04.13 to 31.03.14	OPTCL & GRIDCO	Sh. P. K. Jena, IAS Sh. Hemant Sharma, IAS (from 16.07.13)
01.04.14 to 05.07.15 (contd. beyond Mar'15 due to late receipt of new nomination)	Energy and Power Deptt., Govt.of Sikkim	Sh. P. B. Subba, Principal Chief Engg.-cum-Secretary Shri N. T. Bhutia, Principal Chief Engg.-cum-Secretary (w.e.f. 1.4.15 to 5.7.15)
06.07.15 to 31.03.16	WBSEDCL	Shri Narayan Swaroop Nigam, IAS Shri Rajesh Pandey, IAS (from 04.01.16)
01.04.16 to 31.03.17	BSPHCL	Shri Prataya Amrit, IAS
01.04.17 to 31.03.18	JUVNL	Shri N.M.Kulkarni, IAS
01.04.18 to 31.03.19	**OPTCL & GRIDCO**	**Shri Hemant Sharma, IAS**

ANNEXURE - III

MEMBER SECRETARIES OF EASTERN REGIONAL POWER COMMITTEE (ERPC) & ERSTWHILE EASTERN REGIONAL ELECTRICITY BOARD (EREB) SINCE ITS INCEPTION

Sl. No.	Names of Member Secretaries	From	To
1	Shri Z.S. Haque	1964	1965
2	Shri G. Mukherjee	1965	1967
3	Shri B. Choudhury	1971	1977
4	Shri M.M. Turabi (I/C)	1977	1978
5	Shri B.C. Ghosh (I/C)	06.03.78	06.04.82
6	Shri U.V. Senoy	08.04.82	31.08.82
7	Shri B.C. Ghosh (I/C)	06.09.82	12.12.82
8	Shri P.K.Kar	13.12.82	15.10.85
9	Shri B.C. Ghosh (I/C)	16.10.85	01.12.87
10	Shri B.C. Ghosh	31.12.87	09.03.88
11	Shri B. Sengupta (I/C)	28.03.88	26.03.89
12	Shri B. Sengupta	27.03.89	31.05.93
13	Shri A. Roy (I/C)	01.06.93	17.07.93
14	Dr. S. Mukhopadhyay	18.07.93	03.08.95
15	Shri P. Ray (I/C)	04.08.95	04.02.96
16	Shri S. Santhanam	05.02.96	16.08.96
17	Shri P. Ray (I/C)	17.08.96	26.11.97
18	Shri V.S. Verma	27.11.97	30.07.98
19	Shri P. Ray (I/C)	30.07.98(A/N)	06.07.99
20	Shri B.K. Misra	07.07.99	28.11.03
21	Shri R.B. Sharma	27.11.03	31.01.05
22	Shri M.K.Mitra (I/C)	01.02.05	05.12.05
23	Shri M.K.Mitra	06.12.05	31.03.06
24	Shri K. N. Garg (I/C)	01.04.06	30.04.06
25	Shri Raffi-ud-din	01.05.06	10.09.06
26	Shri R. K. Grover	11.09.06	17.09.09
27	Shri A. K. Rampal	18.09.09	06.09.11
28	Shri A. K. Bandyopadhyaya (I/C)	07.09.11	30.09.14
29	Shri A. K. Bandyopadhyaya	01.10.14	31.10.2017
30	Shri J. Bandyopadhyay	01.11.17	Continuing

INSTALLED AND EFFECTIVE CAPACITY OF POWER STATIONS
IN THE EASTERN REGION AS ON 31.03.2019

SL. N0.	NAME OF THE POWER SYSTEM/ STATION	INSTALLED CAPACITY (MW)			PRESENT CAPACITY (AFTER DERATION) (MW) AS ON 31.03.2019	EFFECTIVE CAPACITY (MW) AS ON 31.03.19
		NO. & CAPACITY OF UNITS 31.03.18	Commissioned(+)/ De-commissioned(-) 2018-19	TOTAL AS ON 2018-19		
I	**BSPGCL+BSPHCL**					
	THERMAL:					
1	BARAUNI	2x110		220	**2x105**	210
2	MUZAFFARPUR (Kanti, operated by NTPC)	2x110		220	2x110	220
	SUB TOTAL (THERMAL)	**440**		**440**	**430**	**430**
3	**RES**	327.9		327.9	327.9	327.9
	GRAND TOTAL (TH+HY) (BSPHCL)	**767.9**		**767.9**	**757.9**	**757.9**
II	**JUSNL**					
4	SUBERNREKHA (HYDRO)	2x65		130	2x65	130
5	RES	39		39	39	39
	GRAND TOTAL (HY+RES) (JUVNL)	**169**		**169**	**169**	**169**
	TVNL					
6	**TENUGHAT TPS (THERMAL)**	**2x210**		420	**2x210**	420
	TOTAL	**420**		**420**	**2x210**	**420**
III	**D V C**					
	THERMAL :					
7	BOKARO "B"(U#3)	1x210		210	1x210	210
8	CHANDRAPURA (U# 3,7&8)	1x140+2x250		640	**1x130**+2x250	630
9	DURGAPUR(U#4)	1x210		210	1x210	210
10	MEJIA(U#1-4, 5-6, 7-8)	4x210+2x250+2x500		2340	4x210+2x250+2x500	2340
11	DURGAPUR STEEL TPS (U#1 & 2))	2x500		1000	2x500	1000
12	KODERMA STPS (U# 1& 2)	2x500		1000	2x500	1000
13	RAGHUNATHPUR(U# 1&2)	2x600		1200	2x600	1200
14	BOKARO "A"(U#1)	500		500	1x500	500
	SUB TOTAL (THERMAL)	**7100**		**7100**	**7090**	**7090**
	HYDRO					
15	MAITHON	2x20+1x23.2		63.2	2x20+1x23.2	63.2
16	PANCHET	2x40		80	2x40	80
17	TILAIYA	2x2		4	2x2	4
	SUB TOTAL(HYDRO)	**147.2**		**147.2**	**147.2**	**147.2**
	GRAND TOTAL (TH+HY) (DVC)	**7247.2**		**7247.2**	**7237.2**	**7237.2**

Patratu #1,2,3,5 &8 retired on 21.12.2016 . Patratu #4,6,7,9 &10 Phase out during 2017-18.
DVC, DTPS U#3(140 MW) decommissioned on 10.03.2016
DVC, CTPS U#1 (140 MW) decommissioned on 13.01.2017 & CTPS U#2(130 MW) on 30.07.2017
DVC, BTPS-B U#1&2(2X210 MW)

SL. N0.	NAME OF THE POWER SYSTEM/ STATION	INSTALLED CAPACITY (MW)			**PRESENT CAPACITY (AFTER DERATION)**	**EFFECTIVE CAPACITY**
		NO. & CAPACITY OF UNITS **ON 31-03-18**	**Commissioned(+)/ De-commissioned(-) 2018-19**	**TOTAL AS ON 2018-19**	(MW) AS ON **31.03.2018**	**(MW) AS ON 31.03.18**
IV	**ODISHA**					
	THERMAL					
17	TALCHER TPS	4x62.5+2x110		470	**4x60**+2x110	460
18	IB TPS	2x210		420	2x210	420
	SUB TOTAL (THERMAL)	**890**		**890**	**880**	**880**
	HYDRO ,OHPC					
19	BURLA (Hirakud-I)*	2x49.5+2x32+3x37.5		275.5	2x49.5+2x32+3x37.5	275.5
20	CHIPLIMA (Hirakud-II)	3x24		72	3x24	72
21	BALIMELA	6x60+2x75		510	6x60+2x75	510
22	RENGALI	5x50		250	5x50	250
23	UPPER KOLAB	4x80		320	4x80	320
24	INDRAVATI	4x150		600	4x150	600
25	MACHKUND (Odisha Share)**	57.38		57.38	57.38	57.38
	SUB TOTAL (HYDRO)	**2084.88**		**2084.88**	**2084.88**	**2084.88**
	RES(Solar)	**499.76**		499.76	**499.76**	499.76
	GRAND TOTAL (TH+HY) (ODISHA)	**3474.6**		**3474.6**	**3464.6**	**3464.6**
V	**WBPDCL**					
	THERMAL					
26	BANDEL @	4x82.5+1x215	,-(2*82.5)	380	**2x60**+1x215	335
27	SANTALDIH (U#5&6)	2x250		500	2x250	500
28	KOLAGHAT	6x210		1260	6x210	1260
29	BAKRESHWAR	5x210		1050	5x210	1050
30	SAGARDIGHI (U# 1,2,3&4)	2x300+2x500		1600	2x300+2x500	1600
31	DPPS (U#6,7,8)	1x110+1x300+1x250		660	1x110+1x300+1x250	660
	TOTAL THERMAL(WBPDCL)	**5615**	**-165**	**5450**	**5405**	**5405**
VI	**WBSEDCL**					
32	JALDHAKA-I	3x9		27	3x9	27
33	JALDHAKA-II	2x4		8	2x4	8
34	RAMAM HYDEL	4x12.73		51	4x12.73	51
35	TISTA CANAL FALLS	9x7.5		67.3	9x7.5	67.3
36	PURULIA PUMP STORAGE	4x225		900	4x225	900
	TOTAL HYDRO (WBSEDCL)	**1053.30**		**1053.30**	**1053.30**	**1053.30**
	RES	407.15		407.15	407.18	407.15
	GRAND TOTAL (TH+HY) (WB)	**7075.45**	**-165.00**	**6910.45**	**6865.48**	**6865.45**

WBPDCL, Bandel TPS U#3&4 (2X82.5 MW) each decommissioned in the month of April-2018

SL. NO.	NAME OF THE POWER SYSTEM/ STATION	INSTALLED CAPACITY (MW)			PRESENT CAPACITY (AFTER DERATION)	EFFECTIVE CAPACITY
		NO & CAPACITY OF UNITS **ON 31-03-18**	**Commissioned(+)/ De-commissioned(-) 2018-19**	**TOTAL AS ON 31.03.19**	(MW) AS ON **31.03.2019**	**(MW) AS ON 31.03.19**
VII	**CESC THERMAL**					
37	SOUTHERN	2x67.5		135	135	135
40	TITAGARH	4x60		240	240	240
41	BUDGE BUDGE	3x250		750	750	750
	TOTAL (CESC)	**1125**		**1125**	**1125**	**1125**
42	**HALDIA ENERGY LTD. (HEL)(2X300 MW)**	600		**600**	600	**600**
IX	**SIKKIM**					
43	**RES**	**52.11**		**52.11**	**52.11**	**52.11**
	TOTAL (SIKKIM)	**52.11**		**52.11**	**52.11**	**52.11**
X	**NTPC**					
44	FARAKKA STPS - I&II	3x200+2x500		1600	3x200+2x500	1600
45	FARAKKA STPS - III (U# 6)	1x500		500	1x500	500
46	KAHALGAON STPS - I&II	4x210+3x500		2340	4x210+3x500	2340
47	TALCHER STPS - I	2x500		1000	2x500	1000
48	BARH (U# 4&5)	2x660		1320	2x660	1320
49	MTPS Stg-II	2X195		390	2X195	390
50	BRBCL,Nabi Nagar TPS	2X250	1X250	750	3X250	750
	TOTAL (NTPC)	**7650**	**250**	**7900**	**7900**	**7900**
XI	**NHPC**					
51	RANGIT HPS	3x20		60	3x20	60
52	TEESTA HPS	3x170		510	3x170	510
53	TLDP-III @@	4x33		132	4x33	132
54	TLDP-IV @@	4x40		160	4x40	160
	TOTAL	**862**		**862**	**862**	**862**
XII	**IPP**					
55	**MPL (Thermal U#1,2)**	2x525		1050	2x525	1050
56	**APNRL (Thermal U# 1,2)**	2x270		540	2x270	540
57	**GMR (Thermal U# 1&2)**	2x350		700	2x350	700
58	**JITPL(Thermal U# 1,2)**	2x600		1200	2x600	1200
	TOTAL IPP (THERMAL)	3490		3490	3490	3490
59	**CHUZACHEN (Hydro U#1,2)**	2x55		110	2x55	110
60	**JORETHANG(Hydro U#1,2)**	2x48		96	2x48	96
61	**TEESTA URJA St III (6x200)**	6x200		1200	6x200	1200
62	**DICKCHU HEP(2x 48)**	2x48		96	2x48	96
63	**TASHIDING(2x 48.5)**	2x48.5		97	2x48.5	97
	TOTAL IPP (HYDRO)	**1599**		**1599**	**1599**	**1599**
XIII						
64	**TALCHER SOLAR**	**10**		**10**	**10**	**10**
XIV	**BHUTAN IMPORT ****					
65	**CHPS**	4x90		360	4x90	270
66	**KURICHHU HPS**	4x15		60	4x15	60
67	**TALA HPS**	6x170		1020	6x170	867
68	**DAGHACHU**	2x63		126	2x63	126
	TOTAL BHUTAN IMPORT	**1566**		**1566**	**1556**	**1323**
XV	**EASTERN REGION(Excluding Bhutan import)**					
	THERMAL	**27330**	**85**	**27415**	**27340**	**27340**
	HYDRO	**5876**		**5876**	**5876**	**5876**
	DIESEL	**0**		**0**	**0**	**0**
	SOLAR	**1336**		**1336**	**1336**	**1336**
	ER GRAND TOTAL (Excl. Bhutan)	**34542**	**85**	**34627**	**34552**	**34552**

** Allocated import by ER from Bhutan (90 MW of Chukha power is for own consumption of Bhutan & 15% of Tala power allocated to NR)
100% power of TLDP-III & IV under NHPC is allocated for West Bengal.
TSTPS Stage-II (4x500 MW) of NTPC though geographically situated in Orissa but it is meant for SR, hence not considered for I.C. of ER.
Capacity of A&N Island (Installed & Effective Capacity of DG 28.03 MW & 23.56 MW respectively) not considered

ANNEXURE - IV B

NEW UNITS DECLARED COMMERCIAL IN EASTERN REGION DURING 2018-19

State	Agency	Name of Power Station	Type	Unit No	Capacity (MW)	Date of COD
BIHAR	NTPC & RAILWAY	BRBCL	THERMAL	U # 3	250	26.02.2019

ANNEXURE - IV C (Page-1/2)

NEW TRANSMISSION ELEMENTS COMMISSIONED DURING 2018-19

A. TRANSMISSION LINES ADDITION DURING THE YEAR

Sl. No.	Name of the lines	VOLTAGE KV	OWNER	Date of Commissioning
1	New-Duburi-TSL (Kalinganagar) - I	400	OPTCL	17-Apr-18
2	Kasba- Barasat-I (LILO of Jeerat-Kasba line at Barasat S/S)	220	WBSETCL	27-Apr-18
3	Jeerat- Barasat-I (LILO of Jeerat-Kasba line at Barasat S/S)	220	WBSETCL	27-Apr-18
4	Kasba- Barasat-II (LILO of Jeerat-Kasba line at Barasat S/S)	220	WBSETCL	28-Apr-18
5	Jeerat- Barasat-II (LILO of Jeerat-Kasba line at Barasat S/S)	220	WBSETCL	28-Apr-18
6	Alipurduar (PG)-Alipurduar(WB)- II	220	WBSETCL	22-May-18
7	Darbanga(DMTCL)-Laukhai- I&II	220	WBSETCL	23-May-18
8	Alipurduar (PG)-Alipurduar(WB)- I	220	WBSETCL	31-May-18
9	Darbanga(DMTCL)-Darbanga(BSPTCL)-I	220	BSPTCL	12-Jun-18
10	Darbanga(DMTCL)-Darbanga(BSPTCL)-II	220	BSPTCL	13-Jun-18
11	Dikchu-Rangpo	400	TPTL/DIKCHU	30-Jun-18
12	BTPS(old)-Hajipur	220	BSPTCL	07-Aug-18
13	Begusarai-Purnia(PG)- I & II	220	BSPTCL	28-Aug-18
14	Farakka-Beherampur-I&II	400	PGCIL	01-Sep-18
15	Jharsuguda- Dharamjaygarh- III	765	PGCIL	31-Oct-18
16	Jharsuguda- Dharamjaygarh- IV	765	PGCIL	01-Nov-18
17	Lapanga-Meramundali - I & II	400	OPTCL	02-Nov-18
18	Lapanga-Vedanta- I & II	400	OPTCL	05-Nov-18
19	Lapanga-IB Stg II (OPGC)-II	400	OPTCL	05-Nov-18
20	Lapanga-IB Stg II (OPGC)-I	400	OPTCL	09-Nov-18
21	Jharsuguda-Anugul-III & IV	765	OPTCL	28-Nov-18
22	New-Purnia-Begusarai- I	220	BSPTCL	19-Dec-18
23	Keonjhar(PG) - Keonjhar (OPTCL)- I	220	OPTCL	31-Dec-18
24	Teesta III- Kishanganj	400	TPTL	04-Jan-19
25	Subhasgam - Rajarhat	400	PGCIL	28-Jan-19
26	Jeerat - Rajurhat	400	PGCIL	28-Jan-19
27	Chaibasa - Ramchandrapur - I & II	220	JUSNL	30-Jan-19
28	LILO of EMSS - NCSS-II at Princep street S/S	220	CRSC	09-Feb-19
29	Rangpo - Kishanganj	400	TPTL/PGCIL	11-Feb-19
30	Darbhanga - Kishanganj - I	400	PGCIL	12-Mar-19

ANNEXURE - IV C (Page-2/2)

B. SUB-STATIONS / ATRS / REACTORS ADDITION DURING THE YEAR 2018-19

Sl. No.	Substation/ATRS/Reactors	Voltage level(kV)	Utility	Date of Commissioning
1	220 MVA TR-I & II at Barasat S/S	220/132	WBSETCL	27-Apr-18
2	200 MVA ICT-I at NSTPP S/S	400/132	NPGC	04-05-2018
3	315 MVA ICT-I at DSTPS S/S	400/220	DVC	23-May-18
4	315 MVA ICT-I at Daltanganj S/S	400/220	PGCIL	03-Nov-18
5	160 MVA ICT-I & II at Alipurduar S/S	220/132	WBSETCL	30-Nov-18
6	315 MVA ICT-I at Lapanga S/S	400/220	OPTCL	09-Nov-18
7	1500 MVA ICT-IV at GAYA S/S	765/400	PGCIL	03-Jan-19
8	200 MVA ICT-II at NSTPP S/S	400/132	NPGC	15-Jan-19
9	500 MVA ICT-III at GAYA S/S	400/220	PGCIL	06-Feb-19
10	160 MVA ICT-I at Princep street S/S	220/132	CESC	11-Feb-19
11	500 MVA ICT-II at Patna S/S	400/220	PGCIL	15-Feb-19
1	240 MVAR Line reactor at 765 KV Angul-Jharsuguda- IV at Jharsuguda e	400	PGCIL	1-Apr-2018
2	240 MVAR Line reactor at 765 KV Angul-Jharsuguda- IV at Angul end.	400	PGCIL	12-Apr-2018
3	125 MVAR Bus reactor II at Baripada.	400	PGCIL	28-Jun-2018
4	125 MVAR Bus reactor II at Durgapur.	400	PGCIL	31-Jul-2018
5	125 MVAR Bus reactor II at Banka.	400	PGCIL	27-Sep-2018
6	50 MVAR Line reactor of 400 KV Sasaram-Daltonganj-I at Daltanganj en	400	PGCIL	27-Sep-2018
7	125 MVAR Bus reactor II at Bolangir.	400	PGCIL	28-Sep-2018
8	80 MVAR Line reactor of 400 KV Purnea(New)-Farakka at Purnea end.	400	PGCIL	26-Oct-2018
9	80 MVAR Line reactor of 400 KV Purnea(New)-Gokarna at Purnea end.	400	PGCIL	30-Oct-2018
10	125 MVAR Bus reactor II at Keonjhar.	400	PGCIL	31-Oct-2018
11	240 MVAR Line reactor of 765 KV Angul-Jharsuguda-III at Angul end.	400	PGCIL	31-Oct-2018
12	125 MVAR Bus reactor II at Keonjhar.	400	PGCIL	3-Nov-2018
13	50 MVAR Bus reactor at Nabinagar STPP.	400	PGCIL	18-Jan-2019
14	80 MVAR Line reactor of 400 KV Rajarhat- Gokarna at Rajarhat end.	400	PGCIL	30-Jan-2019
15	125 MVAR Bus reactor I at Rajarhat.	400	PGCIL	15-Mar-2019
16	125 MVAR Bus reactor II at Rajarhat.	400	PGCIL	29-Mar-2019
17	80 MVAR Line reactor of 400 KV Rajarhat- Farakka line at Rajarhat end.	400	PGCIL	30-Mar-2019
18	240 MVAR Line reactor of 765 KV Sundargarh-Raipur-2 at Sundargarh en	400	PGCIL	31-Mar-2019

