



तापीय विद्युत गृहों के कार्य निष्पादन का
पुनर्विलोकन 2017-2018

REVIEW OF PERFORMANCE OF THERMAL POWER STATION 2017-18



भारत सरकार विद्युत मंत्रालय केन्द्रीय विद्युत प्राधिकरण
नई दिल्ली

**GOVERNMENT OF INDIA MINISTRY OF POWER
CENTRAL ELECTRICITY AUTHORITY
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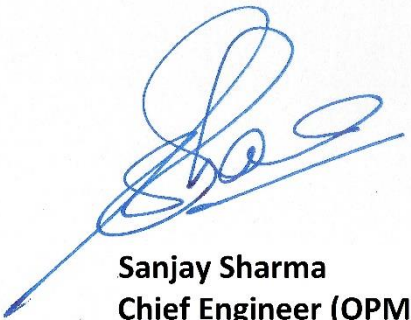
The report on “Review of Performance of Thermal Power Stations 2017-18 is the forty second (42nd) publication of this series brought out by the Central Electricity Authority.

Successful completion of such a voluminous Report covering data from **633 thermal units in 189 Thermal Stations** would not have been possible without active cooperation of all.

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Sanjay Sharma
Chief Engineer (OPM)

OBJECTIVE OF THERMAL PERFORMANCE REVIEW

Under section 73(i) & (j) of the electricity act 2003, responsibility has been vested on Central Electricity Authority to collect & record the data concerning the generation, distribution and utilization of power and carryout studies related to Cost, Efficiency, Loss, Benefits and such like matters and also make public from time information secured under this act and to provide for the publication of reports and investigation.

Central Electricity Authority has been publishing the report on the '**Review of Performance of Thermal Power Stations**' by collecting and recording various operational data, such as unit wise generation, auxiliary consumption, outages (day in, day out, time in, time out and reasons for outages) and partial loss data (including its reasons) and analyzing the data to make the power sector/ utility aware about the following: -

- Unit wise performance indices of thermal power station in the country, such as, Plant Load Factor, Planned Maintenance, Forced Outage, Operating Availability, Partial Loss, Reserve shut down. The performance of the thermal units considered in the review is also arranged capacity group wise/make wise, sector wise and region wise. These performance indices are available for last three years for comparison and investigation.
- The average duration (day) in respect of Boiler overhaul, Capital overhaul and Long duration forced outage. The unit-wise details of boiler overhaul, Capital and long duration forced outage (more than 25 days) is also available in the review.
- The station-wise/ organization wise coal and gas consumption and auxiliary power consumption.
- All India major Grid Disturbances and areas affected.

The above information enables different power utilities/ manufacturers and other concerned to improve upon the process of generation of power and manufacture of equipment related to power. Also, it helps them benchmark the performance with the other generation companies and manufactures for the same kind of equipment so as to investigate and develop methodology, for future needs.

OVERVIEW

PARTICULARS	2013-14	2014-15	2015-16	2016-17	2017-18
ALL INDIA GENERATION (BU)	967.150	1048.67	1107.82	1160.14	1206.30
THERMAL GENERATION (BU)	792.48	878.32	943.79	994.23	1037.06
NUCLEAR GENERATION (BU)	34.228	36.102	37.41	37.92	38.35
HYDRO GENERATION (BU) *	140.448	134.25	126.62	127.99	130.90
THERMAL PLANT LOAD FACTOR (%) **	65.57	64.29	61.06	59.06	60.72
NUCLEAR PLANT LOAD FACTOR (%)	81.74	80.74	73.69	74.38	64.56

* Hydro generation includes import from Bhutan

** All Coal & lignite based stations

PERFORMANCE OF THERMAL STATIONS CONSIDERED IN THE REVIEW

PARTICULARS	2013-14	2014-15	2015-16	2016-17	2017-18
1. COAL & LIGNITE BASED UNITS REVIEWED					
(a) NUMBER OF UNITS	539	570	617	649	633
(b) CAPACITY (MW)	132625	147297	173291.5	189946.5	194336.5
(c) GROSS GENERATION (MU)	746090	835830	894541.9	943579.7	983896.9
2. FORCED OUTAGE (%)	17.64	19.05	21.9	24.52	25.04
3. PLANNED MAINTENANCE (%)	5.01	4.66	4.28	4.32	4.29
4. OPERATING AVAILABILITY FACTOR (%)	77.35	76.29	73.82	71.16	70.66
5. PARTIAL UNAVAILABILITY DUE TO INTERNAL AS WELL AS EXTERNAL PROBLEMS (%)	12.12	11.62	10.99	11.48	10.96
6. LOW SYSTEM DEMAND & RESERVE	8.57	4.48	7.95	8.51	7.91
7. PLANT LOAD FACTOR (%)	65.57	64.29	61.06	59.06	59.22
8. AUX. POWER CONSUMPTION (%)	8.16	8.02	7.95	7.70	7.57
9. (a) AVERAGE TIME TAKEN IN DAYS FOR BOILER OVERHAUL	33	31	29	30	26
9. (b) AVERAGE TIME TAKEN IN DAYS FOR CAPITAL MAINTENANCE	43	35	35	47	57

HIGHLIGHTS

- The review covers the performance analysis of 633 coal/lignite based thermal units (25 MW & above capacity) aggregating to **194336.5 MW** installed in **189 thermal power stations**.
- All India electricity generation from conventional sources¹ in the country during 2017-18 has been **1206.306 BU** as compared to the generation of **1160.14 BU** during 2016-17 representing a growth rate of **3.98%**
- Thermal generation stood at 1037.06 BU representing a share of 85.97 % of total electricity generation from conventional sources in the country.
- Coal/ Lignite based plants continued to have major contribution with a major share of 95.13 % of the total thermal generation.
- During 2017-18, the total thermal generation achieved a growth rate of **4.31%**. Coal based generation recorded a growth rate of **4.57%**.
- The thermal generation in the country during 2017-18 was **99.52%** of its Programme fixed for the year.
- Operating Availability of **70.66%** was achieved for the units considered in the Review during the year 2017-18 as against 71.16% achieved during 2016-17.
- Thirty-one (31) out of 189 thermal stations achieved an Operating Availability more than 90% during 2017-18.
- All India Plant load factor (PLF) of thermal power units considered in the Review, increased to 59.22% during 2017-18, from 59.06% achieved during previous year. The Lower PLF was mainly due to increased generation loss due to Reserve Shut Down (RSD).
- Plant load factor (PLF) of Central Sector units was highest at 72.38%. The PLF of Private Utility increased from 58.49% during 2016-17 to 60.42% during 2017-18.
- Plant load factor (PLF) of BHEL/BHEL make units (385 units aggregating to 114200 MW) was **59.25%** . The China/China make group showed a PLF of **56.95%**
- Energy loss on account of planned maintenance was 4.29%² in 2017-18 as compared to 4.32% during 2016-17.
- The loss of generation due to forced outages during 2017-18 increased to 25.04% as compared to 24.52% during 2016-17. The increased forced outages were mainly due to higher RSD and coal/transmission constraints losses. The details are given in Section 4.
- The average duration of boiler overhaul and capital maintenance was achieved as 26 days and 57 days respectively.

• Following loss of generation due to various external constraints reported by the utilities:

Sl. No.	Category	Energy (BU) (2016-17)	Energy (BU) (2017-18)
1	Shortage of coal	6.22	82.97
2	Wet/poor coal quality	0.12	0.93
3	Reserve shut down	133.97	93.15
4	Transmission constraints	7.45	4.78

¹ Thermal, Hydro and nuclear stations of capacity 25 MW and above

² All losses referred are with respect to maximum possible generation of units considered-MWh from date of stabilization to end of year at rated capacity.

Performance Review of Thermal Power Stations 2017-18

5.	Total	147.76	181.83
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- During the year 2017-18, the generation from gas based plants (including liquid fuel, Diesel etc.) was 50.21 BU in comparison to 49.09 BU in 2016-17. The gas based stations continued to operate at low PLF of 22.86% during 2017-18 – a marginal improvement over 22.51 % during 2016-17
- Energy loss due to partial unavailability of the thermal generating units operating in the country during 2017-18 had decreased to 10.96% of the maximum possible generation during the year in comparison to the 11.48% in 2016-17.
- The All India average auxiliary power consumption by the thermal stations during 2017-18 reduced slightly to 7.57% from 7.70% during 2016-17.

DEFINITIONS

The definitions of the different performance indices referred to in this review are as under: -

(i) **“Capacity”** means the installed or derated/uprated cap. accepted by CEA.

(ii) **Forced Outage/Unavailability (F.O. %)**

$$\frac{Cf1xHf1 + \dots \dots Cfn \times Hfn}{CxH} \times 100$$

Where Cf1 Cfn are the capacities in MW of the units on Forced outage and

Hf1 Hfn are the duration of each outage in hours. C is the total capacity in MW and H is the total hours in the period under review.

(iii) **Planned Maintenance/Planned Unavailability (P.M. %)**

$$= \frac{Cp1xHp1 \dots \dots Cpn \times Hpn}{CxH} \times 100$$

Where Cp1 Cpn are the capacities in MW of units on planned Shutdown and Hp1 Hpn are the duration of each shutdown in Hours in the periods under review.

(iv) **Operating Availability (Op Av.) % = 100 -(FO +PM)**

(v) **Plant Load Factor :**
$$\frac{\text{Energy generated during the period}}{CxH} \times 100$$

(vi) **Partial Unavailability :**
$$\frac{Cr1 Hr1 + \dots \dots C rn \times Hrn}{CxH} \times 100$$

ABBREVIATIONS USED IN THE REPORT

Act.	Actual
ACQ	Annual Contracted Quantity
AM	Annual maintenance
AVB	ACC Vickers Babcock
B&W	Babcock & Wilcox
BEE	Bureau of Energy Efficiency
Cap.	Capacity
CCGT	Combined Cycle Gas Turbine
CEA	Central Electricity Authority
CBIP	Central Board of Irrigation and power
CM	Capital Maintenance
EEC	Excellence Enhancement Centre For Indian Power Sector
FO	Forced Outage
FW	Foster Wheeler
GCV	Gross Calorific Value
GTZ	Deutsche Gesellschaft Fur Internationale Zusammenarbeit
IGEN	Indo-German Efficiency Programme
HFHSD	Heavy-Fuel High Speed Diesel
HFO	Heavy Furnace Oil
HHS	Hot Heavy Stock
HPS	Heavy Petroleum Stock
HSD	High Speed Diesel
IC	Installed Capacity
IPP	Independent Power Producer
IGE	International General Electric
Kcal	Kilocalorie
Kg	Kilogram
KJ	Kilo Joule
KL	Kilo liter
KWh	Kilo Watt Hour
LDO	Light Diesel Oil
LSHS	Low Sulphur Heavy Stock
LNG	Liquefied Natural Gas
LSFO	Low Sulphur Furnace Oil
LSD	Low System Demand
MI	Milliliter
MMSCM	Million Metric Standard Cubic Metres
MMSCMD	Million Metric Standard Cubic Metres per Day
MOU	Memorandum of Understanding
MTBF	Mean Time Between Failure
MU	Million Units
MW	Megawatt
Op. Av.	Operating Availability
PLF	Plant Load Factor
PM	Planned Maintenance
Prog.	Program
PU	Partial Unavailability
RSD	Reserve Shutdown
SCM	Standard Cubic Meter
SEBs	State Electricity Boards
SHR	Station Rate Heat
SPL	Sasan Power Limited
STPS	Super Thermal Power Station
UHR	Unit Heat rate
ABAN POWR	Aban Power Company Limited
APL	Adani Power Company Limited
TOR. POW (SUGEN)	Torrent Power Limited (Sugen)
A&N ADM	Andaman and Nicobar Island Electricity Department
APGENCO	Andhra Pradesh Power Generation Corp. Limited
APCPL	Aravali Power Company Private Limited

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APGPCL	Assam Power Generation Corporation Limited
APPDCL	Andhra Pradesh Power Distribution Company Ltd.
BSEB	Bihar State Electricity Board
BSES (c)	Bses Kerala Power Limited
BEPL	Baja Energy Pvt. Ltd.
CESC	Calcutta Electric Supply Co. Ltd.
CEPL	Coastal Energy Pvt. Ltd.
CSPGCL	Chhattisgarh State Power Generation Co. Ltd
DBPCL	D.B. Power Corp. Ltd.
DVC	Damodar Valley Corporation
DPSCLTD	Dishergarh Projects Limited
DPL	Durgapur Projects Limited
GCEL	GMR Chattisgarh Energy Ltd.
GAUTAMI	Gautami Power Limited
GMR ENERG	GMR Energy Limited
VASAVI	GMR Power Corporation Pvt. Ltd
VEMAGIRI	GMR Vemagiri Power Generation Limited
GIPCL	Gujarat Industries Power Company Limited
GMDCL	Gujarat Mineral Development Corporation Private Limited
GPEC	Gujarat Peguthan Energy Corporation Private Limited
GSECL	Gujarat State Energy Corporation Limited
GSEGL	Gujarat State Energy Generation Corp. Limited
GTE CORP	GTE Corporation Limited
GVKIL	Gvk Industries Limited
HNPC	Hinduja National Power Corp.
HPGCL	Haryana Power Generation Corporation Limited
HEL	Haldia Energy Ltd.
ITPCL	IL & FS Tamilnadu Power Company Ltd.
IPGPCL	Indraprastha Power Generation Company Limited
JITPL	Jindal India Thermal Power Ltd.
JKPDC	J&K State Power Development Corporation
JSEB	Jharkhand State Electricity Board
JPL	Jindal Power Limited
JPPVL	Jai Prakash Power Venture Ltd.
JSWEL	Jsw Energy Limited
K.B.U.N.L	Kanti Bijlee Utpadan Nigam Ltd.
KPCL	Karnataka Power Corporation Limited
KSEB	Kerala State Electricity Board
KONA	Konaseema Gas Power Limited
LANCO	Lanco Amarkantak Power Pvt. Ltd
LAPPL	Lanco Anpara Power Pvt. Ltd
LPGCL	Lalitpur Power Generation Co. Ltd.
KONDAPALI	Lanco Konadapallj Power Pvt. Ltd
LVSPower	Lvs Power Limited
MBPMPL	M B Power Madhya Pradesh Ltd.
MCCPL	Maruti Clean Coal & Power Ltd.
MPPGCL	M.P. Power Generating Corporation Limited
MADURAIP	Madurai Power Corporation Pvt. Limited
MAHAGENCO	Maharashtra State Power Generation Company Limited
MPDC	Manipur Electricity Department
MPL	Maithon Pvt. Ltd
NALCO	National Aluminum Corporation Ltd.
NPL	Nabha Power Ltd.
NLC	Neyveli Lignite Corporation Ltd.
NEEPCO	North-Eastern Electric Power Corporation Limited
NTPL	NLC Tamilnadu Power Corp.
NTPC Ltd.	NTPC Limited
NTECL	NTPC Tamil Nadu Energy Company Limited
NSPCL	NTPC-SAIL Power Co.Pvt. Ltd
OPGC	Orissa Power Generation Corporation Limited
PPGCL(Jaypee)	Prayagraj Power Generation Company Ltd.
PENNA	Penna Power Ltd.
PPNPGCL	Ppn Power Generation Company Pvt. Ltd.
PPCL	Pondicherry Power Corporation Ltd.
PSPCL	Punjab State Power Corp. Ltd.

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RKMPPL	RKM Powergen Pvt. Ltd.
RWPL (JSW)	Raj West Power Ltd. (JSW)
RRVUNL	Rajasthan Rajya Vidyut Utpadan Nigam Limited
RGPPL	Ratnagiri Gas Power Projects Limited
RIL	Reliance Infrastructure Ltd.
RPSCl	Rosa Power Supply Co. Ltd
SAMALPATI	Samalpatti Power Company Private Limited
RAYALSEEMA	Shri Rayalaseema Pvt. Limited
SPL	Sasan Power Ltd.
SPGL	Spectrum Power Generation Limited
ST-CMSECP	ST-CMS ELECTRIC Company Private Limited
SEL	Sterlite Energy Limited
SEIL	Sembcorp Energy India Ltd.
SEPL	Simhapuri Energy Pvt.Ltd.
TNGDCL	Tamil Nadu Generation & Distribution Corp. Ltd.
TAT PCL	Tata Power Company Ltd.
TSPL	Talwandi Sabo Power Ltd.
TSGENCO	Telangana State Genco
TVNL	Tenughat Vidyut Nigam Limited
TOR. POW.	Torrent Power Ltd.
TRIPURA	Tripura State Electricity Corporation Limited
UPCL	Udupi Power Corp. Ltd.
UPRVUNL	Uttar Pradesh Rajya Vidyut Utpandan Nigam Limited
VESPL	Vanada Energy & Steel Pvt. Ltd.
WPCL	Wardha Power Company Ltd.
WBPDC	West Bengal Power Development Corp. Limited

SECTION-1 SCOPE OF THE REVIEW

1.1.SCOPE

The total installed capacity of thermal power stations in the country as on 31-03-2018 was **222402.09** MW comprising **196721.5** MW coal/lignite, **24842.96** MW gas turbines based stations and **837.63** MW diesel plants.

The Review **2017-18** covers the performance of **633** coal/lignite based thermal units (above 25 MW capacity) aggregating to **194,336.50** MW in **189** utility thermal power stations. New units which attained stabilization and considered for computation of PLF during the year **2017-18** have been included in the Review for performance analysis.

The **633** coal/lignite based thermal units includes **614** number of units considered in the previous publication and **19** new units with **9235.0 MW** total capacity, which were synchronized and reckoned for Plant Load Factor (PLF) calculation during the year **2017-18**. However, it does not cover 35 units aggregating to 3625 MW capacity which retired during the year (Details given in Annex 1.2). Details of units covered in the review are as under:

S. No.	Unit Details	No. of Units	Capacity (MW)
1	Units considered in Review 2016-17	649	1,89,946.5
2	New units Synchronized during 2016-17 and 2017-18 and considered in the review and IPP units consider for the first time (details is given in the Annexure 1.1)	19	9,235.0
3	Units covered in Review of 2016-17 but not considered in the present review due to retirement (details is given in the Annexure 1.2)	35	(-)3645
4.	Capacity changes in existing units	2	(-) 1200
5.	Units Considered in the review (details is given in the Annexure 1.4)	633	1,94,336.5

Details of new units synchronized during 2016-17 and **2017-18** and considered in the review for the first time are given in Annexure-1.1.

Details of Units retired during 2016-17 and not considered in the present review are given in Annexure- 1.2.

Details of units retired during the year **2017-18** but considered in the review are given Annexure-1.3. These units will not be considered in subsequent publications.

Details of capacity changes in units during the year **2017-18** due to upration/deration are given Annexure-1.4.

The details of total units (different make) considered in the review are given at Annexure 1.5.

Details of new units which although commissioned during **2017-18** but not considered in the review as the stabilization was not achieved during this period are given at Annexure 1.6.

Annexure-1.1

DETAILS OF NEW UNITS SYNCHRONISED DURING 2016-2017 & 2017-2018 AND CONSIDERED IN THE REVIEW AND IPP UNITS CONSIDER FOR THE FIRST TIME							
S.No.	Name of Station	Unit No	System	Capacity	Make Boiler/Turbine	Date of Synchronization	Date of Stabilization
2016-2017							
1	UNCHAHAR TPS	6	NTPC Ltd.	500	BHEL/BHEL	31-Mar-17	30-Sep-17
2	MAUDA TPS	4	NTPC Ltd.	660	BHEL/BHEL	18-Mar-17	18-Sep-17
3	KUDGI STPP	1	NTPC Ltd.	800	Others/Others	25-Dec-16	31-Jul-17
4	KUDGI STPP	2	NTPC Ltd.	800	Others/Others	23-Mar-17	31-Dec-17
5	YERMARUS TPP	2	RPCL	800	BHEL/BHEL	29-Mar-17	06-Apr-17
6	MUZAFFARPUR TPS	4	K.B.U.N.L	195	BHEL/BHEL	24-Mar-17	01-Jul-17
7	SAGARDIGHI TPS	4	WBPCD	500	BHEL/BHEL	15-Dec-16	20-Dec-16
8	BONGAIGAON TPP	2	NTPC Ltd.	250	BHEL/BHEL	22-Mar-17	01-Nov-17
	SUB TOTAL	8		4505			
2017-2018							
9	PRAYAGRAJ TPP	3	PPGCL (Jaypee)	660	BHEL/BHEL	22-May-17	26-May-17
10	AKALTARA TPS	2	WPCL	600	China/China	18-Jan-18	28-Feb-18
11	BINJKOTE TPP	2	SKS	300	China/China	25-Apr-17	06-Oct-17
12	NAWAPARA TPP	2	TRNE	300	China/China	18-Apr-17	01-May-17
13	UCHPINDA TPP	3	RKMPPPL	360	China/China	12-Sep-17	14-Nov-17
14	SOLAPUR	1	NTPC Ltd.	660	Others/Others	07-Apr-17	25-Sep-17
15	RAYALASEEMA TPS	6	APGENCO	600	BHEL/BHEL	12-Mar-18	29-Mar-18
16	NABI NAGAR TPP	2	BRBCL	250	BHEL/BHEL	03-Apr-17	10-Sep-17
17	HIRANMAYE TPP	1	HYEL	150	BHEL/BHEL	07-Jun-17	13-Aug-17
18	HIRANMAYE TPP	2	HYEL	150	BHEL/BHEL	31-Dec-17	31-Dec-17
	SUB TOTAL	10		4030			
Considered for the first time							
19	BELLARY TPS	3	KPCL	700	BHEL/BHEL	01-Mar-16	16-Sep-17
	SUB TOTAL	1		700			
	TOTAL	19		9235			

Annexure-1.2

UNITS RETIRED DURING 2016-17 AND ARE NOT CONSIDERED IN THE REVIEW DUE TO RETIREMENT						
S. No	Name of Station	Unit No	Capacity	Make Boiler/Turbine	Date of Retirement	
1	GANDHI NAGAR TPS	1	120	BHEL/BHEL	12-Jan-17	
2	GANDHI NAGAR TPS	2	120	BHEL/BHEL	12-Jan-17	
3	KORADI TPS	1	105	ABL Kolkata/Zamech,	2-Aug-16	
4	KORADI TPS	2	105	ABL Kolkata/Zamech,	2-Aug-16	
5	KORADI TPS	3	105	ABL Kolkata/Zamech,	2-Aug-16	
6	KORADI TPS	4	105	ABL Kolkata/Zamech,	2-Aug-16	

UNITS RETIRED DURING 2016-17 AND ARE NOT CONSIDERED IN THE REVIEW DUE TO RETIREMENT

S. No	Name of Station	Unit No	Capacity	Make Boiler/Turbine	Date of Retirement
7	KORADI TPS	5	200	BHEL/BHEL(LMW)	2-Mar-17
8	PARLI TPS	3	210	BHEL/BHEL	9-Jun-16
9	CHANDRAPUR(MAHARASHTRA) STPS	1	210	ABL/BHEL	9-Jun-16
10	CHANDRAPUR(MAHARASHTRA) STPS	2	210	ABL/BHEL	9-Jun-16
11	TROMBAY TPS	4	150	CE/IGE	8-Feb-17
12	ENNORE TPS	1	60	Skoda/Skoda	31-Mar-17
13	ENNORE TPS	2	60	Skoda/Skoda	31-Mar-17
14	ENNORE TPS	3	110	Skoda/Skoda	31-Mar-17
15	ENNORE TPS	4	110	Skoda/Skoda	31-Mar-17
16	ENNORE TPS	5	110	BHEL/BHEL	12-Jan-17
17	PATRATU TPS	1	40	USSR/USSR	29-Jul-16
18	PATRATU TPS	2	40	USSR/USSR	29-Jul-16
19	PATRATU TPS	3	40	USSR/USSR	29-Jul-16
20	PATRATU TPS	5	90	USSR/USSR	29-Jul-16
21	PATRATU TPS	8	105	BHEL/BHEL	29-Jul-16
22	JOJOBERA TPS	4	120	BHEL/BHEL	18-Aug-17
23	CHANDRAPURA(DVC) TPS	1	130	CE/IGE	17-Jan-17
24	DURGAPUR TPS	3	130	null/null	21-Oct-16
25	SANTALDIH TPS	1	120	BHEL/ABL	26-Dec-16
26	SANTALDIH TPS	2	120	BHEL/ABL	26-Dec-16
27	SANTALDIH TPS	3	120	BHEL/ABL	26-Dec-16
28	SANTALDIH TPS	4	120	BHEL/ABL	26-Dec-16
29	D.P.L. TPS	3	70	BW USA/Siemens	20-Feb-17
30	D.P.L. TPS	4	75	BW USA/Siemens	20-Feb-17
31	D.P.L. TPS	5	75	Mitsubishi/Siemens	20-Feb-17
32	NEW COSSIPORE TPS	1	30	B AND WUK/PAR	4-Apr-16
33	NEW COSSIPORE TPS	2	30	B AND WUK/PAR	4-Apr-16
34	NEW COSSIPORE TPS	3	50	B AND WUK/PAR	4-Apr-16
35	NEW COSSIPORE TPS	4	50	B AND WUK/PAR	4-Apr-16
	SUB TOTAL	35	3645		

Annexure-1.3

DETAILS OF UNITS RETIRED DURING THE YEAR 2017-18 BUT CONSIDERED IN THE REVIEW

S. No	Name of Station	Unit No	Capacity	Make Boiler/Turbine	Date of Retirement
1	OBRA TPS	1	40	RUSSIA/RUSSIA	18-Aug-17
2	OBRA TPS	2	50	RUSSIA/RUSSIA	18-Aug-17
3	HARDUAGANJ TPS	5	60	BHEL/BHEL	18-Aug-17
4	UKAI TPS	1	120	BHEL/BHEL	18-Aug-17
5	UKAI TPS	2	120	BHEL/BHEL	18-Aug-17
6	SIKKA REP. TPS	1	120	BHEL/BHEL	18-Aug-17
7	SIKKA REP. TPS	2	120	BHEL/BHEL	18-Aug-17
8	BHUSAWAL TPS	2	210	BHEL/BHEL	31-Aug-17
9	PATRATU TPS	4	40	RUSSIA/RUSSIA	23-Nov-17
10	PATRATU TPS	6	90	RUSSIA/RUSSIA	23-Nov-17
11	PATRATU TPS	7	105	BHEL/BHEL	23-Nov-17
12	PATRATU TPS	9	110	BHEL/BHEL	23-Nov-17
13	PATRATU TPS	10	110	BHEL/BHEL	23-Nov-17
	Total		1295		

Annexure-1.4**DETAILS OF CAPACITY CHANGES IN UNITS DURING THE YEAR 2017-18 DUE TO
UPRATIOB/DERATION**

S. No.	Name of Station	Unit no.	Old Capacity(MW)	New Capacity(MW)	Make Boiler/Turbine
1	Sterlite	3	600	0	China/China
2	Sterlite	4	600	0	China/China
	Total	2	1200	0	

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
BHEL/ABL						
1	BANDEL TPS	5	WEST BENGAL	WBPDC	STATE	210
2	BOKARO `B` TPS	1	JHARKHAND	DVC	CENTRAL	210
3	BOKARO `B` TPS	2	JHARKHAND	DVC	CENTRAL	210
4	D.P.L. TPS	6	WEST BENGAL	DPL	STATE	110
5	KOLAGHAT TPS	1	WEST BENGAL	WBPDC	STATE	210
6	KOLAGHAT TPS	2	WEST BENGAL	WBPDC	STATE	210
7	KOLAGHAT TPS	3	WEST BENGAL	WBPDC	STATE	210
8	KOLAGHAT TPS	4	WEST BENGAL	WBPDC	STATE	210
9	KORBA-III	1	CHHATTISGARH	CSPGCL	STATE	120
10	KORBA-WEST TPS	3	CHHATTISGARH	CSPGCL	STATE	210
11	KORBA-WEST TPS	4	CHHATTISGARH	CSPGCL	STATE	210
	Sub-Total	11				2120
BHEL/BHEL						
12	AMARAVATI TPS	2	MAHARASHTRA	Rattan India	PVT	270
13	AMARAVATI TPS	3	MAHARASHTRA	Rattan India	PVT	270
14	AMARAVATI TPS	4	MAHARASHTRA	Rattan India	PVT	270
15	AMARAVATI TPS	5	MAHARASHTRA	Rattan India	PVT	270
16	AMARKANTAK EXT TPS	3	MADHYA PRADESH	MPPGCL	STATE	210
17	ANPARA TPS	1	UTTAR PRADESH	UPRVUNL	STATE	210
18	ANPARA TPS	2	UTTAR PRADESH	UPRVUNL	STATE	210
19	ANPARA TPS	3	UTTAR PRADESH	UPRVUNL	STATE	210
20	ANPARA TPS	6	UTTAR PRADESH	UPRVUNL	STATE	500
21	ANPARA TPS	7	UTTAR PRADESH	UPRVUNL	STATE	500
22	AVANTHA BHANDAR	1	CHHATTISGARH	KWPCCL	PVT	600
23	BADARPUR TPS	1	DELHI	NTPC Ltd.	CENTRAL	95
24	BADARPUR TPS	2	DELHI	NTPC Ltd.	CENTRAL	95
25	BADARPUR TPS	3	DELHI	NTPC Ltd.	CENTRAL	95
26	BADARPUR TPS	4	DELHI	NTPC Ltd.	CENTRAL	210
27	BADARPUR TPS	5	DELHI	NTPC Ltd.	CENTRAL	210
28	BAKRESWAR TPS	1	WEST BENGAL	WBPDC	STATE	210
29	BAKRESWAR TPS	2	WEST BENGAL	WBPDC	STATE	210
30	BAKRESWAR TPS	3	WEST BENGAL	WBPDC	STATE	210
31	BAKRESWAR TPS	4	WEST BENGAL	WBPDC	STATE	210
32	BAKRESWAR TPS	5	WEST BENGAL	WBPDC	STATE	210
33	BARADARHA TPS	1	CHHATTISGARH	DBPCL	PVT	600
34	BARADARHA TPS	2	CHHATTISGARH	DBPCL	PVT	600
35	BARAUNI TPS	6	BIHAR	NTPC Ltd.	CENTRAL	105
36	BARAUNI TPS	7	BIHAR	NTPC Ltd.	CENTRAL	105
37	BARH II	4	BIHAR	NTPC Ltd.	CENTRAL	660
38	BARH II	5	BIHAR	NTPC Ltd.	CENTRAL	660
39	BARSINGSAR LIGNITE	1	RAJASTHAN	NLC	CENTRAL	125
40	BARSINGSAR LIGNITE	2	RAJASTHAN	NLC	CENTRAL	125
41	BELA TPS	1	MAHARASHTRA	IEPL	PVT	270
42	BELLARY TPS	1	KARNATAKA	KPCL	STATE	500
43	BELLARY TPS	2	KARNATAKA	KPCL	STATE	500
44	BELLARY TPS	3	KARNATAKA	KPCL	STATE	700
45	BHAVNAGAR CFBC TPP	1	GUJARAT	BECL	STATE	250
46	BHAVNAGAR CFBC TPP	2	GUJARAT	BECL	STATE	250
47	BHILAI TPS	1	CHHATTISGARH	NSPCL	CENTRAL	250
48	BHILAI TPS	2	CHHATTISGARH	NSPCL	CENTRAL	250

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
49	BHUSAWAL TPS	2	MAHARASHTRA	MAHAGENCO	STATE	210
50	BHUSAWAL TPS	3	MAHARASHTRA	MAHAGENCO	STATE	210
51	BHUSAWAL TPS	4	MAHARASHTRA	MAHAGENCO	STATE	500
52	BHUSAWAL TPS	5	MAHARASHTRA	MAHAGENCO	STATE	500
53	BINA TPS	1	MADHYA PRADESH	JPPVL	PVT	250
54	BINA TPS	2	MADHYA PRADESH	JPPVL	PVT	250
55	BOKARO TPS `A` EXP	1	JHARKHAND	DVC	CENTRAL	500
56	BOKARO `B` TPS	3	JHARKHAND	DVC	CENTRAL	210
57	BONGAIGAON TPP	1	ASSAM	NTPC Ltd.	CENTRAL	250
58	BONGAIGAON TPP	2	ASSAM	NTPC Ltd.	CENTRAL	250
59	BUDGE BUDGE TPS	3	WEST BENGAL	CESC	PVT	250
60	CHANDRAPUR(ASSAM) TPS	2	ASSAM	APGPCL	STATE	30
61	CHANDRAPUR(MAHARASHTRA) STPS	3	MAHARASHTRA	MAHAGENCO	STATE	210
62	CHANDRAPUR(MAHARASHTRA) STPS	4	MAHARASHTRA	MAHAGENCO	STATE	210
63	CHANDRAPUR(MAHARASHTRA) STPS	5	MAHARASHTRA	MAHAGENCO	STATE	500
64	CHANDRAPUR(MAHARASHTRA) STPS	6	MAHARASHTRA	MAHAGENCO	STATE	500
65	CHANDRAPUR(MAHARASHTRA) STPS	7	MAHARASHTRA	MAHAGENCO	STATE	500
66	CHANDRAPUR(MAHARASHTRA) STPS	8	MAHARASHTRA	MAHAGENCO	STATE	500
67	CHANDRAPUR(MAHARASHTRA) STPS	9	MAHARASHTRA	MAHAGENCO	STATE	500
68	CHANDRAPURA(DVC) TPS	7	JHARKHAND	DVC	CENTRAL	250
69	CHANDRAPURA(DVC) TPS	8	JHARKHAND	DVC	CENTRAL	250
70	CHHABRA TPP	1	RAJASTHAN	RRVUNL	STATE	250
71	CHHABRA TPP	2	RAJASTHAN	RRVUNL	STATE	250
72	CHHABRA TPP	3	RAJASTHAN	RRVUNL	STATE	250
73	CHHABRA TPP	4	RAJASTHAN	RRVUNL	STATE	250
74	D.P.L. TPS	8	WEST BENGAL	DPL	STATE	250
75	DADRI (NCTPP)	1	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
76	DADRI (NCTPP)	2	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
77	DADRI (NCTPP)	3	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
78	DADRI (NCTPP)	4	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
79	DADRI (NCTPP)	5	UTTAR PRADESH	NTPC Ltd.	CENTRAL	490
80	DADRI (NCTPP)	6	UTTAR PRADESH	NTPC Ltd.	CENTRAL	490
81	DAHANU TPS	1	MAHARASHTRA	RIL (DAHANU)	PVT	250
82	DAHANU TPS	2	MAHARASHTRA	RIL (DAHANU)	PVT	250
83	DERANG TPP	1	ORISSA	JITPL	PVT	600
84	DERANG TPP	2	ORISSA	JITPL	PVT	600
85	DSPM TPS	1	CHHATTISGARH	CSPGCL	STATE	250
86	DSPM TPS	2	CHHATTISGARH	CSPGCL	STATE	250
87	DURGAPUR STEEL TPS	1	WEST BENGAL	DVC	CENTRAL	500
88	DURGAPUR STEEL TPS	2	WEST BENGAL	DVC	CENTRAL	500
89	DURGAPUR TPS	4	WEST BENGAL	DVC	CENTRAL	210
90	Dr. N.TATA RAO TPS	1	ANDHRA PRADESH	APGENCO	STATE	210
91	Dr. N.TATA RAO TPS	2	ANDHRA PRADESH	APGENCO	STATE	210
92	Dr. N.TATA RAO TPS	3	ANDHRA PRADESH	APGENCO	STATE	210
93	Dr. N.TATA RAO TPS	4	ANDHRA PRADESH	APGENCO	STATE	210
94	Dr. N.TATA RAO TPS	5	ANDHRA PRADESH	APGENCO	STATE	210
95	Dr. N.TATA RAO TPS	6	ANDHRA PRADESH	APGENCO	STATE	210
96	Dr. N.TATA RAO TPS	7	ANDHRA PRADESH	APGENCO	STATE	500
97	FARAKKA STPS	1	WEST BENGAL	NTPC Ltd.	CENTRAL	200
98	FARAKKA STPS	2	WEST BENGAL	NTPC Ltd.	CENTRAL	200
99	FARAKKA STPS	3	WEST BENGAL	NTPC Ltd.	CENTRAL	200
100	FARAKKA STPS	6	WEST BENGAL	NTPC Ltd.	CENTRAL	500
101	GANDHI NAGAR TPS	3	GUJARAT	GSECL	STATE	210
102	GANDHI NAGAR TPS	4	GUJARAT	GSECL	STATE	210
103	GANDHI NAGAR TPS	5	GUJARAT	GSECL	STATE	210

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
104	GH TPS (LEH.MOH.)	1	PUNJAB	PSPCL	STATE	210
105	GH TPS (LEH.MOH.)	2	PUNJAB	PSPCL	STATE	210
106	GH TPS (LEH.MOH.)	3	PUNJAB	PSPCL	STATE	250
107	GH TPS (LEH.MOH.)	4	PUNJAB	PSPCL	STATE	250
108	GIRAL TPS	1	RAJASTHAN	RRVUNL	STATE	125
109	GIRAL TPS	2	RAJASTHAN	RRVUNL	STATE	125
110	GND TPS(BHATINDA)	1	PUNJAB	PSPCL	STATE	110
111	GND TPS(BHATINDA)	2	PUNJAB	PSPCL	STATE	110
112	GND TPS(BHATINDA)	3	PUNJAB	PSPCL	STATE	110
113	GND TPS(BHATINDA)	4	PUNJAB	PSPCL	STATE	110
114	GOINDWAL SAHIB TPP	1	PUNJAB	GPGSL (GVK)	PVT	270
115	GOINDWAL SAHIB TPP	2	PUNJAB	GPGSL (GVK)	PVT	270
116	HARDUAGANJ TPS	5	UTTAR PRADESH	UPRVUNL	STATE	60
117	HARDUAGANJ TPS	7	UTTAR PRADESH	UPRVUNL	STATE	105
118	HARDUAGANJ TPS	8	UTTAR PRADESH	UPRVUNL	STATE	250
119	HARDUAGANJ TPS	9	UTTAR PRADESH	UPRVUNL	STATE	250
120	HIRANMAYE TPP	1	WEST BENGAL	HYEL	PVT	150
121	HIRANMAYE TPP	2	WEST BENGAL	HYEL	PVT	150
122	IB VALLEY TPS	1	ORISSA	OPGC	STATE	210
123	IB VALLEY TPS	2	ORISSA	OPGC	STATE	210
124	INDIRA GANDHI STPP	1	HARYANA	APCPL	CENTRAL	500
125	INDIRA GANDHI STPP	2	HARYANA	APCPL	CENTRAL	500
126	INDIRA GANDHI STPP	3	HARYANA	APCPL	CENTRAL	500
127	JOJOBERA TPS	2	JHARKHAND	TATA PCL	PVT	120
128	JOJOBERA TPS	3	JHARKHAND	TATA PCL	PVT	120
129	KAHALGAON TPS	5	BIHAR	NTPC Ltd.	CENTRAL	500
130	KAHALGAON TPS	6	BIHAR	NTPC Ltd.	CENTRAL	500
131	KAHALGAON TPS	7	BIHAR	NTPC Ltd.	CENTRAL	500
132	KAKATIYA TPS	1	TELANGANA	TSGENCO	STATE	500
133	KAKATIYA TPS	2	TELANGANA	TSGENCO	STATE	600
134	KHAPARKHEDA TPS	1	MAHARASHTRA	MAHAGENCO	STATE	210
135	KHAPARKHEDA TPS	2	MAHARASHTRA	MAHAGENCO	STATE	210
136	KHAPARKHEDA TPS	3	MAHARASHTRA	MAHAGENCO	STATE	210
137	KHAPARKHEDA TPS	4	MAHARASHTRA	MAHAGENCO	STATE	210
138	KHAPARKHEDA TPS	5	MAHARASHTRA	MAHAGENCO	STATE	500
139	KODARMA TPP	1	JHARKHAND	DVC	CENTRAL	500
140	KODARMA TPP	2	JHARKHAND	DVC	CENTRAL	500
141	KOLAGHAT TPS	5	WEST BENGAL	WBPDCL	STATE	210
142	KOLAGHAT TPS	6	WEST BENGAL	WBPDCL	STATE	210
143	KORADI TPS	6	MAHARASHTRA	MAHAGENCO	STATE	210
144	KORADI TPS	7	MAHARASHTRA	MAHAGENCO	STATE	210
145	KORBA STPS	1	CHHATTISGARH	NTPC Ltd.	CENTRAL	200
146	KORBA STPS	2	CHHATTISGARH	NTPC Ltd.	CENTRAL	200
147	KORBA STPS	3	CHHATTISGARH	NTPC Ltd.	CENTRAL	200
148	KORBA STPS	4	CHHATTISGARH	NTPC Ltd.	CENTRAL	500
149	KORBA STPS	5	CHHATTISGARH	NTPC Ltd.	CENTRAL	500
150	KORBA STPS	6	CHHATTISGARH	NTPC Ltd.	CENTRAL	500
151	KORBA STPS	7	CHHATTISGARH	NTPC Ltd.	CENTRAL	500
152	KORBA-III	2	CHHATTISGARH	CSPGCL	STATE	120
153	KORBA-WEST TPS	1	CHHATTISGARH	CSPGCL	STATE	210
154	KORBA-WEST TPS	2	CHHATTISGARH	CSPGCL	STATE	210
155	KORBA-WEST TPS	5	CHHATTISGARH	CSPGCL	STATE	500
156	KOTA TPS	1	RAJASTHAN	RRVUNL	STATE	110
157	KOTA TPS	2	RAJASTHAN	RRVUNL	STATE	110
158	KOTA TPS	3	RAJASTHAN	RRVUNL	STATE	210

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
159	KOTA TPS	4	RAJASTHAN	RRVUNL	STATE	210
160	KOTA TPS	5	RAJASTHAN	RRVUNL	STATE	210
161	KOTA TPS	6	RAJASTHAN	RRVUNL	STATE	195
162	KOTA TPS	7	RAJASTHAN	RRVUNL	STATE	195
163	KOTHAGUDEM TPS	1	TELANGANA	TSGENCO	STATE	60
164	KOTHAGUDEM TPS	5	TELANGANA	TSGENCO	STATE	120
165	KOTHAGUDEM TPS	6	TELANGANA	TSGENCO	STATE	120
166	KOTHAGUDEM TPS	7	TELANGANA	TSGENCO	STATE	120
167	KOTHAGUDEM TPS	8	TELANGANA	TSGENCO	STATE	120
168	KOTHAGUDEM TPS (NEW)	1	TELANGANA	TSGENCO	STATE	250
169	KOTHAGUDEM TPS (NEW)	2	TELANGANA	TSGENCO	STATE	250
170	KOTHAGUDEM TPS (NEW)	3	TELANGANA	TSGENCO	STATE	500
171	KUTCH LIG. TPS	1	GUJARAT	GSECL	STATE	70
172	KUTCH LIG. TPS	2	GUJARAT	GSECL	STATE	70
173	KUTCH LIG. TPS	4	GUJARAT	GSECL	STATE	75
174	LALITPUR TPS	1	UTTAR PRADESH	LPGCL	PVT	660
175	LALITPUR TPS	2	UTTAR PRADESH	LPGCL	PVT	660
176	LALITPUR TPS	3	UTTAR PRADESH	LPGCL	PVT	660
177	MAHADEV PRASAD STPP	1	JHARKHAND	ADHUNIK	PVT	270
178	MAHADEV PRASAD STPP	2	JHARKHAND	ADHUNIK	PVT	270
179	MAITHON RB TPP	1	JHARKHAND	MPL	PVT	525
180	MAITHON RB TPP	2	JHARKHAND	MPL	PVT	525
181	MARWA TPS	1	CHHATTISGARH	CSPGCL	STATE	500
182	MARWA TPS	2	CHHATTISGARH	CSPGCL	STATE	500
183	MAUDA TPS	1	MAHARASHTRA	NTPC Ltd.	CENTRAL	500
184	MAUDA TPS	2	MAHARASHTRA	NTPC Ltd.	CENTRAL	500
185	MAUDA TPS	3	MAHARASHTRA	NTPC Ltd.	CENTRAL	660
186	MAUDA TPS	4	MAHARASHTRA	NTPC Ltd.	CENTRAL	660
187	MEJIA TPS	1	WEST BENGAL	DVC	CENTRAL	210
188	MEJIA TPS	2	WEST BENGAL	DVC	CENTRAL	210
189	MEJIA TPS	3	WEST BENGAL	DVC	CENTRAL	210
190	MEJIA TPS	4	WEST BENGAL	DVC	CENTRAL	210
191	MEJIA TPS	5	WEST BENGAL	DVC	CENTRAL	250
192	MEJIA TPS	6	WEST BENGAL	DVC	CENTRAL	250
193	MEJIA TPS	7	WEST BENGAL	DVC	CENTRAL	500
194	MEJIA TPS	8	WEST BENGAL	DVC	CENTRAL	500
195	METTUR TPS	1	TAMIL NADU	TNGDCL	STATE	210
196	METTUR TPS	2	TAMIL NADU	TNGDCL	STATE	210
197	METTUR TPS	3	TAMIL NADU	TNGDCL	STATE	210
198	METTUR TPS	4	TAMIL NADU	TNGDCL	STATE	210
199	MUZAFFARPUR TPS	1	BIHAR	K.B.U.N.L	CENTRAL	110
200	MUZAFFARPUR TPS	2	BIHAR	K.B.U.N.L	CENTRAL	110
201	MUZAFFARPUR TPS	3	BIHAR	K.B.U.N.L	CENTRAL	195
202	MUZAFFARPUR TPS	4	BIHAR	K.B.U.N.L	CENTRAL	195
203	NABI NAGAR TPP	1	BIHAR	BRBCL	CENTRAL	250
204	NABI NAGAR TPP	2	BIHAR	BRBCL	CENTRAL	250
205	NASIK (P) TPS	1	MAHARASHTRA	STPL	PVT	270
206	NASIK TPS	3	MAHARASHTRA	MAHAGENCO	STATE	210
207	NASIK TPS	4	MAHARASHTRA	MAHAGENCO	STATE	210
208	NASIK TPS	5	MAHARASHTRA	MAHAGENCO	STATE	210
209	NEYVELI TPS-II	4	TAMIL NADU	NLC	CENTRAL	210
210	NEYVELI TPS-II	5	TAMIL NADU	NLC	CENTRAL	210
211	NEYVELI TPS-II	6	TAMIL NADU	NLC	CENTRAL	210
212	NEYVELI TPS-II	7	TAMIL NADU	NLC	CENTRAL	210
213	NEYVELI TPS-II EXP	1	TAMIL NADU	NLC	CENTRAL	250

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
214	NEYVELI TPS-II EXP	2	TAMIL NADU	NLC	CENTRAL	250
215	NORTH CHENNAI TPS	1	TAMIL NADU	TNGDCL	STATE	210
216	NORTH CHENNAI TPS	2	TAMIL NADU	TNGDCL	STATE	210
217	NORTH CHENNAI TPS	3	TAMIL NADU	TNGDCL	STATE	210
218	NORTH CHENNAI TPS	4	TAMIL NADU	TNGDCL	STATE	600
219	NORTH CHENNAI TPS	5	TAMIL NADU	TNGDCL	STATE	600
220	OBRA TPS	7	UTTAR PRADESH	UPRVUNL	STATE	94
221	OBRA TPS	8	UTTAR PRADESH	UPRVUNL	STATE	94
222	OBRA TPS	9	UTTAR PRADESH	UPRVUNL	STATE	200
223	OBRA TPS	10	UTTAR PRADESH	UPRVUNL	STATE	200
224	OBRA TPS	11	UTTAR PRADESH	UPRVUNL	STATE	200
225	OBRA TPS	12	UTTAR PRADESH	UPRVUNL	STATE	200
226	OBRA TPS	13	UTTAR PRADESH	UPRVUNL	STATE	200
227	OP JINDAL TPS	1	CHHATTISGARH	JPL	PVT	250
228	OP JINDAL TPS	2	CHHATTISGARH	JPL	PVT	250
229	OP JINDAL TPS	3	CHHATTISGARH	JPL	PVT	250
230	OP JINDAL TPS	4	CHHATTISGARH	JPL	PVT	250
231	PANIPAT TPS	5	HARYANA	HPGCL	STATE	210
232	PANIPAT TPS	6	HARYANA	HPGCL	STATE	210
233	PANIPAT TPS	7	HARYANA	HPGCL	STATE	250
234	PANIPAT TPS	8	HARYANA	HPGCL	STATE	250
235	PANKI TPS	3	UTTAR PRADESH	UPRVUNL	STATE	105
236	PANKI TPS	4	UTTAR PRADESH	UPRVUNL	STATE	105
237	PARAS TPS	3	MAHARASHTRA	MAHAGENCO	STATE	250
238	PARAS TPS	4	MAHARASHTRA	MAHAGENCO	STATE	250
239	PARICHHA TPS	1	UTTAR PRADESH	UPRVUNL	STATE	110
240	PARICHHA TPS	2	UTTAR PRADESH	UPRVUNL	STATE	110
241	PARICHHA TPS	3	UTTAR PRADESH	UPRVUNL	STATE	210
242	PARICHHA TPS	4	UTTAR PRADESH	UPRVUNL	STATE	210
243	PARICHHA TPS	5	UTTAR PRADESH	UPRVUNL	STATE	250
244	PARICHHA TPS	6	UTTAR PRADESH	UPRVUNL	STATE	250
245	PARLI TPS	4	MAHARASHTRA	MAHAGENCO	STATE	210
246	PARLI TPS	5	MAHARASHTRA	MAHAGENCO	STATE	210
247	PARLI TPS	6	MAHARASHTRA	MAHAGENCO	STATE	250
248	PARLI TPS	7	MAHARASHTRA	MAHAGENCO	STATE	250
249	PARLI TPS	8	MAHARASHTRA	MAHAGENCO	STATE	250
250	PATRATU TPS	7	JHARKHAND	PVUNL	CENTRAL	105
251	PATRATU TPS	9	JHARKHAND	PVUNL	CENTRAL	110
252	PATRATU TPS	10	JHARKHAND	PVUNL	CENTRAL	110
253	PRAYAGRAJ TPP	1	UTTAR PRADESH	PPGCL (Jaypee)	PVT	660
254	PRAYAGRAJ TPP	2	UTTAR PRADESH	PPGCL (Jaypee)	PVT	660
255	PRAYAGRAJ TPP	3	UTTAR PRADESH	PPGCL (Jaypee)	PVT	660
256	RAICHUR TPS	1	KARNATAKA	KPCL	STATE	210
257	RAICHUR TPS	2	KARNATAKA	KPCL	STATE	210
258	RAICHUR TPS	3	KARNATAKA	KPCL	STATE	210
259	RAICHUR TPS	4	KARNATAKA	KPCL	STATE	210
260	RAICHUR TPS	5	KARNATAKA	KPCL	STATE	210
261	RAICHUR TPS	6	KARNATAKA	KPCL	STATE	210
262	RAICHUR TPS	7	KARNATAKA	KPCL	STATE	210
263	RAICHUR TPS	8	KARNATAKA	KPCL	STATE	250
264	RAJGHAT TPS	1	DELHI	IPGPCL	STATE	67.5
265	RAJGHAT TPS	2	DELHI	IPGPCL	STATE	67.5
266	RAMAGUNDEM STPS	4	TELANGANA	NTPC Ltd.	CENTRAL	500
267	RAMAGUNDEM STPS	5	TELANGANA	NTPC Ltd.	CENTRAL	500
268	RAMAGUNDEM STPS	6	TELANGANA	NTPC Ltd.	CENTRAL	500