ANNEXURE-V

CONSTITUENT-WISE PERFORMANCE DATA DURING 2018-19

SYSTEM	Gross Generation(MU)				Auxiliary power Consumption(MU)			Net Generation (MU)				Import from	Net Exchang	Energy	**Net Peak**
	HYDRO	Thermal	RES (Hy+Solar)	Total	HYDRO	Thermal	Total	HYDRO	Thermal	RES (Hy+Solar)	Total	Captive (MU	Import(+)	Consum-	DEMAND
													Export(-)	ption(MU)	MET (MW)
BIHAR	**0.00**	**780.62**	**415.74**	**1196.36**	**0.00**	**94.60**	**94.60**	**0.00**	**686.02**	**415.74**	**1101.76**	**0.00**	**29163.07**	**30265**	**5084**
JSEB	**102.46**	**1689.05**	**0.00**	**1791.51**	**0.00**	**215.09**	**215.09**	**102.46**	**1473.96**	**0.00**	**1576.42**	**522.53**	**6500.58**	**8600**	**1291**
DVC	**186.41**	**36678.07**	**0.00**	**36864.48**	**1.34**	**2552.73**	**2554.07**	**185.07**	**34125.35**	**0.00**	**34310.41**	**134.75**	**-12026.39**	**22419**	**3098**
ODISHA(OPGC+OHPC+TTPS)	**6456.88**	**6689.77**	**197.42**	**13344.07**	**52.47**	**722.36**	**774.83**	**6404.41**	**5967.41**	**197.42**	**12569.24**	**5862.83**	**13540.86**	**31973**	**5434**
'BPDCL+WBSEDCL+DPL(from 01.01.1	**1623.38**	**23094.93**	**0.00**	**24718.31**	**0.00**	**2231.12**	**2231.12**	**1623.38**	**20863.82**	**0.00**	**22487.20**	**1472.84**	**15529.48**	**39490**	**7009**
DPL(up to 31.12.18)	**0.00**	**1772.66**	**4.60**	**1777.26**	**0.00**	**187.10**	**187.10**	**0.00**	**1585.56**	**4.60**	**1590.16**	**0.00**	**60.19**	**1650**	**289**
CESC	**0.00**	**6298.45**	**0.00**	**6298.45**	**0.00**	**488.51**	**488.51**	**0.00**	**5809.94**	**0.00**	**5809.94**	**0.00**	**4915.30**	**10725**	**2120**
Haldia Energy limited	**0.00**	**4614.72**	**0.00**	**4614.72**	**0.00**	**349.37**	**349.37**	**0.00**	**4265.35**	**0.00**	**4265.35**	**0.00**	**-4265.35**		
SIKKIM	**0.00**	**0.00**	**26.00**	**26.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**26.00**	**26.00**	**0.00**	**515.72**	**542**	**106**
NTPC	**0.00**	**53311.79**	**13.72**	**53325.51**	**0.00**	**3753.55**	**3753.55**	**0.00**	**49558.24**	**13.72**	**49571.96**	**0.00**	**-49571.96**		
MPL	**0.00**	**7267.86**	**0.00**	**7267.86**	**0.00**	**411.85**	**411.85**	**0.00**	**6856.01**	**0.00**	**6856.01**	**0.00**	**-6856.01**		
APNRL	**0.00**	**2875.74**	**0.00**	**2875.74**	**0.00**	**240.07**	**240.07**	**0.00**	**2635.67**	**0.00**	**2635.67**	**0.00**	**-2635.67**		
GMR	**0.00**	**4523.33**	**0.00**	**4523.33**	**0.00**	**286.67**	**286.67**	**0.00**	**4236.66**	**0.00**	**4236.66**	**0.00**	**-4236.66**		
JITPL	**0.00**	**4213.60**	**0.00**	**4213.60**	**0.00**	**283.92**	**283.92**	**0.00**	**3929.68**	**0.00**	**3929.68**	**0.00**	**-3929.68**		
NHPC (Inc TLDP=1249.67MU)	**4272.63**			**4272.63**	**0.00**	**0.00**	**0.00**	**4272.63**	**0.00**	**0.00**	**4272.63**	**0.00**	**-4272.63**		
CHPC(Birpara Receipt)	**1348.07**			**1348.07**	**0.00**	**0.00**	**0.00**	**1348.07**	**0.00**	**0.00**	**1348.07**	**0.00**	**-1348.07**		
KHPS	**285.57**			**285.57**	**0.00**	**0.00**	**0.00**	**285.57**	**0.00**	**0.00**	**285.57**	**0.00**	**-285.57**		
THPS	**2411.73**			**2411.73**	**0.00**	**0.00**	**0.00**	**2411.73**	**0.00**	**0.00**	**2411.73**	**0.00**	**-2411.73**		
DAGACHU HPS	**350.49**			**350.49**	**0.00**	**0.00**	**0.00**	**350.49**	**0.00**	**0.00**	**350.49**	**0.00**	**-350.49**		
CHUZACHEN HPS	**413.66**			**413.66**	**0.00**	**0.00**	**0.00**	**413.66**	**0.00**	**0.00**	**413.66**	**0.00**	**-413.66**		
JORTHANG HPS	**407.97**			**407.97**	**0.00**	**0.00**	**0.00**	**407.97**	**0.00**	**0.00**	**407.97**	**0.00**	**-407.97**		
TEESTA-III HPS	**4227.22**			**4227.22**	**0.00**	**0.00**	**0.00**	**4227.22**	**0.00**	**0.00**	**4227.22**	**0.00**	**-4227.22**		
DIKCHU HPS	**460.00**			**460.00**	**0.00**	**0.00**	**0.00**	**460.00**	**0.00**	**0.00**	**460.00**	**0.00**	**-460.00**		
TASHIDING HPS	**421.60**			**421.60**	**0.00**	**0.00**	**0.00**	**421.60**	**0.00**	**0.00**	**421.60**	**0.00**	**-421.60**		
Total Drawal by BRBCL,Indbharat , OPGC and consumption at HVDC Sasaram& Alipurduar.													**99.16**	**99.16**	
Total	**22968.09**	**153810.59**	**657.48**	**177436.16**	**53.81**	**11816.93**	**11870.74**	**22914.28**	**141993.66**	**657.48**	**165565.42**	**7992.95**	**-27796.31**	**145762**	**22733**
													145762		

		BSEB	JSEB	DVC	ODISHA	WBSEDCL	CESC	SIKKIM	REGION
ANNUAL LOAD FACTOR:		**67.96**	**76.04**	**82.61**	**67.17**	**64.32**	**57.75**	**58.34**	**73.20**

Note: 1. BSPHCL exchange inclusive of the drawal of Nepal from BSPHCL network .

2. Sikkim's generarion figure is estimated

3. Net Exchange of Energy is inclusive of Transmission loss at the periphery of respectives system.

ANNEXURE-VI A

CONSTITUENT WISE PEAK DEMAND MET DURING 2018-19

(All figures in Net MW)

MONTH	BSEB	JSEB	DVC	ODISHA	WBSEDCL	CESC	DPL	SIKKIM	ER
	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met
Apr-18	4463	1222	2877	4358	6546	1917	264	90	21058
May-18	4790	1279	2890	4974	6533	2063	283	88	21902
Jun-18	4851	1222	2901	4684	6449	2120	287	83	22080
Jul-18	4931	1245	2874	4526	7009	1943	288	81	21790
Aug-18	4876	1287	2827	5434	6643	1832	275	85	22580
Sep-18	4992	1250	2764	4936	6759	1932	273	85	22286
Oct-18	5084	1247	2837	5219	6809	1923	278	93	22733
Nov-18	4425	1289	2837	4516	5627	1758	273	101	20322
Dec-18	4151	1291	2957	4042	4688	1346	289	106	18023
Jan-19	4249	1260	2871	4198	5259	1292		106	18702
Feb-19	4216	1264	3098	4264	5611	1439		104	18921
Mar-19	4489	1248	2954	4632	6618	1662		104	21245
MAXIMUM	**5084**	**1291**	**3098**	**5434**	**7009**	**2120**	**289**	**106**	**22733**
MINIMUM	**4151**	**1222**	**2764**	**4042**	**4688**	**1292**	**264**	**81**	**18023**
AVERAGE	**4626**	**1259**	**2891**	**4649**	**6213**	**1769**	**279**	**94**	**20970**
% AVG. Growth wrt 17-18	***10.56***	***2.19***	***1.20***	***9.31***	***7.19***	***0.02***	***3.90***	***1.62***	***9.36***

From 01.01.2019 DPL generating capacity is taken over by WBPDCL where as distribution is taken over by WBSEDCL

CONSTITUENT WISE PEAK DEMAND MET DURING 2017-18

MONTH	BSEB	JSEB	DVC	ODISHA	WBSEDCL	CESC	DPL	SIKKIM	ER
	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met	Peak Demand Met
Apr-17	3923	1177	2803	4262	6247	1980	276	88	19164
May-17	4062	1217	2726	4149	5877	2110	274	83	19509
Jun-17	4151	1214	2746	3902	6067	2148	276	83	18994
Jul-17	4134	1216	2761	4247	6102	1742	290	78	19110
Aug-17	4101	1245	2721	4254	6151	1790	273	78	19221
Sep-17	4437	1232	2851	4365	6470	1964	257	85	20283
Oct-17	4527	1254	2700	4488	6098	1848	243	99	19882
Nov-17	3919	1314	2957	4191	4998	1643	252	108	18377
Dec-17	3969	1235	2944	4254	4836	1391	242	107	17837
Jan-18	4359	1233	3079	4232	4931	1306	256	104	18238
Feb-18	4146	1220	2989	4213	5316	1563	264	103	18918
Mar-18	4487	1223	2997	4475	6456	1738	318	92	20567
MAXIMUM	**4527**	**1314**	**3079**	**4488**	**6470**	**2148**	**318**	**108**	**20567**
MINIMUM	**3919**	**1177**	**2700**	**3902**	**4836**	**1306**	**242**	**78**	**17837**
AVERAGE	**4185**	**1232**	**2856**	**4253**	**5796**	**1769**	**268**	**92**	**19175**
% AVG. Growth wrt 16-17	***15.84***	***6.74***	***15.33***	***7.57***	***0.39***	***1.09***	***5.71***	***8.20***	***5.40***

Constituent wise Peak Demand Met during 2016-17

MONTH	BSEB	JSEB	DVC	ODISHA	WBSEDCL	CESC	DPL	SIKKIM	ER
Apr-16	3518	1192	2518	3965	6038	2055	284	84	18607
May-16	3634	1116	2493	3965	5820	2009	274	79	18306
Jun-16	3520	1110	2608	4052	5976	1943	271	80	18302
Jul-16	3583	1122	2428	4072	5862	1722	284	76	18338
Aug-16	3529	1162	2382	4105	6079	1837	262	78	18418
Sep-16	3623	1138	2723	3936	5968	1846	253	82	18469
Oct-16	3699	1195	2493	3999	6232	1926	245	81	18930
Nov-16	3780	1159	2332	3861	5637	1685	234	86	18239
Dec-16	3520	1161	2265	3830	4667	1404	258	91	17019
Jan-17	3698	1184	2502	3794	5379	1316	230	96	17556
Feb-17	3536	1165	2474	3847	5429	1531	222	95	17901
Mar-17	3710	1143	2500	4013	6193	1721	230	96	18225
MAXIMUM	3780	1195	2723	4105	6232	2055	284	96	18930
MINIMUM	3518	1110	2265	3794	4667	1316	222	76	17019
AVERAGE	3613	1154	2477	3953	5773	1750	254	85	18193

संलग्नक / ANNEXURE -VI.B

वर्ष 2018-19 के दौरान राज्यवार मासिक वास्तविक अधिकतम मांग (मे.वा. में)

Statewise Monthly Actual Peak Demand in MW during 2018-19

(Ex-Bus MW Figs)

महिना / Month	States	BIHAR	JHARKHAND	DVC	ODISHA	WBSEDCL	CESC	DPL	SIKKIM	EASTERN REGION
	Actual / UR	1	2	3	4	5	6	7	8	9
अप्रैल / Apr-18	Actual	4463	1222	2877	4358	6546	1917	264	90	21058
	Unrestricted	4482	1226	2925	4362	6566	1920	264	90	21128
मई / May-18	Actual	4790	1279	2890	4974	6533	2063	283	88	21902
	Unrestricted	4880	1284	2900	4982	6590	2068	285	89	22012
जून / June-18	Actual	4851	1222	2901	4684	6449	2120	287	83	22080
	Unrestricted	4958	1224	2907	4708	6469	2122	288	83	22964
जुलाई / July-18	Actual	4931	1245	2874	4526	7009	1943	288	81	21790
	Unrestricted	4960	1250	2877	4532	7014	1946	289	81	21849
अगस्त / Aug-18	Actual	4876	1287	2827	5434	6643	1832	275	85	22580
	Unrestricted	4899	1292	2832	5451	6666	1840	275	85	22794
सितंबर / Sep-18	Actual	4992	1250	2764	4936	6759	1932	273	85	22286
	Unrestricted	4993	1251	2766	4950	6796	1944	274	86	22815
अक्तूबर / Oct-18	Actual	5084	1247	2837	5219	6809	1923	278	93	22733
	Unrestricted	5115	1247	2900	5231	6816	1926	278	93	23093
नवम्बर / Nov-18	Actual	4425	1289	2837	4516	5627	1758	273	101	20322
	Unrestricted	4425	1289	2837	4516	5630	1763	273	101	20512
दिसम्बर / Dec-18	Actual	4151	1291	2957	4042	4688	1346	289	106	18023
	Unrestricted	4155	1292	2958	4048	4705	1348	290	106	18049
जनवरी / Jan-19	Actual	4249	1260	2871	4198	5259	1292		106	18702
	Unrestricted	4251	1260	2873	4198	5273	1295		106	18783
फरवरी / Feb-19	Actual	4126	1264	3098	4264	5611	1439		104	18921
	Unrestricted	4130	1265	3100	4272	5620	1439		104	18923
मार्च / March-19	Actual	4489	1248	2954	4611	6618	1662		104	21221
	Unrestricted	4496	1250	2954	4623	6770	1665		104	21416
Maximum	Actual	5084	1291	3098	5434	7009	2120	289	106	22733
	Unrestricted	5115	1292	3100	5451	7014	2122	290	106	23093
Minimum	Actual	4126	1222	2764	4042	4688	1292	264	81	18023
	Unrestricted	4130	1224	2766	4048	4705	1295	264	81	18049
Average	Actual	4619	1259	2891	4647	6213	1769	279	94	20968
	Unrestricted	4645	1261	2902	4656	6243	1773	279	94	21195

ANNEXURE-VII A

Constituent wise net energy consumption during 2018-19

(All Figures in Net MU)

MONTH	BSEB	JSEB	DVC (OWN)	ODISHA	WBSEDCL (OWN)	DPL	CESC	WEST BENGAL (TOTAL)	SIKKIM	ER (TOTAL)	Per Day
Apr-18	2462	680	1841	2372	3277	177	955	4409	45	11809	394
May-18	2682	732	1923	2888	3503	192	1071	4766	43	13036	421
Jun-18	2743	702	1879	2847	3655	190	1064	4909	41	13123	437
Jul-18	2821	722	1931	2635	3802	192	1055	5050	42	13204	426
Aug-18	*2898*	*746*	*1853*	*3163*	*3907*	*181*	*1044*	*5132*	*40*	*13837*	*446*
Sep-18	2843	733	1750	2932	3710	176	1027	4912	39	13216	441
Oct-18	2694	730	1838	3223	3347	178	944	4470	44	13009	420
Nov-18	2218	721	1823	2662	2638	178	761	3578	46	11058	369
Dec-18	*2223*	*727*	*1904*	*2268*	*2501*	*187*	*676*	*3364*	*53*	*10556*	*341*
Jan-19	2347	749	1966	2259	2956		667	3623	53	11009	355
Feb-19	1987	642	1740	2111	2810		637	3447	47	9986	357
Mar-19	2348	716	1972	2615	3384		823	4207	49	11917	384
TOTAL	30265	8600	22419	31973	39490	1650	10725	51866	542	145762	399
AVERAGE	2522	717	1868	2664	3291	183	894	4322	45	12147	399
MAXIMUM	2898	749	1972	3223	3907	192	1071	5132	53	13837	446
MINIMUM	1987	642	1740	2111	2501	176	637	3364	39	9986	341
% Growth wrt 17-18	*10.64*	*1.28*	*5.11*	*9.13*	*3.35*	*9.66*	*-1.45*	*1.50*	*5.66*	*5.54*	
Per day Consumption	82.92	23.56	61.42	87.60	108.19	6.00	29.38	142.10	1.48	399.35	

From 01.01.2019 DPL generating capacity is taken over by WBPDCL where as distribution is taken over by WBSEDCL

Constituent wise net energy consumption during 2017-18

(All Figures in Net MU)

MONTH	BSEB	JSEB	DVC (OWN)	ODISHA	WBSEDCL (OWN)	DPL	CESC	WEST BENGAL (TOTAL)	SIKKIM	ER (TOTAL)	Per Day
Apr-17	2099	731	1732	2541	3500	170	1009	4679	39	11821	394.05
May-17	2289	718	1747	2601	3398	175	1122	4695	40	12090	389.99
Jun-17	2439	685	1734	2325	3495	167	1077	4739	37	11959	398.64
Jul-17	2317	661	1728	2468	3438	171	992	4602	37	11813	381.05
Aug-17	2449	740	1770	2493	3542	174	1036	4751	36	12239	394.80
Sep-17	2582	724	1786	2654	3581	162	1034	4777	37	12560	418.67
Oct-17	2532	706	1769	2759	3219	159	932	4310	42	12117	390.86
Nov-17	1932	675	1723	2156	2527	155	748	3431	50	9965	332.18
Dec-17	2027	726	1866	2206	2493	165	682	3341	51	10216	329.56
Jan-18	2338	743	1923	2361	2712	172	670	3554	52	10972	353.93
Feb-18	1977	648	1706	2180	2733	159	669	3560	47	10118	361.36
Mar-18	2373	734	1846	2553	3573	177	913	4662	45	12213	393.98
TOTAL	27355	8490	21329	29297	38211	2007	10882	51100	513	138105	378
AVERAGE	2280	708	1777	2441	3184	167	907	4258	43	11507	378
MAXIMUM	2582	743	1923	2759	3581	177	1122	4777	52	12560	419
MINIMUM	1932	648	1706	2156	2493	155	669	3341	36	9965	330
% Growth wrt 16-17	*14.62*	*5.62*	*6.59*	*12.39*	*0.81*	*9.24*	*1.88*	*1.34*	*9.56*	*7.13*	
Per day Consumption	74.94	23.26	58.43	80.27	104.69	5.50	29.81	140.00	1.40	378.37	

Constituent wise net energy consumption during 2016-17

(All Figures in Net MU)

MONTH	BSEB	JSEB	DVC (OWN)	ODISHA	WBSEDCL (OWN)	DPL	CESC	WEST BENGAL (TOTAL)	SIKKIM	ER (TOTAL)	Per Day
Apr-16	1964	732	1738	2295	3543	175	1080	4798	35	11562	385.40
May-16	1932	662	1542	2153	3301	173	1055	4529	35	10853	350.10
Jun-16	2035	637	1685	2249	3439	173	1048	4660	36	11302	376.73
Jul-16	2166	674	1547	2339	3455	174	992	4621	39	11386	367.29
Aug-16	2150	639	1690	2273	3465	155	1017	4637	35	11424	368.52
Sep-16	2031	622	1694	2009	3392	144	957	4493	36	10885	362.83
Oct-16	2176	649	1836	2341	3572	150	952	4674	38	11714	377.87
Nov-16	1876	656	1593	1977	2486	137	721	3344	39	9485	316.17
Dec-16	1874	694	1635	2000	2475	133	678	3286	43	9532	307.48
Jan-17	1951	703	1721	2074	2746	143	667	3556	45	10050	324.19
Feb-17	1763	665	1591	2021	2791	137	680	3608	42	9690	346.07
Mar-17	1948	706	1741	2337	3241	143	834	4218	45	10995	354.68
TOTAL	23866	8039	20010	26068	37904	1837	10681	50424	468	128916	
AVERAGE	1989	670	1668	2172	3159	153	890	4202	39	10740	353
MAXIMUM	2176	732	1836	2341	3572	175	1080	4798	45	11714	385
MINIMUM	1763	622	1542	1977	2475	133	667	3286	35	9485	307
% Growth wrt 15-16	*4.14*	*9.98*	*4.91*	*0.44*	*5.36*	*-7.88*	*-1.12*	*3.38*	*22.24*	*3.62*	
Per day Consumption	65.39	22.02	54.82	71.42	103.85	5.03	29.26	138.15	1.28	353.19	

वर्ष 2018-19 में विद्युत की राज्यवार मासिक आवश्यकता एवं उपभोग (मि.यू. में)

Statewise Monthly Energy Requirement and Consumption in MU during 2018-19

(EX-Bus Figs from PSP)

ा / State	BIHAR		JHARKHAND☐		DVC☐		ODISHA☐		WBSEDCL☐		CESC☐		DPL		SIKKIM		Eastern Region	
स / Mon	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement	Actual Consumption	Unrestricted Requirement
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	
अप्रैल / A	2462	2473	679	709	1841	1858	2372	2375	3277	3316	955	956	176	177	45	45	11809	11909
मई / Ma	2682	2763	732	743	1923	1948	2888	2894	3503	3531	1071	1074	191	191	43	43	13036	13187
जून / Jur	2743	2817	702	707	1879	1885	2848	2851	3655	3677	1065	1066	189	189	41	41	13123	13234
जुलाई / J	2821	2842	722	725	1931	1935	2634	2637	3802	3820	1055	1056	192	192	42	43	13204	13247
अगस्त / A	2898	2917	747	750	1853	1905	3163	3166	3907	3925	1044	1045	181	181	40	40	13837	13927
सितंबर /	2843	2891	733	750	1750	1902	2932	2936	3710	3733	1027	1028	175	175	39	39	13216	13454
अक्तूबर /	2694	2710	730	772	1838	1882	3223	3227	3347	3360	944	945	178	178	44	44	13009	13120
नवम्बर /	2218	2226	721	733	1823	1877	2662	2665	2638	2644	761	762	178	179	46	46	11058	11131
दिसम्बर /	2223	2231	727	765	1904	1914	2268	2271	2501	2509	676	677	187	187	53	53	10556	10607
जनवरी /	2347	2354	749	808	1966	1973	2259	2261	2956	2964	667	667	0	0	53.3	53.33	11009	11080
फरवरी /	1987	1993	642	652	1740	1742	2111	2111	2810	2822	637	637	0	0	46.48	46.48	9986	10003
मार्च / Ma	2348	2354	716	733	1972	1975	2615	2616	3384	3398	823	824	0	0	49.16	49.29	11917	11950
Total	**30265**	**30570**	**8600**	**8849**	**22419**	**22797**	**31974**	**32010**	**39491**	**39698**	**10725**	**10737**	**1647**	**1649**	**542**	**543**	**145762**	**146848**

Note : (a) Drawl from Central Sector is at ISGS periphery.
(b) From the month of January-19, DPL Generation and Distribution load has been taken over by WBPDCL and WBSEDCL respectively.