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
269	RAMAGUNDEM STPS	7	TELANGANA	NTPC Ltd.	CENTRAL	500
270	RATIJA TPS	2	CHHATTISGARH	SCPL	PVT	50
271	RAYALASEEMA TPS	1	ANDHRA PRADESH	APGENCO	STATE	210
272	RAYALASEEMA TPS	2	ANDHRA PRADESH	APGENCO	STATE	210
273	RAYALASEEMA TPS	3	ANDHRA PRADESH	APGENCO	STATE	210
274	RAYALASEEMA TPS	4	ANDHRA PRADESH	APGENCO	STATE	210
275	RAYALASEEMA TPS	5	ANDHRA PRADESH	APGENCO	STATE	210
276	RAYALASEEMA TPS	6	ANDHRA PRADESH	APGENCO	STATE	600
277	RIHAND STPS	3	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
278	RIHAND STPS	4	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
279	RIHAND STPS	5	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
280	RIHAND STPS	6	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
281	ROPAR TPS	1	PUNJAB	PSPCL	STATE	210
282	ROPAR TPS	2	PUNJAB	PSPCL	STATE	210
283	ROPAR TPS	3	PUNJAB	PSPCL	STATE	210
284	ROPAR TPS	4	PUNJAB	PSPCL	STATE	210
285	ROPAR TPS	5	PUNJAB	PSPCL	STATE	210
286	ROPAR TPS	6	PUNJAB	PSPCL	STATE	210
287	SABARMATI (D-F STATIONS)	1	GUJARAT	TOR. POW.	PVT	120
288	SABARMATI (D-F STATIONS)	2	GUJARAT	TOR. POW.	PVT	121
289	SABARMATI (D-F STATIONS)	3	GUJARAT	TOR. POW.	PVT	121
290	SAGARDIGHI TPS	3	WEST BENGAL	WBPDC	STATE	500
291	SAGARDIGHI TPS	4	WEST BENGAL	WBPDC	STATE	500
292	SANJAY GANDHI TPS	1	MADHYA PRADESH	MPPGCL	STATE	210
293	SANJAY GANDHI TPS	2	MADHYA PRADESH	MPPGCL	STATE	210
294	SANJAY GANDHI TPS	3	MADHYA PRADESH	MPPGCL	STATE	210
295	SANJAY GANDHI TPS	4	MADHYA PRADESH	MPPGCL	STATE	210
296	SANJAY GANDHI TPS	5	MADHYA PRADESH	MPPGCL	STATE	500
297	SANTALDIH TPS	5	WEST BENGAL	WBPDC	STATE	250
298	SANTALDIH TPS	6	WEST BENGAL	WBPDC	STATE	250
299	SATPURA TPS	6	MADHYA PRADESH	MPPGCL	STATE	200
300	SATPURA TPS	7	MADHYA PRADESH	MPPGCL	STATE	210
301	SATPURA TPS	8	MADHYA PRADESH	MPPGCL	STATE	210
302	SATPURA TPS	9	MADHYA PRADESH	MPPGCL	STATE	210
303	SATPURA TPS	11	MADHYA PRADESH	MPPGCL	STATE	250
304	SEIONI TPP	1	MADHYA PRADESH	JHAPL	PVT	600
305	SHREE SINGAJI TPP	1	MADHYA PRADESH	MPPGCL	STATE	600
306	SHREE SINGAJI TPP	2	MADHYA PRADESH	MPPGCL	STATE	600
307	SIKKA REP. TPS	1	GUJARAT	GSECL	STATE	120
308	SIKKA REP. TPS	2	GUJARAT	GSECL	STATE	120
309	SIKKA REP. TPS	3	GUJARAT	GSECL	STATE	250
310	SIKKA REP. TPS	4	GUJARAT	GSECL	STATE	250
311	SIMHADRI	1	ANDHRA PRADESH	NTPC Ltd.	CENTRAL	500
312	SIMHADRI	2	ANDHRA PRADESH	NTPC Ltd.	CENTRAL	500
313	SIMHADRI	3	ANDHRA PRADESH	NTPC Ltd.	CENTRAL	500
314	SIMHADRI	4	ANDHRA PRADESH	NTPC Ltd.	CENTRAL	500
315	SINGARENI TPP	1	TELANGANA	SCCL	STATE	600
316	SINGARENI TPP	2	TELANGANA	SCCL	STATE	600
317	SINGRAULI STPS	1	UTTAR PRADESH	NTPC Ltd.	CENTRAL	200
318	SINGRAULI STPS	2	UTTAR PRADESH	NTPC Ltd.	CENTRAL	200
319	SINGRAULI STPS	3	UTTAR PRADESH	NTPC Ltd.	CENTRAL	200
320	SINGRAULI STPS	4	UTTAR PRADESH	NTPC Ltd.	CENTRAL	200
321	SINGRAULI STPS	5	UTTAR PRADESH	NTPC Ltd.	CENTRAL	200
322	SINGRAULI STPS	6	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
323	SINGRAULI STPS	7	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
324	SIPAT STPS	4	CHHATTISGARH	NTPC Ltd.	CENTRAL	500
325	SIPAT STPS	5	CHHATTISGARH	NTPC Ltd.	CENTRAL	500
326	SOUTHERN REPL. TPS	1	WEST BENGAL	CESC	PVT	67.5
327	SOUTHERN REPL. TPS	2	WEST BENGAL	CESC	PVT	67.5
328	SURAT LIG. TPS	1	GUJARAT	GIPCL	PVT	125
329	SURAT LIG. TPS	2	GUJARAT	GIPCL	PVT	125
330	SURAT LIG. TPS	3	GUJARAT	GIPCL	PVT	125
331	SURAT LIG. TPS	4	GUJARAT	GIPCL	PVT	125
332	SURATGARH TPS	1	RAJASTHAN	RRVUNL	STATE	250
333	SURATGARH TPS	2	RAJASTHAN	RRVUNL	STATE	250
334	SURATGARH TPS	3	RAJASTHAN	RRVUNL	STATE	250
335	SURATGARH TPS	4	RAJASTHAN	RRVUNL	STATE	250
336	SURATGARH TPS	5	RAJASTHAN	RRVUNL	STATE	250
337	SURATGARH TPS	6	RAJASTHAN	RRVUNL	STATE	250
338	TALCHER (OLD) TPS	5	ORISSA	NTPC Ltd.	CENTRAL	110
339	TALCHER (OLD) TPS	6	ORISSA	NTPC Ltd.	CENTRAL	110
340	TALCHER STPS	3	ORISSA	NTPC Ltd.	CENTRAL	500
341	TALCHER STPS	4	ORISSA	NTPC Ltd.	CENTRAL	500
342	TALCHER STPS	5	ORISSA	NTPC Ltd.	CENTRAL	500
343	TALCHER STPS	6	ORISSA	NTPC Ltd.	CENTRAL	500
344	TAMNAR TPP	1	CHHATTISGARH	JPL	PVT	600
345	TAMNAR TPP	2	CHHATTISGARH	JPL	PVT	600
346	TAMNAR TPP	3	CHHATTISGARH	JPL	PVT	600
347	TAMNAR TPP	4	CHHATTISGARH	JPL	PVT	600
348	TANDA TPS	3	UTTAR PRADESH	NTPC Ltd.	CENTRAL	110
349	TANDA TPS	4	UTTAR PRADESH	NTPC Ltd.	CENTRAL	110
350	TENUGHAT TPS	1	JHARKHAND	TVNL	STATE	210
351	TENUGHAT TPS	2	JHARKHAND	TVNL	STATE	210
352	TORANGALLU TPS(SBU-I)	1	KARNATAKA	JSWEL	PVT	130
353	TORANGALLU TPS(SBU-I)	2	KARNATAKA	JSWEL	PVT	130
354	TROMBAY TPS	5	MAHARASHTRA	TATA PCL	PVT	500
355	TROMBAY TPS	6	MAHARASHTRA	TATA PCL	PVT	500
356	TROMBAY TPS	8	MAHARASHTRA	TATA PCL	PVT	250
357	TUTICORIN (JV) TPP	1	TAMIL NADU	NTPL	CENTRAL	500
358	TUTICORIN (JV) TPP	2	TAMIL NADU	NTPL	CENTRAL	500
359	TUTICORIN TPS	1	TAMIL NADU	TNGDCL	STATE	210
360	TUTICORIN TPS	2	TAMIL NADU	TNGDCL	STATE	210
361	TUTICORIN TPS	3	TAMIL NADU	TNGDCL	STATE	210
362	TUTICORIN TPS	4	TAMIL NADU	TNGDCL	STATE	210
363	TUTICORIN TPS	5	TAMIL NADU	TNGDCL	STATE	210
364	UKAI TPS	1	GUJARAT	GSECL	STATE	120
365	UKAI TPS	2	GUJARAT	GSECL	STATE	120
366	UKAI TPS	3	GUJARAT	GSECL	STATE	200
367	UKAI TPS	4	GUJARAT	GSECL	STATE	200
368	UKAI TPS	5	GUJARAT	GSECL	STATE	210
369	UKAI TPS	6	GUJARAT	GSECL	STATE	500
370	UNCHAHAHAR TPS	1	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
371	UNCHAHAHAR TPS	2	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
372	UNCHAHAHAR TPS	3	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
373	UNCHAHAHAR TPS	4	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
374	UNCHAHAHAR TPS	5	UTTAR PRADESH	NTPC Ltd.	CENTRAL	210
375	UNCHAHAHAR TPS	6	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
376	VALLUR TPP	1	TAMIL NADU	NTECL	CENTRAL	500
377	VALLUR TPP	2	TAMIL NADU	NTECL	CENTRAL	500
378	VALLUR TPP	3	TAMIL NADU	NTECL	CENTRAL	500

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
379	VINDHYACHAL STPS	7	MADHYA PRADESH	NTPC Ltd.	CENTRAL	500
380	VINDHYACHAL STPS	8	MADHYA PRADESH	NTPC Ltd.	CENTRAL	500
381	VINDHYACHAL STPS	9	MADHYA PRADESH	NTPC Ltd.	CENTRAL	500
382	VINDHYACHAL STPS	10	MADHYA PRADESH	NTPC Ltd.	CENTRAL	500
383	VINDHYACHAL STPS	11	MADHYA PRADESH	NTPC Ltd.	CENTRAL	500
384	VINDHYACHAL STPS	12	MADHYA PRADESH	NTPC Ltd.	CENTRAL	500
385	VINDHYACHAL STPS	13	MADHYA PRADESH	NTPC Ltd.	CENTRAL	500
386	VIZAG TPP	1	ANDHRA PRADESH	HNPC	PVT	520
387	VIZAG TPP	2	ANDHRA PRADESH	HNPC	PVT	520
388	WANAKBORI TPS	1	GUJARAT	GSECL	STATE	210
389	WANAKBORI TPS	2	GUJARAT	GSECL	STATE	210
390	WANAKBORI TPS	3	GUJARAT	GSECL	STATE	210
391	WANAKBORI TPS	4	GUJARAT	GSECL	STATE	210
392	WANAKBORI TPS	5	GUJARAT	GSECL	STATE	210
393	WANAKBORI TPS	6	GUJARAT	GSECL	STATE	210
394	WANAKBORI TPS	7	GUJARAT	GSECL	STATE	210
395	YERMARUS TPP	1	KARNATAKA	RPCL	STATE	800
396	YERMARUS TPP	2	KARNATAKA	RPCL	STATE	800
	Sub-Total	385				114200
CHINA/CHINA						
397	AKALTARA TPS	3	CHHATTISGARH	WPCL	PVT	600
398	AKALTARA TPS	4	CHHATTISGARH	WPCL	PVT	600
399	AKALTARA TPS	2	CHHATTISGARH	WPCL	PVT	600
400	ANPARA C TPS	1	UTTAR PRADESH	LAPPL	PVT	600
401	ANPARA C TPS	2	UTTAR PRADESH	LAPPL	PVT	600
402	ANUPPUR TPP	1	MADHYA PRADESH	MBPMPL	PVT	600
403	ANUPPUR TPP	2	MADHYA PRADESH	MBPMPL	PVT	600
404	BALCO TPS	1	CHHATTISGARH	BALCO	PVT	300
405	BALCO TPS	2	CHHATTISGARH	BALCO	PVT	300
406	BANDAKHAR TPP	1	CHHATTISGARH	MCCPL	PVT	300
407	BINJKOTE TPP	2	CHHATTISGARH	SKS	PVT	300
408	BUTIBORI TPP	1	MAHARASHTRA	VIP	PVT	300
409	BUTIBORI TPP	2	MAHARASHTRA	VIP	PVT	300
410	D.P.L. TPS	7	WEST BENGAL	DPL	STATE	300
411	DHARIWAL TPP	1	MAHARASHTRA	DIPL	PVT	300
412	DHARIWAL TPP	2	MAHARASHTRA	DIPL	PVT	300
413	GEPL TPP Ph-I	1	MAHARASHTRA	GEPL	PVT	60
414	GEPL TPP Ph-I	2	MAHARASHTRA	GEPL	PVT	60
415	GMR WARORA TPS	1	MAHARASHTRA	GMR ENERG	PVT	300
416	GMR WARORA TPS	2	MAHARASHTRA	GMR ENERG	PVT	300
417	HALDIA TPP	1	WEST BENGAL	HEL	PVT	300
418	HALDIA TPP	2	WEST BENGAL	HEL	PVT	300
419	ITPCL TPP	1	TAMIL NADU	ITPCL	PVT	600
420	ITPCL TPP	2	TAMIL NADU	ITPCL	PVT	600
421	JALIPA KAPURDI TPP	1	RAJASTHAN	RWPL (JSW)	PVT	135
422	JALIPA KAPURDI TPP	2	RAJASTHAN	RWPL (JSW)	PVT	135
423	JALIPA KAPURDI TPP	3	RAJASTHAN	RWPL (JSW)	PVT	135
424	JALIPA KAPURDI TPP	4	RAJASTHAN	RWPL (JSW)	PVT	135
425	JALIPA KAPURDI TPP	5	RAJASTHAN	RWPL (JSW)	PVT	135
426	JALIPA KAPURDI TPP	6	RAJASTHAN	RWPL (JSW)	PVT	135
427	JALIPA KAPURDI TPP	7	RAJASTHAN	RWPL (JSW)	PVT	135
428	JALIPA KAPURDI TPP	8	RAJASTHAN	RWPL (JSW)	PVT	135
429	JSW RATNAGIRI TPP	1	MAHARASHTRA	JSWEL	PVT	300
430	JSW RATNAGIRI TPP	2	MAHARASHTRA	JSWEL	PVT	300
431	JSW RATNAGIRI TPP	3	MAHARASHTRA	JSWEL	PVT	300

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
432	JSW RATNAGIRI TPP	4	MAHARASHTRA	JSWEL	PVT	300
433	KALISINDH TPS	1	RAJASTHAN	RRVUNL	STATE	600
434	KALISINDH TPS	2	RAJASTHAN	RRVUNL	STATE	600
435	KAMALANGA TPS	1	ORISSA	GMR ENERG	PVT	350
436	KAMALANGA TPS	2	ORISSA	GMR ENERG	PVT	350
437	KAMALANGA TPS	3	ORISSA	GMR ENERG	PVT	350
438	KASAIPALLI TPP	1	CHHATTISGARH	ACB	PVT	135
439	KASAIPALLI TPP	2	CHHATTISGARH	ACB	PVT	135
440	KAWAI TPS	1	RAJASTHAN	APL	PVT	660
441	KAWAI TPS	2	RAJASTHAN	APL	PVT	660
442	MAHAN TPP	1	MADHYA PRADESH	ESSARPMPL	PVT	600
443	MAHATMA GANDHI TPS	1	HARYANA	JhPL(HR)	PVT	660
444	MAHATMA GANDHI TPS	2	HARYANA	JhPL(HR)	PVT	660
445	METTUR TPS - II	1	TAMIL NADU	TNGDCL	STATE	600
446	MIHAN TPS	1	MAHARASHTRA	AMNEPL	PVT	61.5
447	MIHAN TPS	2	MAHARASHTRA	AMNEPL	PVT	61.5
448	MIHAN TPS	3	MAHARASHTRA	AMNEPL	PVT	61.5
449	MIHAN TPS	4	MAHARASHTRA	AMNEPL	PVT	61.5
450	MUNDRA TPS	1	GUJARAT	APL	PVT	330
451	MUNDRA TPS	2	GUJARAT	APL	PVT	330
452	MUNDRA TPS	3	GUJARAT	APL	PVT	330
453	MUNDRA TPS	4	GUJARAT	APL	PVT	330
454	MUNDRA TPS	5	GUJARAT	APL	PVT	660
455	MUNDRA TPS	6	GUJARAT	APL	PVT	660
456	MUNDRA TPS	7	GUJARAT	APL	PVT	660
457	MUNDRA TPS	8	GUJARAT	APL	PVT	660
458	MUNDRA TPS	9	GUJARAT	APL	PVT	660
459	MUTHIARA TPP	1	TAMIL NADU	CEPL	PVT	600
460	MUTHIARA TPP	2	TAMIL NADU	CEPL	PVT	600
461	NAWAPARA TPP	1	CHHATTISGARH	TRNE	PVT	300
462	NAWAPARA TPP	2	CHHATTISGARH	TRNE	PVT	300
463	PAINAMPURAM TPP	1	ANDHRA PRADESH	SEIL	PVT	660
464	PAINAMPURAM TPP	2	ANDHRA PRADESH	SEIL	PVT	660
465	PATHADI TPP	1	CHHATTISGARH	LANCO	PVT	300
466	PATHADI TPP	2	CHHATTISGARH	LANCO	PVT	300
467	RAGHUNATHPUR TPP	1	WEST BENGAL	DVC	CENTRAL	600
468	RAGHUNATHPUR TPP	2	WEST BENGAL	DVC	CENTRAL	600
469	RAJIV GANDHI TPS	1	HARYANA	HPGCL	STATE	600
470	RAJIV GANDHI TPS	2	HARYANA	HPGCL	STATE	600
471	ROSA TPP Ph-I	1	UTTAR PRADESH	RPSCL	PVT	300
472	ROSA TPP Ph-I	2	UTTAR PRADESH	RPSCL	PVT	300
473	ROSA TPP Ph-I	3	UTTAR PRADESH	RPSCL	PVT	300
474	ROSA TPP Ph-I	4	UTTAR PRADESH	RPSCL	PVT	300
475	SAGARDIGHI TPS	1	WEST BENGAL	WBPDC	STATE	300
476	SAGARDIGHI TPS	2	WEST BENGAL	WBPDC	STATE	300
477	SALAYA TPP	1	GUJARAT	EPGL	PVT	600
478	SALAYA TPP	2	GUJARAT	EPGL	PVT	600
479	SALORA TPP	1	CHHATTISGARH	VVL	PVT	135
480	SASAN UMTTP	1	MADHYA PRADESH	SPL	PVT	660
481	SASAN UMTTP	2	MADHYA PRADESH	SPL	PVT	660
482	SASAN UMTTP	3	MADHYA PRADESH	SPL	PVT	660
483	SASAN UMTTP	4	MADHYA PRADESH	SPL	PVT	660
484	SASAN UMTTP	5	MADHYA PRADESH	SPL	PVT	660
485	SASAN UMTTP	6	MADHYA PRADESH	SPL	PVT	660
486	SGPL TPP	1	ANDHRA PRADESH	SEIL	PVT	660

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
487	SGPL TPP	2	ANDHRA PRADESH	SEIL	PVT	660
488	SIMHAPURI TPS	1	ANDHRA PRADESH	SEPL	PVT	150
489	SIMHAPURI TPS	2	ANDHRA PRADESH	SEPL	PVT	150
490	STERLITE TPP	1	ORISSA	SEL	PVT	600
491	STERLITE TPP	2	ORISSA	SEL	PVT	600
492	STERLITE TPP	3	ORISSA	SEL	PVT	0
493	STERLITE TPP	4	ORISSA	SEL	PVT	0
494	SVPL TPP	1	CHHATTISGARH	SVPL	PVT	63
495	TALWANDI SABO TPP	1	PUNJAB	TSPL	PVT	660
496	TALWANDI SABO TPP	2	PUNJAB	TSPL	PVT	660
497	TALWANDI SABO TPP	3	PUNJAB	TSPL	PVT	660
498	TIRORA TPS	1	MAHARASHTRA	APL	PVT	660
499	TIRORA TPS	2	MAHARASHTRA	APL	PVT	660
500	TIRORA TPS	3	MAHARASHTRA	APL	PVT	660
501	TIRORA TPS	4	MAHARASHTRA	APL	PVT	660
502	TIRORA TPS	5	MAHARASHTRA	APL	PVT	660
503	TORANGALLU TPS(SBU-II)	3	KARNATAKA	JSWEL	PVT	300
504	TORANGALLU TPS(SBU-II)	4	KARNATAKA	JSWEL	PVT	300
505	TUTICORIN (P) TPP	1	TAMIL NADU	IBPIL	PVT	150
506	UCHPINDA TPP	1	CHHATTISGARH	RKMPPL	PVT	360
507	UCHPINDA TPP	2	CHHATTISGARH	RKMPPL	PVT	360
508	UCHPINDA TPP	3	CHHATTISGARH	RKMPPL	PVT	360
509	UDUPI TPP	1	KARNATAKA	UPCL	PVT	600
510	UDUPI TPP	2	KARNATAKA	UPCL	PVT	600
511	UTKAL TPP(IND BARATH)	1	ORISSA	IBPIL	PVT	350
512	WARDHA WARORA TPP	1	MAHARASHTRA	WPCL	PVT	135
513	WARDHA WARORA TPP	2	MAHARASHTRA	WPCL	PVT	135
514	WARDHA WARORA TPP	3	MAHARASHTRA	WPCL	PVT	135
515	WARDHA WARORA TPP	4	MAHARASHTRA	WPCL	PVT	135
516	YAMUNA NAGAR TPS	1	HARYANA	HPGCL	STATE	300
517	YAMUNA NAGAR TPS	2	HARYANA	HPGCL	STATE	300
	Sub-Total	121				48824
OTHERS/OTHERS						
518	AKRIMOTA LIG TPS	1	GUJARAT	GMDCL	STATE	125
519	AKRIMOTA LIG TPS	2	GUJARAT	GMDCL	STATE	125
520	AMARAVATI TPS	1	MAHARASHTRA	Rattan India	PVT	270
521	ANPARA TPS	4	UTTAR PRADESH	UPRVUNL	STATE	500
522	ANPARA TPS	5	UTTAR PRADESH	UPRVUNL	STATE	500
523	BANDEL TPS	1	WEST BENGAL	WBPDCL	STATE	60
524	BANDEL TPS	2	WEST BENGAL	WBPDCL	STATE	60
525	BANDEL TPS	3	WEST BENGAL	WBPDCL	STATE	60
526	BANDEL TPS	4	WEST BENGAL	WBPDCL	STATE	60
527	BARKHERA TPS	1	UTTAR PRADESH	BEPL	PVT	45
528	BARKHERA TPS	2	UTTAR PRADESH	BEPL	PVT	45
529	BUDGE BUDGE TPS	1	WEST BENGAL	CESC	PVT	250
530	BUDGE BUDGE TPS	2	WEST BENGAL	CESC	PVT	250
531	CHAKABURA TPP	2	CHHATTISGARH	ACB	PVT	30
532	CHANDRAPUR(ASSAM) TPS	1	ASSAM	APGCL	STATE	30
533	CHANDRAPURA(DVC) TPS	2	JHARKHAND	DVC	CENTRAL	130
534	CHANDRAPURA(DVC) TPS	3	JHARKHAND	DVC	CENTRAL	130
535	DAMODARAM SANJEEVAIAH TPS	1	ANDHRA PRADESH	APPDCL	STATE	800
536	DAMODARAM SANJEEVAIAH TPS	2	ANDHRA PRADESH	APPDCL	STATE	800
537	FARAKKA STPS	4	WEST BENGAL	NTPC Ltd.	CENTRAL	500
538	FARAKKA STPS	5	WEST BENGAL	NTPC Ltd.	CENTRAL	500
539	KATGHORA TPP	1	CHHATTISGARH	VESPL	PVT	35

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
540	KHAMBARKHERA TPS	1	UTTAR PRADESH	BEPL	PVT	45
541	KHAMBARKHERA TPS	2	UTTAR PRADESH	BEPL	PVT	45
542	KORADI TPS	8	MAHARASHTRA	MAHAGENCO	STATE	660
543	KORADI TPS	9	MAHARASHTRA	MAHAGENCO	STATE	660
544	KORADI TPS	10	MAHARASHTRA	MAHAGENCO	STATE	660
545	KOTHAGUDEM TPS	2	TELANGANA	TSGENCO	STATE	60
546	KOTHAGUDEM TPS	3	TELANGANA	TSGENCO	STATE	60
547	KOTHAGUDEM TPS	4	TELANGANA	TSGENCO	STATE	60
548	KUDGI STPP	1	KARNATAKA	NTPC Ltd.	CENTRAL	800
549	KUDGI STPP	2	KARNATAKA	NTPC Ltd.	CENTRAL	800
550	KUNDARKI TPS	1	UTTAR PRADESH	BEPL	PVT	45
551	KUNDARKI TPS	2	UTTAR PRADESH	BEPL	PVT	45
552	KUTCH LIG. TPS	3	GUJARAT	GSECL	STATE	75
553	MAQSOODPUR TPS	1	UTTAR PRADESH	BEPL	PVT	45
554	MAQSOODPUR TPS	2	UTTAR PRADESH	BEPL	PVT	45
555	MUNDRA UMTTP	1	GUJARAT	CGPL	PVT	800
556	MUNDRA UMTTP	2	GUJARAT	CGPL	PVT	800
557	MUNDRA UMTTP	3	GUJARAT	CGPL	PVT	800
558	MUNDRA UMTTP	4	GUJARAT	CGPL	PVT	800
559	MUNDRA UMTTP	5	GUJARAT	CGPL	PVT	800
560	NEYVELI (EXT) TPS	1	TAMIL NADU	NLC	CENTRAL	210
561	NEYVELI (EXT) TPS	2	TAMIL NADU	NLC	CENTRAL	210
562	NEYVELI TPS(Z)	1	TAMIL NADU	ST-CMSECP	PVT	250
563	NEYVELI TPS-II	1	TAMIL NADU	NLC	CENTRAL	210
564	NEYVELI TPS-II	2	TAMIL NADU	NLC	CENTRAL	210
565	NEYVELI TPS-II	3	TAMIL NADU	NLC	CENTRAL	210
566	NIGRI TPP	1	MADHYA PRADESH	JPPVL	PVT	660
567	NIGRI TPP	2	MADHYA PRADESH	JPPVL	PVT	660
568	NIWARI TPP	1	MADHYA PRADESH	BLAPPL	PVT	45
569	RAIKHEDA TPP	1	CHHATTISGARH	GCEL	PVT	685
570	RAIKHEDA TPP	2	CHHATTISGARH	GCEL	PVT	685
571	RAJPURA TPP	1	PUNJAB	NPL	PVT	700
572	RAJPURA TPP	2	PUNJAB	NPL	PVT	700
573	RAMAGUNDEM - B TPS	1	TELANGANA	TSGENCO	STATE	62.5
574	RAMAGUNDEM STPS	1	TELANGANA	NTPC Ltd.	CENTRAL	200
575	RAMAGUNDEM STPS	2	TELANGANA	NTPC Ltd.	CENTRAL	200
576	RAMAGUNDEM STPS	3	TELANGANA	NTPC Ltd.	CENTRAL	200
577	RATIJA TPS	1	CHHATTISGARH	SCPL	PVT	50
578	RIHAND STPS	1	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
579	RIHAND STPS	2	UTTAR PRADESH	NTPC Ltd.	CENTRAL	500
580	SABARMATI (C STATION)	15	GUJARAT	TOR. POW.	PVT	30
581	SABARMATI (C STATION)	16	GUJARAT	TOR. POW.	PVT	30
582	SATPURA TPS	10	MADHYA PRADESH	MPPGCL	STATE	250
583	SIMHAPURI TPS	3	ANDHRA PRADESH	SEPL	PVT	150
584	SIMHAPURI TPS	4	ANDHRA PRADESH	SEPL	PVT	150
585	SIPAT STPS	1	CHHATTISGARH	NTPC Ltd.	CENTRAL	660
586	SIPAT STPS	2	CHHATTISGARH	NTPC Ltd.	CENTRAL	660
587	SIPAT STPS	3	CHHATTISGARH	NTPC Ltd.	CENTRAL	660
588	SOLAPUR	1	MAHARASHTRA	NTPC Ltd.	CENTRAL	660
589	SWASTIK KORBA TPP	1	CHHATTISGARH	ACB	PVT	25
590	TALCHER (OLD) TPS	1	ORISSA	NTPC Ltd.	CENTRAL	60
591	TALCHER (OLD) TPS	2	ORISSA	NTPC Ltd.	CENTRAL	60
592	TALCHER (OLD) TPS	3	ORISSA	NTPC Ltd.	CENTRAL	60
593	TALCHER (OLD) TPS	4	ORISSA	NTPC Ltd.	CENTRAL	60
594	TALCHER STPS	1	ORISSA	NTPC Ltd.	CENTRAL	500

DETAILS OF DIFFERENT MAKE OF UNITS CONSIDERED IN THE REVIEW 2017-2018						Annex-1.5
S. NO	NAME	UNIT NO	STATE	ORGANIZATION NAME	SECTOR	CAPACITY (MW)
595	TALCHER STPS	2	ORISSA	NTPC Ltd.	CENTRAL	500
596	TANDA TPS	1	UTTAR PRADESH	NTPC Ltd.	CENTRAL	110
597	TANDA TPS	2	UTTAR PRADESH	NTPC Ltd.	CENTRAL	110
598	THAMMINAPATNAM TPS	1	ANDHRA PRADESH	MEL	PVT	150
599	THAMMINAPATNAM TPS	2	ANDHRA PRADESH	MEL	PVT	150
600	TITAGARH TPS	1	WEST BENGAL	CESC	PVT	60
601	TITAGARH TPS	2	WEST BENGAL	CESC	PVT	60
602	TITAGARH TPS	3	WEST BENGAL	CESC	PVT	60
603	TITAGARH TPS	4	WEST BENGAL	CESC	PVT	60
604	TUTICORIN (P) TPP	2	TAMIL NADU	IBPIL	PVT	150
605	UTRAULA TPS	1	UTTAR PRADESH	BEPL	PVT	45
606	UTRAULA TPS	2	UTTAR PRADESH	BEPL	PVT	45
	Sub-Total	89				26072.5
RUSSIA/RUSSIA						
607	KAHALGAON TPS	1	BIHAR	NTPC Ltd.	CENTRAL	210
608	KAHALGAON TPS	2	BIHAR	NTPC Ltd.	CENTRAL	210
609	KAHALGAON TPS	3	BIHAR	NTPC Ltd.	CENTRAL	210
610	KAHALGAON TPS	4	BIHAR	NTPC Ltd.	CENTRAL	210
611	KORBA-II	1	CHHATTISGARH	CSPGCL	STATE	50
612	KORBA-II	2	CHHATTISGARH	CSPGCL	STATE	50
613	KORBA-II	3	CHHATTISGARH	CSPGCL	STATE	50
614	KORBA-II	4	CHHATTISGARH	CSPGCL	STATE	50
615	NEYVELI TPS- I	1	TAMIL NADU	NLC	CENTRAL	50
616	NEYVELI TPS- I	2	TAMIL NADU	NLC	CENTRAL	50
617	NEYVELI TPS- I	3	TAMIL NADU	NLC	CENTRAL	50
618	NEYVELI TPS- I	4	TAMIL NADU	NLC	CENTRAL	50
619	NEYVELI TPS- I	5	TAMIL NADU	NLC	CENTRAL	50
620	NEYVELI TPS- I	6	TAMIL NADU	NLC	CENTRAL	50
621	NEYVELI TPS- I	7	TAMIL NADU	NLC	CENTRAL	100
622	NEYVELI TPS- I	8	TAMIL NADU	NLC	CENTRAL	100
623	NEYVELI TPS- I	9	TAMIL NADU	NLC	CENTRAL	100
624	OBRA TPS	1	UTTAR PRADESH	UPRVUNL	STATE	40
625	OBRA TPS	2	UTTAR PRADESH	UPRVUNL	STATE	50
626	PATRATU TPS	4	JHARKHAND	PVUNL	CENTRAL	40
627	PATRATU TPS	6	JHARKHAND	PVUNL	CENTRAL	90
628	VINDHYACHAL STPS	1	MADHYA PRADESH	NTPC Ltd.	CENTRAL	210
629	VINDHYACHAL STPS	2	MADHYA PRADESH	NTPC Ltd.	CENTRAL	210
630	VINDHYACHAL STPS	3	MADHYA PRADESH	NTPC Ltd.	CENTRAL	210
631	VINDHYACHAL STPS	4	MADHYA PRADESH	NTPC Ltd.	CENTRAL	210
632	VINDHYACHAL STPS	5	MADHYA PRADESH	NTPC Ltd.	CENTRAL	210
633	VINDHYACHAL STPS	6	MADHYA PRADESH	NTPC Ltd.	CENTRAL	210
	Sub-Total	27				3120

Annexure-1.6

DETAILS OF NEW UNITS COMMISSIONED BUT NOT CONSIDERED IN THE REVIEW 2017-18

S. No.	Name of Station	Unit No	Organization	Capacity (MW)	Make Boiler/Turbine	Date of Commissioning
1.	CHABRA TPS	8	RRVUNL	660.00	BHEL/BHEL	04-Apr-17

DETAILS OF NEW UNITS COMMISSIONED BUT NOT CONSIDERED IN THE REVIEW 2017-18

S. No.	Name of Station	Unit No	Organization	Capacity (MW)	Make Boiler/Turbine	Date of Commissioning
2	BINKOTE TPP	1	SKS	300.00	CHINA/CHINA	25-Apr-17
3	NASIK (P) TPP	2	RATTANINDIA	270.00	BHEL/BHEL	15-Feb-17
4	NASIK (P) TPP	3	RATTANINDIA	270.00	BHEL/BHEL	14-Apr-17
5	NASIK (P) TPP	4	RATTANINDIA	270.00	BHEL/BHEL	19-May-17
6	NASIK (P) TPP	5	RATTANINDIA	270.00	BHEL/BHEL	30-May-17
7	SHIRPUR TPS	1	SPPL	150.00	BHEL/BHEL	28-Sep-17
8	KUDGI STPP	3	NTPC Ltd.	800.00	OTHERS/OTHERS	12-Mar-18
9	BARAUNII TPS	8	BSEB	250.00	BHEL/BHEL	11-Jan-18
10	BARAUNII TPS	9	BSEB	250.00	BHEL/BHEL	31-Mar-18
11	LARA TPS	1	NTPC LTD.	800.00	BHEL/BHEL	31-Mar-18
12	MEJA TPS	1	MUNPL LTD.	660.00	OTHERS/OTHERS	31-Mar-18
	TOTAL	12		4950.00		

SECTION-2 GENERATION PERFORMANCE

2.1 OVERALL GENERATION PERFORMANCE

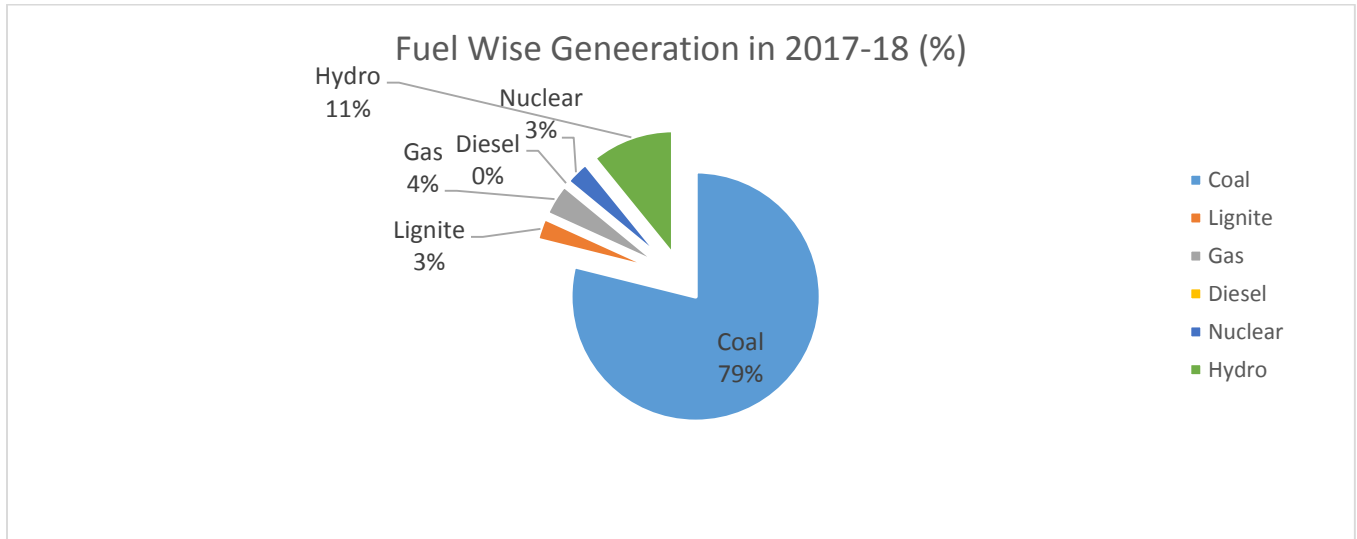
In making performance assessment, several indices like Forced Outage (FO), Planned Maintenance (PM), Operating Availability (Op. Av.), Partial unavailability (Partial loss) and the Plant Load Factor (PLF) have been considered for evaluating the overall performance of thermal power station for the purpose of analysis. No single performance index has been taken as the sole indication of overall performance. A detailed review of generation with reference to the program and PLF is brought out in this section while the other performance indices are covered in Sections 3 to 7.

All India program³ for electricity generation for the year 2017-18 was fixed at **1229.4** BU and Generation achieved during the year was **1206.306** BU, which was **98.12%** of the program, indicating a growth rate of **3.98%** over the year 2016-17. Details of program and actual generation, are given below: -

Category	Program Generation (BU)	Actual Generation (BU)	Short fall (-) / Surplus (+) (BU)	% of Program 2017-18	Actual 2017-18 as (% of Actual 2016-17)	Growth over 2016-17 (%)
Thermal						
Coal based Stations	958.442	951.754	-6.688	99.30	104.57	4.57
Lignite based Stations	35.965	34.836	-1.129	96.86	100.32	0.32
Multi fuel based Stations	0.00	0.00	0	0.00	0.00	0.00
Gas based Stations	47.367	50.207	2.84	106.00	102.27	2.27
Liquid Fuel based Stations	0.00	0.00	0	0.00	0.00	0.00
Diesel based Stations	0.254	0.261	0.007	102.64	94.7	-5.3
Thermal(total)	1042.03	1037.06	-4.97	99.52	104.31	4.31
Nuclear	40.97	38.35	-2.62	93.59	101.13	1.13
Hydro	141.4	126.12	-15.28	89.2	103.06	3.06
Bhutan Import	5	4.78	-0.22	95.57	85.06	-14.94
Total	1229.4	1206.31	-23.09	98.12	103.98	3.98

Details of generation from various fuels and share in various fuels in total generation during the year 2017-18, are presented in the figure below

³ All Program and Generation figures in this Review refer to generation from conventional sources (thermal/hydro/nuclear) of capacity greater than 25 MW in utility stations



Salient observations on fuel wise performance of generating stations in the country during the year 2017-18 are as follows:

- Total thermal generation was lower by 4.97 BU than program estimation for the year - major contributors being coal and lignite based plants with short falls of 6.69 BU and 1.13 BU respectively vis-à-vis program. However, the gas based generation exceeded the programme by 2.84 BU
- Total thermal generation has achieved a growth rate of 4.31% over the last year. Coal and lignite based generation recorded a growth rate of 4.57 % and 0.32% respectively.
- Nuclear generation achieved a growth of 1.13% while hydro generation achieved a growth of 3.06%.

2.2 PERFORMANCE OF THERMAL GENERATION AND REASONS FOR SHORTFALL

Region wise performance

Thermal generation in Northern, Southern, Eastern and North Eastern Regions remained below their respective program. However, the generation in Western Regions exceeded program. Region-wise generation performance of thermal power stations during the year under review are given below: -

Region/ Category	Program(MU)	Actual (MU)	Short fall(-)/ Surplus(+)(MU)
NORTHERN	225970	225643	-327
WESTERN	407413	426149	18736
SOUTHERN	223987	206045	-17942
EASTERN	173789	168908	-4881
NORTH EASTERN	10869	10314	-555
TOTAL THERMAL	1042028	1037059	-4969

Sector wise performance

Sector-wise generation performance during 2017-18 is given below. Thermal power stations in Central Sector and State Sector have generated 104.82 %and 94.47%of their generation program. Generation in Private Sector Stations was 101.39 % of the program.

Category / Sectors	Monitored Capacity as on 31.03.2018 (MW)	April 2017 - March 2018		Actual Generation 2016-17 (MU)	% of Program	Growth (%)
		Program (MU)	Actual (MU)			
CENTRAL SECTOR						
MUNPL	660	0	8	0	0	0
NPGCPL	0	100	0	0	0	0
NTECL	1500	9201	7168	9211	77.9	-22.18
APCPL	1500	5500	7735	5474	140.63	41.3
NTPL	1000	6570	5413	6252	82.39	-13.42
BRBCL	500	2500	1061	0	42.44	0
PVUNL	0	1280	0	386	0	-100
NTPC Ltd.	44372.23	242571	261362.83	246552.42	107.75	6.01
NLC	3240	20848	20548	20913	98.56	-1.75
NEEPCO.	527	2710	2958	2649	109.15	11.66
RGPPPL	1967	4248	4501	4558	105.96	-1.24
NSPCL	500	3746	3878	3651	103.52	6.21
K.B.U.N.L	610	1500	1751	793	116.71	120.62
DVC	7090	34475	35694	33311	103.54	7.15
ONGC	727	4500	4053	4173	90.07	-2.87
CENTRAL SEC.	64192.91	339749	356130.05	337924.06	104.82	5.39
STATE SEC.	72083.38	339494	320736.93	299587.16	94.47	7.06
IPP SEC.	82649	344239	341388	337769	99.17	1.07
PVT. UTL. SEC.	3477	18546	18804	18950	101.39	-0.77
TOTAL THERMAL	222402	1042028	1037059	994230	99.52	4.31

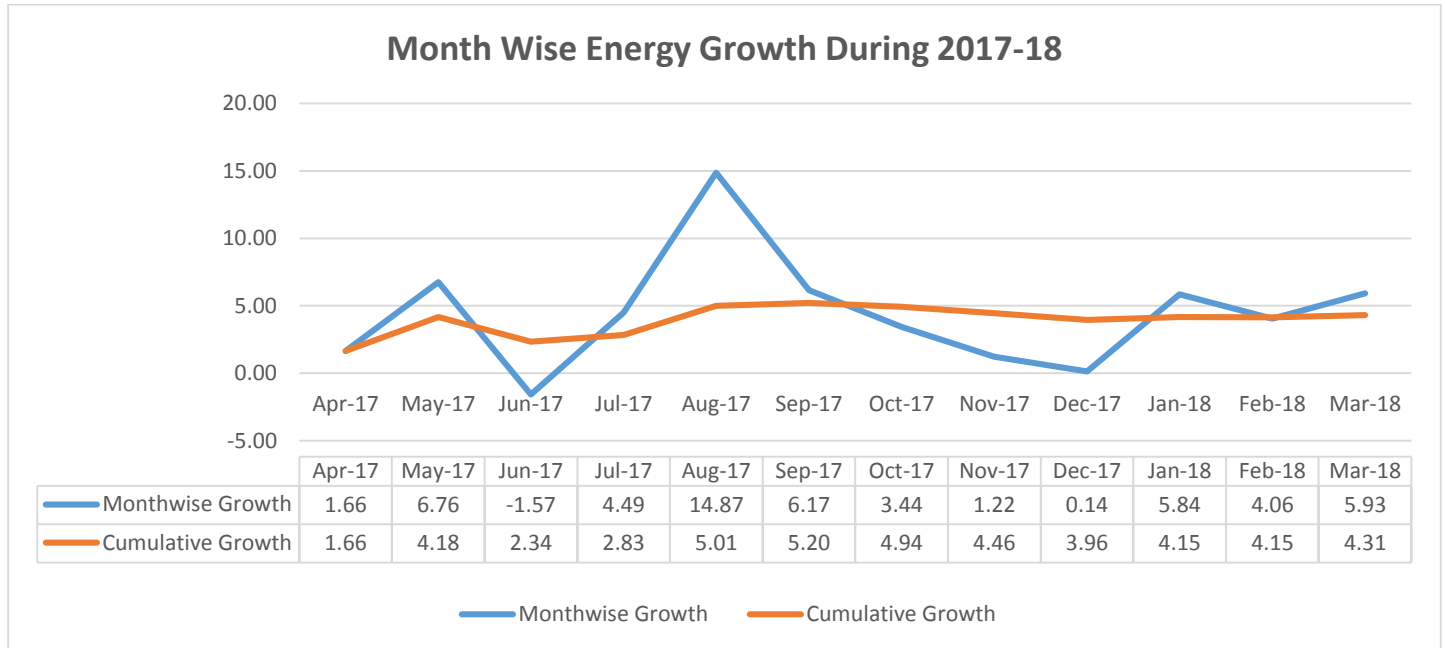
Month wise generation performance

Month-wise and cumulative thermal generation performance vis-à-vis program generation is given below: -

Figures in MU

Month	Thermal Generation Program (2017-18)		Actual Generation (2017-18)		Previous Year Generation (2016-17)	
	Monthly	Cumulative	Monthly	Cumulative	Monthly	Cumulative
April 2017	86485	86485	89570	89570	88106	88106
May 2017	90449	176934	91777	181346	85969	174075
June 2017	84981	261915	80318	261664	81600	255675
July 2017	84379	346294	78628	340292	75252	330927
August 2017	84153	430447	83845	424137	72991	403918
September 2017	85301	515748	84867	509005	79936	483855
October 2017	89018	604766	87970	596975	85045	568899
November 2017	83719	688485	84309	681284	83291	652190
December 2017	87815	776300	86075	767359	85956	738146
January 2018	90523	866823	91119	858479	86092	824239
February 2018	82568	949391	82893	941371	79661	903900
March 2018	92637	1042028	95688	1037059	90330	994230

Month-wise and cumulative thermal generation growth during the year 2017-18 vis-à-vis last year 2016-17 is depicted in the following chart: -



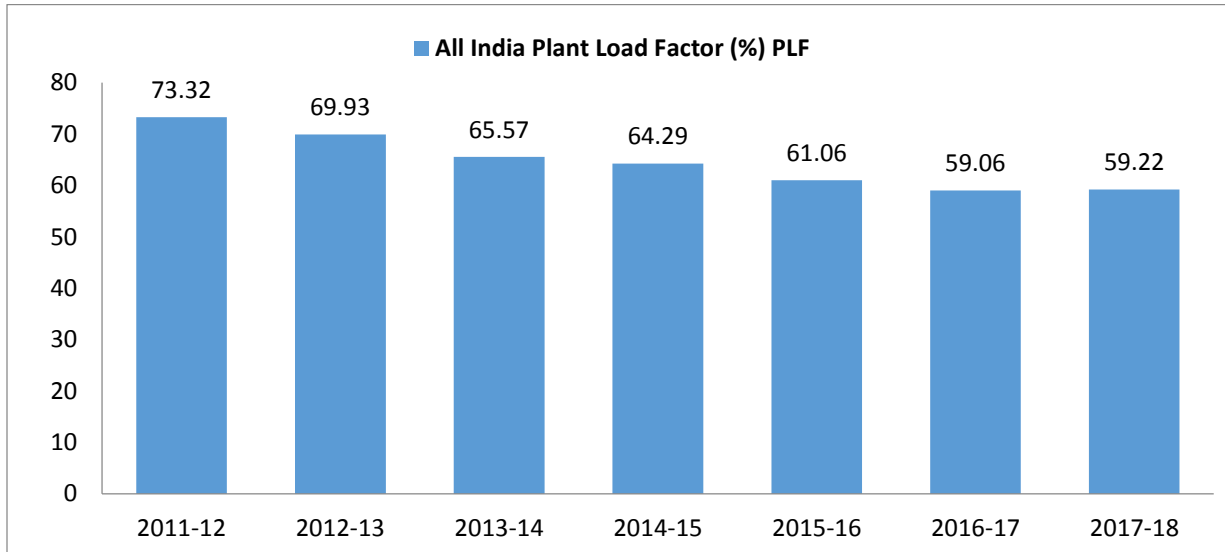
- Total monthly thermal generation varied from 78.63 BU in July'17 to the maximum of 95.69 BU in March'18.
- Thermal generation achieved a growth rate of 4.31% during the year 2017-18 and generation was less than the program by 4.97 BU.
- Units wise and station wise performance indices for the year 2017-18 are given in Annexure-2.1

2.3 PLANT LOAD FACTOR (PLF%) – for units considered in the Review

National average ⁴PLF of coal/lignite based plants during the financial year 2017-18 increased to 59.22 % against 59.06% during 2016-17.