ANNEXURE-VIII A

INTER-REGIONAL AND INTRA-REGIONAL EXCHANGE OF ENERGY DURING 2018-19

All Figures in MU

	Months--->	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	TOTAL (Net)	TOTAL DRAWAL
	SYSTEM													DRAWAL	Incl. T.loss
DRAWAL BY	BSPHCL	2319.75	2557.25	2607.31	2678.08	2809.69	2767.68	2567.29	2105.57	2067.33	2154.07	1811.75	2167.48	28613.25	29163.07
	JUVNL	472.37	582.07	547.68	567.55	582.95	537.34	501.37	456.50	508.21	590.45	474.47	557.07	6378.02	6500.58
	GRIDCO	847.88	1192.24	1416.22	1312.59	1601.97	1004.87	1284.58	1188.27	842.42	815.49	712.92	1066.13	13285.57	13540.86
	WBSEDCL	1059.65	1411.73	1580.97	1627.39	1839.26	2004.38	1185.41	834.71	649.08	756.17	635.17	1123.40	14707.34	14989.95
	SIKKIM	41.06	39.39	37.11	37.77	36.06	35.62	40.46	44.24	50.87	51.34	44.67	47.40	506.00	515.72
	NER	240.80	77.97	270.69	370.48	518.58	481.10	397.73	375.37	0.00	0.00	0.00	0.00	2732.71	2785.22
	NR	1374.18	2014.21	1957.71	2362.27	1905.79	1150.68	1067.05	1108.83	1714.44	1975.14	1655.28	1819.55	20105.11	20491.45
	SR	1354.62	837.02	661.37	712.92	555.65	1168.79	945.65	1462.22	1141.72	1350.13	1407.07	1925.81	13522.97	13782.82
	NEPAL	84.91	83.66	72.63	71.52	80.67	122.35	72.06	64.42	152.09	184.11	159.89	166.85	1315.15	1340.43
	BANGLADESH	198.54	351.85	326.04	345.94	363.86	498.50	525.96	420.93	353.32	360.23	425.45	546.87	4717.46	4808.11
	HVDC SASARAM	0.22	0.03	0.04	0.03	0.03	0.03	0.02	0.02	0.03	0.19	0.41	0.38	1.43	1.46
	ALIPURDUAR	0.46	0.55	0.61	0.74	0.73	0.76	0.63	0.52	0.04	0.34	0.35	0.36	6.11	6.22
	NPGC INFIRM	0.00	1.37	2.11	2.42	2.74	1.5362	4.99	2.32	11.09	5.01	4.66	0.00	38.24	38.98
	Darlipali STPS	0.00	0.00	0.14	0.20	0.34	0.47	0.66	0.98	0.32	3.30	2.05	2.22	10.69	10.89
	INDBHARAT	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.21
	BRBCL INFIRM	0.00	0.00	0.00	0.00	0.00	0.80	1.48	1.04	1.78	0.00	0.00	0.00	5.10	5.20
	OPGC INFIRM	0.22	0.42	0.58	1.40	2.10	2.87	1.55	5.15	4.83	3.64	5.74	7.02	35.52	36.20
	Total Drawal	7994.86	9149.75	9481.21	10091.30	10300.41	9777.77	8596.90	8071.09	7497.56	8249.62	7339.87	9430.53	105980.87	108017.36
INJECTION BY	FSTPS I&II	520.97	785.18	925.03	907.66	844.05	957.04	875.62	996.41	1003.83	981.31	808.89	887.31	10493.32	
	FSTPS- III	286.86	306.27	233.06	279.36	296.86	285.20	303.05	226.80	298.78	305.63	238.36	277.70	3337.94	
	KhSTPP-I	453.85	493.13	449.22	395.63	450.49	465.99	488.00	458.80	509.27	490.55	395.81	428.58	5479.33	
	KhSTPP-II	888.17	733.44	675.41	751.53	904.41	700.20	851.60	878.27	912.01	897.71	741.41	891.67	9825.81	
	TSTPS-I	614.08	658.70	590.05	567.86	561.58	552.73	561.11	537.96	265.63	376.97	505.56	657.61	6449.85	
	Barh STPS	785.31	742.40	792.92	838.94	791.47	677.73	825.14	799.33	865.72	876.54	599.34	738.90	9333.75	
	MTPS-II	174.97	146.17	84.38	137.18	183.02	210.23	172.78	208.67	208.69	187.64	161.86	182.88	2058.45	
	Total NTPC	3724.22	3865.30	3750.07	3878.16	4031.88	3849.11	4077.30	4106.25	4063.92	4116.36	3451.23	4064.64	46978.45	
	TALCHER Solar	1.36	1.41	1.13	0.79	0.84	0.93	1.20	1.21	1.12	1.21	1.22	1.30	13.72	
	APNRL	167.23	341.12	265.78	299.64	181.44	192.57	226.68	247.95	195.10	126.87	166.64	224.64	2635.67	
	GMR KEL	404.87	400.51	390.47	326.45	265.06	356.73	321.13	350.98	382.10	312.81	324.00	401.55	4236.66	
	JITPL	491.80	348.18	338.60	324.47	275.74	288.23	302.64	267.20	287.89	357.29	286.13	361.51	3929.68	
	MAITHAN	600.77	637.58	600.91	500.02	554.25	442.24	565.77	561.97	656.96	550.94	560.41	624.19	6856.01	
	BRBCL	115.44	151.30	147.80	116.07	97.82	141.20	230.84	264.94	302.15	325.01	276.97	376.44	2545.99	
	RHPS	15.46	30.81	40.63	44.14	43.79	43.80	43.04	26.83	17.85	13.12	11.52	14.16	345.13	
	TEESTA HPS	148.70	278.54	348.99	369.00	370.37	336.06	292.30	148.42	97.22	79.75	78.71	129.77	2677.83	
	CHPC	27.93	111.54	158.78	291.91	285.37	249.76	123.84	48.99	15.26	1.41	4.82	28.45	1348.07	
	KHPS	3.90	25.91	42.99	71.29	71.28	71.78	36.77	11.34	-11.17	-15.28	-12.76	-10.49	285.57	
	TALA HPS	13.54	152.26	263.57	605.05	612.18	512.06	169.72	48.60	12.20	0.79	3.38	18.39	2411.73	
	DAGACHUHPS	5.75	16.68	25.34	58.98	81.60	61.61	30.74	19.22	15.42	12.38	10.58	12.21	350.49	
	CHUZACHEN HPS	24.01	44.24	56.56	73.85	66.27	66.58	33.20	15.94	11.07	7.36	3.71	10.87	413.66	
	JORETHANG HEP	13.06	24.90	52.55	71.29	67.83	71.13	44.74	21.70	13.53	10.43	8.85	7.94	407.97	
	TEESTA URJA	202.73	404.87	574.08	562.35	529.24	574.44	460.27	263.97	184.97	141.08	125.68	203.55	4227.22	
	DIKCHU HPS	29.60	58.10	66.42	71.66	68.72	68.83	44.62	18.47	11.10	7.21	4.94	10.33	460.00	
	TASINGDIH HPS	13.73	25.05	47.82	74.27	69.86	75.93	43.43	22.30	15.94	12.35	9.79	11.13	421.60	
	DVC	1603.68	1408.21	1058.64	940.64	743.78	560.76	575.35	615.23	625.78	1194.65	1227.51	1472.15	12026.39	
	WR	542.98	1002.86	1439.13	1630.22	2083.04	1991.88	1131.26	1159.06	625.09	783.92	628.58	1293.43	14311.46	
	NER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	127.72	363.93	286.34	322.26	1100.24	
	BRBCL(infirm)										6.27	25.84	0.00	32.11	
	NPGC (infirm)												1.70	1.70	
	TOTAL INJECTION	8150.77	9329.38	9670.26	10310.26	10500.36	9955.61	8754.84	8220.58	7651.23	8409.84	7484.10	9580.14	108017.36	
	Transmission loss	155.91	179.63	189.05	218.96	199.95	177.84	157.95	149.49	153.67	160.22	144.23	149.61	2036.49	
	% Transmission loss	1.95	1.96	1.99	2.17	1.94	1.82	1.84	1.85	2.05	1.94	1.96	1.59	1.92	
Export by Bihar to Nepal	Export	194.41	163.51	119.64	107.31	98.32	54.29	50.23	61.03	117.73	146.05	112.83	129.83	1355.17	
	Import	0.00	0.06	0.81	0.80	0.72	4.79	9.38	2.30	0.28	0.02	0.20	0.16	19.55	
	Total	194.41	163.44	118.83	106.51	97.60	49.50	40.85	58.72	117.44	146.02	112.62	129.67	1335.62	

ANNEXURE-VIII (B)

	IMPORT BY ODISHA FROM CAPTIVE STATIONS DURING 2018-19													All Figs in MU
		IMPORT BY ODISHA FROM												
SN.	Name of IPP / CGPs	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Total
1	Aarti Steel Ltd, ghantikhal	11.734	16.176	11.648	8.585	9.368	1.926	3.688	3.089	1.431	7.544	8.057	7.195	**90.44**
2	ACC	0.002	0.005	0.002	0.002	0.002	0.000	0.002	0.000	0.002	0.002	0.002	0.002	**0.02**
4	Action Ispat	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
5	Aryan Ispat,	1.050	1.515	0.000	1.698	0.793	0.598	1.437	0.912	1.215	1.073	1.142	0.000	**11.43**
3	BPPL	70.874	71.875	71.033	58.437	60.639	69.418	76.819	72.985	65.280	72.862	49.142	75.144	**814.51**
5	BPSL, Jharsuguda	9.187	11.779	9.830	11.889	16.761	13.608	11.922	8.599	18.088	12.863	3.272	6.845	**134.64**
6	BSL, Meramundali	5.354	5.037	2.064	11.889	1.593	0.379	0.171	3.199	6.519	3.482	0.956	0.648	**41.29**
7	GMR Kamalanga Energy Ltd	198.166	192.422	188.427	193.425	202.645	######	191.841	175.068	165.809	209.460	11.501	135.048	**2000.36**
8	HINDALCO, Hirakud	0.000	1.937	0.000	3.855	0.000	1.762	3.420	4.487	1.920	3.338	1.697	1.641	**24.06**
9	IFFCO, Paradeep	0.001	0.0002	0.0001	0.0005	0.3007	0.0009	0.0009	0.0002	0.0002	0.0001	0.0005	0.0001	**0.31**
10	IMFA , Choudwar	29.549	0.094	0.000	17.171	0.000	20.219	0.000	13.678	26.060	27.961	27.743	24.133	**186.61**
11	JINDAL, New Duburi	8.081	9.503	8.333	9.672	0.144	10.235	8.377	7.928	7.346	8.114	6.265	6.589	**90.59**
12	JSPL, Angul	42.254	109.398	60.769	32.553	35.775	49.370	66.902	49.094	38.491	58.424	33.220	36.371	**612.62**
13	Mahavir Ferro Alloys	0.006	0.078	0.202	0.198	0.062	0.139	0.064	0.047	0.165	0.029	0.012	0.045	**1.05**
14	Maithan Ispat Ltd.	0.462	0.114	0.024	1.568	2.374	1.294	0.605	1.273	1.750	1.335	0.154	0.000	**10.95**
15	Meenakshi Power Ltd. (SH)	7.592	11.274	13.000	13.000	27.561	29.397	27.561	14.066	12.727	9.234	7.111	9.173	**181.70**
16	MSP, Jharsuguda	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
17	NALCO , Angul	17.68	21.81	4.16	10.17	4.16	50.47	41.83	33.12	10.14	0.30	0.13	0.05	**194.03**
18	Narbheram	0.000	0.069	0.106	0.038	0.030	0.244	0.432	0.350	0.078	0.066	0.086	0.200	**1.70**
19	NBVL , Kharag Prasad	7.500	19.520	15.835	12.262	11.944	20.408	30.158	5.945	6.292	7.850	6.998	5.760	**150.47**
21	NINL , Duburi	1.276	0.506	1.201	1.822	2.592	2.196	0.331	1.849	0.014	0.023	0.220	0.148	**12.18**
22	OCL	5.277	6.833	0.041	5.455	0.041	4.890	4.813	0.018	0.006	4.770	2.886	4.395	**39.43**
23	OPCL, Samal (SH)	8.132	9.245	7.225	6.377	7.382	7.444	8.866	4.477	4.048	3.499	4.182	4.690	**75.57**
26	PSAL, Keonjhar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.00**
27	RSP , Rourkela	0.000	0.001	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.01**
28	Shree Ganesh	0.758	1.060	0.790	0.842	0.829	0.804	1.066	0.885	0.764	0.518	0.518	0.559	**9.39**
29	Shyam Metallics	1.079	0.959	0.327	0.016	0.327	1.389	0.333	0.528	0.282	0.258	0.053	0.110	**5.66**
30	SMC Power	0.068	0.049	0.011	0.031	0.024	0.048	0.080	0.051	0.020	0.082	0.033	0.011	**0.51**
31	TSIL, Joda	12.596	13.121	12.141	13.535	12.249	6.963	12.046	11.504	12.470	13.402	12.651	11.172	**143.87**
32	Vedanta Ltd. (IPP-Unit-2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.418	44.162	288.718	94.854	**438.15**
33	Vedanta, Jharsuguda	49.786	4.485	13.102	21.910	1.113	0.639	0.114	58.457	33.436	63.523	59.435	59.303	**365.30**
36	Vedanta, Lanjigarh	0.532	0.609	0.604	0.564	0.650	0.376	0.672	0.599	0.689	0.421	0.591	0.493	**6.80**
37	VISA Steel	0.286	0.189	0.228	0.487	0.395	0.400	0.575	0.556	0.372	0.293	0.306	0.498	**4.58**
38	Yazdani Steel & Power Ltd.	0.522	0.412	0.410	0.340	0.000	0.000	0.000	0.154	0.000	0.000	0.000	0.366	**2.20**
39	Vedanta Ltd. (3*600)	53.140	2.327	1.696	21.644	0.022	0.040	0.000	74.412	17.669	29.978	10.521	0.952	**212.40**
	Total support from CPPs	**542.95**	**512.40**	**423.21**	**459.44**	**399.78**	**431.21**	**494.12**	**547.33**	**443.50**	**584.87**	**537.61**	**486.39**	**5862.83**

ANNEXURE-VIII C

IMPORT FROM CAPTIVE & IPP

All Figures in MU

Months--->	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	TOTAL (Net)
IMPORT BY JUVNL FROM CAPTIVE & IPP	**47.485**	**18.93**	**52.12**	**48.259**	**47.834**	**42.062**	**50.706**	**45.027**	**46.844**	**40.576**	**42.919**	**39.766**	**522.53**
Import by ODISHA from CAPTIVE & CPP	**542.95**	**512.40**	**423.21**	**459.44**	**399.78**	**431.21**	**494.14**	**547.33**	**443.51**	**584.87**	**537.61**	**486.39**	5862.83
Import by DVC from TISCO	**7.28**	**3.28**	**9.00**	**15.86**	**20.40**	**9.72**	**8.10**	**10.21**	**13.79**	**10.92**	**19.18**	**7.00**	134.75

IMPORT BY WBSEDCL FROM CAPTIVE & IPP

Months--->	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	TOTAL (Net)
PCBL	10.55	11.77	9.31	10.74	9.26	10.44	10.29	11.38	3.94	6.91	10.17	9.89	114.64
RENUKA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TATA POWER (Haldia)	43.65	54.00	52.84	54.36	53.23	55.16	71.61	68.91	69.24	65.78	61.35	67.43	717.56
ELECTRICAL STEEL(H)	4.85	4.45	3.75	3.57	4.07	4.70	4.44	2.36	4.12	4.50	4.35	4.41	
CONCAST BENGAL	0.56	0.65	0.37	0.39	0.50	0.47	0.20	0.29	0.19	0.39	0.28	0.51	4.79
IMADRI CHEMICAL LTI	3.55	3.73	5.57	4.93	5.79	4.80	5.07	4.28	2.71	4.46	3.13	3.26	51.28
BENGAL ENERGY LTD.	17.02	8.51	13.53	16.82	15.29	14.77	14.51	12.08	10.02	17.82	15.13	17.40	172.90
HIRRANMOYEE								59.16	13.80	0.00	0.00	0.00	72.96
CRECSENT POWER	25.79	27.08	21.95	26.09	25.64	18.02	23.97	25.51	18.82	26.73	23.26	26.30	289.16
IPCL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL IMPORT	105.96	110.20	107.32	116.90	113.77	108.36	130.09	183.96	122.83	126.59	117.67	129.19	1472.84
TLDP-III &IV	50.36	110.44	168.45	207.11	206.03	182.27	120.15	61.59	40.33	31.06	28.41	43.49	1249.67
HEL	375.57	382.45	361.78	392.78	396.44	389.53	386.31	348.89	345.88	273.12	288.32	324.54	4265.58

EXPORT BY WBSEDCL

DPL	105.51	-2.40	38.23	-51.67	-60.84	-46.25	17.26	-10.52	-49.51	0.00	0.00	0.00	-60.19
DPSC	**45.00**	44.39	49.77	55.74	54.07	53.96	54.75	51.80	53.49	54.10	50.10	54.19	621.34
PPSP	80.07	104.70	106.69	146.16	160.41	123.94	100.27	111.41	120.91	172.59	109.02	86.11	1422.28
CESC	433.23	539.42	544.36	523.98	502.14	501.98	416.08	399.88	309.48	187.38	189.24	368.13	4915.30

ANNEXURE - IX A

FREQUENCY SUMMARY OF THE EASTERN REGION DURING 2018-19

AVERAGE FREQUENCY IN DIFFERENT PERIODS OF THE DAY

	< -----HOURS----->					
	00-05	**05-10**	**10-17**	**17-22**	**22-24**	**OO-24**
Apr-18	49.95	49.98	49.96	49.97	49.92	49.96
May-18	49.95	49.97	49.53	49.94	49.90	49.94
Jun-18	49.97	49.99	49.97	49.95	49.93	49.97
Jul-18	49.97	49.98	49.33	49.94	49.96	49.97
Aug-18	49.98	49.98	49.18	49.95	49.96	49.97
Sep-18	49.96	49.97	49.96	49.94	49.95	49.96
Oct-18	49.95	49.96	49.96	49.98	49.96	49.96
Nov-18	49.96	49.95	49.96	49.98	49.97	49.97
Dec-18	49.98	49.94	49.96	49.97	49.99	49.96
Jan-19	49.99	49.97	49.98	49.98	50.00	49.98
Feb-19	49.99	49.99	50.00	49.99	50.00	49.99
Mar-19	49.99	49.99	49.98	49.99	49.96	49.99
MAXIMUM	**49.99**	**49.99**	**50.00**	**49.99**	**50.00**	**49.99**
MINIMUM	**49.95**	**49.94**	**49.18**	**49.94**	**49.90**	**49.94**
AVERAGE	**49.97**	**49.97**	**49.81**	**49.97**	**49.96**	**49.97**

ANNEXURE - IX B

AVERAGE FREQUENCY IN PERCENTAGE OF THE TIME (%) INCLUDING MAX. AND MIN. FREQUENCY DURING 2018-19

	FREQUENCY (HZ) IN % OF TIME			INST. FREQ. (HZ)						15 MINUTES INTEGRATED (HZ)	
	<49.9	49.9-50.05	>50.05	MAX	Date	HRS.	MIN	Date	HRS.	MAX	MIN
Apr-18	12.48	**79.70**	7.82	50.21	29-Apr	18:02	49.61	23-Apr	10:44	50.13	49.63
May-18	21.28	**71.16**	7.57	50.22	12-May	18:02	49.56	26-May	19:49	50.14	49.70
Jun-18	11.82	**77.07**	11.11	50.24	12-Jun	07:58	49.59	19-Jun	22:20	50.17	49.69
Jul-18	10.25	**78.48**	11.28	50.24	24-Jul	18:01	49.61	19-Jul	19:28	50.12	49.73
Aug-18	8.92	**80.44**	10.64	50.26	6-Aug	13:06	49.62	28-Aug	19:17	50.13	49.71
Sep-18	13.25	**80.31**	6.44	50.20	22-Sep	13:03	49.57	24-Sep	18:23	50.11	49.64
Oct-18	11.87	**79.37**	8.76	50.20	05-Oct	13:03	49.69	20-Oct	17:24	50.12	49.76
Nov-18	10.91	**79.88**	9.20	50.25	22-Nov	22:00	49.70	12-Nov	07:35	50.18	49.79
Dec-18	12.78	**76.90**	10.32	50.25	2-Dec	06:01	49.67	30-Dec	09:17	50.15	49.73
Jan-19	10.75	**70.21**	19.04	50.28	21-Jan	02:01	49.58	4-Jan	07:32	50.17	49.71
Feb-19	7.01	**70.73**	22.26	50.26	26-Feb	13:02	49.68	1-Feb	12:42	50.17	49.75
Mar-19	9.70	**71.03**	19.27	50.30	1-Mar	08:09	49.64	10-Mar	09:07	50.22	49.72
MAX	**21.28**	**80.44**	**22.26**	**50.30**			**49.70**			**50.22**	**49.79**
MIN	**7.01**	**70.21**	**6.44**	**50.20**			**49.56**			**50.11**	**49.63**
AVG	**11.75**	**76.27**	**11.98**	**50.24**			**49.63**			**50.15**	**49.71**

Note: New IEGC Frequency Band is 49.90 Hz to 50.05 Hz with effect from 00:00 Hrs. of 17.02.2014

ANNEXURE-X (Page-1/2)

ENERGY GENERATION BY VARIOUS POWER STATIONS AND PLANT LOAD FACTOR OF THERMAL STATIONS OF EASTERN REGION FOR THE YEAR 2017-18 & 2018-19

(Comparison Statement)

SYSTEM	TYPE	POWER STATION	INSTALLED CAPACITY IN MW as on 31.03.2019	EFFECTIVE CAPACITY IN MW as on 31.03.2019	2017-18		2018-19	
					Generation (MU)	PLF (%)	Generation (MU)	PLF (%)
BSPHCL	*Th*	Barauni	220.00	210.00	**39.44**	**2.14**	**44.86**	**2.44**
		Muzaffarpur Stg-I	220.00	220.00	**752.16**	**39.03**	**735.76**	**38.18**
		Thermal Total	**440.00**	**430.00**	**791.60**	**21.02**	**780.62**	**20.72**
	RES		327.90	327.90	**14.37**		**415.74**	
	Total BSPHCL		**767.9**	**757.9**	**805.97**		**1196.4**	
JUVNL	*Hy*	Subarnrekha	130.00	130.00	**190.28**		**102.46**	
	RES		39.00	39.00	**0.00**		**0.00**	
TVNL	Th		**420.00**	**420.00**	**1933.31**	**52.55**	**1689.05**	**45.91**
DVC	*Th*	Bokaro-B (U #3)	210.00	210.00	**573.94**	**18.82**	**688.44**	**37.42**
		Chandrapura(U#3)	140.00	130.00	**321.10**	**21.22**	**0.00**	**0.00**
		Chandrapura(U 7-8)	500.00	500.00	**3754.87**	**85.73**	**3562.60**	**81.34**
		Durgapur(U #4)	210.00	210.00	**947.05**	**51.48**	**981.29**	**53.34**
		Mezia(U 1-6)	1340.00	1340.00	**7109.48**	**60.57**	**7025.15**	**59.85**
		Mezia(U 7-8)	1000.00	1000.00	**5368.97**	**61.29**	**5719.15**	**65.29**
		Durgapur STPS (U 1-2)	1000.00	1000.00	**6503.95**	**74.25**	**6293.54**	**71.84**
		Koderma STPS (U 1-2)	1000.00	1000.00	**5911.25**	**67.48**	**6278.77**	**71.68**
		Raghunathpur (U 1-2)	1200.00	1200.00	**2277.30**	**21.66**	**3208.40**	**30.52**
		Bokaro-A (U 1)	500.00	500.00	**2924.19**	**66.76**	**2920.73**	**66.68**
		Thermal Total	**7100.00**	**7090.00**	**35692.10**	**56.04**	**36678.08**	**59.05**
	Hy	Maithon	63.20	63.20	**114.40**		**101.33**	
		Panchet	80.00	80.00	**141.95**		**79.77**	
		Tilaya	4.00	4.00	**10.85**		**5.30**	
		Hydro Total	**147.20**	**147.20**	**267.20**		**186.41**	
		RES(Small Hy+Solar)			**10.92**			
	Total DVC		**7247.20**	**7237.20**	**35970.22**		**36864.48**	
WBPDCL	*Th*	Bandel	380.00	335.00	**1926.03**	**65.63**	**1315.38**	**44.82**
		Santaldih(U 5-6)	500.00	500.00	**2941.58**	**67.16**	**3552.62**	**81.11**
		Kolaghat	1260.00	1260.00	**4749.84**	**43.03**	**4422.85**	**40.07**
		Bakreswar	1050.00	1050.00	**7486.39**	**81.39**	**7182.22**	**78.08**
		Sagardighi TPS	1600.00	1600.00	**6342.12**	**45.25**	**6050.92**	**43.17**
		DPPS	660.00	660.00	**2524.46**	**43.66**	**2343.64**	**40.54**
	Total WBPDCL		**5450.00**	**5405.00**	**25970.43**	**54.85**	**24867.64**	**52.52**
WBSEDCL	*Hy*	Jaldhaka	35.00	35.00	**145.18**		**197.02**	
		Ramam	51.00	51.00	**122.46**		**236.94**	
		Teesta CF	67.30	67.30	**131.02**		**85.47**	
		Purulia PSP	900.00	900.00	**1014.36**		**1103.94**	
	Total WBSEDCL		**1053.30**	**1053.30**	**1413.01**		**1623.36**	
		RES(Solar)	407.15	407.15	**6.04**		**4.60**	
		Total	***6,910***	***6,865***	***27,389***	***55***	***26,496***	

DVC, DTPS U#3(140 MW) decommissioned on 10.03.2016

DVC, CTPS U#1 (140 MW) decommissioned on 13.01.2017

DVC, BTPS-B U#1&2(2X210 MW) & CTPS U#2 (140 MW) each decommissioned on 30.07.2017

WBPDCL, BTPS U#3 &U#4 (82.5 MW) each decommissioned from 01.04.2018

ENERGY GENERATION BY VARIOUS POWER STATIONS AND PLANT LOAD FACTOR OF THERMAL STATIONS OF EASTERN REGION FOR THE YEAR 2017-18 & 2018-19

(Comparison Statement)

SYSTEM	TYPE	POWER STATION	INSTALLED CAPACITY IN MW	EFFECTIVE CAPACITY IN MW	2017-18		2018-19	
					Generation (MU)	PLF (%)	Generation (MU)	PLF (%)
CESC	Th	Titagarh	240.00	240.00	0.00	0.00	0.00	0.00
		Southern	135.00	135.00	303.75	25.68	283.78	24.00
		Budge-Budge	750.00	750.00	6033.39	91.83	6014.68	91.55
	Total CESC		1125.00	1125.00	6337.14	64.30	6298.46	63.91
HEL	Th	Haldia	600.00	600.00	4525.90	86.11	4614.82	87.80
ODISHA	TH	Talcher-I	250.00	240.00	2058.16	97.90	1924.50	91.54
		Talcher-II	220.00	220.00	1722.58	89.38	1680.12	87.18
	(NTPC)	Thermal Total	470.00	460.00	3780.74	93.82	3604.62	89.45
	TH (OPGC)	IB TPS	420.00	420.00	2842.35	77.25	3085.15	83.85
	HYDRO	Burla (Hirakud-I)	275.50	275.50	613.63		380.29	
		Chiplima (Hirakud-II)	72.00	72.00	249.40		168.31	
		Balimela	510.00	510.00	1477.33		1734.15	
		Rengali	250.00	250.00	762.57		837.87	
		Upper Kolab	320.00	320.00	706.85		922.09	
		Indravati HPS	600.00	600.00	1742.51		2142.62	
		Mckd.(Orissa dr)	57.38	57.38	239.73		271.57	
		Hydro Total	2084.88	2084.88	5792.02		6456.89	
	RES	RES	499.76	499.76	96.45		197.42	
Total ODISHA (NTPC +OPGC+ OHPC+RES)			3474.64	3464.64	12511.56		13344.08	
SIKKIM*	RES	Total	52.11	52.11	30.00		26.00	
NTPC	THERMAL	FSTPS - I&II	1600.00	1600.00	10229.34	72.98	11264.02	80.37
		FSTPS - III (U#6)	500.00	500.00	3127.43	71.40	3582.35	81.79
		KhSTPP-I & II	2340.00	2340.00	16316.76	79.60	16486.14	80.43
		TSTPP - I	1000.00	1000.00	7679.19	87.66	7020.94	80.15
		BARH HPS - II	1320.00	1320.00	9272.26	80.19	9845.23	85.14
		Muzaffarpur Stg-II	390.00	390.00	998.83	32.66	2305.61	67.49
		BRBCL	750.00	750.00	1060.29	29.56	2793.94	60.10
		Nabinagar STPS					13.55	
	Total NTPC		7900.00	7900.00	48684.10		53311.78	79.23
	RES	Talcher Solar	10	10	13.81		13.72	
NHPC	Hy	Rangit	60	60	341.14		345.13	
		Teesta HEP	510	510	2796.90		2677.83	
		TLDP (NHPC)	292	292	859.01		1249.67	
	Total NHPC		862.00	862.00	3997.04		4272.64	
EASTERN REGION		THERMAL (EXCL. IPP)	23925.00	23850.00	130557.66	63.31	134930.21	65.18
		HYDRO	4277.38	4277.38	11659.55		12641.76	
		RES(Small Hy+Solar)	1336	1336	171.6	0	657.48	
IPP	Th	MPL (U 1&2)	1050	1050	7406.14	80.52	7267.86	79.02
		APNRL (U 1&2)	540	540	2909.86	61.51	2875.74	60.79
		GMR (U 1-2)	700	700	3687.57	60.14	4523.33	73.77
		JITPL(U 1-2)	1200	1200	3666.42	34.88	4213.59	40.08
		IPP (Thermal)	3490	3490	17669.99	57.80	18880.52	61.76
	Hy	CHUZACHEN (U 1-2)	110	110	442.46		413.66	
		JORTHANG (U# 1&2)	96	96	405.56		407.97	
		Teesta Urja St III	1200	1200	4392.65		4227.22	
		DIKCHU(U 1-2)	96	96	379.97		460.00	
		TASHIDING (U 1-2)	97	97	92.78		421.60	
		IPP (Hydel)	1599.00	1599.00	5713.42		5930.47	
EASTERN REGION		THERMAL (INCL. IPP	27415.00	27340.00	148227.73	62.12	153810.59	64.74
		HYDRO	5876.38	5876.38	17372.97		18572.22	
		RES	1336	1336	171.63		657.48	
		TOTAL(TH+HY+RES)	34627.30	34552.30	165772.33		173040.29	
IMPORT FROM BHUTAN	Hy	CHPC	360.00	270**	1580.65		1348.07	
		KHPS	60.00	60**	347.31		285.57	
		TALA HPS	1020.00	867**	2702.48		2411.73	
		DAGACHU	126.00	126.00	441.65		350.49	
		Total Bhutan Import	1566.00	126.00	5072.08		4395.87	
GRAND TOTAL (TH+HY) INCLUDING IMPORT FROM BHUTAN					170844.42		177436.16	

* Sikkim's data are estimated as actual data not received.

** Actual import at ER pheriphery from HPS of Bhutan

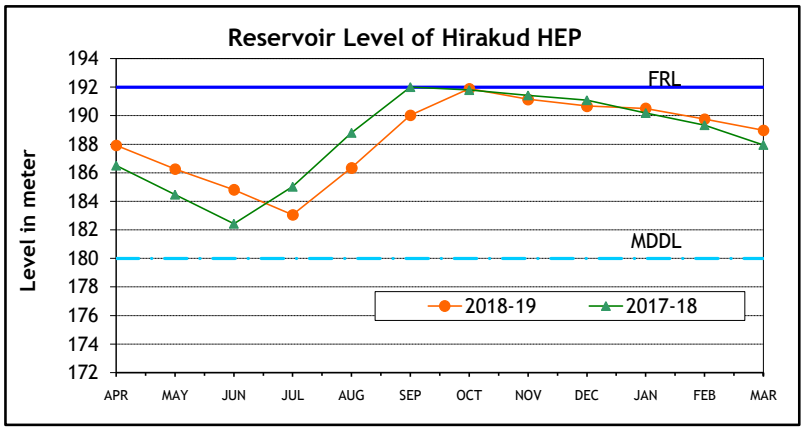
NOTE: PLF has been calculated based on the capacity and generation of the commercially declared units only.

NEW UNITS			Infirm Generation				
SYSTEM	POWER STATIO	Capacity	Jan-19	Feb-19	Mar-19	Total	Remarks
BRBCL	NTPS	U#3 250 MW	9.18	30.00		39.18	COD on 26.02.2019
NTPC	Nabinagar STPS	U#1 660 MW	0.00	0.21	13.34	13.55	COD yet to be declared

WATER LEVEL IN THE MAJOR HYDRO RESERVOIRS IN THE REGION DURING 2018-19

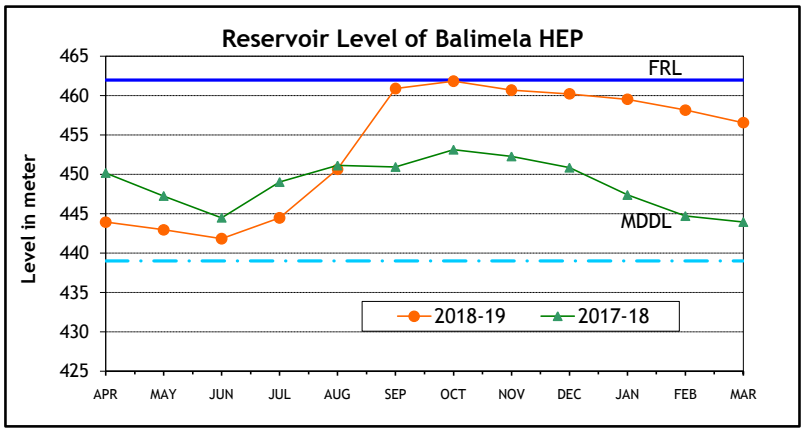
Reservoir Level of Hirakud HEP

Month	FRL	MDDL	2018-19	2017-18
APR	192.00	180.00	**187.92**	**186.51**
MAY	192.00	180.00	**186.26**	**184.47**
JUN	192.00	180.00	**184.81**	**182.43**
JUL	192.00	180.00	**183.05**	**185.03**
AUG	192.00	180.00	**186.34**	**188.81**
SEP	192.00	180.00	**190.03**	**192.02**
OCT	192.00	180.00	**191.89**	**191.81**
NOV	192.00	180.00	**191.14**	**191.44**
DEC	192.00	180.00	**190.67**	**191.10**
JAN	192.00	180.00	**190.51**	**190.20**
FEB	192.00	180.00	**189.76**	**189.35**
MAR	192.00	180.00	**188.98**	**187.96**



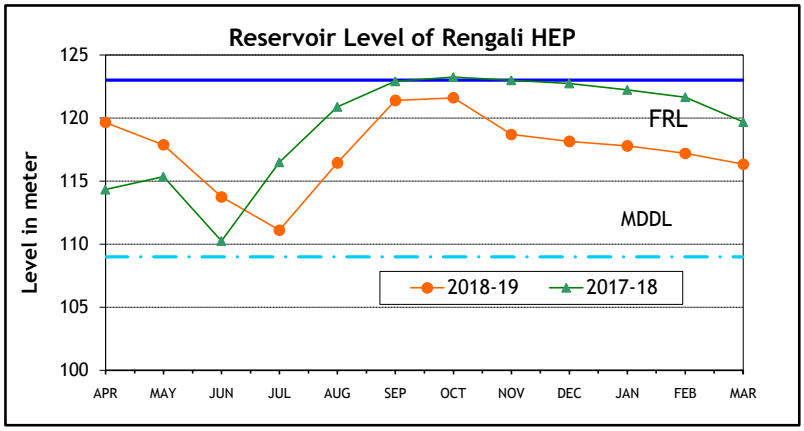
Reservoir Level of Balimela HEP

Month	FRL	MDDL	2018-19	2017-18
APR	462.00	439.00	**443.94**	**450.19**
MAY	462.00	439.00	**442.97**	**447.26**
JUN	462.00	439.00	**441.84**	**444.49**
JUL	462.00	439.00	**444.49**	**449.03**
AUG	462.00	439.00	**450.65**	**451.13**
SEP	462.00	439.00	**460.92**	**450.95**
OCT	462.00	439.00	**461.86**	**453.15**
NOV	462.00	439.00	**460.71**	**452.29**
DEC	462.00	439.00	**460.25**	**450.86**
JAN	462.00	439.00	**459.55**	**447.39**
FEB	462.00	439.00	**458.18**	**444.70**
MAR	462.00	439.00	**456.59**	**443.94**



Reservoir Level of Rengali HEP

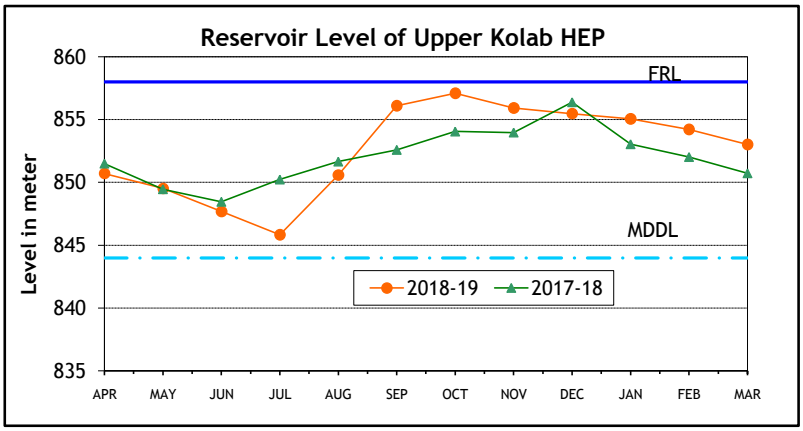
Month	FRL	MDDL	2018-19	2017-18
APR	123.00	109.00	**119.66**	**114.33**
MAY	123.00	109.00	**117.88**	**115.36**
JUN	123.00	109.00	**113.75**	**110.25**
JUL	123.00	109.00	**111.11**	**116.50**
AUG	123.00	109.00	**116.45**	**120.90**
SEP	123.00	109.00	**121.40**	**122.93**
OCT	123.00	109.00	**121.61**	**123.26**
NOV	123.00	109.00	**118.70**	**123.01**
DEC	123.00	109.00	**118.15**	**122.76**
JAN	123.00	109.00	**117.79**	**122.25**
FEB	123.00	109.00	**117.20**	**121.67**
MAR	123.00	109.00	**116.34**	**119.69**



WATER LEVEL IN THE MAJOR HYDRO RESERVOIRS IN THE REGION DURING 2018-19

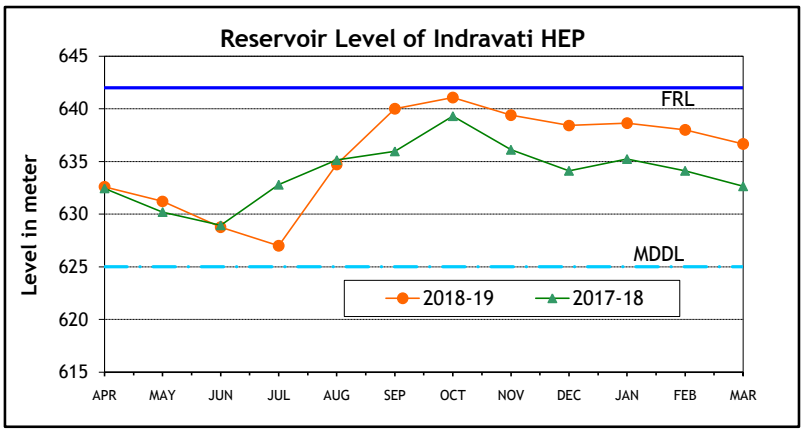
Reservoir Level of Upper Kolab HEP

Month	FRL	MDDL	2018-19	2017-18
APR	858.00	844.00	**850.72**	**851.51**
MAY	858.00	844.00	**849.53**	**849.47**
JUN	858.00	844.00	**847.69**	**848.47**
JUL	858.00	844.00	**845.84**	**850.24**
AUG	858.00	844.00	**850.60**	**851.67**
SEP	858.00	844.00	**856.11**	**852.60**
OCT	858.00	844.00	**857.11**	**854.06**
NOV	858.00	844.00	**855.93**	**853.98**
DEC	858.00	844.00	**855.49**	**856.39**
JAN	858.00	844.00	**855.07**	**853.05**
FEB	858.00	844.00	**854.22**	**852.03**
MAR	858.00	844.00	**853.03**	**850.74**