The details of PLF from financial year 2010-11 onwards are depicted in the following chart:

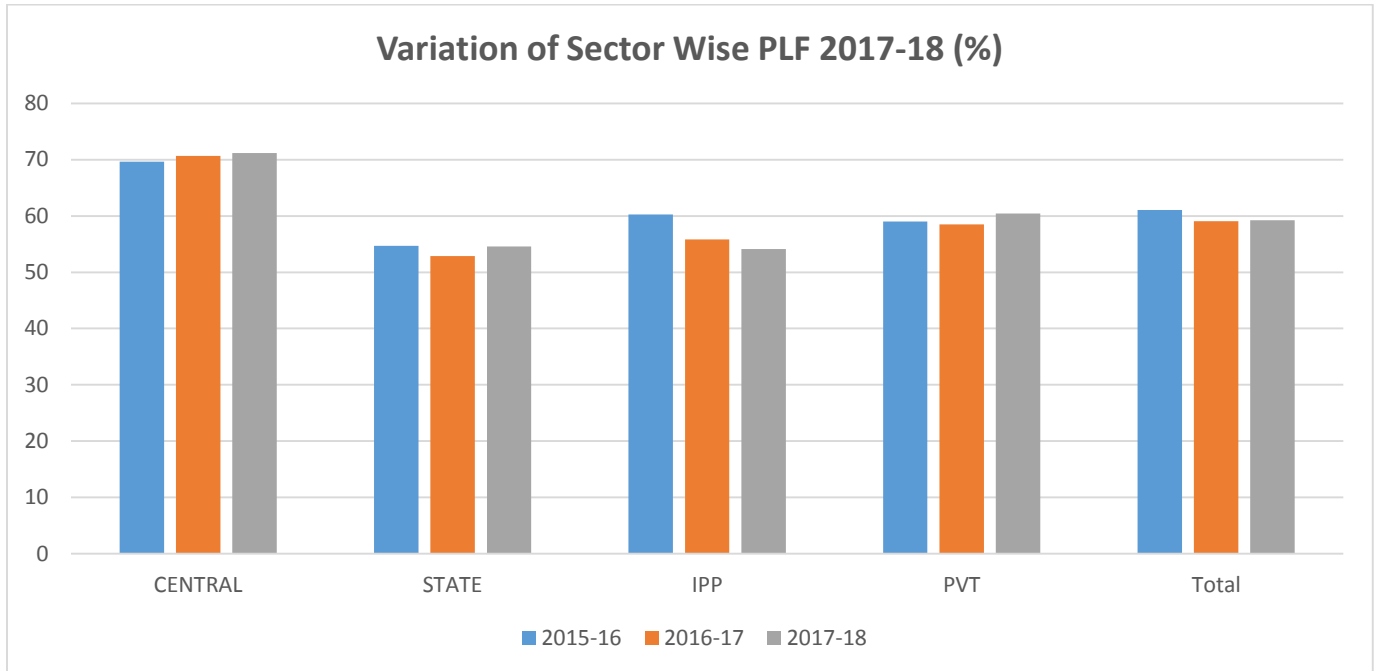
⁴ PLF of units considered in the Review



Sector-wise Plant Load Factor (PLF)

During 2017-18, Central Sector Stations achieved highest PLF of 71.2 % amongst all the Sectors. The overall PLF of thermal generating units was higher (59.22 %) as compared to previous year (59.06%). Sector wise PLF of thermal power plants during the last three years are given in the following table:

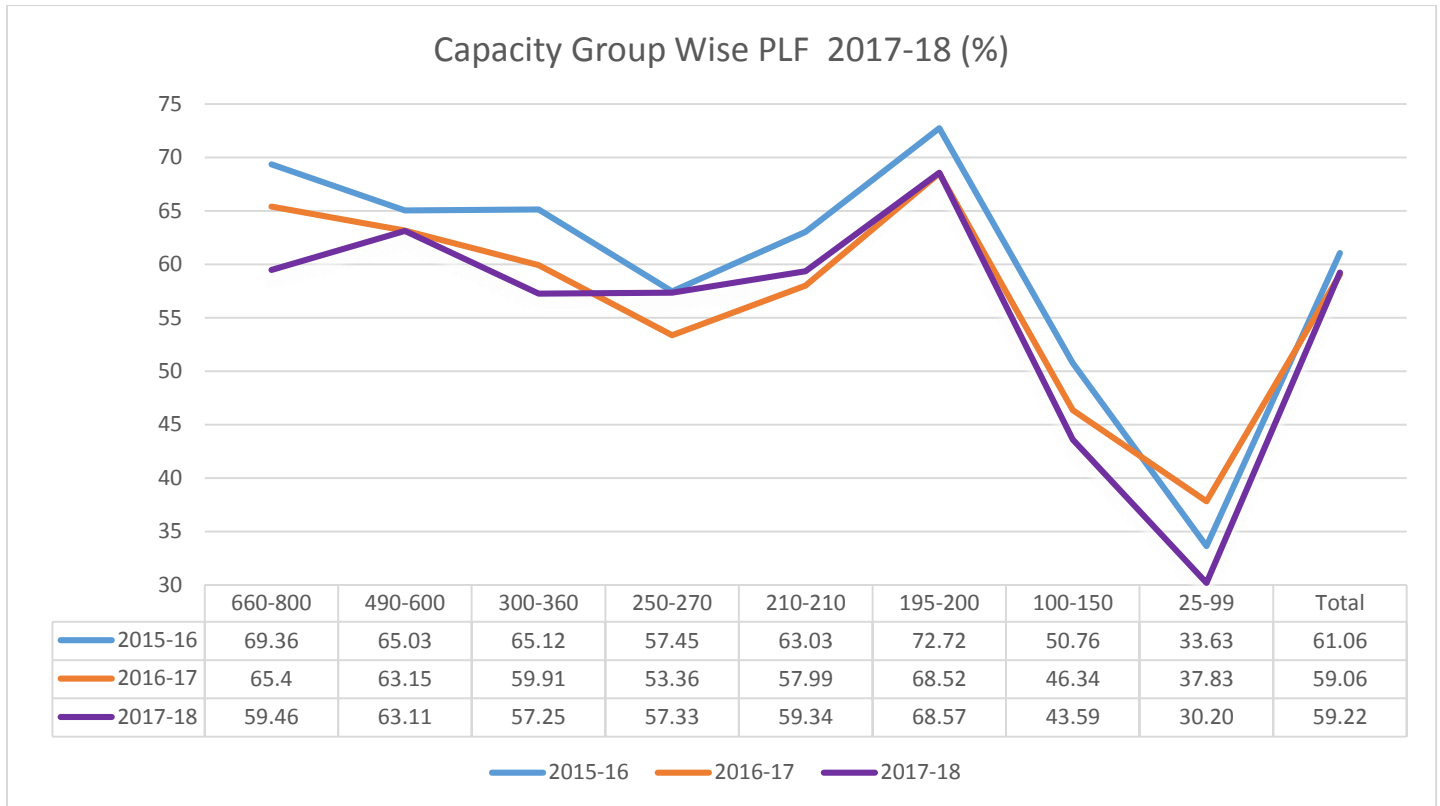
Sector	Capacity (MW)			Plant Load Factor (%)		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
CENTRAL	50,515.0	52370.0	55700	69.63	70.66	71.2
STATE	57,820.5	64450.0	64620.5	54.72	52.85	54.58
IPP	61,349.0	69519.0	70719	60.26	55.82	54.14
PVT	3,607.0	3,607.0	3297	59	58.49	60.42
Total	173,291.5	189946.5	194336.5	61.06	59.06	59.22



Capacity group-wise Plant Load Factor

Details of PLF of thermal units under review falling under various capacity groups are given below. The 195-200 MW capacity group achieved the highest PF of 68.57 %, followed by the 490-600 MW capacity group which achieved a plant load factor of 63.11%. Supercritical unit capacity group achieved a plant lower factor of 59.46%

Capacity Group (MW)	Units commissioned as on 31-MAR-2018		Units Reviewed		PLF (%) of units Reviewed		
	No. of Units	Capacity (MW)	No. of Units	Capacity (MW)	2015-16	2016-17	2017-18
660-800	66	45550	62	42630	69.36	65.4	59.46
490-600	134	71370	134	71370	65.03	63.15	63.11
300-360	43	13400	42	13100	65.12	59.91	57.25
250-270	79	20050	73	18470	57.45	53.36	57.33
210-210	137	28770	140	29400	63.03	57.99	59.34
195-200	26	5180	26	5180	72.72	68.52	68.57
100-150	75	9332	82	10117	50.76	46.34	43.59
25-99	61	3069.5	74	4069.5	33.63	37.83	30.20
Total	621	196721.5	633	194336.5	61.06	59.06	59.22



Make-wise PLF

The PLF of different makes wise units taken in the review during last three years is given as under. The PLF of BHEL/BHEL make units increased from 58.63% during 2016-17 to 59.25 % during 2017-18. Reduction is seen in PLF of China/China make units.

As may be seen, out of 633 units reviewed, the highest numbers of units (385 numbers with aggregate capacity 114200MW) were of BHEL/BHEL make.

Make TG/Boiler	Units operating as on 31-03-2018		Reviewed during 2017-18		PLF Of units Reviewed		
	No. of units	Capacity (MW)	No. of units	Capacity (MW)	15-16	16-17	17-18
BHEL/BHEL	380	115125	385	114200	60.68	58.63	59.25
BHEL/ABL	9	1700	11	2120	29.49	36.28	45.23
RUSSIA/RUSSIA	23	2900	27	3120	60.12	64.24	71.89
CHINA/CHINA	119	48824	121	48824	64.32	58.54	56.95
OTHERS/OTHERS	90	28172.5	89	26072.5	63.44	63.71	62.97
TOTAL	621	196721.5	633	194336.5	61.06	59.06	59.22

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
NORTHERN									
BADARPUR TPS	1	95	0	0	100	0	0	0	0
BADARPUR TPS	2	95	0	0	100	0	0	0	0
BADARPUR TPS	3	95	0	0	100	0	0	0	0
BADARPUR TPS	4	210	717.84	0	53.18	46.82	5.45	7.8	39
BADARPUR TPS	5	210	839.13	0	47.89	52.11	0.99	6.49	45.6
BADARPUR TPS		705	1556.97	0	70.53	29.47	1.92	4.26	0
INDIRA GANDHI STPP	1	500	2572.09	0	20.19	79.81	0.85	21.08	58.7
INDIRA GANDHI STPP	2	500	2462.56	5.93	15.61	78.46	4.78	22.24	56.2
INDIRA GANDHI STPP	3	500	2699.88	0	16.04	83.96	0	22.32	61.6
INDIRA GANDHI STPP		1500	7734.53	1.98	17.28	80.74	1.88	21.88	58.86
BARSINGSAR LIGNITE	1	125	869.28	1.96	15.04	83	0	3.61	79.4
BARSINGSAR LIGNITE	2	125	779.53	8.33	15.9	75.77	0	4.58	71.2
BARSINGSAR LIGNITE		250	1648.81	5.15	15.47	79.38	0	4.09	75.29
SINGRAULI STPS	1	200	1237.42	12.17	0.25	87.58	0	16.95	70.6
SINGRAULI STPS	2	200	1521.09	7.54	0.61	91.85	0	5.12	86.8
SINGRAULI STPS	3	200	1388.51	10.61	1.66	87.74	0	8.48	79.3
SINGRAULI STPS	4	200	1433.55	0	3.08	96.92	0	15.1	81.8
SINGRAULI STPS	5	200	1422.94	0	0.28	99.72	0	18.5	81.2
SINGRAULI STPS	6	500	3824.66	1.37	5.19	93.44	0	6.12	87.3
SINGRAULI STPS	7	500	3953.66	0	4.92	95.08	0	4.82	90.3
SINGRAULI STPS		2000	14781.83	3.37	3.11	93.51	0	9.15	84.37
RIHAND STPS	1	500	4088.66	0	1.85	98.15	0	4.8	93.3
RIHAND STPS	2	500	3665.88	2.87	6.53	90.6	0	6.9	83.7
RIHAND STPS	3	500	4102.24	2.67	0.83	96.5	0	3	93.7
RIHAND STPS	4	500	3714.26	0	12.93	87.07	0	2.31	84.8
RIHAND STPS	5	500	4149.81	0	0.42	99.58	0	4.84	94.7
RIHAND STPS	6	500	3809.69	7.69	2.87	89.44	0	2.65	87
RIHAND STPS		3000	23530.54	2.2	4.24	93.56	0	4.08	89.54
UNCHAHAH TPS	1	210	1311.88	9.11	0.5	90.38	0	19.07	71.3
UNCHAHAH TPS	2	210	1278.13	0	6.54	93.46	0	23.98	69.5
UNCHAHAH TPS	3	210	1335.94	0	4.56	95.44	0	22.82	72.6
UNCHAHAH TPS	4	210	1418.51	1.26	0.05	98.7	0	21.59	77.1
UNCHAHAH TPS	5	210	1382.68	1.05	0.31	98.65	0	23.48	75.2
UNCHAHAH TPS	6	500	365.34	0	86.91	13.09	0	2.85	12.2
UNCHAHAH TPS		1550	7092.48	1.84	18.61	79.54	0	18.48	61.44
DADRI (NCTPP)	1	210	1092.63	0.04	14.71	85.26	14.68	25.86	59.4
DADRI (NCTPP)	2	210	883.82	0	30.56	69.44	29.28	21.39	48
DADRI (NCTPP)	3	210	1159.07	0	9.96	90.04	8.81	27.03	63
DADRI (NCTPP)	4	210	1157.78	8.4	2.36	89.24	2.14	26.3	62.9
DADRI (NCTPP)	5	490	3082.94	0	8.77	91.23	5.95	19.41	71.8
DADRI (NCTPP)	6	490	2557.15	15.14	1.16	83.7	0	24.12	59.6
DADRI (NCTPP)		1820	9933.39	5.05	9.32	85.63	7.94	23.33	62.3
TANDA TPS	1	110	743.39	10.51	1.82	87.67	0	10.52	77.1
TANDA TPS	2	110	867.35	0	0.79	99.21	0	9.2	90
TANDA TPS	3	110	809.76	5.9	1.04	93.05	0	9.02	84
TANDA TPS	4	110	857.48	1.02	1.49	97.48	0	8.5	89
TANDA TPS		440	3277.98	4.36	1.29	94.35	0	9.31	85.05
RAJGHAT TPS	1	67.5	0	0	100	0	100	0	0
RAJGHAT TPS	2	67.5	0	0	100	0	100	0	0
RAJGHAT TPS		135	0	0	100	0	100	0	0
PANIPAT TPS	5	210	140.77	0	91.39	8.61	29.15	0.96	7.7

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
PANIPAT TPS	6	210	373.68	16.18	62.23	21.59	23.49	1.28	20.3
PANIPAT TPS	7	250	1277.64	0	36.43	63.57	15.39	5.23	58.3
PANIPAT TPS	8	250	787.36	0	60.92	39.08	27.66	3.13	36
PANIPAT TPS		920	2579.45	3.69	61.52	34.79	23.71	2.78	32.01
YAMUNA NAGAR TPS	1	300	1441.37	16.18	21.25	62.57	3.69	7.72	54.8
YAMUNA NAGAR TPS	2	300	2006.76	0	13.02	86.98	8.21	10.62	76.4
YAMUNA NAGAR TPS		600	3448.13	8.09	17.13	74.78	5.95	9.17	65.6
RAJIV GANDHI TPS	1	600	2361.5	0	42.45	57.55	36.8	12.62	44.9
RAJIV GANDHI TPS	2	600	2319.51	0	41.21	58.79	28.99	14.66	44.1
RAJIV GANDHI TPS		1200	4681.01	0	41.83	58.17	32.89	13.64	44.53
GND TPS(BHATINDA)	1	110	10.2	50.86	47.73	1.41	33.06	0.35	1.1
GND TPS(BHATINDA)	2	110	16.05	0	97.9	2.1	97.9	0.44	1.7
GND TPS(BHATINDA)	3	110	170.21	0	80.67	19.33	78	1.67	17.7
GND TPS(BHATINDA)	4	110	104.87	0	88.42	11.58	88.42	0.69	10.9
GND TPS(BHATINDA)		440	301.33	12.71	78.68	8.6	74.57	0.79	0
GH TPS (LEH.MOH.)	1	210	540.99	0	67.73	32.27	67.73	2.86	29.4
GH TPS (LEH.MOH.)	2	210	612.99	0	63.72	36.28	63.72	2.96	33.3
GH TPS (LEH.MOH.)	3	250	942.5	0	51.86	48.14	51.86	5.11	43
GH TPS (LEH.MOH.)	4	250	848.02	0	57.03	42.97	57.03	4.25	38.7
GH TPS (LEH.MOH.)		920	2944.5	0	59.59	40.41	62.49	3.87	36.54
ROPAR TPS	1	210	144.09	24.66	66.14	9.21	66.14	1.37	7.8
ROPAR TPS	2	210	272.96	24.66	58.12	17.22	58.12	2.38	14.8
ROPAR TPS	3	210	283.77	0	82.18	17.82	82.18	2.4	15.4
ROPAR TPS	4	210	455.58	0	71.24	28.76	71.24	4	24.8
ROPAR TPS	5	210	614.12	0	60.91	39.09	56.71	5.7	33.4
ROPAR TPS	6	210	503.84	0	67.88	32.12	67.88	4.73	27.4
ROPAR TPS		1260	2274.36	8.22	67.74	24.04	68.56	3.43	16.83
KOTA TPS	1	110	384.82	0	54.16	45.84	37.11	5.91	39.9
KOTA TPS	2	110	458.68	0	43.07	56.93	29.55	9.33	47.6
KOTA TPS	3	210	1114.17	0	26.9	73.1	17.05	12.53	60.6
KOTA TPS	4	210	1194.14	0	21.38	78.62	21.38	13.71	64.9
KOTA TPS	5	210	1141.51	8.2	23.47	68.33	19.5	6.28	62.1
KOTA TPS	6	195	1417.67	0	13.65	86.35	12.1	3.55	83
KOTA TPS	7	195	1502.06	4.61	3.94	91.44	3.94	3.52	87.9
KOTA TPS		1240	7213.05	2.11	23.54	74.34	19.41	7.97	66.4
SURATGARH TPS	1	250	1072.21	0	43.26	56.74	28.75	7.78	49
SURATGARH TPS	2	250	783.88	0	59.34	40.66	40.65	4.87	35.8
SURATGARH TPS	3	250	672.72	0	64.21	35.79	38.38	5.07	30.7
SURATGARH TPS	4	250	915.62	0	52.38	47.62	52.36	5.81	41.8
SURATGARH TPS	5	250	913.96	29.62	21.97	48.41	20.65	6.68	41.7
SURATGARH TPS	6	250	605.97	0	68.07	31.93	51.57	4.26	27.7
SURATGARH TPS		1500	4964.36	4.94	51.54	43.52	38.73	5.74	37.78
GIRAL TPS	1	125	0	100	0	0	0	0	0
GIRAL TPS	2	125	0	100	0	0	0	0	0
GIRAL TPS		250	0	100	0	0	0	0	0
CHHABRA TPP	1	250	1608.33	11.33	8.99	79.68	3.42	6.24	73.4
CHHABRA TPP	2	250	1536.09	10.38	13.56	76.05	0	5.91	70.1
CHHABRA TPP	3	250	1330.64	14.3	19.64	66.06	0	5.3	60.8
CHHABRA TPP	4	250	1776.54	5.81	6.61	87.58	0	6.46	81.1
CHHABRA TPP		1000	6251.6	10.46	12.2	77.34	0.86	5.98	71.37
KALISINDH TPS	1	600	3402.3	0	24.67	75.33	10.6	10.6	64.7
KALISINDH TPS	2	600	3288.88	0	26.56	73.44	12.63	10.87	62.6
KALISINDH TPS		1200	6691.18	0	25.62	74.38	11.62	10.73	63.65
OBRA TPS	1	40	0	0	100	0	0	0	0

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
OBRA TPS	2	50	54.04	0	38.61	61.39	0	24.49	36.9
OBRA TPS	7	94	0	100	0	0	0	0	0
OBRA TPS	8	94	0	0	100	0	0	0	0
OBRA TPS	9	200	939.56	30.41	6.6	62.99	0	9.36	53.6
OBRA TPS	10	200	1202.03	0.37	18.23	81.4	0	12.79	68.6
OBRA TPS	11	200	1324.99	0	10.16	89.84	0	14.21	75.6
OBRA TPS	12	200	0	100	0	0	0	0	0
OBRA TPS	13	200	793.28	8.21	19.13	72.66	0	27.38	45.3
OBRA TPS		1278	4313.9	30.54	23.15	46.31	0	10.8	40.43
PANKI TPS	3	105	148.22	0	29.21	70.79	14.4	9.62	17.6
PANKI TPS	4	105	190.47	0	22.62	77.38	20.07	8.68	22.6
PANKI TPS		210	338.69	0	25.92	74.08	17.24	9.15	20.12
HARDUAGANJ TPS	5	60	0	0	100	0	0	0	0
HARDUAGANJ TPS	7	105	267.57	0	66.31	33.69	65.08	4.6	29.1
HARDUAGANJ TPS	8	250	1772.12	0	4.64	95.36	3.21	14.44	80.9
HARDUAGANJ TPS	9	250	1810.83	0	3.44	96.56	0.86	13.88	82.7
HARDUAGANJ TPS		665	3850.52	0	23.97	76.03	12.56	12.1	70.32
PARICHHA TPS	1	110	0	100	0	0	0	0	0
PARICHHA TPS	2	110	285.78	0	57.61	42.39	18.51	12.73	29.7
PARICHHA TPS	3	210	1396.35	0	6.07	93.93	0	18.02	75.9
PARICHHA TPS	4	210	1468.93	0	2.16	97.84	0	17.99	79.9
PARICHHA TPS	5	250	1536.76	11.42	2.8	85.79	0	15.61	70.2
PARICHHA TPS	6	250	1739.27	0.5	2.46	97.04	0	17.62	79.4
PARICHHA TPS		1140	6427.09	12.26	8.23	79.51	1.79	15.15	64.36
ANPARA TPS	1	210	1550.43	0.06	3.22	96.72	0	12.44	84.3
ANPARA TPS	2	210	1071.47	23.42	6.07	70.51	0	12.26	58.2
ANPARA TPS	3	210	1563.62	0.29	5.45	94.27	0	9.27	85
ANPARA TPS	4	500	3879.62	0	8.5	91.5	0	3.02	88.6
ANPARA TPS	5	500	3114.82	0	17.87	82.13	0	11.01	71.1
ANPARA TPS	6	500	3604.62	0	13.65	86.35	0	4.05	82.3
ANPARA TPS	7	500	1833.93	0	54.1	45.9	0	4.03	41.9
ANPARA TPS		2630	16618.51	1.9	19.07	79.03	0	6.92	72.13
MAHATMA GANDHI TPS	1	660	3798.55	0	16.92	83.08	5.59	17.38	65.7
MAHATMA GANDHI TPS	2	660	3526.92	14.37	8.92	76.71	5.81	15.71	61
MAHATMA GANDHI TPS		1320	7325.47	7.18	12.92	79.9	5.7	16.55	63.35
GOINDWAL SAHIB TPP	1	270	1122.22	0	39.67	60.33	4.9	12.88	47.4
GOINDWAL SAHIB TPP	2	270	418.78	0	76.9	23.1	0.32	5.4	17.7
GOINDWAL SAHIB TPP		540	1541	0	58.28	41.72	2.61	9.14	32.58
RAJPURA TPP	1	700	4823.58	0	8.61	91.39	8.61	12.73	78.7
RAJPURA TPP	2	700	4286.46	8.51	10.63	80.86	10.63	10.96	69.9
RAJPURA TPP		1400	9110.04	4.25	9.62	86.13	11.98	11.84	74.28
TALWANDI SABO TPP	1	660	2967.79	0	24.63	75.37	21.34	24.04	51.3
TALWANDI SABO TPP	2	660	2779	0	29.96	70.04	21.08	21.97	48.1
TALWANDI SABO TPP	3	660	2810.03	0	32.09	67.91	20.38	19.31	48.6
TALWANDI SABO TPP		1980	8556.82	0	28.89	71.11	20.93	21.77	49.33
JALIPA KAPURDI TPP	1	135	856.06	0	14.81	85.19	0	12.8	72.4
JALIPA KAPURDI TPP	2	135	829.25	0	18.6	81.4	0	11.28	70.1
JALIPA KAPURDI TPP	3	135	839.73	0	15.08	84.92	0	13.91	71
JALIPA KAPURDI TPP	4	135	869.64	0	11.99	88.01	0	14.48	73.5
JALIPA KAPURDI TPP	5	135	853.69	0	14.2	85.8	0	13.61	72.2
JALIPA KAPURDI TPP	6	135	894.01	0	10.7	89.3	0	13.71	75.6
JALIPA KAPURDI TPP	7	135	894.22	0.89	9.92	89.2	0	13.58	75.6
JALIPA KAPURDI TPP	8	135	819.35	0	18.06	81.94	0	12.66	69.3
JALIPA KAPURDI TPP		1080	6855.95	0.11	14.17	85.72	0	13.25	72.47

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
KAWAI TPS	1	660	2177.06	0	56	44	0	6.34	37.7
KAWAI TPS	2	660	2890.09	0	43.15	56.85	0	6.86	50
KAWAI TPS		1320	5067.15	0	49.58	50.42	0	6.6	43.82
PRAYAGRAJ TPP	1	660	2545.82	0	48.74	51.26	0	7.23	44
PRAYAGRAJ TPP	2	660	2051.42	0	55.46	44.54	0	9.06	35.5
PRAYAGRAJ TPP	3	660	1037.82	0	45.27	54.73	0	11.52	19.3
PRAYAGRAJ TPP		1980	5635.06	0	50.09	49.91	0	9.14	33.74
LALITPUR TPS	1	660	2668.52	0	39.53	60.47	0	14.32	46.2
LALITPUR TPS	2	660	3086.56	0	31.48	68.52	0	15.14	53.4
LALITPUR TPS	3	660	2810.84	0	38.67	61.33	0	12.71	48.6
LALITPUR TPS		1980	8565.92	0	36.56	63.44	0	14.06	49.39
ANPARA C TPS	1	600	4238.02	0	9.48	90.52	0	9.89	80.6
ANPARA C TPS	2	600	4159.08	4.37	4.75	90.88	0	11.75	79.1
ANPARA C TPS		1200	8397.1	2.19	7.11	90.7	0	10.82	79.88
ROSA TPP Ph-I	1	300	2012.6	0	8.73	91.27	8.73	14.69	76.6
ROSA TPP Ph-I	2	300	1973.5	5.49	2.9	91.61	2.9	16.52	75.1
ROSA TPP Ph-I	3	300	1906.1	5.88	3.79	90.32	3.79	17.79	72.5
ROSA TPP Ph-I	4	300	1826.6	2.34	10.9	86.75	10.9	17.25	69.5
ROSA TPP Ph-I		1200	7718.8	3.43	6.58	89.99	18.25	16.56	73.43
MAQSOODPUR TPS	1	45	71.8	9.8	67.16	23.04	64.31	4.82	18.2
MAQSOODPUR TPS	2	45	95.68	10.55	59.22	30.24	59.22	5.96	24.3
MAQSOODPUR TPS		90	167.48	10.17	63.19	26.64	64.37	5.39	21.24
KHAMBARKHERA TPS	1	45	83.47	11.92	60.79	27.29	60.79	6.11	21.2
KHAMBARKHERA TPS	2	45	98.04	4.17	63.01	32.82	63.01	7.95	24.9
KHAMBARKHERA TPS		90	181.51	8.04	61.9	30.05	67.39	7.03	23.02
BARKHERA TPS	1	45	102.68	3.31	62.4	34.29	62.4	8.25	26
BARKHERA TPS	2	45	87.68	10.5	60.89	28.61	60.89	6.37	22.2
BARKHERA TPS		90	190.36	6.91	61.64	31.45	65.49	7.31	24.15
KUNDARKI TPS	1	45	100.76	3.9	63.18	32.93	63.18	7.36	25.6
KUNDARKI TPS	2	45	91.36	11.18	58.84	29.98	58.84	6.81	23.2
KUNDARKI TPS		90	192.12	7.54	61.01	31.45	64.99	7.09	24.37
UTRAULA TPS	1	45	88.83	13.2	58.47	28.34	58.47	5.8	22.5
UTRAULA TPS	2	45	104.1	5.75	60.68	33.56	60.68	7.16	26.4
UTRAULA TPS		90	192.93	9.48	59.57	30.95	64.7	6.48	24.47
WESTERN									
KORBA STPS	1	200	1322.07	8.69	0.72	90.59	0	15.13	75.5
KORBA STPS	2	200	1549.29	8.88	1.22	89.9	0	1.99	88.4
KORBA STPS	3	200	1667.47	1.06	1.54	97.4	0	2.43	95.2
KORBA STPS	4	500	4107.16	0	2.6	97.4	0	3.7	93.8
KORBA STPS	5	500	3747.11	8.74	0.99	90.27	0	4.81	85.6
KORBA STPS	6	500	4126.88	0	2.39	97.61	0	3.41	94.2
KORBA STPS	7	500	3957.96	6.57	1.4	92.03	0	1.67	90.4
KORBA STPS		2600	20477.94	4.38	1.69	93.94	0	4.12	89.91
SIPAT STPS	1	660	4980.14	9.63	1.87	88.5	0	2.37	86.1
SIPAT STPS	2	660	5562.09	0	2.09	97.91	0	1.77	96.2
SIPAT STPS	3	660	4703.77	14.63	1.27	84.1	0	2.75	81.4
SIPAT STPS	4	500	4133.3	0	1.12	98.88	0	4.51	94.4
SIPAT STPS	5	500	3630.52	12.79	1.8	85.4	0	2.51	82.9
SIPAT STPS		2980	23009.82	7.52	1.65	90.83	0	2.71	88.14
VINDHYACHAL STPS	1	210	1681.39	1.12	1.18	97.7	0	6.3	91.4
VINDHYACHAL STPS	2	210	1742.56	0	0.81	99.19	0.19	4.79	94.7
VINDHYACHAL STPS	3	210	1575.48	9.4	0.03	90.57	0	5.19	85.6
VINDHYACHAL STPS	4	210	1580.87	6.53	0.25	93.22	0	7.28	85.9
VINDHYACHAL STPS	5	210	1525.54	6.39	0.34	93.26	0	10.34	82.9