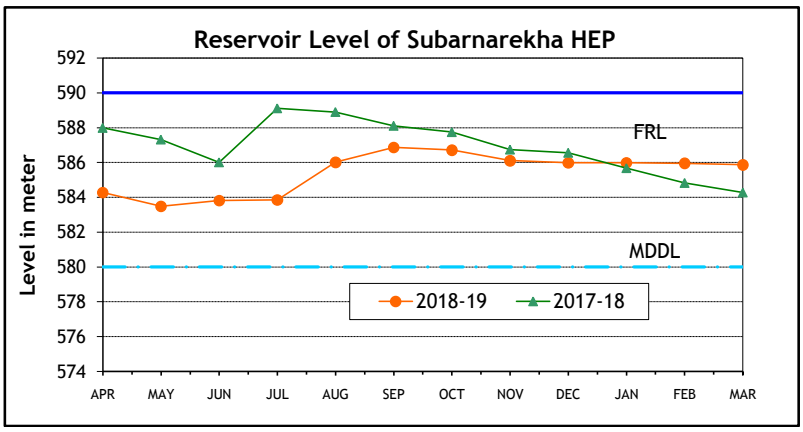
Reservoir Level of Indravati HEP

Month	FRL	MDDL	2018-19	2017-18
APR	642.00	625.00	**632.61**	**632.5**
MAY	642.00	625.00	**631.22**	**630.20**
JUN	642.00	625.00	**628.77**	**628.94**
JUL	642.00	625.00	**627.00**	**632.80**
AUG	642.00	625.00	**634.73**	**635.14**
SEP	642.00	625.00	**640.01**	**635.97**
OCT	642.00	625.00	**641.08**	**639.32**
NOV	642.00	625.00	**639.40**	**636.12**
DEC	642.00	625.00	**638.42**	**634.12**
JAN	642.00	625.00	**638.64**	**635.24**
FEB	642.00	625.00	**638.00**	**634.12**
MAR	642.00	625.00	**636.66**	**632.65**



Reservoir Level of Subarnarekha HEP

Month	FRL	MDDL	2018-19	2017-18
APR	590.00	580.00	**584.27**	**587.99**
MAY	590.00	580.00	**583.48**	**587.32**
JUN	590.00	580.00	**583.81**	**586.01**
JUL	590.00	580.00	**583.84**	**589.12**
AUG	590.00	580.00	**586.01**	**588.90**
SEP	590.00	580.00	**586.86**	**588.11**
OCT	590.00	580.00	**586.71**	**587.75**
NOV	590.00	580.00	**586.10**	**586.74**
DEC	590.00	580.00	**585.98**	**586.56**
JAN	590.00	580.00	**585.98**	**585.67**
FEB	590.00	580.00	**585.95**	**584.82**
MAR	590.00	580.00	**585.86**	**584.27**



ANNEXURE-XII (Page-1/2)

% WEIGHTED AVERAGE OF SHARE ALLOCATION FOR THE MONTH OF APRIL,2018 (FIRST YEAR OF F.Y 2018-19)

CONSTITUENT	FSTPS STAGE - I & II	FSTPS STAGE - III	KhSTPS STAGE-I	KhSTPS STAGE-II	TSTPS STAGE-I	BARH STPS STAGE-II	MTPS-II	BRBCL	TALA	CHUKHA	KIRICHU	TEESTA-STG-V	RANGIT
ER:													
BIHAR	31.397866	26.517874	41.858038	4.979865	41.245379	76.047894	74.972000	10.000000	25.500000	29.630000	0.000000	21.260000	35.000000
JHARKHAND	8.574292	16.948474	3.200751	1.248565	7.667664	7.081288	3.433000		11.460000	10.740000	0.000000	12.340000	13.330000
DVC	0.000000	6.360000	0.000000	0.000000	0.310000	0.000000	2.600000		5.540000	10.370000	50.000000	8.640000	10.000000
DVC (COAL POWER - Rajasthan)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
DVC (COAL POWER - Raj-II Sun Tech)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
DVC (COAL POWER - Talcher)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
DVC (COAL POWER - Unchahar)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
ODISHA	13.630000	16.620000	15.240000	2.050000	31.800000	14.688415	8.527000		4.250000	15.190000	0.000000	20.590000	0.000000
ODISHA (COAL POWER - AFTAB)	0.099049	0.000000	0.098249	0.106629	0.099049	0.000000							
ODISHA (COAL POWER - DADRI)	0.082937	0.162663	0.082268	0.089285	0.082937	0.000000							
ODISHA (COAL POWER - Rajasthan)	0.183824	0.183823	0.183824	0.183824	0.183824	0.000000							
ODISHA (COAL POWER - Raj-II SunTech)	0.091912	0.091912	0.091912	0.091912	0.091912	0.000000							
ODISHA (COAL POWER - Faridabad)	0.095840	0.091354	0.078653	0.098967	0.086460	0.000000	9.635000						
WEST BENGAL	30.540000	31.278940	0.000000	0.000000	9.100000	0.000000			38.250000	31.850000	50.000000	23.980000	28.340000
West Bengal (COAL POWER - Rajasthan)	0.643382	0.643382	0.643382	0.643382	0.643382	0.000000							
West Bengal (COAL POWER- Raj-II SunTech)	0.275735	0.275735	0.275735	0.275735	0.275735	0.000000							
SIKKIM	1.630000	0.000000	1.550000	0.330000	2.400000	1.318009	0.554000			2.220000	0.000000	13.190000	13.330000
RLY DVC								29.886833					
SUB-TOTAL	87.244837	99.174158	63.302812	10.098164	93.986342	99.135606	99.721000						
SR:	2.041558	0.733930	1.382150	0.763112	1.562870	0.675000	0.279000						
WR :	0.000000	0.000000	0.000000	26.530000	0.000000	0.000000		51.800667					
NR:	7.090000	0.000000	31.020000	56.090000	0.000000	0.000000		8.312500	15.000000				
NER :	3.311105	0.091912	2.954562	5.185391	2.950788	0.000000							
NVVN POWER - A/C BPDB	0.312500	0.000000	1.190476	1.333333	1.500000	0.189394							
POWERGRID(PUSAULI)			0.150000										
GRAND TOTAL (%)	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**

ANNEXURE-XII (Page-2/2)

% WEIGHTED AVERAGE OF SHARE ALLOCATION FOR THE MONTH OF SEPTEMBERL,2018 (FIRST YEAR OF F.Y 2018-19)

CONSTITUENT	FSTPS STAGE - I & II	FSTPS STAGE - III	KhSTPS STAGE-I	KhSTPS STAGE-II	TSTPS STAGE-I	BARH STPS STAGE-II	MTPS-II	BRBCL	TALA	CHUKHA	KIRICHU	TEESTA-STG-V	RANGIT
ER:													
BIHAR	31.397866	26.517874	41.858038	4.979865	41.245379	76.047894	74.972000	10.000000	25.500000	29.630000	0.000000	21.260000	35.000000
JHARKHAND	8.574292	16.948474	3.200751	1.248565	7.667664	7.081288	3.433000		11.460000	10.740000	0.000000	12.340000	13.330000
DVC	0.000000	6.360000	0.000000	0.000000	0.310000	0.000000	2.600000		5.540000	10.370000	50.000000	8.640000	10.000000
DVC (COAL POWER - Rajasthan)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
DVC (COAL POWER - Raj-II Sun Tech)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
DVC (COAL POWER - Talcher)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
DVC (COAL POWER - Unchahar)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							
ODISHA	13.630000	16.620000	15.240000	2.050000	31.800000	14.688415	8.527000		4.250000	15.190000	0.000000	20.590000	0.000000
ODISHA (COAL POWER - AFTAB)	0.099049	0.000000	0.098249	0.106629	0.099049	0.000000							
ODISHA (COAL POWER - DADRI)	0.082937	0.162663	0.082268	0.089285	0.082937	0.000000							
ODISHA (COAL POWER - Rajasthan)	0.183824	0.183823	0.183824	0.183824	0.183824	0.000000							
ODISHA (COAL POWER - Raj-II SunTech)	0.091912	0.091912	0.091912	0.091912	0.091912	0.000000							
ODISHA (COAL POWER - Faridabad)	0.095840	0.091354	0.078653	0.098967	0.086460	0.000000	9.635000						
WEST BENGAL	30.540000	31.278940	0.000000	0.000000	9.100000	0.000000			38.250000	31.850000	50.000000	23.980000	28.340000
West Bengal (COAL POWER - Rajasthan)	0.643382	0.643382	0.643382	0.643382	0.643382	0.000000							
West Bengal (COAL POWER- Raj-II SunTech)	0.275735	0.275735	0.275735	0.275735	0.275735	0.000000							
SIKKIM	1.630000	0.000000	1.550000	0.330000	2.400000	1.318009	0.554000			2.220000	0.000000	13.190000	13.330000
RLY DVC								20.455000					
RLY BIHAR								13.636000					
SUB-TOTAL	87.244837	99.174158	63.302812	10.098164	93.986342	99.135606	99.721000						
SR:	2.041558	0.733930	1.382150	0.763112	1.562870	0.675000	0.279000						
WR :	0.000000	0.000000	0.000000	26.530000	0.000000	0.000000		46.363000					
NR:	7.090000	0.000000	31.020000	56.090000	0.000000	0.000000		9.546000	15.000000				
NER :	3.311105	0.091912	2.954562	5.185391	2.950788	0.000000							
NVVN POWER - A/C BPDB	0.312500	0.000000	1.190476	1.333333	1.500000	0.189394							
POWERGRID(PUSAULI)			0.150000										
GRAND TOTAL (%)	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**

Slabs for PoC Rates - Eastern Region

	SL NO.	Name of Entity	PoC Slab Rate (₹/MW/Month)	Reliability Support Charges Rate(₹/MW/Month)	HVDC Charges Rate for ER (₹/MW/Month)
April'18 - June'18	1	Odisha	250795	26946	8299
	2	Bihar	287754	26946	8299
	3	GMR Kamalanga	139916	26946	8299
	4	West Bengal	213835	26946	8299
	5	DVC	139916	26946	8299
	6	Jharkhand	139916	26946	8299
	7	Bangladesh	65997	26946	8299
	8	Sikkim	65997	26946	8299
	9	West Bengal inj	65997	26946	8299

	SL NO.	Name of Entity	PoC Slab Rate (₹/MW/Month)	Reliability Support Charges Rate(₹/MW/Month)	HVDC Charges Rate for ER (₹/MW/Month)
July'18 - Sep'18	1	Odisha	376841	29248	12313
	2	Bihar	285169	29248	12313
	3	GMR Kamalanga	147660	29248	12313
	4	West Bengal	239332	29248	12313
	5	DVC	193496	29248	12313
	6	Jharkhand	147660	29248	12313
	7	Bangladesh	101824	29248	12313
	8	Sikkim	55988	29248	12313
	9	West Bengal inj	55988	29248	12313

	SL NO.	Name of Entity	PoC Slab Rate (₹/MW/Month)	Reliability Support Charges Rate(₹/MW/Month)	HVDC Charges Rate for ER (₹/MW/Month)
Oct'18 - Dec'18	1	Odisha	345331	30097	12102
	2	Bihar	345331	30097	12102
	3	GMR Kamalanga	157157	30097	12102
	4	West Bengal	204201	30097	12102
	5	DVC	204201	30097	12102
	6	Jharkhand	157157	30097	12102
	7	Bangladesh	110113	30097	12102
	8	Sikkim	63070	30097	12102
	9	West Bengal inj	63070	30097	12102

	SL NO.	Name of Entity	PoC Slab Rate (₹/MW/Month)	Reliability Support Charges Rate(₹/MW/Month)	HVDC Charges Rate for ER (₹/MW/Month)
Jan'19 - Mar'19	1	Odisha	345331	30097	12102
	2	Bihar	345331	30097	12102
	3	GMR Kamalanga	157157	30097	12102
	4	West Bengal	204201	30097	12102
	5	DVC	204201	30097	12102
	6	Jharkhand	157157	30097	12102
	7	Bangladesh	110113	30097	12102
	8	Sikkim	63070	30097	12102
	9	West Bengal inj	63070	30097	12102

Monthwise statement of over/under generation of ISGS & over/under drawal by the constituents

MONTH	BENEFICIARY	SCHEDULE (MWH)	ACTUAL (MWH)	UI Charges (Rs.) (-) payable (+) receivable
Apr-18	BSPHCL	-2336932.17	-2319750.04	-20250833.06
	JUVNL	-451163.62	-472365.53	-89906859.27
	DVC	1620898.60	1603683.76	-45458133.82
	GRIDCO	-792900.18	-847880.76	-118963596.94
	SIKKIM	-43962.54	-41057.77	5984004.21
	WBSETCL	-1040819.68	-1059647.97	-117940528.99
	NER	-138295.35	-240800.41	-235023858.21
	NR	-1479885.78	-1374177.55	303011849.83
	SR	-611921.04	-1354617.09	-1899369493.72
	WR	-220945.43	542976.70	1902736273.12
	FSTPP-I & II	525654.63	520973.80	-11557550.81
	KHSTPP-I	456242.14	453854.69	-4883969.91
	TSTPP	611377.54	614081.85	8024603.73
	RANGIT	14240.00	15456.73	3059478.10
	CHPC	259.00	27933.71	62268088.27
	KHPC	1880.56	3895.90	4272517.41
	THPC	63147.20	13544.19	-105158377.66
	KHSTPP-II	891833.53	888174.67	-5729229.19
	FSTPP-III	291089.51	286861.61	-9689943.20
	TEESTA	137858.00	148701.41	27408643.06
	MAITHON R/B	599804.67	600772.97	3334988.35
	BARH	787887.42	785307.15	-383999.88
	NVVN-NEPAL	-84506.16	-84910.43	-2836767.47
	APNRL	167446.19	167232.61	983478.41
	GMRKEL	414522.61	404869.08	-9227422.98
	JITPL	492679.48	491796.21	-1345812.66
	TPTCL	7997.42	5747.13	-5808990.02
	BRBCL	113194.93	115438.72	5660815.94
	TALCHER SOLAR	1353.96	1363.28	53856.00
	JORETHANG HEP	15268.93	13060.95	-2692839.79
	IND Barath	0.00	-206.40	-544175.05
	HVDC SASARAM	-760.09	-219.66	1366737.00
	VAE	-103969.87	0.00	253457407.90
	NVVN	-203164.14	-198536.25	1776582.64
	CHUZACHEN	22167.21	24011.31	3357736.26
	TUL	200932.06	202731.27	11088449.16
	DICKCHU	25352.16	29610.09	7565424.79
	THEP	16280.54	13732.48	-5011287.37
	HVDC_ALIPURDUAR	-1547.45	-462.66	2723661.60
	OPGC_INFIRM	0.00	-224.58	-583046.95
	MTPS-II	178479.81	174968.10	-7543597.81
May-18	BSPHCL	-2581103.41	-2557245.93	-29767312.25
	JUVNL	-561046.95	-582065.71	-91657477.72
	DVC	1451912.05	1408207.01	-130439831.26
	GRIDCO	-1120666.50	-1192236.22	-163568782.91
	SIKKIM	-43192.01	-39389.12	8079714.96
	WBSETCL	-1351956.70	-1411734.05	-197156246.18
	NER	39567.51	-77965.66	-350739522.50
	NR	-2255022.90	-2014205.58	731537542.34
	SR	-47637.28	-837022.68	-2386352950.88
	WR	209304.51	1002864.15	2403897914.74
	FSTPP-I & II	791140.09	785179.00	-15255413.16
	KHSTPP-I	498231.07	493132.92	-12530006.06
	TSTPP	654579.04	658701.08	12249087.56
	RANGIT	28756.00	30810.68	6545566.25
	CHPC	69529.65	111537.98	101648932.25
	KHPC	7985.72	25912.11	38003951.89
	THPC	229165.67	152263.68	-163032222.46
	KHSTPP-II	736140.14	733439.25	-3927817.85
	FSTPP-III	309253.70	306272.57	-7647090.22
	TEESTA	263684.00	278539.92	43550873.34
	MAITHON R/B	639375.40	637580.06	-2851082.72
	BARH	745948.83	742402.90	-3211579.89
	NVVN-NEPAL	-85385.95	-83657.16	-156627.18
	APNRL	337396.06	341116.58	15051786.72
	GMRKEL	407786.81	400509.08	-3148763.42
	JITPL	347110.56	348183.92	4133563.42
	TPTCL	29331.00	16676.35	-37605081.36
	BRBCL	150472.64	151304.98	2330702.26
	TALCHER SOLAR	1372.69	1407.19	302866.09
	JORETHANG HEP	24513.73	24904.48	4654503.26
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-800.76	-33.90	2237748.42
	VAE	-73685.88	0.00	196260281.92
	NVVN	-357522.47	-351846.21	-1457664.43
	CHUZACHEN	41122.18	44239.85	8013378.45
	TUL	397885.12	404874.69	31315010.24
	DICKCHU	56564.73	58099.73	2406792.27
	THEP	26271.16	25045.31	-1073211.16
	HVDC_ALIPURDUAR	-1443.20	-553.57	2484024.65
	OPGC_INFIRM	0.00	-421.02	-1278759.13
	MTPS-II	150428.74	146172.70	-9170586.34
	NPGC_INFIRM	0.00	-1368.16	-4229769.32
	DARLIPALI_INFIRM	0.00	-0.66	-2190.50

MONTH	BENEFICIARY	SCHEDULE (MWH)	ACTUAL (MWH)	UI Charges (Rs.) (-) payable (+) receivable
Jun-18	BSPHCL	-2635566.77	-2607308.88	17454291.15
	JUVNL	-529111.98	-547684.70	-59418939.79
	DVC	1078983.59	1058637.63	-42745495.21
	GRIDCO	-1303924.83	-1416222.36	-227901667.03
	SIKKIM	-39623.42	-37114.39	4943874.85
	WBSETCL	-1505092.52	-1580968.88	-183042127.73
	NER	-14339.02	-270691.73	-579635110.08
	NR	-2688226.86	-1957710.14	1845611523.25
	SR	590114.46	-661636.09	-3015688700.91
	WR	412158.99	1439134.78	2274899983.13
	FSTPP-I & II	932153.04	925030.65	-12522076.83
	KHSTPP-I	453201.28	449220.01	-7645857.94
	TSTPP	590053.24	590052.17	3975756.45
	RANGIT	39399.10	40628.84	3296611.32
	CHPC	115751.41	158779.98	109722867.59
	KHPC	18095.79	42986.18	52767633.16
	THPC	370869.76	263567.86	-227480031.43
	KHSTPP-II	679789.64	675407.40	-6661112.26
	FSTPP-III	235061.94	233061.25	-4540232.67
	TEESTA	343562.00	348991.96	12652106.72
	MAITHON R/B	603062.26	600908.06	-1244879.05
	BARH	801499.79	792918.39	-6729071.52
	NVVN-NEPAL	-72576.05	-72629.03	-834459.47
	APNRL	266951.02	265784.72	546461.00
	GMRKEL	403852.69	390471.48	-13024725.75
	JITPL	337956.04	338599.56	3129364.88
	TPTCL	56961.66	25339.08	-79741650.05
	BRBCL	147888.55	147801.50	969165.09
	TALCHER SOLAR	1116.17	1129.59	72288.87
	JORETHANG HEP	52083.76	52553.41	4204907.06
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-741.01	-36.88	1652905.35
	VAE	-49049.74	0.00	126467749.07
	NVVN	-331109.01	-326036.98	3145160.92
	CHUZACHEN	55527.83	56561.92	2430044.30
	TUL	566646.31	574075.99	20215709.16
	DICKCHU	64786.89	66416.72	4082137.00
	THEP	48328.95	47821.82	-801996.28
	HVDC_ALIPURDUAR	-1589.92	-609.15	2271119.14
	OPGC_INFIRM	0.00	-584.61	-1387326.65
	MTPS-II	89104.11	84380.90	-9002352.83
	NPGC_INFIRM	0.00	-2110.31	-4799416.41
	DARLIPALI_INFIRM	0.00	-138.22	-333350.04
Jul-18	BSPHCL	-2682072.08	-2678079.56	-39817872.53
	JUVNL	-569508.31	-567548.22	-23741406.11
	DVC	950186.69	940643.47	-5087020.42
	GRIDCO	-1170585.87	-1312585.92	-322790056.82
	SIKKIM	-42201.04	-37772.90	9381753.14
	WBSETCL	-1525796.52	-1627391.97	-248999840.17
	NER	44781.75	-370483.83	-985538155.43
	NR	-2487435.61	-2362269.87	366417302.67
	SR	-307311.84	-712915.42	-940780094.06
	WR	662524.59	1630222.97	2192806994.04
	FSTPP-I & II	916192.66	907663.28	-14867429.69
	KHSTPP-I	399891.37	395626.85	-7950929.58
	TSTPP	564164.05	567863.68	11816770.23
	RANGIT	43271.68	44140.04	1947160.40
	CHPC	201770.53	291905.27	229843589.54
	KHPC	18777.28	71291.65	111330458.25
	THPC	750238.39	605047.68	-307804294.64
	KHSTPP-II	756004.40	751534.45	-7489973.62
	FSTPP-III	283211.28	279358.05	-7919809.58
	TEESTA	364926.00	368998.39	10176603.73
	MAITHON R/B	502210.19	500024.10	-2692349.18
	BARH	842736.14	838942.13	-899072.52
	NVVN-NEPAL	-68505.81	-71521.19	-8673243.97
	APNRL	302522.09	299638.03	-3184317.63
	GMRKEL	334851.47	326451.92	-6307392.36
	JITPL	325283.19	324471.85	-111300.91
	TPTCL	86267.08	58978.94	-61581210.54
	BRBCL	116119.23	116073.71	741404.24
	TALCHER SOLAR	836.59	786.25	-543434.01
	JORETHANG HEP	69980.63	71292.42	3780696.42
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-620.66	-34.34	1342126.21
	VAE	-44225.29	0.00	83135751.96
	NVVN	-346755.77	-345937.41	-2290300.60
	CHUZACHEN	71802.51	73846.34	4800370.74
	TUL	560698.38	562347.63	1312822.52
	DICKCHU	69686.74	71663.63	4672191.09
	THEP	70722.67	74267.81	10454440.05
	HVDC_ALIPURDUAR	-1725.26	-744.04	2241754.72
	OPGC_INFIRM	0.00	-1390.70	-3316688.07
	MTPS-II	142716.46	137176.13	-9487413.23
	NPGC_INFIRM	0.00	-2415.96	-5725666.36
	DARLIPALI_INFIRM	0.00	-202.13	-468121.43