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
VINDHYACHAL STPS	6	210	1651.88	6.63	0.36	93.01	0	3.7	89.8
VINDHYACHAL STPS	7	500	3825.37	0	9.05	90.95	0	3.62	87.3
VINDHYACHAL STPS	8	500	3986.76	0	4.24	95.76	0	4.74	91
VINDHYACHAL STPS	9	500	4180.91	0.61	0.03	99.37	0	3.93	95.5
VINDHYACHAL STPS	10	500	3844.27	8.5	0.56	90.94	0	3.17	87.8
VINDHYACHAL STPS	11	500	3918.32	7.06	0.78	92.17	0	2.76	89.5
VINDHYACHAL STPS	12	500	3860.04	5.7	3.37	90.93	0	2.89	88.1
VINDHYACHAL STPS	13	500	4122.34	0	0.72	99.28	0	5.16	94.1
VINDHYACHAL STPS		4760	37495.73	3.62	2.1	94.28	0.01	4.42	89.92
BHILAI TPS	1	250	2014.57	0	1.75	98.25	1.75	6.26	92
BHILAI TPS	2	250	1863.2	7.64	0	92.36	0	7.28	85.1
BHILAI TPS		500	3877.77	3.82	0.87	95.3	0.87	6.77	88.53
MAUDA TPS	1	500	2542.77	0	22.13	77.87	4.97	19.82	58.1
MAUDA TPS	2	500	2370.35	0	27.38	72.62	10.46	18.5	54.1
MAUDA TPS	3	660	1845.74	0	50.58	49.42	16.55	17.5	31.9
MAUDA TPS	4	660	1212.28	0	53.42	46.58	0	17.04	33.3
MAUDA TPS		2320	7971.14	0	38.07	61.93	9.37	18.26	44.3
SOLAPUR	1	660	1397.56	0	38.32	61.68	0	19.57	39.6
SOLAPUR		660	1397.56	0	38.32	61.68	0	19.57	39.62
UKAI TPS	1	120	0	0	100	0	0	0	0
UKAI TPS	2	120	0	0	100	0	0	0	0
UKAI TPS	3	200	1284.18	0	17.29	82.71	0.71	9.41	73.3
UKAI TPS	4	200	1115.98	13.85	15.86	70.29	7.28	6.59	63.7
UKAI TPS	5	210	1380.38	0	16.25	83.75	4.66	8.71	75
UKAI TPS	6	500	2988.42	0	25.92	74.08	0	5.86	68.2
UKAI TPS		1350	6768.96	2.33	39.49	58.18	2.17	6.69	64.92
GANDHI NAGAR TPS	3	210	1191.88	0	23.08	76.92	18.53	12.12	64.8
GANDHI NAGAR TPS	4	210	1099.92	0	29.03	70.97	23.98	11.18	59.8
GANDHI NAGAR TPS	5	210	1450.18	9.8	4.24	85.95	4.24	7.12	78.8
GANDHI NAGAR TPS		630	3741.98	3.27	18.79	77.95	15.58	10.14	67.8
WANAKBORI TPS	1	210	1046.96	0	33.94	66.06	15.37	9.15	56.9
WANAKBORI TPS	2	210	780.95	22.59	26.85	50.56	26.85	8.1	42.5
WANAKBORI TPS	3	210	810.59	35.48	15.65	48.87	9.34	4.81	44.1
WANAKBORI TPS	4	210	1248.55	0	22.88	77.12	22.88	9.25	67.9
WANAKBORI TPS	5	210	1158.93	0	28.36	71.64	28.36	8.64	63
WANAKBORI TPS	6	210	1179.44	1.22	26.41	72.37	26.41	8.26	64.1
WANAKBORI TPS	7	210	1479.26	0	11.52	88.48	11.52	8.06	80.4
WANAKBORI TPS		1470	7704.68	8.47	23.66	67.87	23.4	8.04	59.83
SIKKA REP. TPS	1	120	0	0	100	0	100	0	0
SIKKA REP. TPS	2	120	0	0	100	0	0	0	0
SIKKA REP. TPS	3	250	1383	6.66	6.18	87.17	6.18	24.01	63.2
SIKKA REP. TPS	4	250	1294.54	6.63	13.14	80.23	13.14	21.12	59.1
SIKKA REP. TPS		740	2677.54	5.72	49.69	44.59	32.68	19.45	52.68
BHAVNAGAR CFBC TPP	1	250	461.45	0	60.35	39.65	1.69	18.58	21.1
BHAVNAGAR CFBC TPP	2	250	18.7	0	97.28	2.72	10.11	1.95	0.9
BHAVNAGAR CFBC TPP		500	480.15	0	78.81	21.19	5.9	10.27	10.96
KUTCH LIG. TPS	1	70	312.95	6.45	30.53	63.02	16.04	11.99	51
KUTCH LIG. TPS	2	70	359.62	0.42	23.14	76.44	21.35	17.8	58.6
KUTCH LIG. TPS	3	75	331.35	8.19	27.86	63.96	17.95	13.52	50.4
KUTCH LIG. TPS	4	75	293.86	0	41.77	58.23	16.38	13.5	44.7
KUTCH LIG. TPS		290	1297.78	3.77	30.96	65.26	17.9	14.18	51.09
AKRIMOTA LIG TPS	1	125	693.9	8.91	7.53	83.57	0	20.2	63.4
AKRIMOTA LIG TPS	2	125	663.22	9.18	8.78	82.05	0	21.48	60.6
AKRIMOTA LIG TPS		250	1357.12	9.04	8.15	82.81	0	20.84	61.97

Annex 2.1

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
SATPURA TPS	6	200	559.46	0	65.62	34.38	41.66	8.55	34.8
SATPURA TPS	7	210	308.21	0	83.87	16.13	5.88	6.83	18.3
SATPURA TPS	8	210	813.58	8.79	33.85	57.36	29.93	13.13	44.2
SATPURA TPS	9	210	35.11	30.96	66.5	2.53	7.11	0.62	1.9
SATPURA TPS	10	250	1886.09	0	3.28	96.72	0	10.6	86.1
SATPURA TPS	11	250	1418.4	23.04	2.83	74.14	0	9.37	64.8
SATPURA TPS		1330	5020.85	10.88	39.2	49.92	12.78	8.31	44.21
SHREE SINGAJI TPP	1	600	2341.56	12.7	27.99	59.31	13.04	14.76	44.6
SHREE SINGAJI TPP	2	600	1612.53	16.81	35.98	47.21	28.59	16.53	30.7
SHREE SINGAJI TPP		1200	3954.09	14.76	31.99	53.26	20.81	15.64	37.62
KORBA-II	1	50	13.1	0	94.25	5.75	0	2.75	3
KORBA-II	2	50	74.29	0	66.19	33.81	0	16.84	17
KORBA-II	3	50	250.52	3.7	14.71	81.59	0	24.39	57.2
KORBA-II	4	50	207.33	0	28.78	71.22	0	23.89	47.3
KORBA-II		200	545.24	0.93	50.98	48.09	0	16.97	31.12
KORBA-III	1	120	582.92	9.02	14.44	76.55	0	21.09	55.5
KORBA-III	2	120	659.28	0	9.15	90.85	0	28.13	62.7
KORBA-III		240	1242.2	4.51	11.79	83.7	0	24.61	59.08
DSPM TPS	1	250	2041.84	1.1	2.11	96.79	0	3.56	93.2
DSPM TPS	2	250	2001.13	3.4	2.87	93.73	0	2.35	91.4
DSPM TPS		500	4042.97	2.25	2.49	95.26	0	2.95	92.31
KORBA-WEST TPS	1	210	1332.17	4.91	7.03	88.06	3.96	15.64	72.4
KORBA-WEST TPS	2	210	1210.84	10.67	2.51	86.83	1.85	21	65.8
KORBA-WEST TPS	3	210	1464.55	0	4.54	95.46	4.34	15.84	79.6
KORBA-WEST TPS	4	210	1290	7.53	6.42	86.05	3.59	15.93	70.1
KORBA-WEST TPS	5	500	3986.08	0	4.09	95.91	0.38	4.9	91
KORBA-WEST TPS		1340	9283.64	3.62	4.74	91.64	2.3	12.55	79.09
MARWA TPS	1	500	2739.97	0	19.42	80.58	0	18.03	62.6
MARWA TPS	2	500	2980.03	5.35	8.43	86.22	0	18.18	68
MARWA TPS		1000	5720	2.68	13.92	83.4	0	18.11	65.3
AMARKANTAK EXT TPS	3	210	1728.15	0	2.81	97.19	2.81	3.24	93.9
AMARKANTAK EXT TPS		210	1728.15	0	2.81	97.19	2.81	3.24	93.94
SANJAY GANDHI TPS	1	210	1121.02	4.4	12.92	82.68	0.64	21.74	60.9
SANJAY GANDHI TPS	2	210	1061.75	4.52	16.55	78.93	6.47	21.22	57.7
SANJAY GANDHI TPS	3	210	1160.01	6.74	9.74	83.52	7.64	20.46	63.1
SANJAY GANDHI TPS	4	210	1161.89	0	16.73	83.27	5.76	20.11	63.2
SANJAY GANDHI TPS	5	500	3038.41	9.32	11.27	79.41	0.31	10.04	69.4
SANJAY GANDHI TPS		1340	7543.08	5.93	12.97	81.1	3.33	16.84	64.26
NASIK TPS	3	210	814.26	14.72	30.7	54.58	5.39	10.31	44.3
NASIK TPS	4	210	1265.62	8.18	8.62	83.2	8.62	14.4	68.8
NASIK TPS	5	210	808	0	47.2	52.8	16.41	8.87	43.9
NASIK TPS		630	2887.88	7.64	28.84	63.52	11.65	11.2	52.33
KORADI TPS	6	210	0	100	0	0	0	0	0
KORADI TPS	7	210	453.35	15.49	49.51	35	0	10.36	24.6
KORADI TPS	8	660	3136.71	0	21.93	78.07	0.38	23.82	54.3
KORADI TPS	9	660	2644.16	0	32.42	67.58	0.5	21.85	45.7
KORADI TPS	10	660	3152.86	0	21.45	78.55	0.55	21.65	54.5
KORADI TPS		2400	9387.08	10.11	25.18	64.72	0.4	19.42	44.65
KHAPARKHEDA TPS	1	210	726.18	0	45.2	54.8	10.58	15.33	39.5
KHAPARKHEDA TPS	2	210	960.89	14.64	16.52	68.84	1.67	16.61	52.2
KHAPARKHEDA TPS	3	210	599.65	0	59.04	40.96	3.85	8.36	32.6
KHAPARKHEDA TPS	4	210	890.98	1.29	35.78	62.93	1.45	14.43	48.4
KHAPARKHEDA TPS	5	500	3001.49	0	17.88	82.12	9.1	13.59	68.5
KHAPARKHEDA TPS		1340	6179.19	2.5	31.21	66.3	6.14	13.65	52.64

Annex 2.1

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
PARAS TPS	3	250	1457.14	0	22.38	77.62	4.63	11.09	66.5
PARAS TPS	4	250	1659.18	7.19	5.23	87.58	5.19	11.82	75.8
PARAS TPS		500	3116.32	3.6	13.8	82.6	4.91	11.45	71.15
BHUSAWAL TPS	2	210	0	0	100	0	100	0	0
BHUSAWAL TPS	3	210	615.64	0	58.67	41.33	17.81	7.86	33.5
BHUSAWAL TPS	4	500	3055.44	0	14.53	85.47	5.62	15.71	69.8
BHUSAWAL TPS	5	500	2952.79	0	17.31	82.69	13.74	15.27	67.4
BHUSAWAL TPS		1420	6623.87	0	38.47	61.53	26.89	13.39	59.07
PARLI TPS	4	210	0	0	100	0	0	0	0
PARLI TPS	5	210	0	0	100	0	0	0	0
PARLI TPS	6	250	1377.38	0	25.82	74.18	24.05	11.29	62.9
PARLI TPS	7	250	843.28	0	54.29	45.71	26.42	7.2	38.5
PARLI TPS	8	250	846.65	0	48.49	51.51	29.43	12.85	38.7
PARLI TPS		1170	3067.31	0	63.38	36.62	17.07	6.7	29.93
CHANDRAPUR(MAHARASHTRA)	3	210	507.25	13.34	54.92	31.74	0.2	4.17	27.6
CHANDRAPUR(MAHARASHTRA)	4	210	713.15	10.43	44.37	45.2	1.4	6.43	38.8
CHANDRAPUR(MAHARASHTRA)	5	500	2827.93	11.48	6.65	81.87	2.23	17.31	64.6
CHANDRAPUR(MAHARASHTRA)	6	500	2137.75	16.16	20.56	63.27	2.26	14.46	48.8
CHANDRAPUR(MAHARASHTRA)	7	500	2532.55	13.6	13.87	72.53	3.55	14.71	57.8
CHANDRAPUR(MAHARASHTRA)	8	500	2798.31	13.4	11.46	75.14	0	11.25	63.9
CHANDRAPUR(MAHARASHTRA)	9	500	3281.28	0	11.59	88.41	0	13.49	74.9
CHANDRAPUR(MAHARASHTRA)		2920	14798.22	11.07	18.12	70.81	1.49	12.96	57.85
SABARMATI (C STATION)	15	30	0	0	99.99	0.01	99.99	0.01	0
SABARMATI (C STATION)	16	30	0.01	0	99.99	0.01	99.99	0.01	0
SABARMATI (C STATION)		60	0.01	0	99.99	0.01	99.99	0.01	0
SALAYA TPP	1	600	1786.68	0	53.93	46.07	4.3	12.08	34
SALAYA TPP	2	600	895.74	13.7	63.05	23.25	9.08	6.2	17
SALAYA TPP		1200	2682.42	6.85	58.49	34.66	6.69	9.14	25.52
SABARMATI (D-F STATIONS)	1	120	836.94	5.3	1.45	93.24	0	13.63	79.6
SABARMATI (D-F STATIONS)	2	121	926.7	2.86	0.26	96.88	0	9.45	87.4
SABARMATI (D-F STATIONS)	3	121	875.13	7.78	2.82	89.4	0.28	6.83	82.6
SABARMATI (D-F STATIONS)		362	2638.77	5.32	1.51	93.17	0.09	9.96	83.21
SURAT LIG. TPS	1	125	848.75	0	12.81	87.19	1.86	9.68	77.5
SURAT LIG. TPS	2	125	740.6	0	20.31	79.69	10.46	12.05	67.6
SURAT LIG. TPS	3	125	833.77	6.44	11.16	82.4	0	6.25	76.1
SURAT LIG. TPS	4	125	848.6	0	12.72	87.28	0	9.79	77.5
SURAT LIG. TPS		500	3271.72	1.61	14.25	84.14	3.08	9.44	74.7
MUNDRA TPS	1	330	1520.65	0	41.65	58.35	0	5.75	52.6
MUNDRA TPS	2	330	1982.52	0	24.47	75.53	0	6.95	68.6
MUNDRA TPS	3	330	1610.28	0	37.36	62.64	0	6.94	55.7
MUNDRA TPS	4	330	1401.63	8.26	39.01	52.73	0	4.24	48.5
MUNDRA TPS	5	660	2132.03	0	58.96	41.04	0	4.17	36.9
MUNDRA TPS	6	660	1757.13	0	64.62	35.38	0	4.98	30.4
MUNDRA TPS	7	660	3705.81	0	23.03	76.97	0	12.88	64.1
MUNDRA TPS	8	660	3824.45	0	22.37	77.63	0	11.49	66.1
MUNDRA TPS	9	660	3973.45	0	21.85	78.15	0	9.43	68.7
MUNDRA TPS		4620	21907.95	0.59	37.44	61.97	0	7.84	54.13
MUNDRA UMTTP	1	800	4070.76	16.14	20.72	63.13	2.44	5.05	58.1
MUNDRA UMTTP	2	800	6425.73	0	4.47	95.53	1.17	3.99	91.7
MUNDRA UMTTP	3	800	5615.32	15.81	1.03	83.16	0.65	3.04	80.1
MUNDRA UMTTP	4	800	5307.99	10.77	8.31	80.93	1.55	5.33	75.7
MUNDRA UMTTP	5	800	5095.07	9.11	8.09	82.81	0.16	10.1	72.7
MUNDRA UMTTP		4000	26514.87	10.36	8.52	81.11	1.19	5.5	75.67
BINA TPS	1	250	1362.34	5.15	2.7	92.16	0	29.95	62.2

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
BINA TPS	2	250	1102.94	5.79	19.53	74.67	0	24.31	50.4
BINA TPS		500	2465.28	5.47	11.12	83.41	0	27.13	56.28
MAHAN TPP	1	600	2918.23	7.96	10.75	81.29	1.91	25.77	55.5
MAHAN TPP		600	2918.23	7.96	10.75	81.29	1.91	25.77	55.52
SASAN UMTPP	1	660	5491.04	0	3.28	96.72	0	2.04	95
SASAN UMTPP	2	660	4941.77	8.52	3.79	87.69	0	2.3	85.5
SASAN UMTPP	3	660	5128.02	0	10.01	89.99	0	1.45	88.7
SASAN UMTPP	4	660	5400.11	0	4.21	95.79	0	2.7	93.4
SASAN UMTPP	5	660	5554.85	0	2.78	97.22	0	1.63	96.1
SASAN UMTPP	6	660	5276.73	6.65	0.51	92.84	0	2.1	91.3
SASAN UMTPP		3960	31792.52	2.53	4.1	93.38	0	2.04	91.65
NIWARI TPP	1	45	87.88	0	68.75	31.25	32.96	8.96	22.3
NIWARI TPP		45	87.88	0	68.75	31.25	32.96	8.96	22.29
SEIONI TPP	1	600	1666.87	2.74	51.25	46.01	0	14.29	31.7
SEIONI TPP		600	1666.87	2.74	51.25	46.01	0	14.29	31.71
NIGRI TPP	1	660	3781.1	13.06	4.25	82.7	4.25	17.3	65.4
NIGRI TPP	2	660	3907.83	0	13.38	86.62	13.38	19.03	67.6
NIGRI TPP		1320	7688.93	6.53	8.81	84.66	8.81	18.17	66.49
ANUPPUR TPP	1	600	3262.02	13.29	9.23	77.48	0	15.41	62.1
ANUPPUR TPP	2	600	2963.03	0	25.57	74.43	0.23	18.06	56.4
ANUPPUR TPP		1200	6225.05	6.65	17.4	75.95	0.11	16.74	59.22
OP JINDAL TPS	1	250	851.47	0	56.69	43.31	4.43	4.43	38.9
OP JINDAL TPS	2	250	1313.47	0	32.43	67.57	7.72	7.59	60
OP JINDAL TPS	3	250	1256.21	0	36.78	63.22	5.86	5.86	57.4
OP JINDAL TPS	4	250	800.32	0	58.51	41.49	4.95	4.95	36.5
OP JINDAL TPS		1000	4221.47	0	46.1	53.9	5.74	5.71	48.19
PATHADI TPP	1	300	1992.89	5.66	2	92.34	0	16.7	75.8
PATHADI TPP	2	300	2146.53	6.59	5.78	87.63	0	5.95	81.7
PATHADI TPP		600	4139.42	6.13	3.89	89.98	0	11.33	78.76
KASAIPALLI TPP	1	135	951.64	2.69	15.18	82.14	0	1.65	80.5
KASAIPALLI TPP	2	135	953.72	6.09	11.35	82.56	0	2.05	80.6
KASAIPALLI TPP		270	1905.36	4.39	13.26	82.35	0	1.85	80.56
RATIJA TPS	1	50	320.61	4.9	17.49	77.6	0	4.41	73.2
RATIJA TPS	2	50	422.45	0.33	1.41	98.26	0	2.17	96.4
RATIJA TPS		100	743.06	2.62	9.45	87.93	0	3.29	84.82
SWASTIK KORBA TPP	1	25	0	0	100	0	0	0	0
SWASTIK KORBA TPP		25	0	0	100	0	0	0	0
CHAKABURA TPP	2	30	224.68	3.05	6.25	90.69	0	5.42	85.5
CHAKABURA TPP		30	224.68	3.05	6.25	90.69	0	5.42	85.49
SVPL TPP	1	63	27.13	0	94.34	5.66	0	0.74	4.9
SVPL TPP		63	27.13	0	94.34	5.66	0	0.74	4.92
RAIKHEDA TPP	1	685	368.38	0	90.11	9.89	69.29	3.75	6.1
RAIKHEDA TPP	2	685	999.54	0	76.38	23.62	3.91	6.97	16.7
RAIKHEDA TPP		1370	1367.92	0	83.24	16.76	36.6	5.36	11.4
KATGHORA TPP	1	35	0	0	100	0	0	0	0
KATGHORA TPP		35	0	0	100	0	0	0	0
BALCO TPS	1	300	1394.77	20.82	7.96	71.22	0	18.15	53.1
BALCO TPS	2	300	918.3	0	48.31	51.69	0	16.74	34.9
BALCO TPS		600	2313.07	10.41	28.14	61.45	0	17.45	44.01
SALORA TPP	1	135	0	0	100	0	0	0	0
SALORA TPP		135	0	0	100	0	0	0	0
AKALTARA TPS	2	600	68.8	0	79.81	20.19	0	71.22	15.4
AKALTARA TPS	3	600	2629.77	0	29.48	70.52	0	20.49	50
AKALTARA TPS	4	600	3108.41	0	17.83	82.17	0	23.03	59.1

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
AKALTARA TPS		1800	5806.98	0	25.94	74.06	0	23.77	52.99
BARADARHA TPS	1	600	3218.18	9.22	15.94	74.84	0	13.62	61.2
BARADARHA TPS	2	600	3318.63	10.6	12.88	76.52	0	13.38	63.1
BARADARHA TPS		1200	6536.81	9.91	14.41	75.68	0	13.5	62.18
AVANTHA BHANDAR	1	600	572.13	0	86.27	13.73	0	2.85	10.9
AVANTHA BHANDAR		600	572.13	0	86.27	13.73	0	2.85	10.89
TAMNAR TPP	1	600	2041.1	0	56.47	43.53	35.37	4.7	38.8
TAMNAR TPP	2	600	3715.25	0	21.7	78.3	7.64	7.64	70.7
TAMNAR TPP	3	600	394.53	0	91.73	8.27	57.9	0.77	7.5
TAMNAR TPP	4	600	533.41	0	88.53	11.47	43.99	1.32	10.1
TAMNAR TPP		2400	6684.29	0	64.61	35.39	36.23	3.61	31.79
BANDAKHAR TPP	1	300	2223.84	5.73	7.19	87.09	0	2.55	84.6
BANDAKHAR TPP		300	2223.84	5.73	7.19	87.09	0	2.55	84.62
BINJKOTE TPP	2	300	0	0	0	100	0	0	0
BINJKOTE TPP		300	0	0	0	100	0	0	0
NAWAPARA TPP	1	300	1389.86	0	36.02	63.98	0	11.1	52.9
NAWAPARA TPP	2	300	1351.27	0	36.57	63.43	0	16.36	56
NAWAPARA TPP		600	2741.13	0	36.28	63.72	0	13.61	54.39
UCHPINDA TPP	1	360	1266.54	0	43.52	56.48	0.29	16.32	40.2
UCHPINDA TPP	2	360	121.56	0	93.87	6.13	0	2.27	3.9
UCHPINDA TPP	3	360	50.68	0	19.87	80.13	0	7.53	0
UCHPINDA TPP		1080	1438.78	0	60.33	39.67	0.12	8.99	18.9
TROMBAY TPS	5	500	3204.17	4.07	1.36	94.57	0	21.42	73.2
TROMBAY TPS	6	500	0	0	100	0	0	0	0
TROMBAY TPS	8	250	1736.33	6.77	3.08	90.15	0	10.87	79.3
TROMBAY TPS		1250	4940.5	2.98	41.16	55.86	0	10.74	45.12
DAHANU TPS	1	250	1893.21	0.87	0.85	98.28	0.85	11.83	86.4
DAHANU TPS	2	250	1641.06	8.34	5.4	86.26	5.4	11.33	74.9
DAHANU TPS		500	3534.27	4.61	3.13	92.27	3.13	11.58	80.69
JSW RATNAGIRI TPP	1	300	2106.58	0	14.51	85.49	2.47	5.41	80.2
JSW RATNAGIRI TPP	2	300	919.89	0	58.83	41.17	0	6.17	35
JSW RATNAGIRI TPP	3	300	2034.53	0	1.91	98.09	0	20.68	77.4
JSW RATNAGIRI TPP	4	300	1670.26	8.4	7.08	84.53	0	20.97	63.6
JSW RATNAGIRI TPP		1200	6731.26	2.1	20.58	77.32	0.62	13.31	64.03
WARDHA WARORA TPP	1	135	0	0	100	0	0	0	0
WARDHA WARORA TPP	2	135	0	0	100	0	0	0	0
WARDHA WARORA TPP	3	135	455.52	0	43.06	56.94	0.4	18.42	38.5
WARDHA WARORA TPP	4	135	674.18	0	15.94	84.06	0.29	27.06	57
WARDHA WARORA TPP		540	1129.7	0	64.75	35.25	0.17	11.37	23.88
MIHAN TPS	1	61.5	0	0	100	0	0	0	0
MIHAN TPS	2	61.5	0	0	100	0	0	0	0
MIHAN TPS	3	61.5	0	0	100	0	0	0	0
MIHAN TPS	4	61.5	0	0	100	0	0	0	0
MIHAN TPS		246	0	0	100	0	0	0	0
TIRORA TPS	1	660	3701.57	0	19.75	80.25	0	16.22	64
TIRORA TPS	2	660	2805.34	0	40.45	59.55	0	11.02	48.5
TIRORA TPS	3	660	3567.99	4.66	21.66	73.68	0	11.97	61.7
TIRORA TPS	4	660	3456.91	0	23.41	76.59	0	16.8	59.8
TIRORA TPS	5	660	4064.43	0	12.7	87.3	0	17	70.3
TIRORA TPS		3300	17596.24	0.93	23.6	75.47	0	14.6	60.87
BELA TPS	1	270	80.51	0	94.06	5.94	1.13	2.54	3.4
BELA TPS		270	80.51	0	94.06	5.94	1.13	2.54	3.4
GMR WARORA TPS	1	300	2000.38	0	13	87	0	10.88	76.1
GMR WARORA TPS	2	300	1745.72	0	22.82	77.18	0	10.75	66.4