MONTH	BENEFICIARY	SCHEDULE (MWH)	ACTUAL (MWH)	UI Charges (Rs.) (-) payable (+) receivable
	BSPHCL	-2789585.57	-2809688.96	-74939604.48
	JUVNL	-567208.06	-582953.55	-51165789.66
	DVC	880461.66	743783.32	-293912962.84
	GRIDCO	-1499295.50	-1601965.06	-220144136.92
	SIKKIM	-41655.58	-36060.92	11049719.89
	WBSETCL	-1715957.34	-1839261.17	-290514614.44
	NER	-33372.22	-518575.62	-1102556936.16
	NR	-2174738.60	-1905786.03	547806597.64
	SR	329828.65	-555653.31	-1868408214.33
	WR	592532.54	2083036.79	3272243637.23
	FSTPP-I & II	854572.59	844051.31	-20203023.30
	KHSTPP-I	459698.42	450491.98	-19292819.53
	TSTPP	558111.87	561582.91	10855834.48
	RANGIT	42881.60	43786.89	1989906.41
	CHPC	192456.22	285371.40	236933720.59
	KHPC	13262.35	71283.90	123005701.69
	THPC	768787.46	612183.82	-331999718.98
	KHSTPP-II	913049.98	904411.28	-15509151.24
	FSTPP-III	303806.75	296864.52	-14779685.94
Aug-18	TEESTA	365520.00	370368.87	11898135.93
	MAITHON R/B	553777.78	554245.84	2082105.33
	BARH	799925.93	791465.44	-9939958.68
	NVVN-NEPAL	-60662.68	-80666.20	-43215430.81
	APNRL	185257.52	181439.41	-6681561.23
	GMRKEL	277120.90	265060.50	-16614819.43
	JITPL	275500.85	275741.54	2634004.11
	TPTCL	91379.75	81602.51	-20323268.18
	BRBCL	99512.62	97822.02	-2884956.80
	TALCHER SOLAR	872.31	838.06	-419536.84
	JORETHANG HEP	66121.65	67827.65	5874934.38
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-754.70	-31.18	1603086.38
	VAE	-72460.50	0.00	159474500.56
	NVVN	-363751.14	-363858.39	-3893283.75
	CHUZACHEN	65242.18	66271.61	2674152.21
	TUL	523285.87	529237.52	15425593.76
	DICKCHU	66253.99	68717.82	5537573.64
	THEP	67599.95	69861.54	6234072.64
	HVDC_ALIPURDUAR	-1553.66	-733.58	1796103.06
	OPGC_INFIRM	0.00	-2097.73	-4885880.91
	MTPS-II	188579.80	183015.56	-10418283.95
	NPGC_INFIRM	0.00	-2741.80	-6203348.91
	DARLIPALI_INFIRM	0.00	-341.47	-753577.59
	BSPHCL	-2749851.71	-2767678.71	-88585951.17
	JUVNL	-511274.68	-537336.30	-81260279.03
	DVC	717259.97	560755.07	-408554042.08
	GRIDCO	-927890.33	-1004868.91	-200182810.76
	SIKKIM	-33841.31	-35618.47	-5026272.64
	WBSETCL	-1894732.65	-2004382.80	-289361954.07
	NER	-10800.82	-481096.73	-1226562297.88
	NR	-1125353.94	-1150683.01	-118782462.45
	SR	-755695.68	-1168788.55	-993716702.60
	WR	703835.58	1991883.46	3355607930.73
	FSTPP-I & II	971244.34	957041.75	-31080889.29
	KHSTPP-I	467446.80	465988.17	-5727355.78
	TSTPP	549133.40	552725.76	11020496.24
	RANGIT	42768.36	43796.65	2468205.94
	CHPC	195487.16	249761.30	138399064.17
	KHPC	14385.73	71784.49	121685362.72
	THPC	644945.64	512056.79	-281724358.04
	KHSTPP-II	701478.32	700195.22	-1874458.17
	FSTPP-III	294029.37	285197.97	-21021452.00
Sep-18	TEESTA	332702.00	336063.92	9583297.24
	MAITHON R/B	442298.36	442235.92	1555314.49
	BARH	676558.83	677732.28	7177473.65
	NVVN-NEPAL	-117118.80	-122349.57	-18668396.70
	APNRL	195027.69	192573.45	-4442897.08
	GMRKEL	367283.94	356725.74	-17737726.15
	JITPL	286345.43	288230.03	6786353.97
	TPTCL	84841.14	61605.35	-60990010.26
	BRBCL	139813.79	141195.71	3847327.04
	TALCHER SOLAR	971.60	926.15	-466884.30
	JORETHANG HEP	69142.77	71129.98	5291881.11
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-774.21	-28.86	1916968.82
	VAE	-70428.73	0.00	158188347.49
	NVVN	-496818.09	-498495.80	-8511951.19
	CHUZACHEN	64355.65	66583.11	7569387.91
	TUL	564780.49	574435.12	24841831.44
	DICKCHU	67691.67	68833.09	3235468.55
	THEP	69483.60	75925.31	17395819.22
	HVDC_ALIPURDUAR	-1306.34	-764.21	1374542.22
	OPGC_INFIRM	0.00	-2865.49	-7883305.29
	MTPS-II	220007.36	210225.41	-21950199.25
	NPGC_INFIRM	0.00	-1536.19	-4095913.29
	DARLIPALI_INFIRM	0.00	-472.04	-1252614.65
	BRBCL U-III INFIRM	0.00	-803.11	-2246741.39

MONTH	BENEFICIARY	SCHEDULE (MWH)	ACTUAL (MWH)	UI Charges (Rs.) (-) payable (+) receivable
	BSPHCL	-2588712.90	-2567293.31	7601100.64
	JUVNL	-471968.21	-501365.20	-84451613.25
	DVC	695197.88	575351.57	-295485121.55
	GRIDCO	-1185756.91	-1284575.89	-240973402.20
	SIKKIM	-38082.67	-40460.96	-8337705.03
	WBSETCL	-1120616.93	-1185409.35	-181200300.28
	NER	76406.50	-397725.51	-1173367600.62
	NR	-664677.25	-1067054.63	-1037539515.50
	SR	-506260.95	-945653.70	-1038362569.85
	WR	-539000.38	1131258.52	4103424446.06
	FSTPP-I & II	887532.01	875621.99	-26209621.45
	KHSTPP-I	488826.04	487998.57	88911.97
	TSTPP	559157.99	561109.57	7587764.19
	RANGIT	41813.35	43039.11	3067947.54
	CHPC	69534.03	123842.83	138487433.57
	KHPC	4907.42	36767.57	67543537.08
	THPC	247827.90	169715.41	-165598474.28
	KHSTPP-II	854121.96	851595.80	-2853202.37
	FSTPP-III	313000.22	303050.22	-21625100.27
Oct-18	TEESTA	276536.00	292301.41	41242782.42
	MAITHON R/B	564863.48	565773.08	5348075.34
	BARH	829805.25	825136.86	-4379648.63
	NVVN-NEPAL	-49623.30	-72063.58	-57122041.37
	APNRL	229760.91	226684.43	-5268442.32
	GMRKEL	332899.76	321128.58	-14555070.59
	JITPL	304018.37	302639.56	-2179019.23
	TPTCL	58138.02	30736.22	-68243845.33
	BRBCL	228099.83	230835.61	7013572.64
	TALCHER SOLAR	1190.65	1202.08	90267.75
	JORETHANG HEP	51118.51	44743.20	-12055636.91
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-754.02	-21.67	1788785.07
	VAE	-30286.49	0.00	72950097.94
	NVVN	-529877.82	-525962.41	-713057.88
	CHUZACHEN	33117.38	33204.05	624687.69
	TUL	463635.65	460272.43	1311924.40
	DICKCHU	45727.30	44616.63	-952896.09
	THEP	48070.18	43433.70	-6553225.84
	HVDC_ALIPURDUAR	-1611.17	-626.87	2410870.92
	OPGC_INFIRM	0.00	-1550.43	-3818828.22
	MTPS-II	187019.69	172783.97	-30116518.65
	NPGC_INFIRM	0.00	-4987.31	-11917769.52
	DARLIPALI_INFIRM	0.00	-663.88	-1613964.44
	BRBCL U-III INFIRM	0.00	-1483.25	-3717229.70
	BSPHCL	-2133230.97	-2105570.87	36549248.39
	JUVNL	-454018.09	-456501.56	-14956511.14
	DVC	700234.63	615226.75	-210650879.09
	GRIDCO	-1086683.64	-1188267.51	-236353957.32
	SIKKIM	-44233.55	-44243.87	-1900348.35
	WBSETCL	-779529.11	-834711.57	-136706392.59
	NER	8066.50	-375365.53	-939185946.73
	NR	-960933.02	-1108827.84	-441271369.56
	SR	-1196894.55	-1462218.88	-673153780.69
	WR	67549.20	1159058.68	2736913853.73
	FSTPP-I & II	1008293.47	996409.97	-25696409.61
	KHSTPP-I	458189.11	458803.97	4246237.98
	TSTPP	536553.66	537963.71	4908829.33
	RANGIT	25837.25	26825.80	2790015.34
	CHPC	13038.44	48993.87	91686366.50
	KHPC	1320.00	11340.96	21244430.11
	THPC	119036.26	48601.54	-149321603.37
	KHSTPP-II	877601.71	878267.65	4954413.94
	FSTPP-III	232717.22	226804.45	-13138976.98
Nov-18	TEESTA	137230.00	148421.96	28282780.15
	MAITHON R/B	562944.11	561966.13	-702762.68
	BARH	803351.31	799331.88	-3382241.14
	NVVN-NEPAL	-56287.63	-64418.86	-22275847.23
	APNRL	249784.92	247952.21	-2482397.42
	GMRKEL	363170.95	350983.27	-15940071.98
	JITPL	265772.01	267199.27	4460197.20
	TPTCL	40834.92	19220.46	-52580763.05
	BRBCL	261347.63	264942.05	8903538.70
	TALCHER SOLAR	1239.66	1205.32	-326299.25
	JORETHANG HEP	23835.23	21704.13	-2041358.75
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-708.32	-22.55	1672767.43
	VAE	-35933.89	0.00	88983121.52
	NVVN	-415112.21	-420933.45	-14217812.33
	CHUZACHEN	15399.74	15937.12	1458532.47
	TUL	264228.44	263966.69	3220927.21
	DICKCHU	17395.54	18470.54	2865287.92
	THEP	24589.29	22304.06	-2146273.60
	HVDC_ALIPURDUAR	-1524.40	-521.74	2445608.56
	OPGC_INFIRM	0.00	-5145.64	-13092142.54
	MTPS-II	219335.05	208672.92	-22065412.73
	NPGC_INFIRM	0.00	-2321.63	-5624951.79
	DARLIPALI_INFIRM	0.00	-979.37	-2363224.80
	BRBCL U-III INFIRM	0.00	-1038.25	-2539023.86

MONTH	BENEFICIARY	SCHEDULE (MWH)	ACTUAL (MWH)	UI Charges (Rs.) (-) payable (+) receivable
	BSPHCL	-2079138.72	-2067333.00	3097436.51
	JUVNL	-487856.18	-508209.17	-68030561.35
	DVC	685145.37	625783.99	-146902471.61
	GRIDCO	-793786.75	-842422.57	-129975656.64
	SIKKIM	-51359.20	-50865.29	-582094.17
	WBSETCL	-643475.48	-649084.05	-27624412.74
	NER	-76650.13	127723.88	485888804.54
	NR	-1132635.37	-1714436.43	-1397544074.06
	SR	-1084904.30	-1141721.40	-204093328.83
	WR	-36651.49	625091.43	1656161757.30
	FSTPP-I & II	1011500.05	1003833.67	-16222119.10
	KHSTPP-I	511646.43	509267.21	-3694536.06
	TSTPP	268542.13	265625.11	-5939509.58
	RANGIT	17297.50	17847.81	1625685.27
	CHPC	0.00	15263.50	38921927.05
	KHPC	0.00	-11171.24	-23683019.47
	THPC	65520.82	12199.06	-113042131.91
	KHSTPP-II	911434.76	912006.34	4105758.45
	FSTPP-III	304208.65	298775.68	-12589289.74
Dec-18	TEESTA	90162.67	97219.31	18915088.44
	MAITHON R/B	656113.31	656957.33	2445987.24
	BARH	870764.30	865724.17	-6364584.43
	NVVN-NEPAL	-133697.38	-152091.97	-47071953.78
	APNRL	196962.92	195099.20	-3180222.40
	GMRKEL	393328.22	382102.18	-13725793.16
	JITPL	288328.35	287891.19	-1199702.80
	TPTCL	19691.23	15415.25	-10083718.59
	BRBCL	299006.43	302147.62	7995196.68
	TALCHER SOLAR	1128.91	1120.64	-97229.11
	JORETHANG HEP	14842.84	13533.76	-1294019.05
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-791.26	-27.64	1871830.47
	VAE	-26471.16	0.00	70383057.79
	NVVN	-358396.97	-353315.41	6300151.95
	CHUZACHEN	10765.59	11069.37	950017.18
	TUL	185658.22	184974.98	3384900.03
	DICKCHU	11088.26	11097.55	376646.69
	THEP	17103.97	15943.87	-1954183.82
	HVDC_ALIPURDUAR	-1650.49	-430.82	3015132.27
	OPGC_INFIRM	0.00	-4827.30	-12023453.23
	MTPS-II	214698.10	208685.82	-12261988.69
	NPGC_INFIRM	0.00	-11090.47	-27819127.12
	DARLIPALI_INFIRM	0.00	-318.17	-1248186.09
	BRBCL U-III INFIRM	0.00	-1775.63	-4176697.28
	BSPHCL	-2154347.61	-2154074.03	-31907707.81
	JUVNL	-560428.47	-590453.32	-119373654.87
	DVC	1201629.51	1194652.11	-17634130.94
	GRIDCO	-814573.07	-815492.45	20951185.74
	SIKKIM	-55638.31	-51337.63	14370858.32
	WBSETCL	-750724.78	-756173.65	-3887535.08
	NER	-72166.21	363926.31	1501628787.99
	NR	-1352655.54	-1975142.14	-2218422918.02
	SR	-1175216.23	-1350133.59	-693459161.32
	WR	265356.55	783916.38	1856324685.68
	FSTPP-I & II	993470.03	981314.42	-22246208.55
	KHSTPP-I	492912.19	490554.98	-3266264.28
	TSTPP	378317.35	376970.13	-1183687.93
	RANGIT	12977.42	13122.04	312820.75
	CHPC	0.00	1407.90	3590148.54
	KHPC	0.00	-15277.31	-32387887.87
	THPC	23645.60	786.11	-48462101.02
	KHSTPP-II	900198.73	897711.34	-2217009.41
	FSTPP-III	308688.77	305627.43	-5383914.88
Jan-19	TEESTA	77327.58	79747.67	2736137.17
	MAITHON R/B	551917.91	550940.72	-1005223.43
	BARH	881384.26	876543.15	-6069882.60
	NVVN-NEPAL	-174245.99	-184106.16	-35757490.39
	APNRL	127966.25	126866.54	-1165778.58
	GMRKEL	313881.59	312806.68	-824904.19
	JITPL	357656.53	357288.65	-821050.27
	TPTCL	18388.58	12378.56	-14509377.83
	BRBCL	325318.37	325009.78	-947.35
	TALCHER SOLAR	1190.76	1213.73	203184.52
	JORETHANG HEP	10733.30	10431.04	2181.53
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-793.38	-190.42	2143608.80
	VAE	972.40	0.00	8007058.25
	NVVN	-361053.20	-360226.56	284362.39
	CHUZACHEN	7260.54	7360.71	374867.86
	TUL	142180.34	141078.40	376968.66
	DICKCHU	7241.21	7211.73	94549.70
	THEP	13465.80	12350.46	-1640143.98
	HVDC_ALIPURDUAR	-1675.80	-341.55	4660907.24
	OPGC_INFIRM	0.00	-3635.82	-12371961.14
	MTPS-II	193811.94	187638.81	-12432930.81
	NPGC_INFIRM	0.00	-5013.71	-17229636.80
	DARLIPALI_INFIRM	0.00	-3302.05	-11533611.64
	BRBCL U-III INFIRM	0.00	6265.49	5594600.23

MONTH	BENEFICIARY	SCHEDULE (MWH)	ACTUAL (MWH)	UI Charges (Rs.) (-) payable (+) receivable
	BSPHCL	-1824426.50	-1811750.14	-595015.08
	JUVNL	-469967.28	-474473.30	-30183838.02
	DVC	1234951.19	1227505.78	-19694198.92
	GRIDCO	-695409.79	-712916.39	-19301328.87
	SIKKIM	-45698.33	-44672.70	817747.89
	WBSETCL	-641842.02	-635171.93	14084482.63
	NER	-141216.29	286335.59	1252228583.20
	NR	-975285.53	-1655276.04	-2053379171.99
	SR	-1391789.53	-1407069.92	-33281155.03
	WR	228017.22	628584.72	1184150731.36
	FSTPP-I & II	817937.17	808894.26	-17153010.92
	KHSTPP-I	400749.83	395809.27	-7406327.29
	TSTPP	508510.17	505561.08	-3341791.50
	RANGIT	11317.75	11515.80	431339.19
	CHPC	0.00	4823.27	12299346.19
	KHPC	0.00	-12756.32	-27043396.70
	THPC	8265.78	3376.78	-10364673.74
	KHSTPP-II	745452.05	741406.16	-3408205.43
	FSTPP-III	242019.19	238361.17	-6718904.89
Feb-19	TEESTA	76156.25	78711.93	2586657.93
	MAITHON R/B	559740.50	560410.50	2991739.27
	BARH	604991.82	599343.37	-8285889.08
	NVVN-NEPAL	-155248.51	-159888.90	-14855692.86
	APNRL	167080.94	166644.36	2853.07
	GMRKEL	326407.65	324003.34	-2489595.73
	JITPL	286014.75	286126.90	350543.91
	TPTCL	15273.09	10578.79	-10533180.69
	BRBCL	278181.12	276971.31	-1330953.67
	TALCHER SOLAR	1214.54	1221.84	43567.59
	JORETHANG HEP	8833.49	8853.18	738683.12
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-447.47	-406.93	122297.31
	VAE	53191.77	0.00	-161041478.26
	NVVN	-424539.77	-425445.81	-12162650.41
	CHUZACHEN	3750.39	3710.09	-123280.40
	TUL	126634.44	125676.58	453659.42
	DICKCHU	4902.04	4944.18	173782.94
	THEP	10594.14	9787.23	-1219803.04
	HVDC_ALIPURDUAR	-431.33	-347.71	295653.37
	OPGC_INFIRM	0.00	-5744.75	-16873974.69
	MTPS-II	165783.15	161855.70	-7382330.30
	NPGC_INFIRM	0.00	-4655.39	-13947309.60
	DARLIPALI_INFIRM	0.00	-2050.82	-5872581.60
	BRBCL U-III INFIRM	0.00	25839.81	29149753.53
	BSPHCL	-2170932.03	-2167476.61	-34743216.57
	JUVNL	-553764.89	-557067.82	-21603212.39
	DVC	1475382.30	1472154.51	-1138638.98
	GRIDCO	-1026620.55	-1066134.95	-57269947.66
	SIKKIM	-48892.20	-47403.65	1506680.68
	WBSETCL	-1126269.60	-1123400.41	24133538.04
	NER	-104017.17	322255.91	1381003287.77
	NR	-890721.31	-1819545.19	-3028237038.11
	SR	-1948852.27	-1925808.25	44019688.76
	WR	606024.43	1293430.17	2195978393.27
	FSTPP-I & II	902052.64	887310.24	-27448855.40
	KHSTPP-I	432780.08	428576.73	-5733108.34
	TSTPP	661031.16	657613.19	-4222002.84
	RANGIT	13835.75	14162.38	655031.99
	CHPC	0.00	28451.00	72550040.76
	KHPC	0.00	-10487.29	-22233053.95
	THPC	36267.58	18389.63	-37901257.06
	KHSTPP-II	895253.27	891665.29	-2941607.05
	FSTPP-III	280356.48	277701.69	-4914290.72
Mar-19	TEESTA	125618.00	129766.43	4817434.27
	MAITHON R/B	622544.04	624191.37	6198282.50
	BARH	744034.52	738901.40	-7603805.98
	NVVN-NEPAL	-167464.97	-166851.20	1517976.18
	APNRL	223729.73	224642.39	2709960.25
	GMRKEL	411885.86	401546.68	-22515413.03
	JITPL	362145.24	361509.16	-1052291.80
	TPTCL	13979.20	12211.91	-4001974.14
	BRBCL	375740.08	376444.14	639920.65
	TALCHER SOLAR	1305.70	1303.92	-26431.47
	JORETHANG HEP	8110.16	7938.90	411154.30
	IND Barath	0.00	0.00	0.00
	HVDC SASARAM	-320.44	-377.24	-195906.49
	VAE	96610.19	0.00	-331433651.66
	NVVN	-548409.99	-546868.63	-9711848.15
	CHUZACHEN	10804.05	10869.45	1113.93
	TUL	207127.05	203549.89	-2266430.17
	DICKCHU	10753.26	10330.82	-1246941.63
	THEP	11067.36	11130.59	541900.08
	HVDC_ALIPURDUAR	-446.81	-356.69	274153.02
	OPGC_INFIRM	0.00	-7023.16	-21525525.97
	MTPS-II	186533.02	182875.00	-7529810.24
	NPGC_INFIRM	0.00	1701.48	-13459534.04
	DARLIPALI_INFIRM	0.00	-2216.86	-6433928.89
	BRBCL U-III INFIRM	0.00	0.00	0.00
	MTPS-II	186533.02	182875.00	-7529810.24
	NPGC_INFIRM	0.00	1701.48	-13459534.04
	DARLIPALI_INFIRM	0.00	-2216.86	-6433928.89