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
GMR WARORA TPS		600	3746.1	0	17.91	82.09	0	10.81	71.27
AMARAVATI TPS	1	270	1213.8	0	36.2	63.8	31.71	12.48	51.3
AMARAVATI TPS	2	270	1125.88	0	44.37	55.63	26.9	8.03	47.6
AMARAVATI TPS	3	270	865	0	56.53	43.47	19.91	6.9	36.6
AMARAVATI TPS	4	270	916.6	0	54.9	45.1	32.7	6.35	38.8
AMARAVATI TPS	5	270	650.1	0	68.75	31.25	18.49	3.76	27.5
AMARAVATI TPS		1350	4771.38	0	52.15	47.85	25.94	7.5	40.35
NASIK (P) TPS	1	270	0	0	100	0	0	0	0
NASIK (P) TPS		270	0	0	100	0	0	0	0
GEPL TPP Ph-I	1	60	0	0	100	0	0	0	0
GEPL TPP Ph-I	2	60	0	0	100	0	0	0	0
GEPL TPP Ph-I		120	0	0	100	0	0	0	0
BUTIBORI TPP	1	300	1109.15	0	47.55	52.45	6.72	10.24	42.2
BUTIBORI TPP	2	300	2197.16	0	5.52	94.48	5.52	10.87	83.6
BUTIBORI TPP		600	3306.31	0	26.54	73.46	6.12	10.56	62.91
DHARIWAL TPP	1	300	258.43	1.17	80.22	18.61	75.92	8.77	9.8
DHARIWAL TPP	2	300	2134.84	0	2.68	97.32	2.68	16.09	81.2
DHARIWAL TPP		600	2393.27	0.58	41.45	57.97	40.15	12.43	45.53
SOUTHERN									
RAMAGUNDEM STPS	1	200	1433.53	4.64	2.9	92.46	0	10.64	81.8
RAMAGUNDEM STPS	2	200	1381.42	10.04	3.39	86.57	0	7.72	78.8
RAMAGUNDEM STPS	3	200	1359.96	8.28	5.38	86.34	0	8.72	77.6
RAMAGUNDEM STPS	4	500	3314.38	12.54	2.28	85.18	0	9.51	75.7
RAMAGUNDEM STPS	5	500	3739.01	0	4.31	95.69	0	10.33	85.4
RAMAGUNDEM STPS	6	500	3797.77	0	3.22	96.78	0	10.07	86.7
RAMAGUNDEM STPS	7	500	3841.58	0	4.44	95.56	0	7.86	87.7
RAMAGUNDEM STPS		2600	18867.65	4.18	3.64	92.18	0	9.34	82.84
SIMHADRI	1	500	3190.64	0	6.74	93.26	0	20.42	72.8
SIMHADRI	2	500	2571.68	15.44	5.98	78.58	0	19.86	58.7
SIMHADRI	3	500	2834.72	8.02	6.59	85.39	0	20.67	64.7
SIMHADRI	4	500	3176.67	0	4.56	95.44	0	22.92	72.5
SIMHADRI		2000	11773.71	5.87	5.97	88.17	0	20.97	67.2
KUDGI STPP	1	800	3007.62	0	15.15	84.85	0	29.36	60
KUDGI STPP	2	800	931.31	0	41.44	58.56	35.53	23.77	39
KUDGI STPP		1600	3938.93	0	22.26	77.74	9.6	27.85	54.31
NEYVELI TPS- I	1	50	285.35	5.73	7.35	86.92	0	21.78	65.1
NEYVELI TPS- I	2	50	293.95	5.8	7.19	87.01	0	19.9	67.1
NEYVELI TPS- I	3	50	289.4	7.83	4.91	87.26	0	21.19	66.1
NEYVELI TPS- I	4	50	296.48	7.68	4.77	87.56	1.37	19.87	67.7
NEYVELI TPS- I	5	50	289.62	8.34	5.76	85.91	3.94	19.78	66.1
NEYVELI TPS- I	6	50	282.48	8.39	6.27	85.34	4.3	20.85	64.5
NEYVELI TPS- I	7	100	525.13	5.17	0.58	94.25	0	34.3	59.9
NEYVELI TPS- I	8	100	577.73	5.74	1.9	92.36	0	26.41	66
NEYVELI TPS- I	9	100	539.59	1.42	3.72	94.87	0	33.27	61.6
NEYVELI TPS- I		600	3379.73	5.7	4.05	90.24	0.8	25.94	54.31
NEYVELI TPS-II	1	210	1491.1	4.88	3.18	91.93	3.18	10.88	81.1
NEYVELI TPS-II	2	210	1515.51	5.69	1	93.31	1	10.92	82.4
NEYVELI TPS-II	3	210	1195.13	25.99	3.43	70.58	3.43	5.61	65
NEYVELI TPS-II	4	210	1552.07	1.41	1.58	97.01	1.58	12.64	84.4
NEYVELI TPS-II	5	210	1488.57	6.42	1.43	92.14	1.43	11.22	80.9
NEYVELI TPS-II	6	210	1493.37	6.49	1.14	92.37	1.14	11.19	81.2
NEYVELI TPS-II	7	210	1526.81	3.32	2.13	94.55	2.13	11.56	83
NEYVELI TPS-II		1470	10262.56	7.74	1.99	90.27	10.02	10.57	79.7
NEYVELI (EXT) TPS	1	210	1651.91	1.19	0.35	98.46	0.35	8.66	89.8

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
NEYVELI (EXT) TPS	2	210	1595.24	5.52	0.95	93.54	0.95	6.82	86.7
NEYVELI (EXT) TPS		420	3247.15	3.35	0.65	96	0.65	7.74	88.26
NEYVELI TPS-II EXP	1	250	1178.58	0	30.05	69.95	0	16.14	53.8
NEYVELI TPS-II EXP	2	250	831.32	5.38	42.94	51.67	0	13.71	38
NEYVELI TPS-II EXP		500	2009.9	2.69	36.5	60.81	0	14.93	45.89
VALLUR TPP	1	500	3255.41	0	2.59	97.41	0	23.08	74.3
VALLUR TPP	2	500	3142.18	0	7.8	92.2	0	20.46	71.7
VALLUR TPP	3	500	770.13	73.46	4.74	21.79	0	4.21	17.6
VALLUR TPP		1500	7167.72	24.49	5.04	70.47	0	15.92	54.55
TUTICORIN (JV) TPP	1	500	2634.96	10.44	6.85	82.71	0	22.55	60.2
TUTICORIN (JV) TPP	2	500	2777.87	2.04	6.58	91.38	0	27.96	63.4
TUTICORIN (JV) TPP		1000	5412.83	6.24	6.71	87.05	0	25.26	61.79
KOTHAGUDEM TPS	1	60	379.12	3.32	1.91	94.77	0	22.64	72.1
KOTHAGUDEM TPS	2	60	396.99	4.14	0.74	95.12	0	19.59	75.5
KOTHAGUDEM TPS	3	60	52.26	0	87.19	12.81	0	2.86	9.9
KOTHAGUDEM TPS	4	60	400.37	4.18	0.32	95.5	0	19.33	76.2
KOTHAGUDEM TPS	5	120	714.51	3.39	2.42	94.2	0	26.23	68
KOTHAGUDEM TPS	6	120	645.61	4.78	3	92.22	1.3	30.8	61.4
KOTHAGUDEM TPS	7	120	662.79	4.26	1.56	94.18	0	31.13	63.1
KOTHAGUDEM TPS	8	120	619.42	4.61	3.7	91.69	0	32.77	58.9
KOTHAGUDEM TPS		720	3871.07	3.81	9.29	86.9	0.22	25.52	40.49
KOTHAGUDEM TPS (NEW)	1	250	1698.16	13.39	2.55	84.06	0	6.54	77.5
KOTHAGUDEM TPS (NEW)	2	250	1896.8	0	2.38	97.62	0	11.01	86.6
KOTHAGUDEM TPS (NEW)	3	500	3536.24	5.84	5.22	88.93	1.01	8.2	80.7
KOTHAGUDEM TPS (NEW)		1000	7131.2	6.27	3.84	89.89	0.51	8.48	81.41
Dr. N.TATA RAO TPS	1	210	937.54	0	38.94	61.06	4.93	10.09	51
Dr. N.TATA RAO TPS	2	210	1021.7	0	32.4	67.6	6.83	12.06	55.5
Dr. N.TATA RAO TPS	3	210	1511.74	4.66	1.87	93.46	1.87	11.28	82.2
Dr. N.TATA RAO TPS	4	210	1501.73	5.56	0.74	93.69	0.74	12.06	81.6
Dr. N.TATA RAO TPS	5	210	1491.84	0	3.35	96.65	3.35	15.55	81.1
Dr. N.TATA RAO TPS	6	210	1335.62	4.26	10.81	84.93	7.44	12.33	72.6
Dr. N.TATA RAO TPS	7	500	3021.38	7.82	9.32	82.87	6.27	13.89	69
Dr. N.TATA RAO TPS		1760	10821.55	3.95	13.16	82.89	7.23	12.7	70.19
DAMODARAM SANJEEVAIAH TPS	1	800	2540.19	0	44.94	55.06	13.05	18.81	36.2
DAMODARAM SANJEEVAIAH TPS	2	800	2399.73	2.75	42.96	54.28	15.99	20.04	34.2
DAMODARAM SANJEEVAIAH		1600	4939.92	1.38	43.95	54.67	14.52	19.43	35.24
RAMAGUNDEM - B TPS	1	62.5	474.84	0	3.2	96.8	0	10.07	86.7
RAMAGUNDEM - B TPS		62.5	474.84	0	3.2	96.8	0	10.07	86.73
KAKATIYA TPS	1	500	3492.45	6.03	4.18	89.79	0.56	10.05	79.7
KAKATIYA TPS	2	600	3899.85	7.02	4.93	88.05	0	13.85	74.2
KAKATIYA TPS		1100	7392.3	6.57	4.59	88.84	0.25	12.13	76.72
SINGARENI TPP	1	600	4606.02	0	9.92	90.08	0	2.45	87.6
SINGARENI TPP	2	600	4969.14	0	3.83	96.17	0	1.67	94.5
SINGARENI TPP		1200	9575.16	0	6.87	93.13	0	2.06	91.09
RAYALASEEMA TPS	1	210	1389.15	5.76	5.59	88.65	1.44	13.14	75.5
RAYALASEEMA TPS	2	210	1378.91	4.51	7.09	88.4	0	13.44	75
RAYALASEEMA TPS	3	210	1400.68	6.01	2.65	91.33	0	15.19	76.1
RAYALASEEMA TPS	4	210	1448.9	5.59	1.66	92.74	0	13.98	78.8
RAYALASEEMA TPS	5	210	1183.97	19.58	2.54	77.88	0	13.52	64.4
RAYALASEEMA TPS	6	600	123.09	0	0	100	0	0	0
RAYALASEEMA TPS		1650	6924.7	8.29	3.91	87.8	0.29	13.86	73.95
RAICHUR TPS	1	210	835.97	36.73	14.58	48.68	13.12	3.24	45.4
RAICHUR TPS	2	210	918.22	42.29	4.05	53.66	1.29	3.75	49.9
RAICHUR TPS	3	210	1491.32	7.77	6.49	85.75	6.49	4.68	81.1

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
RAICHUR TPS	4	210	1614.74	7.14	1.32	91.54	1.32	3.77	87.8
RAICHUR TPS	5	210	1266.15	15.68	9.9	74.41	7.54	5.59	68.8
RAICHUR TPS	6	210	1417.2	6.75	11.21	82.04	9.42	5	77
RAICHUR TPS	7	210	1423.52	8.31	8.98	82.71	3.08	5.33	77.4
RAICHUR TPS	8	250	1867.4	6.72	2.24	91.05	2.24	5.78	85.3
RAICHUR TPS		1720	10834.52	16.2	7.23	76.58	5.73	4.67	71.91
BELLARY TPS	1	500	1348.3	0	61.36	38.64	19.99	7.85	30.8
BELLARY TPS	2	500	1845.95	0	50.25	49.75	15.42	7.6	42.1
BELLARY TPS	3	700	826.89	0	77.91	22.09	44.77	13.11	20.9
BELLARY TPS		1700	4021.14	0	61.53	38.47	24.71	9.12	32.44
YERMARUS TPP	1	800	890.25	0	75.23	24.77	0	12.07	12.7
YERMARUS TPP	2	800	107.2	0	98.17	1.83	0	0.16	0
YERMARUS TPP		1600	997.45	0	86.7	13.3	0	6.12	7.12
TUTICORIN TPS	1	210	711.24	4.48	49.95	45.57	49.95	6.91	38.7
TUTICORIN TPS	2	210	1034.92	2.79	33.19	64.01	33.19	7.76	56.3
TUTICORIN TPS	3	210	1000.44	3.47	32.69	63.84	32.69	9.46	54.4
TUTICORIN TPS	4	210	1328.47	3.74	10.91	85.35	10.91	13.14	72.2
TUTICORIN TPS	5	210	1172.11	4.15	20.54	75.32	20.54	11.6	63.7
TUTICORIN TPS		1050	5247.18	3.72	29.46	66.82	29.46	9.77	57.05
METTUR TPS	1	210	1163.75	3.96	28.19	67.85	6.92	4.59	63.3
METTUR TPS	2	210	1392.92	0	20.18	79.82	9.45	4.1	75.7
METTUR TPS	3	210	1237.59	4	23.16	72.84	8.74	5.56	67.3
METTUR TPS	4	210	1313.48	12.16	10.18	77.66	10.18	6.26	71.4
METTUR TPS		840	5107.74	5.03	20.43	74.54	10.01	5.13	69.41
METTUR TPS - II	1	600	2450.86	9.85	20.65	69.51	5.64	22.88	46.6
METTUR TPS - II		600	2450.86	9.85	20.65	69.51	5.64	22.88	46.63
NORTH CHENNAI TPS	1	210	1366.46	5.83	10.42	83.75	7.09	9.47	74.3
NORTH CHENNAI TPS	2	210	1378.33	0	15.3	84.7	13.19	9.78	74.9
NORTH CHENNAI TPS	3	210	1459.94	4.77	7.86	87.37	5.79	8.01	79.4
NORTH CHENNAI TPS	4	600	3373.37	9.11	11.35	79.53	6.81	15.35	64.2
NORTH CHENNAI TPS	5	600	2484.68	4.51	36.74	58.74	5.87	11.47	47.3
NORTH CHENNAI TPS		1830	10062.78	5.68	19.62	74.69	7.15	11.92	62.77
SIMHAPURI TPS	1	150	0	0	100	0	100	0	0
SIMHAPURI TPS	2	150	0	0	100	0	100	0	0
SIMHAPURI TPS	3	150	5.82	0	99.37	0.63	99.37	0.19	0.4
SIMHAPURI TPS	4	150	19.2	0	98.29	1.71	98.29	0.24	1.5
SIMHAPURI TPS		600	25.02	0	99.42	0.58	99.42	0.11	0.48
THAMMINAPATNAM TPS	1	150	185.84	0	81.8	18.2	81.4	4.06	14.1
THAMMINAPATNAM TPS	2	150	401.46	0	58.33	41.67	12.22	11.11	30.6
THAMMINAPATNAM TPS		300	587.3	0	70.07	29.93	46.81	7.59	22.35
VIZAG TPP	1	520	1874.04	0	41.15	58.85	38.18	17.71	41.1
VIZAG TPP	2	520	1452.1	0	51.69	48.31	41.52	16.43	31.9
VIZAG TPP		1040	3326.14	0	46.42	53.58	39.85	17.07	36.51
PAINAMPURAM TPP	1	660	4935.46	0	6.08	93.92	0	8.55	85.4
PAINAMPURAM TPP	2	660	4898.12	4.91	3.97	91.12	0	6.4	84.7
PAINAMPURAM TPP		1320	9833.58	2.45	5.03	92.52	0	7.48	85.04
SGPL TPP	1	660	4522.72	5.8	6.71	87.49	0	9.26	78.2
SGPL TPP	2	660	4447.87	4.84	5.28	89.88	0	12.95	76.9
SGPL TPP		1320	8970.59	5.32	6	88.68	0	11.1	77.58
TORANGALLU TPS(SBU-I)	1	130	857.04	0	19.21	80.79	14.81	5.53	75.3
TORANGALLU TPS(SBU-I)	2	130	818.02	4.97	10.64	84.4	10.64	12.56	71.8
TORANGALLU TPS(SBU-I)		260	1675.06	2.48	14.92	82.59	12.72	9.05	73.54
TORANGALLU TPS(SBU-II)	3	300	1448.09	6.81	16.44	76.75	16.44	21.64	55.1
TORANGALLU TPS(SBU-II)	4	300	890.01	0	49.27	50.73	23.41	16.86	33.9

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
TORANGALLU TPS(SBU-II)		600	2338.1	3.4	32.86	63.74	19.92	19.25	44.48
UDUPI TPP	1	600	3046.97	0	28.52	71.48	0	13.51	58
UDUPI TPP	2	600	3134.35	0	28.88	71.12	0	11.49	59.6
UDUPI TPP		1200	6181.32	0	28.7	71.3	0	12.5	58.8
TUTICORIN (P) TPP	1	150	0	0	100	0	0	0	0
TUTICORIN (P) TPP	2	150	0	0	100	0	0	0	0
TUTICORIN (P) TPP		300	0	0	100	0	0	0	0
MUTHIARA TPP	1	600	1242.1	0	67.21	32.79	22.27	9.16	23.6
MUTHIARA TPP	2	600	2664.14	0	30.46	69.54	18.88	18.85	50.7
MUTHIARA TPP		1200	3906.24	0	48.84	51.16	20.57	14	37.16
NEYVELI TPS(Z)	1	250	1025.27	0	25.39	74.61	25.39	29.43	46.8
NEYVELI TPS(Z)		250	1025.27	0	25.39	74.61	25.39	29.43	46.82
ITPCL TPP	1	600	3216.14	14.36	5.86	79.78	0.31	18.59	61.2
ITPCL TPP	2	600	2508.15	0	42.81	57.19	32.09	9.48	47.7
ITPCL TPP		1200	5724.29	7.18	24.33	68.49	16.2	14.03	54.45
EASTERN									
PATRATU TPS	4	40	0	0	14.02	85.98	0	0	0
PATRATU TPS	6	90	0	0	14.02	85.98	0	0	0
PATRATU TPS	7	105	0	0	14.02	85.98	0	0	0
PATRATU TPS	9	110	0	0	14.02	85.98	0	0	0
PATRATU TPS	10	110	0	0	14.02	85.98	0	0	0
PATRATU TPS		455	0	0	14.02	85.98	0	0	0
BARAUNI TPS	6	105	0	100	0	0	0	0	0
BARAUNI TPS	7	105	39.44	0	94.28	5.72	0	1.43	4.3
BARAUNI TPS		210	39.44	50	47.14	2.86	0	0.72	2.14
MUZAFFARPUR TPS	1	110	466.3	0	40.03	59.97	0	11.58	48.4
MUZAFFARPUR TPS	2	110	282.64	9.98	51.79	38.23	0.56	8.9	29.3
MUZAFFARPUR TPS	3	195	489.03	0	60.19	39.81	0	11.18	28.6
MUZAFFARPUR TPS	4	195	512.64	0	47.16	52.84	0.83	14.77	38.1
MUZAFFARPUR TPS		610	1750.61	1.96	51.19	46.85	0.33	11.75	35.1
BARH II	4	660	4948.61	0	3.63	96.37	0	10.77	85.6
BARH II	5	660	4323.74	9.04	3.8	87.16	0	12.38	74.8
BARH II		1320	9272.35	4.52	3.72	91.76	0	11.57	80.19
NABI NAGAR TPP	1	250	892.68	0	43.38	56.62	0	15.9	40.8
NABI NAGAR TPP	2	250	168.26	0	82.97	17.03	57.15	14.76	9.2
NABI NAGAR TPP		500	1060.94	0	57.93	42.07	21	15.48	29.16
KAHALGAON TPS	1	210	1322.54	10.76	3.9	85.34	0	13.45	71.9
KAHALGAON TPS	2	210	1425.82	7.39	1.36	91.25	0	13.74	77.5
KAHALGAON TPS	3	210	1564.76	0	1.48	98.52	0	13.46	85.1
KAHALGAON TPS	4	210	1406.64	9.66	2.31	88.03	0	11.56	76.5
KAHALGAON TPS	5	500	3677.64	0	1.77	98.23	0	14.27	84
KAHALGAON TPS	6	500	3264.34	8.76	2.69	88.56	0	14.03	74.5
KAHALGAON TPS	7	500	3654.91	0	2.45	97.55	0	14.1	83.4
KAHALGAON TPS		2340	16316.65	4.37	2.29	93.35	0	13.75	79.6
CHANDRAPURA(DVC) TPS	2	130	109.32	0	34.16	65.84	0	8.2	22.9
CHANDRAPURA(DVC) TPS	3	130	211.79	0	75.09	24.91	0	6.32	18.6
CHANDRAPURA(DVC) TPS	7	250	1895.67	0	4.93	95.07	0	8.51	86.6
CHANDRAPURA(DVC) TPS	8	250	1859.04	0	5.23	94.77	0	9.88	84.9
CHANDRAPURA(DVC) TPS		760	4075.82	0	20.69	79.31	0	8.57	67.97
DURGAPUR TPS	4	210	947.1	0	38.32	61.68	1.89	10.19	51.5
DURGAPUR TPS		210	947.1	0	38.32	61.68	1.89	10.19	51.48
BOKARO `B` TPS	1	210	25.23	0	36.72	63.28	0	1.28	3.3
BOKARO `B` TPS	2	210	167.77	6.38	18.94	74.68	9.41	8.34	21.8
BOKARO `B` TPS	3	210	380.94	0	72.41	27.59	15.07	6.88	20.7