ANNEXURE-XIV-B

Details of DSM Transactions from April 2018- March 2019

BENEFICIARY	SCHEDULE (MWH)	ACTUAL (MWH)	UI Charges (Rs.) (-) payable (+) receivable
BSPHCL	-28725900.5	-28613250.1	-255905436.3
JUVNL	-6187316.7	-6378024.4	-735750142.6
DVC	12692243.5	12026385.0	-1617702926.7
GRIDCO	-12418093.9	-13285569.0	-1916474158.3
SIKKIM	-528380.2	-505997.7	40287933.8
WBSETCL	-14096813.3	-14707337.8	-1638215931.6
NER	-422034.9	-1632463.3	-1971859964.1
NR	-18187571.7	-20105114.4	-6500791734.0
SR	-8106540.6	-13523238.9	-13702646463.5
WR	2950706.3	14311458.7	29135146600.4
FSTPP-I & II	10611742.7	10493324.3	-240462608.1
KHSTPP-I	5519814.8	5479325.4	-73796024.8
TSTPP	6439531.6	6449850.2	55752150.4
RANGIT	334395.7	345132.8	28189768.5
CHPC	857826.4	1348072.0	1236351525.0
KHPC	80614.8	285570.6	434506234.3
THPC	3327718.1	2411732.6	-1941889244.6
KHSTPP-II	9862358.5	9825814.9	-43551594.2
FSTPP-III	3397443.1	3337936.6	-129968691.1
TEESTA	2591282.5	2677833.2	213850540.4
MAITHON R/B	6858652.0	6856006.1	15460195.5
BARH	9388888.4	9333749.1	-50072260.7
NVVN-NEPAL	-1225323.2	-1315154.3	-249949975.0
APNRL	2649886.2	2635673.9	-7111077.2
GMRKEL	4346992.5	4236658.5	-136111698.8
JITPL	3928810.8	3929677.8	14784849.8
TPTCL	523083.1	350490.5	-426003070.0
BRBCL	2534695.2	2545987.2	33884785.4
TALCHER SOLAR	13793.5	13718.0	-1113784.2
JORETHANG HEP	414585.0	407973.1	6875086.7
IND Barath	0.0	-206.4	-544175.1
HVDC SASARAM	-8266.3	-1431.3	17522954.8
VAE	-355737.2	0.0	724832244.5
NVVN	-4736510.6	-4717463.3	-41452310.8
CHUZACHEN	401315.3	413664.9	32131008.6
TUL	4203692.4	4227221.2	110681365.8
DICKCHU	447443.8	460012.5	28810016.9
THEP	423577.6	421604.2	14226106.9
HVDC_ALIPURDUAR	-16505.8	-6492.6	25993530.8
OPGC_INFIRM	0.0	-35511.2	-99040892.8
MTPS-II	2136497.214	2058451.032	-159361424.8
NPGC_INFIRM	0	-36539.44577	-115052443.2
DARLIPALI_INFIRM	0	-10685.67997	-31875351.67
BRBCL U-III INFIRM	0	27005.05078	22064661.52

Annexure - XV

STATUS OF REACTIVE CHARGES A/C

RECEIVABLE IN ER POOL AS PER PUBLISHED A/C UPTO 20.01.19 (2018 -19)
AS ON 06.02.19

CONSTITUENT	AMOUNT RECEIVABLE IN THE POOL (Rs.)	AMOUNT RECEIVED IN THE POOL (Rs.)	TOTAL OUTSTANDING(Rs.)
BSPHCL	5010087	378537	4631550
JUVNL	4285714	1137688	3148026
DVC	660320	660320	0
GRIDCO	245987789	245987789	0
WBSETCL	676708817	658345891	18362926
SIKKIM	635432	325817	309615
TOTAL	933288159	906836042	26452117

Note: (+ve) means payable by utility & (-ve) means receivable by utility

ANEXURE-XVI (1/2)

Details of stations/Units required to operate under RGMO/FGMO as per IEGC							Whether operating under RGMO	Whether operating in FGMO with manual intervention to achieve RGMO	whether exempted from FGMO/RGMO by CERC	Whether applied to CERC for exemption /extension	whether units operating with locked governors	indicate in case of status is not available
Name of State	Type	Name of Uitlity	Sector (CS/SS/Private)	Name of Station	Name of Stage/ Unit	Installed capacity (MW)						
JHARKHAND	Thermal	TVNL	SS	Tenughat	1	210	No			No		Difficulties in implementing RGMO & exemption not applied
			SS		2	210	Yes			No		
	Hydro	JSEB	SS	Subarnrekha	1	65	Yes					
			SS		2	65	Yes					
WEST BENGAL	Termal	WBPDCL	SS	Bandel TPS	1	82.5	No			Yes		
			SS		2	82.5	No			Yes		
			SS		3	82.5	No			Yes		
			SS		4	82.5	No			Yes		
			SS		5	210	No			Yes		
			SS	Santaldih	5	250	No					
			SS		6	250	No					Unit#6 could not be implemented b
			SS	Kolaghat	1	210	No	Yes	No	Yes	Yes	Nil
			SS		2	210	No	Yes	No	Yes	Yes	Nil
			SS		3	210	No	Yes	No	Yes	Yes	Nil
			SS		4	210	No	Yes	No	Yes	Yes	Nil
			SS		5	210	No	Yes	No	Yes	Yes	Nil
			SS		6	210	No	No	No	Yes	Yes	Nil
			SS	Bakreshwar	1	210	Yes					
			SS		2	210	Yes					
			SS		3	210	Yes					
			SS		4	210	Yes					
			SS		5	210	Yes					
			SS	Sagardighi	1	300	Yes					
			SS		2	300	Yes					
	Hydro				3	500	Yes					
					4	500	Yes					
			SS	PPSP	1	225	Yes			Yes		
			SS		2	225	Yes			Yes		In 134th OCC WBPDCL informed that the units are in RGMO/FGMO mode
			SS		3	225	Yes			Yes		
			SS		4	225	Yes			Yes		
	Thermal	CESC	SS	Budge-Budge	1	250	Yes					
			SS		2	250	Yes					
			SS		3	250	Yes					
			SS	Haldia	1	300	Yes					
			SS		2	300	Yes					
	Thermal			DPL	7	300	Yes					
		DPL	SS		8	250	Yes					
Orissa		OPGC	SS	IB TPS	1	210	Yes					Not adequate response in RGMO
			SS		2	210	Yes					
	Hydro	OHPC	SS	Burla	1	49.5	No	Yes		Yes		
			SS		2	49.5	No	Yes		Yes		
			SS		3	32	No	Yes		Yes		
			SS		4	32	No	Yes		Yes		
			SS		5	37.5	No	Yes		Yes		
			SS		6	37.5	No	Yes		Yes		
			SS		7	37.5	No	Yes		Yes		
			SS	Balimela	1	60	No	Yes		Yes		
			SS		2	60	No	Yes		Yes		
			SS		3	60	No	Yes		Yes		
			SS		4	60	No	Yes		Yes		
			SS		5	60	No	Yes		Yes		
			SS		6	60	No	Yes		Yes		
			SS		7	75	No	Yes		Yes		
			SS		8	75	No	Yes		Yes		
			SS	Rengali	1	50	No	Yes		Yes		
			SS		2	50	No	Yes		Yes		
			SS		3	50	No	Yes		Yes		
			SS		4	50	No	Yes		Yes		
			SS		5	50	No	Yes		Yes		
			SS	Upper Kolab	1	80	No	Yes		Yes		
			SS		2	80	No	Yes		Yes		
			SS		3	80	No	Yes		Yes		
			SS		4	80	No	Yes		Yes		
			SS	Indravati	1	150	No	Yes		Yes		
			SS		2	150	No	Yes		Yes		
			SS		3	150	No	Yes		Yes		
			SS		4	150	No	Yes		Yes		

ANEXURE-XVI (2/2)

Central Sector	Thermal	DVC	CS	Bokaro-A	1	500	Yes			Yes		
			CS	Bokaro-B	3	210	No					Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS	CTPS	3	130	No			Yes		Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS		7	250	Yes					
			CS		8	250	Yes					
			CS	DTPS	4	210	No			Yes		Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS	Mejia	1	210	No			Yes		Not possible due to non availability of Electro hydraulic
			CS		2	210	No			Yes		
			CS		3	210	No			Yes		Action has been initiated to put in RGMO, but testing is not yet completed.
			CS		4	210	Yes					
			CS		5	250	Yes					
			CS		6	250	Yes					
			CS	Mejia - B	7	500	Yes					
			CS		8	500	Yes					
			CS	DSTPS	1	500	Yes					
			CS		2	500	Yes					
			CS	KODERMA	1	500	Yes					
			CS		2	500	Yes					
			CS	RTPS	1	600	Yes					
			CS		2	600	Yes					
	Hydro		CS	Panchet	1	40	No					RGMO mode of operation would not be possible for units1 & 2.
			CS		2	40	No					
	Thermal	NTPC	CS	Farakka STPP-I	1	200	Yes					
			CS		2	200	Yes					
			CS		3	200	Yes					
			CS	Farakka STPP-II	1	500	Yes					
			CS		2	500	Yes					
			CS	Farakka-U#6		500	Yes					Kept in RGMO mode from April, 2014
			CS	Kahalgoan STPP	1	210	Yes					
			CS		2	210	Yes					
			CS		3	210	Yes					
			CS		4	210	Yes					
			CS		5	500	Yes					
			CS		6	500	Yes					
			CS		7	500	Yes					
			CS	Talcher STPP Stg-I	1	500	Yes					
			CS		2	500	Yes					
			CS	Barh	5	660	Yes					
			CS	Barh	6	660	Yes					
			CS	BRBCL	1	250	Yes					
			CS	BRBCL	2	250	Yes					
	Hydro	NHPC	CS	Teesta HEP	1	170	Yes					
			CS		2	170	Yes					
			CS		3	170	Yes					
IPP	Thermal	IPP	PS	Maithon RB TPP	1	525	Yes					
			PS		2	525	Yes					
			PS	Sterlite	1	600	Yes					
			PS		2	600	Yes					
			PS		3	600	Yes					
			PS		4	600	Yes					
			PS	Adhunik Power	1	270	Yes					
			PS		2	270	Yes					
			PS	GMR	1	350	Yes					
			PS		2	350	Yes					
			PS		3	350	Yes					
			PS	JITPL	1	600	Yes					
			PS		2	600	Yes					
	Hydro	IPP	PS	JLHEP	1	48	No					(RoR project with 3 hours pondage)
			PS		2	48	No					
			PS	Chujachen HEP	1	49.5	No					(RoR project with 3 hours pondage)
			PS		2	49.5	No					
			PS	Teesta Urja	1	200	Yes					
			PS		2	200	Yes					
			PS		3	200	Yes					
			PS		4	200	Yes					
			PS		5	200	Yes					
			PS		6	200	Yes					
			PS	Dikchu	1	48	Yes					
			PS		2	48	Yes					

ANNEXURE – XVII (Page-1/2)

IMPORTANT MEETINGS HELD DURING 2018-19

Sl. No	Description	Date	Venue
	A. ERPC MEETINGS		
i)	38th ERPC Meeting	30.06.2018	KOLKATA
ii)	39th ERPC Meeting	17.11.2018.	JAIPUR
iii)	40th ERPC Meeting	16.03.2019	JODHPUR
	B. TCC MEETINGS		
i)	38th TCC Meeting	29.06.2018	KOLKATA
ii)	39th TCC Meeting	16.11.2018	JAIPUR
iii)	40th TCC Meeting	15.03.2019	JODHPUR
	C. OPERATION COORDINATION SUB-COMMITTEE (OCC) MEETINGS		
i)	144th OCC Meeting	19.04.2018	ERPC, Kolkata
ii)	145th OCC Meeting	18.05.2018	ERPC, Kolkata
iii)	146th OCC Meeting	15.06.2018	ERPC, Kolkata
iv)	147th OCC Meeting	20.07.2018	ERPC, Kolkata
v)	148th OCC Meeting	20.08.2018	ERPC, Kolkata
vi)	149th OCC Meeting	18.09.2018	ERPC, Kolkata
vii)	150th OCC Meeting	11.10.2018	ERPC, Kolkata
viii)	151th OCC Meeting	27.11.2018	NTPC,Farakka
ix)	152nd OCC Meeting	17.12.2018	Floatel, Kolkata
x)	153rd OCC Meeting	21.01.2019	ERPC, Kolkata
xi)	154th OCC Meeting	21.02.2019	Mejia TPS, DVC,Mejia
xii)	155th OCC Meeting	25.03.2019	Hotel Pride Plaza, Kolkata
	D. COMMERCIAL SUB- COMMITTEE(CC) MEETINGS		
i)	37th CC Meeting	11.06.2018	ERPC, Kolkata
ii)	38th CC Meeting	12.10.2018	ERPC, Kolkata
iii)	39th CC Meeting	18.02.2019	ERPC, Kolkata
	E. PROTECTION COORDINATION SUB-COMMITTEE (PCC) MEETINGS		
i)	66th PCC Meeting	25.04.2018	ERPC, Kolkata
ii)	67th PCC Meeting	22.05.2018	ERPC, Kolkata
iii)	68th PCC Meeting	18.06.2018	ERPC, Kolkata
iv)	69th PCC Meeting	19.07.2018	ERPC, Kolkata
v)	70th PCC Meeting	21.08.2018	ERPC, Kolkata
vi)	71st PCC Meeting	19.09.2018	ERPC, Kolkata
vii)	72nd PCC Meeting	29.10.2018	ERPC, Kolkata
viii)	73rd PCC Meeting	29.11.2018	ERPC, Kolkata
ix)	74th PCC Meeting	19.12.2018	ERPC, Kolkata
x)	75th PCC Meeting	22.01.2019	ERPC, Kolkata
xi)	76th PCC Meeting	14.02.2019	ERPC, Kolkata
xii)	77th PCC Meeting	26.03.2019	Powergrid ER-II, Kolkata
	F. LOAD GENERATION BALANCE REPORT MEETING		
i)	LGBR Meeting	18.12.2018	ERPC, Kolkata

G. SPECIAL MEETINGS

Sl. No.	Description	Date	Venue
1	Meeting with PRDC	04.04.2018	ERPC, Kolkata
2	Meeting with PWC	04.04.2018	ERPC, Kolkata
3	SPS Review Meeting	06.04.2018	ERPC, Kolkata
4	Hindi Committee Meeting	16.04.2018	ERPC, Kolkata
5	SPS study group meeting of GMR and JITPL on tripping of any HVDC Talcher –Kolar pole	18.04.2018	ERPC, Kolkata
7	Workshop on 5 minute scheduling & NEP	20.04.2018	ERPC, Kolkata
8	Meeting with CPWD	23.04.2018	ERPC, Kolkata
9	Training Programme on PDMS by PRDC	26.04.2018 to 27.04.2018	ERPC, Kolkata
10	Meeting on Shutdown issue of 220kV New Melli - Rangpo Line	02.05.2018	ERPC, Kolkata
11	Meeting with ERLDC & WBSEDCL on NTPC Solar issue	08.05.2018	ERPC, Kolkata
12	Workshop on Cyber Security	09.05.2018	ERPC, Kolkata
13	Meeting with MPL	09.05.2018	ERPC, Kolkata
14	Meeting with JITPL & Powergrid	18.05.2018	ERPC, Kolkata
15	Meeting on TVNL issue	21.05.2018	ERPC, Kolkata
16	Hindi Workshop	31.05.2018	ERPC, Kolkata
17	Special Meeting on IBEUL issue	01.06.2018	ERPC, Kolkata
18	PSDF Review Meeting at Binaguri	08.06.2018	Binaguri, West Bengal
19	Special Meeting with KBUNL, MTPS & Bihar	15.06.2018	ERPC, Kolkata
20	68th PCC meeting	18.06.2018	ERPC, Kolkata
21	Training by PRDC	02.07.2018 to 04.07.2018	ERPC, Kolkata
22	Workshop on Tariff Regulations	05.07.2018	ERPC, Kolkata
23	6th Meeting of Standing Committee on Transmission Planning for State Sectors	09.07.2018	ERPC, Kolkata
24	Meeting with GRIDCO on Auxiliary Power	10.07.2018	ERPC, Kolkata
25	Reactive Energy Committee Meeting	11.07.2018	ERPC, Kolkata
26	Meeting among PTC, Bhutan, ERLDC & ERPC	13.07.2018	ERPC, Kolkata
27	1st meeting of Eastern Regional Standing Committee on Transmission	16.07.2018	New Town,Rajarhat,Kolkata.
28	Hindi Workshop.	17.07.2018	ERPC, Kolkata
29	Workshop on Genus Meter & RTDSM	24.07.2018	ERPC, Kolkata
30	Workshop on Amendment to DSM Regulations	25.07.2018	ERPC, Kolkata
31	Workshop on Flexible Scheduling	27.07.2018	ERPC, Kolkata
32	Workshop on POC Charges	30.07.2018	ERPC, Kolkata
33	Simulator Training at Bakreswar TPS,Bakreswar	06.08.2018 to 11.08.2018	BkTPS,WBPDCL,Bakreswar
34	Hindi Workshop	14.08.2018	ERPC, Kolkata
35	Workshop on 5 Min. Scheduling, Metering, Accounting & Settlement	24.08.2018	ERPC, Kolkata
36	Meeting taken by Hon'ble Minister-in-charge of Power &NES,Govt. of West Bengalon Action plan for uninterrupted power supply to consumers and supply of coal to Thermal power Station during the ensuing puja festival,2018	25.08.2018	WBSEDCL,Vidyut Bhawan, Saltlake

Sl. No.	Description	Date	Venue
37	Meeting between ERPC & ERLDC	30.08.2018	ERPC, Kolkata
38	Meeting with DISCOMS	03.09.2018	ERPC, Kolkata
39	Pension Adalat	18.09.2018	ERPC, Kolkata
40	Meeting with DVC & Railway	24.09.2018	ERPC, Kolkata
41	Workshop organised by ERPC on emerging issues in power sector, blackstart and restoration procedure for Odisha System.	26.09.2018 to 27.09.2018	Upperkolab, Odisha
42	Meeting for discussion on preparedness for the ensuing Durga Puja festivals2018.	03.10.2018	WBSEDCL,Vidyut Bhawan, Saltlake
43	Meeting with PTC	03.10.2018	ERPC, Kolkata
44	Meeting on augmentation of Coal supply & its transportation to various power station in the Eastern Region before Puja festivals.	04.10.2018	ERPC, Kolkata
45	Workshop on Smart Grid.	05.10.2018	ERPC, Kolkata
46	Workshop organised by ERPC	23.10.2018 to 25.10.2018	Gedu, Bhutan
47	Meeting on SCADA	12.11.2018	ERPC, Kolkata
48	8th Meeting of NPC	30.11.2018	Guwahati
49	ISO Meeting	04.12.2018	ERPC, Kolkata
50	Seminar on "Regulatory Frame Work in India" by NPTI, Durgapur at Ranchi	06.12.2018 to 07.12.2018	Ranchi
51	PWC Presentation	11.12.2018	ERPC, Kolkata
52	Meeting on Islanding Scheme of IbTPS	12.12.2018	ERPC, Kolkata
53	Meeting regd. Lalmatia Issue	13.12.2018	ERPC, Kolkata
54	Mtg. with CEO, DMTCL	14.12.2018	ERPC, Kolkata
55	Meeting with CPWD	20.12.2018	ERPC, Kolkata
56	Demonstration of Black Start at Balimela HPS	21.12.2018	ERPC, Kolkata
57	Special meeting on Bus Splitting arrangement at Durgapur S/S	26.12.2018	ERPC, Kolkata
58	Hindi Workshop	26.12.2018	ERPC, Kolkata
59	Workshop on DSM	27.12.2018	ERPC, Kolkata
60	Review Mtg. to be taken by Member Secretary, ERPC	01.01.2019	ERPC, Kolkata
61	Mtg. on e-office Implementation	03.01.2019	ERPC, Kolkata
62	Presentation by PWC	07.01.2019	ERPC, Kolkata
63	Discussion with MPL	08.01.2019	ERPC, Kolkata
64	Prsensentation by Sh. Lenin B., AEE on Tariff Regulations 2019 – 24	09.01.2019	ERPC, Kolkata
65	ISO Meeting	09.01.2019	ERPC, Kolkata
66	Workshop by NPTI	11.01.2019	Bhubaneshwar
67	Meeting on Operationalization of Bus splitting scheme in Durgapur S/s	17.01.2019	ERPC, Kolkata
68	Meeting on Maintainance Program of Trans. Lines	18.01.2019	ERLDC, Kolkata
69	Mtg. with PTC	24.01.2019	ERPC, Kolkata
70	Presentation on Tariff Regulations	28.01.2019	ERPC, Kolkata

Sl. No.	Description	Date	Venue
71	Workshop on PoC Charges Bills	29.01.2019	ERPC, Kolkata
72	Workshop on PoC charges Calculation	30.01.2019	ERPC, Kolkata
73	Mtg. with NTPC	30.01.2019	ERPC, Kolkata
74	Special Meeting on RGMO/FGMO & PSS Tuning of Generators in ER	31.01.2019	ERPC, Kolkata
75	Workshop on Enhancing Managerial Skill	04.02.2019	IMI, Kolkata
76	Presentation on FRAS by Sh. S.K.Pradhan, AE	05.02.2019	ERPC, Kolkata
77	ISO Meeting	05.02.2019	ERPC, Kolkata
78	Meeting on APNRL & WBSEDCL Issue	08.02.2019	ERPC, Kolkata
79	Training on Substation and Tr. Line Protection	11.02.2019 to 13.02.2019	ERPC, Kolkata
80	Mtg. with CPWD	11.02.2019	ERPC, Kolkata
81	Mtg. on Transmission Availability	13.02.2019	ERPC, Kolkata
82	Workshop on Restoration Procedure	15.02.2019	ERPC, Kolkata
83	Meeting on OCC Shut down through VC	19.02.2019	ERLDC, Kolkata
84	Special Meeting on "RGMO/FGMO" of Budge-Budge units of CESC	19.02.2019	ERPC, Kolkata
85	Validation Committee Meeting	21.02.2019	ERLDC, Kolkata
86	Workshop by PRDC	27.02.2019 to 28.02.2019	Hotel Pride Plaza, New Town, Kolkata
87	Meeting on Power support at Manique GSS from DVC and at Kendposi GSS from OPTCL	01.03.2019	ERPC, Kolkata
88	Meeting on the methodology of segregation of Actual Generation of NTPC Kahalgaon Stage – I & II	04.03.2019	ERPC, Kolkata
89	ISO Meeting	04.03.2019	ERPC, Kolkata
90	SCADA Meeting	06.03.2019	ERLDC, Kolkata
91	Meeting on Budget Issues	07.03.2019	ERPC, Kolkata
92	Meeting on SPS at Rangpo	08.03.2019	ERPC, Kolkata
93	Mtg. on COD of Unit#3 of Nabinagar TPP of BRBCL	11.03.2019	ERPC, Kolkata
94	Meeting on OCC Shut down (Through VC)	20.03.2019	ERPC, Kolkata
95	Hindi Meeting	28.03.2019	ERPC, Kolkata

ANNEXURE - XVIII

THERMAL POWER PROJECT UNDER CONSTRUCTION IN THE ER

State	Project Name	Impl. Agency	Unit No.	Capacity (MW)	Expected date of Synchronisation
	Nabi Nagar TPP	Joint Venture of NTPC and Railways	U-4	250	2019-20
	New Nabi Nagar STPP	Joint Venture of NTPC and Bihar	U-1	660	2019-20
			U-2	660	2019-20
			U-3	660	2019-20
	Barh-St-II	NTPC	U-1	660	
			U-2	660	
			U-3	660	

HYDRO POWER PROJECT UNDER CONSTRUCTION IN THE ER

State	Project Name	Impl. Agency	Unit No.	Unit Size & Capacity (MW)	Likely Commissioning Year
	Teesta- VI	Lanco	U-1 to U-4	4x125	
	Rangit-IV	Jal Power corp. Ltd.	U-1 to U-3	3x40	
	Bhasmey	Gati Infrastructure	U-1 to U-3	3x17	
	Rangit-II	Sikkim Hydro Power Ltd.	U-1 to U-2	2x33	2019-20
	Rongnichu	Madhya Bharat Power Corp. Ltd.	U-1 to U-2	2x48	2019-20
	Panan	Himgiri Hydro Energy Pvt. Ltd.	U-1 to U-4	4x75	2019-20

ANNEXURE-XIX

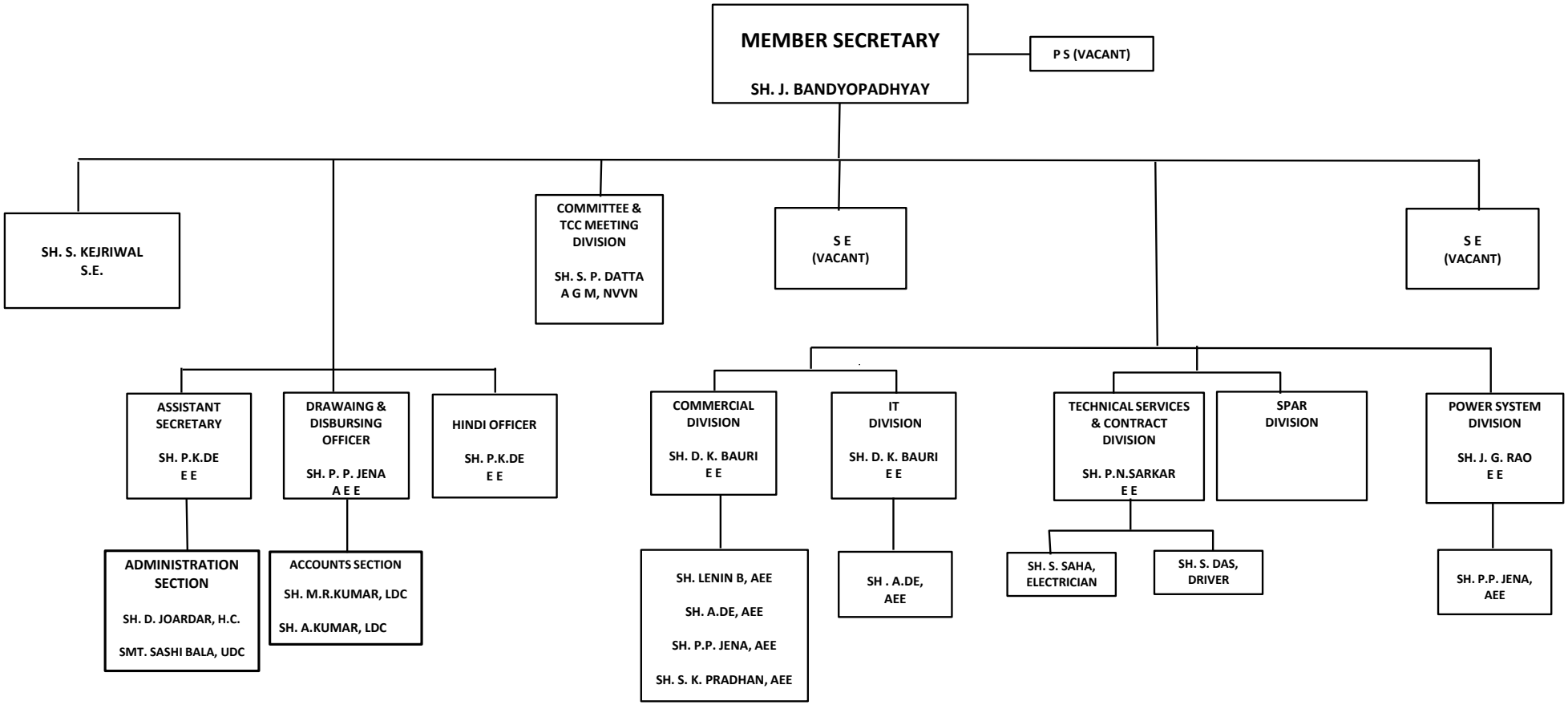
LIST OF ASSETS TO BE COMMISSIONED IN ER-I

Sl. No.	Name of the Project	Name of the Trans line/ Substation/ Extn.	Scope	MVA addition	Length (CKM)	IA/ RCE Sch.	Tgt. Compln.	Indic. Cap. Cost (Rs. Cr.)	Balance work/ gang			Ant. Compln.	Remarks/ Critical Issues
									Fdn.	TE	Stgg (Km)		
	Q-I												
1	ERSS -XII	Repl. Of 1x315 MVA ICT by 1x500 MVA ICT at Patna under ERSS XII - 2nd Agency: GE Comp Sch: Jan'16 (LOA)	Replacement of 1 no. 315 MVA ICT by 1 no. 500 MVA ICT	185		Nov'16/ Nov'17	May'18	17				Jun'18	ICTdespatched from BHEL on 28.03.18. **Efforts to be made to complete in May'18.**
2	ERSS III &XVII	400 KV Daltonganj SS Agency: GE Sch Compl: Mar'17 (LOA)	ERSS-III: 1x315 MVA ICT, 2x50MVAR L/R for 400kV Sasaram bays . ERSS XVII: 2 Nos 132kV Line bays for Chattarpur	315		Nov'12/ Dec'17	June'18	42				June'18	Shortage material for ICT II is being arranged from Siemens. 1 no. 50 MVAR LR reached at site.
3	Split Bus	400KV D/C trans. Line for reconfiguration of Biharshariff Ckt III & IV from its present position to St.-II side of Kahalgaon Sw. yd. of NTPC Agency: Shyama Comp. Sch: Dec'14 (LOA)	400kV D/C Quad Moose Condr line with 42 Locs and 13 Kms line length (ER-I portion) for shifting of the Ckt 3 & 4 to Stage II side of NTPC S/Y.		26	Mar'16	Jun'18*	39	3/1	6/0	3.21/0	June'18	Completion by June'18. However commissioning matching with readiness of bays by NTPC (Critical). Decision on DOCO pending readiness of NTPC end bays. NTPC Bays expected by June'18.
4	ERSS -V	Extension of 400 KV Purnea SS including 02 nos. 80 MVAR 400 KV Line reactor under ERSS V Agency: Sterling & Wilson Comp Sch: Dec'16 (LOA)	2 Nos 400kV Bays for Rajarhar lines with 2x80MVAR L/R			Apr'16/ Sep'17	June'18	32				June'18	Major work completed. Commissioning matching with line.
5	ERSS -V	400KV D/C Rajarhat - Purnea line (Triple)-ER I Portion Agency: EMC Comp. Sch: Feb'16 (LOA)	400kV D/C Triple Snow bird Condr line with **417 Locs and 151 Kms** line length (ER-I portion).		302	Apr'16/ Sep'17	June'18	381	3/1	10/1	29/4	June'18	Additional stgg. Gang required. Pile is Critical and NEC gang mobilised.
6	North Karanpura	400 KV GIS Bays extension at Chandwa Agency: Hyosung	02 Nos 400kV GIS Bays for Northkaranpura Bays at Chandwa			Sep'17	June'18	15				June'18	GIS bays received at site. Matching with TBCB line (Adani). **Decision on DOCO pending completetion of TBCB line.** (uncertain)
7	ERSS -XII	Repl. Of 1x315 MVA ICT by 1x500 MVA ICT at Pusauli Agency: GE Comp Sch: Dec'15 (LOA)	315MVA 2nd ICT at Pusali to augumented with 500MVA ICT.	185		Nov'16/ Nov'17	June'18	18				June'18	**Best Effort target for May'18.** ICT reached at Pusauli S/s. S/D from BSPTCL critical

Sl. No.	Name of the Project	Name of the Trans line/ Substation/ Extn.	Scope	MVA addition	Length (CKM)	IA/ RCE Sch.	Tgt. Compln.	Indic. Cap. Cost (Rs. Cr.)	Balance work/ gang			Ant. Compln.	Remarks/ Critical Issues
									Fdn.	TE	Stgg (Km)		
8	ERSS -XIV	125 MVAR BR at Chaibasa Agency: GE Comp sch : Dec'17 (LOA)	Supply, Installation and Commissoning (incl Civil work) of 1x125MVAR Bus Reactor			Nov'18	June'18	13				June'18	**To be recorded in RPC for commissioning in May'18.** Reactor under Transit. Expected at site by 1st week of May'18
9	ERSS-XI	STATCOM at Ranchi Agency- M/s Siemens Compl Sch.: May'18 (LOA) /Nov'18(IA)	Supply, Installation and Commissoning (incl Civil work) of Statcom			Nov'18	June'18	173				June'18	
	Sub total of Q-I			**685**	**328**			**729**					
	Q-II												
10	ERSS -XIV	125 MVAR BR at Lakhisarai Agency: GE Comp sch : Dec'17 (LOA)	Supply, Installation and Commissoning (incl Civil work) of 1x125MVAR Bus Reactor			Nov'18	July'18	13				Sep'18	**Best effort target for Jul'18.** Civil works completed. Reactor supply expected in May'18
11	ERSS -XIV	125 MVAR BR at Banka Agency: GE Comp sch : Nov'17 (LOA)	Supply, Installation and Commissoning (incl Civil work) of 1x125MVAR Bus Reactor			Nov'18	Aug'18	13				Sep'18	**Best effort target for Aug'18.** Civil works completed. Reactor supply expected in May'18
12	ERSS -IX	1*500 MVA, 1-Phase spare unit Auto transformer at Gaya (Diverted to Ranchi) Agency: GE Comp. Sch: Aug'16 (LOA)	1 No single phase 765kV 500MVA to be commissioned as cold standby.	500		Feb'16/ Jun'17	Aug'18	15				Sep'18	**Best effort target for Aug'18.** No confirm program received from M/s GE. Foundation is ready at Ranchi. Critical
	Sub total of QII			**500**				**41**					
	Q-III												
13	ERSS-XI	STATCOM at Kishenganj Agency- M/s Siemens Compl Sch.: May'18(LOA)/Nov'18(IA)	Supply, Installation and Commissoning (incl Civil work) of Statcom			Nov'18	Oct'18	150				Oct'18	Material shifted to Purnea from Ranchi.Work will commence very shortly.
	Sub total of Q-III							**150**					
	Q-IV												
14	Ttrans System Strenghtening in	2 Nos. 400kV GIS Line Bays at Kishenganj S/S for termination of 400kV Kishanganj-Darbhanga D/C Line (Quad) (Line under TBCB) Party: M/s Xian & M/s Techno NOA: Jun'17 Compln. Sch- Dec'18	2 Nos. 400kV GIS Line Bays at Kishenganj S/S for termination of 400kV Kishanganj-Darbhanga D/C Line (Quad) (Line under TBCB)			-	Dec'18	20				Jan'19	Commissioning matching with TBCB line (Sch.: Mar'19).

Sl. No.	Name of the Project	Name of the Trans line/ Substation/ Extn.	Scope	MVA addition	Length (CKM)	IA/ RCE Sch.	Tgt. Compln.	Indic. Cap. Cost (Rs. Cr.)	Balance work/ gang			Ant. Compln.	Remarks/ Critical Issues
									Fdn.	TE	Stgg (Km)		
15	India for Transfer of Power from New HEP-Bhutan	2x80MVAR 400kV Switchable Line Reactor with 400 ohm NGR (one on each circuit) of 400kV Kishanganj-Darbhanga D/C Line at Kishanganj S/S IA Sch- Mar'19. Party: M/s GE NOA: 12.06.17 Compln Sch-Dec'18	2x80MVAR 400kV Switchable Line Reactor with 400 ohm NGR (one on each circuit) of 400kV Kishanganj-Darbhanga D/C Line at Kishanganj S/S			-	Dec'18	12				Jan'19	Commissioning matching with TBCB line (Sch.: Mar'19).
16	ERSS-XVII Part-B	Ext. of 400kV (AIS)/220kV(GIS) Gaya S/S along with 1x500 MVA 400/220 KV ICT . Party: M/s Xian & M/s Techno NOA: Jun'17 Compln Sch-Jan'19	Supply, Installation and Commissoning (incl Civil work) for Ext. of 400kV (AIS)/220kV(GIS) Gaya S/S along with 1x500 MVA 400/220 KV ICT .	500		Jan'19	Jan'19	36				Jan'19	
	Sub total of Q-IV			**500**	**0**			**69**					
Total (ER-I)				**1685**	**328**			**989**					
	Best Efforts												
1	Nabinagar II	Installation of 3x500 MVA ICT at Gaya under Nabinagar II Agency: M/s Toshiba Comp sch :- Aug'18 (LOA)/June'19(IA)	Supply, Installation and Commissoning (incl Civil work) of 3x500MVA 765kV 1ph ICT	1500		June'19	Oct'18	8				Oct'18	2 nos ICT reached at site balance 1 no. under transit. Completion ant. ahead of Implementation agreement zero date (Apr'19). To be taken up with NTPC/ RPC for early commissioning matching with Gen.
2	Nabinagar II	400 KV Nabinagar Patna Transmission Line Agency: M/s KEC Limited Comp sch :March'18(LOA) /June'19(IA)	400kV D/C Quad Moose Condr line with 392 Locs and 141 Kms line length		282	June'19	Oct'18	321	47/ 7G	67/ 6G	73/ WIP: 7 Kms	Mar'19	Completion ant. ahead of Implementation agreement zero date (Apr'19). To be taken up with NTPC/ RPC for early commissioning matching with Gen.
3	Nabinagar II	400 KV bay Extn at Patna Extn alongwith 2x 80 MVAR LR for Nabinagar Patna Line Agency: M/s GE Comp sch :Oct'18 (LOA) /June'19(IA)	02 Nos 400kV Bays for Nabinagar Line with 2x80MVAR LR			June'19	Oct'18	12				Mar'19	work under progress. Clearance for supply of 80 MVAR Reactor given to M/s CGL. Completion ant. ahead of Implementation agreement zero date (Apr'19). To be taken up with NTPC/ RPC for early commissioning matching with Gen.
	Sub total (B. Eff.)			**1500**	**282**			**341**					

ORGANISATION CHART OF ERPC, KOLKATA
AS ON 31.03.2019



EASTERN REGION POWER MAP

NOT TO SCALE

UTTAR PRADESH

NEPAL

BHUTAN

SIKKIM

BIHAR

JHARKHAND

W. BENGAL

ASSAM

CHHATTISGARH

ODISHA

BANGLADESH

ANDHRA PRADESH

BAY OF BENGAL

SIKKIM
1. MELLI
2. MAMRING
3. NAMCHI
4. ROTHAK
5. SORENG
6. GAZING
7.SAGBARI
8. RABANGLA

9. ODLABARI
10. CHALSA
11. NAGRAKATA
12. BANARHAT
13. KHEJURIA
14.KUMARDHUBI
15. RAMKANALI
16. KALIPAHARI
17. UKHRA
17a.BURNPUR
18. MUCHIPARA
19.BOLPUR
20.BURDWAN
21.ADISAPTAGRAM
22. DHARAMPUR
23. CHANDITALA
24.BAGHATI
25.MANIQUE(DVC)
26. GOLMURI
27. JADUGUDA
28. ADITYAPUR
29.PATNA
30.MITHAPUR
31.GAIGHAT
32.BARIPAHARI
33.SULTANGANJ

34. BARAJAMDA
35. BHALULATA
36. ROURKELA
37. RSP
38. RAIRANGPUR
39. RENGALI (PG)
40. RENGALI (Gr)
41. RENGALI (PS)
39. NANDIRA
40.JAYPORE TR.
41. CH. KUSUMI
42. MALIGUDA
43. MANBAR
44. MACHKUND
45.JAGATS'PUR
46.PHUTNAKARA
47. KESURA
48. RANASINGPUR
49.49b. KONARK
50. P.KHEMUNDI
51. JAJPUR TOWN
51a. J. Pura trac.
52.JAKHAPURA Tr.
52a. MAHESWARI
52b. SALEPUR
52c. OCC
53. D. PAHANDI
54. Budipadar
55.Aditya Al.
56. Basundhara

66 KV
132 KV
220 KV
400 KV
765 KV
THERMAL
HYDRO
HVDC

EASTERN REGIONAL POWER COMMITTEE
14, GOLF CLUB ROAD, KOLKATA - 700 033

JUNE-2019

220 KV AND ABOVE E.R . TRANSMISSION SYSTEM