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
BOKARO `B` TPS		630	573.94	1.45	52.08	46.47	10.34	5.94	16.97
BOKARO TPS `A` EXP	1	500	2924.25	0.98	11.75	87.27	6.03	20.51	66.8
BOKARO TPS `A` EXP		500	2924.25	0.98	11.75	87.27	6.03	20.51	66.76
MEJIA TPS	1	210	1072.16	0	33.82	66.18	8.17	7.89	58.3
MEJIA TPS	2	210	1139.54	0	29.87	70.13	24.65	8.18	61.9
MEJIA TPS	3	210	1296.74	0	20.68	79.32	13.92	8.83	70.5
MEJIA TPS	4	210	913.37	0	43.98	56.02	19.43	6.37	49.7
MEJIA TPS	5	250	810.79	4.51	52.62	42.87	5.85	5.85	37
MEJIA TPS	6	250	1876.92	0	4.64	95.36	4.64	9.66	85.7
MEJIA TPS	7	500	3574.34	0	5.61	94.39	5.61	12.79	81.6
MEJIA TPS	8	500	1794.62	0	53.1	46.9	5.93	5.93	41
MEJIA TPS		2340	12478.48	0.48	30.18	69.34	11.6	8.46	60.88
KODARMA TPP	1	500	2585.05	0	26.35	73.65	14.63	14.63	59
KODARMA TPP	2	500	3326.25	0	8.1	91.9	8.36	15.96	75.9
KODARMA TPP		1000	5911.3	0	17.23	82.77	11.36	15.29	67.48
DURGAPUR STEEL TPS	1	500	2977.2	13.47	5.6	80.93	5.6	12.96	68
DURGAPUR STEEL TPS	2	500	3526.65	0	4.72	95.28	4.72	14.76	80.5
DURGAPUR STEEL TPS		1000	6503.85	6.74	5.16	88.1	5.16	13.86	74.24
RAGHUNATHPUR TPP	1	600	1598.43	17.41	33.65	48.93	0	18.52	30.4
RAGHUNATHPUR TPP	2	600	681.04	0	78.96	21.04	0	8.08	13
RAGHUNATHPUR TPP		1200	2279.47	8.71	56.31	34.98	0	13.3	21.68
TALCHER (OLD) TPS	1	60	520.47	3.98	0.9	95.12	0	0	99
TALCHER (OLD) TPS	2	60	514.17	4.01	1.25	94.74	0	0.09	97.8
TALCHER (OLD) TPS	3	60	507.1	3.71	0.97	95.31	0	0.94	96.5
TALCHER (OLD) TPS	4	60	516.4	4.01	0.84	95.15	0	0	98.2
TALCHER (OLD) TPS	5	110	802.17	0	16.03	83.97	0	0.9	83.2
TALCHER (OLD) TPS	6	110	920.4	2.62	1.39	95.99	0	0.81	95.5
TALCHER (OLD) TPS		460	3780.71	2.68	4.68	92.64	0	0.54	93.82
TALCHER STPS	1	500	3586.04	9.9	3.65	86.44	0	4.75	81.9
TALCHER STPS	2	500	4093.17	0	2.7	97.3	0	3.99	93.5
TALCHER STPS	3	500	3573.56	11.32	0	88.68	0	7.09	81.6
TALCHER STPS	4	500	3571.36	12.45	0.59	86.96	0	5.42	81.5
TALCHER STPS	5	500	4080.02	0	0.33	99.67	0	6.52	93.2
TALCHER STPS	6	500	4072.84	0	1.95	98.05	0	5.12	93
TALCHER STPS		3000	22976.99	5.61	1.54	92.85	0	5.48	87.43
FARAKKA STPS	1	200	1304.63	4.63	2.47	92.9	0	18.44	74.5
FARAKKA STPS	2	200	1360.42	0	3.66	96.34	0	18.69	77.6
FARAKKA STPS	3	200	1301.4	8.15	2.35	89.5	0	15.22	74.3
FARAKKA STPS	4	500	3191.05	5.75	4.19	90.06	0	17.2	72.9
FARAKKA STPS	5	500	3071.97	10.17	2.65	87.19	0	17.05	70.1
FARAKKA STPS	6	500	3127.44	1.35	7.18	91.47	0	20.06	71.4
FARAKKA STPS		2100	13356.91	5.33	4.15	90.53	0	17.92	72.61
TENUGHAT TPS	1	210	979.36	0	31.94	68.06	13.86	14.82	53.2
TENUGHAT TPS	2	210	953.95	0	37.85	62.15	20.79	10.29	51.9
TENUGHAT TPS		420	1933.31	0	34.9	65.1	17.33	12.56	52.55
IB VALLEY TPS	1	210	1460.78	6.44	2.24	91.31	0.97	11.9	79.4
IB VALLEY TPS	2	210	1379.55	13.67	1.68	84.65	1.68	9.66	75
IB VALLEY TPS		420	2840.33	10.06	1.96	87.98	1.32	10.78	77.2
BANDEL TPS	1	60	263.78	0	23.73	76.27	0	26.08	50.2
BANDEL TPS	2	60	266.5	5.25	17.62	77.13	0.15	26.43	50.7
BANDEL TPS	3	60	69.89	0	76.55	23.45	0	0	13.3
BANDEL TPS	4	60	91.01	0	72.4	27.6	0	0	17.3
BANDEL TPS	5	210	1234.85	2.2	14.31	83.49	1.88	16.36	67.1
BANDEL TPS		450	1926.03	1.73	32.05	66.22	0.9	14.64	48.86

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
SANTALDIH TPS	5	250	860.68	0	59.53	40.47	0	1.17	39.3
SANTALDIH TPS	6	250	2080.91	0	2.05	97.95	0	2.94	95
SANTALDIH TPS		500	2941.59	0	30.79	69.21	0	2.06	67.16
KOLAGHAT TPS	1	210	950.35	2.1	13	84.9	0.34	33.24	51.7
KOLAGHAT TPS	2	210	611.61	0	42.99	57.01	0.24	23.76	33.2
KOLAGHAT TPS	3	210	0	0	100	0	0	0	0
KOLAGHAT TPS	4	210	1103.67	12.97	2.18	84.85	2.18	24.85	60
KOLAGHAT TPS	5	210	1523.91	0	9	91	3.16	8.16	82.8
KOLAGHAT TPS	6	210	560.3	0	65.01	34.99	1.41	4.53	30.5
KOLAGHAT TPS		1260	4749.84	2.51	38.7	58.79	1.39	15.76	43.03
BAKRESWAR TPS	1	210	1353.11	10.14	7.12	82.75	7.12	9.19	73.6
BAKRESWAR TPS	2	210	1623.32	0	0.74	99.26	0.74	11.01	88.2
BAKRESWAR TPS	3	210	1486.11	0	7.83	92.17	7.83	11.39	80.8
BAKRESWAR TPS	4	210	1448.83	8.2	5.68	86.11	5.68	7.35	78.8
BAKRESWAR TPS	5	210	1575.4	0	6.62	93.38	6.62	7.74	85.6
BAKRESWAR TPS		1050	7486.77	3.67	5.6	90.73	5.6	9.34	81.4
SAGARDIGHI TPS	1	300	1384.64	7.24	32.11	60.65	0.24	7.96	52.7
SAGARDIGHI TPS	2	300	1609.32	0	27.75	72.25	0	11.01	61.2
SAGARDIGHI TPS	3	500	1943.09	0.35	25.68	73.97	0	29.61	44.4
SAGARDIGHI TPS	4	500	1404.7	0	44.92	55.08	0	23.01	32.1
SAGARDIGHI TPS		1600	6341.75	1.47	33.28	65.25	0.05	20	45.25
D.P.L. TPS	6	110	1.99	0	99.07	0.93	0	0.72	0.2
D.P.L. TPS	7	300	1517.08	0	22	78	0.21	20.26	57.7
D.P.L. TPS	8	250	1005.39	0	45.85	54.15	0	8.24	45.9
D.P.L. TPS		660	2524.46	0	43.88	56.12	0.09	12.45	43.66
JOJOBERA TPS	2	120	815.39	3.09	0.04	96.87	0.04	19.3	77.6
JOJOBERA TPS	3	120	802.99	1.73	0.5	97.77	0.5	21.39	76.4
JOJOBERA TPS		240	1618.38	2.41	0.27	97.32	0.27	20.34	76.98
MAHADEV PRASAD STPP	1	270	2106.15	0	7.51	92.49	0	3.44	89
MAHADEV PRASAD STPP	2	270	803.77	0	63.07	36.93	0	2.95	34
MAHADEV PRASAD STPP		540	2909.92	0	35.29	64.71	0	3.2	61.52
MAITHON RB TPP	1	525	3165.07	16.94	6.42	76.64	0	7.82	68.8
MAITHON RB TPP	2	525	4180.27	0	1.73	98.27	0	7.37	90.9
MAITHON RB TPP		1050	7345.34	8.47	4.08	87.45	0	7.6	79.86
STERLITE TPP	1	600	0	0	0	100	0	0	0
STERLITE TPP	2	600	1074.47	0	66.52	33.48	0.88	14.44	20.4
STERLITE TPP	3	0	0	0	0	100	0	0	0
STERLITE TPP	4	0	0	0	0	100	0	0	0
STERLITE TPP		1200	1074.47	0	39.94	60.06	0.53	8.67	12.27
KAMALANGA TPS	1	350	1397.18	0	45.42	54.58	0	9.01	45.6
KAMALANGA TPS	2	350	2290.42	0	14.58	85.42	0	10.71	74.7
KAMALANGA TPS	3	350	1896.39	0	13.62	86.38	0	24.53	61.9
KAMALANGA TPS		1050	5583.99	0	24.54	75.46	0	14.75	60.71
DERANG TPP	1	600	1318.98	0	68	32	0	6.9	25.1
DERANG TPP	2	600	2338.44	2.04	34.18	63.78	0	19.29	44.5
DERANG TPP		1200	3657.42	1.02	51.09	47.89	0	13.1	34.79
UTKAL TPP (IND	1	350	0	0	100	0	0	0	0
UTKAL TPP (IND		350	0	0	100	0	0	0	0
TITAGARH TPS	1	60	0	0	100	0	0	0	0
TITAGARH TPS	2	60	0	0	100	0	0	0	0
TITAGARH TPS	3	60	0	0	100	0	0	0	0
TITAGARH TPS	4	60	0	0	100	0	0	0	0
TITAGARH TPS		240	0	0	100	0	0	0	0
SOUTHERN REPL. TPS	1	67.5	127.04	4.38	17.36	78.26	17.36	56.77	21.5

Unit wise and Station wise Performance Indices for 2017-18

NAME OF UNIT/ SYSTEM	UNIT NO.	CAP (MW)	GEN (MW)	P.M. (%)	F.O. (%)	Op.Av. (%)	R.S.D. + L.S.D (%)	P.U. incl. LSD (%)	PLF (%)
SOUTHERN REPL. TPS	2	67.5	176.72	0	25.19	74.81	25.19	44.92	29.9
SOUTHERN REPL. TPS		135	303.76	2.19	21.28	76.53	21.28	50.85	25.69
BUDGE BUDGE TPS	1	250	2084.79	0	1.15	98.85	1.15	3.93	95.2
BUDGE BUDGE TPS	2	250	1907.36	8.53	0.23	91.24	0.23	4.18	87.1
BUDGE BUDGE TPS	3	250	2041.24	5.93	0.33	93.74	0.33	1.33	93.2
BUDGE BUDGE TPS		750	6033.39	4.82	0.57	94.61	0.57	3.14	91.83
HALDIA TPP	1	300	2229.47	3.37	0.13	96.5	0.13	11.67	84.8
HALDIA TPP	2	300	2296.42	0	0.56	99.44	0.56	12.06	87.4
HALDIA TPP		600	4525.89	1.69	0.34	97.97	0.34	11.86	86.11
HIRANMAYE TPP	1	150	27.48	0	100	0	0	0	0
HIRANMAYE TPP	2	150	0	0	100	0	0	0	0
HIRANMAYE TPP		300	27.48	0	100	0	0	0	0
NORTH EASTERN									
BONGAIGAON TPP	1	250	1037.35	33.76	4.05	62.19	0	14.82	47.4
BONGAIGAON TPP	2	250	694.82	0	8.76	91.24	0	16.69	70.9
BONGAIGAON TPP		500	1732.17	23.88	5.43	70.69	0	15.37	54.24
CHANDRAPUR(ASSAM) TPS	1	30	0	0	100	0	0	0	0
CHANDRAPUR(ASSAM) TPS	2	30	0	0	100	0	0	0	0
CHANDRAPUR(ASSAM) TPS		60	0	0	100	0	0	0	0
Grand Total		194336.5	983896.89	4.3	25.07	70.63	7.7	10.99	59.22

SECTION-3 PLANNED MAINTENANCE

- 3.1** Planned Maintenance covers maintenance works that are planned/scheduled in advance (before the beginning of the year). The Planned Maintenance works carried out can be broadly classified as – Annual Maintenance (generally covers boiler and auxiliaries) and Capital Maintenance which covers both Boiler and Turbine Generator. The Capital Maintenance is generally carried out once in 5 to 6 years. Generally, a five/six year rolling plan is followed for Planned Maintenance which leads to an average annual outage of 28 days for units of 200/210/500 MW capacity. Other Planned Maintenance works include Boiler inspection/recertification, Renovation & Modernization and Other activities like Performance Guarantee (PG) Test of new units & Residual Life Assessment (RLA) studies on old units.
- 3.2** During 2017-18, the total duration for carrying out various Planned Maintenance works was **2,73,067.21** hours. Out of total **633** units analyzed for the year, Capital Maintenance was carried out on **14 generating** units and Annual Maintenance was carried out on **199** generating units. The All India energy loss during the year, on account of Planned Maintenance actually carried out was **4.3%** (of the maximum possible generation) against a program of **4.09%** (considering all units scheduled for Planned Maintenance). The average duration of unit outage for Boiler inspection/ Re-Certification was **8** days which is less than ⁵Scheduled Duration of 9 days. The average duration of unit outage for Capital Maintenance was **57** days which was higher than the schedule duration of 50 days and is considerably higher than the last year (2016-17) duration of 47 days. However, if two units which involved very high capital maintenance duration are ignored than the average duration for 12 units works out to be 47 days. The details of Planned Maintenance of thermal stations for the year

Work	No. of Units	Capacity of the units involved (MW)	Average duration (Days)	Energy Loss (MU)	Energy loss as % of max possible generation of Overall Capacity
1. Annual Maintenance					
i) Programme	273	72721	22	41184.17	2.49
ii) Actual	199	57019.5	26	39594.31	2.40
2. Capital Maintenance					
i) Programme	50	16055	50	18129.84	1.1
ii) Actual	14	3520	57	4799.73	0.29
3. Total Annual and Capital Maintenance					
i) Programme	323	88776	27	59314.01	3.59
ii) Actual	213	60539.5	28	44394.03	2.69
4. R&M Works					
i) Programme	5	945	208	5082.84	0.31
ii) Actual	9	1539	227	7393.1	0.45
5. Boiler Inspection/ Re-Certification					
i) Programme	55	13127.5	9	3126.6	0.19
ii) Actual	35	9880	8	2351.26	0.14
6. Other Planned Maintenance including PG Test of new units & RLA studies					

⁵ Scheduled/Programme/ durations are based on average of Schedule/Programme durations for individual units furnished by Stations.

Work	No. of Units	Capacity of the units involved (MW)	Average duration (Days)	Energy Loss (MU)	Energy loss as % of max possible generation of Overall Capacity
ii) Actual	32	9950	94	16766.43	1.02
7. Grand Total					
i) Programme	383	102848.5	26	67523.45	4.09
ii) Actual**	289	81908.5	39	70904.82	4.29
* Other maintenance work includes miscellaneous Preventative Maintenance, short duration Planned Maintenance and R&M works.					
** Grand Total may not match with sub totals due to duplication of units.					

3.3 Annual Maintenance was carried out on **199** units, out of **273** units scheduled for Annual Maintenance during 2017-18, - thus **72.89%** of the thermal units scheduled for Annual Maintenance actually carried out Annual Maintenance. Capital Maintenance was carried out on **14** units out of total **50** units scheduled - thus only **28%** units scheduled for Capital Maintenance actually carried out Capital Maintenance. Actual Planned Maintenance figures include all such units, which first went under forced outage, & subsequently Annual/Capital Maintenance was taken up on them. Details of units scheduled/programmed for Annual Maintenance and Capital Maintenance and the numbers actually taken out during 2017-18 are given below: -

Particulars	Annual Maintenance				Capital Maintenance			
	2014-15	2015-16	2016-17	2017-18	2014-15	2015-16	2016-17	2017-18
Nos. Programmed for overhaul	242	283	233	273	84	65	50	50
Nos. actually taken out including those taken unscheduled	205	226	183	199	18	22	29	14
Percentage of Program	84.71%	79.86%	78.54%	72.89%	21.43%	33.85%	58%	28%

The Unit wise details of Planned Maintenance durations during 2017-18 are given in **Annexure 3.1**. The maintenance duration mentioned are the duration during the year 2017-18, though maintenance works on certain units had started in the previous year (before 1-4-2017) or have continued beyond the current year (beyond 31-03-2018) thus indicating very low maintenance durations for some of the units. However, for computing the average actual maintenance durations, the total duration of Planned Maintenance for such units have been taken.

In some cases, the Planned Maintenance has been done in more than one outages – short outage for exploratory works and then actual maintenance and so very short outages are also seen. Also certain units taken exceptionally long to complete maintenance.

3.4 CAPACITY GROUPWISE MAINTENANCE (NUMBER OF UNITS)

3.4.1 The All India capacity group wise, Planned Maintenance details in terms of number of units Scheduled for Planned Maintenance and actually taken out for Planned Maintenance during the year 2017-18 are given below:

Particulars	660-800	490-600	300-360	250-270	210-210	195-200	100-150	25-99	Total
	MW	MW	MW	MW	MW	MW	MW	MW	
A. Annual Maintenance									
No. Programmed for Overhaul	16	50	9	32	74	12	46	34	273
No. Actually taken out	14	44	9	18	49	12	24	29	199
B. Capital Maintenance									
No. Programmed for Overhaul	6	11	2	3	17	2	3	6	50
No. Actually taken out	0	1	3	2	7	0	1	0	14

3.4.2 Region-wise details of Units taken for Planned Maintenance during 2017-18 are furnished below:

No. of Units taken for Maintenance in the Region													
Capacity Group (MW)	AM/CM	Northern		Western		Southern		Eastern		North -East		All India	
		Program	Actual	Program	Actual	Program	Actual	Program	Actual	Program	Actual	Program	Actual
660-800	A.M.	2	2	12	8	1	3	1	1	0	0	16	14
	C.M.	3	0	3	0	0	0	0	0	0	0	6	0
490-600	A.M.	11	8	13	16	20	13	6	7	0	0	50	44
	C.M.	2	0	2	1	1	0	6	0	0	0	11	1
300-360	A.M.	1	3	4	3	1	1	3	2	0	0	9	9
	C.M.	1	1	1	2	0	0	0	0	0	0	2	3
250-270	A.M.	13	5	11	8	5	2	3	3	0	1	32	18
	C.M.	2	1	0	0	0	1	1	0	0	0	3	2
210	A.M.	14	2	15	14	30	27	15	6	0	0	74	49
	C.M.	3	0	5	5	6	1	3	1	0	0	17	7
195-200	A.M.	7	4	3	3	2	3	0	2	0	0	12	12
	C.M.	0	0	0	0	0	0	2	0	0	0	2	0
100-150	A.M.	9	5	18	9	13	7	6	3	0	0	46	24
	C.M.	1	0	1	0	1	0	0	1	0	0	3	1
25-99	A.M.	11	10	8	5	9	9	6	5	0	0	34	29
	C.M.	0	0	0	0	2	0	4	0	0	0	6	0
Overall Capacity	A.M.	68	39	84	66	81	65	40	29	0	1	273	199
	C.M.	12	2	12	8	10	2	16	2	0	0	50	14

A.M. – Annual Maintenance (Boiler Overhaul) C.M. – Capital Maintenance (Boiler and Turbine-Generator)

3.5 Duration of Annual Maintenance / Capital Maintenance

3.5.1 Capacity group wise Maintenance duration

Capacity Group wise details of average duration of Annual Maintenance and Capital Maintenance vis-à-vis program for the years 2017-18 at national level are given below:-

Average Duration (in days)				
Capacity Group (MW)	Annual Maintenance		Capital Maintenance	
	Program	Actual	Program	Actual
	2017-18		2017-18	
660-800	22	33	54	0
490-600	25	31	39	50
300-360	24	20	52	40
250-270	23	35	44	78
210-210	24	31	49	66
195-200	23	37	35	0
100-150	20	19	37	120
25-99	17	22	79	0
OVERALL CAPACITY	22	26	50	57

3.5.2 Region-wise actual duration of Annual Maintenance & Capital Maintenance against programmed duration for the year 2017-18 is indicated in the following tables:

Average Duration of Annual Maintenance (in days) in the Region during 2017-18								
Capacity in MW	Northern Region		Western Region		Southern Region		Eastern Region	
	Program	Actual	Program	Actual	Program	Actual	Program	Actual
660-800	22	42	27	36	11	19	30	30
490-600	25	18	25	36	24	32	24	37
300-360	22	17	27	22	12	25	25	19
250-270	23	39	22	23	23	22	22	23
210-210	23	32	26	29	23	20	24	34
195-200	22	32	22	38	28	28	24	24
100-150	24	19	20	24	17	17	24	16
25-99	14	31	19	18	17	22	16	15
OVERALL CAPACITY	22	27	24	29	21	23	23	27

Average Duration of Capital Maintenance (in days) in the Region during 2017-18								
Capacity in MW	Northern Region		Western Region		Southern Region		Eastern Region	
	Program	Actual	Program	Actual	Program	Actual	Program	Actual
660-800	38	**	70	**	0	**	0	**
490-600	40	**	38	50	37	**	40	**
300-360	62	59	41	30	0	**	0	**
250-270	45	108	0	**	0	49	41	**
210-210	67	**	56	74	41	44	35	50
195-200	0	**	0	**	0	**	35	**
100-150	35	**	30	**	46	**	0	120
25-99	0	**	0	**	40	**	99	**

Average Duration of Annual Maintenance (in days) in the Region during 2017-18								
Capacity in MW	Northern Region		Western Region		Southern Region		Eastern Region	
	Program	Actual	Program	Actual	Program	Actual	Program	Actual
OVERALL CAPACITY	49	84	53	60	41	47	53	31

**** - No Maintenance Undertaken**

3.5.3 SECTOR WISE MAINTENANCE DURATION

The average duration of Annual Maintenance and Capital Maintenance during last four years in different sectors in the country are shown below:

Sector	Average Duration (Days)				
	AM/CM	17-18	16-17	15-16	14-15
		Actual	Actual	Actual	Actual
CENTRAL	A.M.	27	27	28	33
	C.M.	**	**	33	52
PVT IPP	A.M.	27	35	29	29
	C.M.	24	41	54	25
PVT UTILITY	A.M.	22	14	49	27
	C.M.	**	**	**	**
STATE Sector	A.M.	26	39	29	28
	C.M.	66	49	37	38

** - No maintenance Undertaken

3.5.4 REGION WISE MAINTENANCE DURATION

Region wise details of the number of units, aggregate capacity and Planned Maintenance of thermal generating units carried out during the year 2017-18 is given below:

REGION	Units considered in the review		Planned Maintenance carried out on units				
	No.	Capacity (MW)	No	Capacity (MW)	Duration (Hrs.)	Energy Loss (MU)	Energy Loss as % of Max. Poss. gen of Total Region Capacity Reviewed
NORTHERN	153	42303	60	13534	90325.2	16035.14	4.38
WESTERN	233	79111	96	31662	81654.09	28123.93	4.18
SOUTHERN	122	39712.5	76	20460	56122.44	16739.97	5.04
EASTERN	121	32650	43	12377.5	42008.45	9266.52	3.37
NORTH EASTERN	4	560	1	250	2957.03	739.26	22.6
ALL INDIA	633	194336.5	276	78283.5	273067.2	70904.82	4.3

The average duration of Annual Maintenance and Capital Maintenance during the last four years in different Regions in the country are shown below:

Region	Average Region wise maintenance duration (Days)				
	AM/CM	17-18	16-17	15-16	14-15
Northern Region	A.M.	27	41	31	32
	C.M.	84	47	46	25
Western Region	A.M.	29	36	33	33
	C.M.	60	39	36	42
Southern Region	A.M.	23	25	25	25
	C.M.	47	51	42	38
Eastern Region	A.M.	27	30	31	39
	C.M.	31	53	39	40
All India	A.M.	26	33	29	31
	C.M.	57	47	40	35

3.5.5 UTILITY / ORGANISATION WISE MAINTENANCE DURATION

Sector wise/utility/Organization-wise Planned Maintenance duration of thermal generating units and energy loss due to it during the year 2017-18 is furnished below:

ORGANIZATION NAME	Number of Units	Total CAPACITY (MW)	Number of Units	Capacity	Duration (Hrs)	Energy Loss (MU)	Energy Loss as % of Max. Poss. gen. of Total Utility Capacity Reviewed
Central Sector							
APCPL	3	1500	2	500	519.48	259.74	1.98
BRBCL	2	500	0	0	0	0	0.00
DVC	23	7640	5	2060	11233.37	1696.09	2.53
K.B.U.N.L	4	610	2	220	874.61	96.2	1.96
NLC	22	3240	22	2990	11623.85	1651	5.82
NSPCL	2	500	1	250	669.63	167.41	3.82
NTECL	3	1500	1	500	6435.53	3217.76	24.49
NTPC Ltd.	106	38755	60	19810	38517.21	13469.39	4.17
NTPL	2	1000	3	1500	1093.56	546.78	6.24
PVUNL	5	455	0	0	0	0	0.00
CENTRAL Total	172	55700	96	27830	70967.24	21104.37	4.50
State Sector							
NORTHERN							
HPGCL	8	2720	2	510	2834.63	722.85	3.03
IPGPCL	2	135	0	0	0	0	0.00
PSPCL	14	2620	3	530	8775.33	1397.29	6.09
RRVUNL	21	5190	9	1905	24901.22	3984.35	8.76
UPRVUNL	28	5923	12	2334	32820.65	4920.18	9.63
WESTERN							
BECL	2	500	0	0	0	0	0.00
CSPGCL	15	3280	9	1850	4001.72	869.11	3.02
GMDCL	2	250	2	250	1584.24	198.03	9.04
GSECL	24	4480	10	1755	9747.92	1900.48	5.19

ORGANIZATION NAME	Number of Units	Total CAPACITY (MW)	Number of Units	Capacity	Duration (Hrs)	Energy Loss (MU)	Energy Loss as % of Max. Poss. gen. of Total Utility Capacity Reviewed
MAHAGENCO	31	10380	13	3930	21017.95	5827.12	6.49
MPPGCL	14	4080	9	3000	10275.15	3483.64	9.75
SOUTHERN							
APGENCO	13	3410	9	2180	5584.45	1371.29	5.56
APPDCL	2	1600	1	800	241.08	192.86	1.38
KPCL	11	3420	8	1720	11509.72	2440.56	8.99
RPCL	2	1600	0	0	0	0	0.00
SCCL	2	1200	0	0	0	0	0.00
TNGDCL	15	4320	13	3900	6378.71	2141.38	5.66
TSGENCO	14	2882.5	11	2510	5340.44	1422.59	5.63
EASTERN							
BSEB	2	210	1	105	8760	919.8	50.00
DPL	3	660	0	0	0	0	0.00
OPGC	2	420	2	420	1761.99	370.02	10.06
TVNL	2	420	0	0	0	0	0.00
WBPDC	22	4860	9	2120	4244.89	888.55	2.09
NORTH EAST							
APGPCL	2	60	0	0	0	0	0.00
State Total	253	64620.5	123	29819	159780.1	33050.1	5.97
Private Sector							
NORTHERN							
APL	2	1320	2	990	1132.17	508.35	4.40
BEPL	10	450	10	450	7382.1	332.18	8.43
GPGSL (GVK)	2	540	0	0	0	0	0.00
JhPL(HR)	2	1320	1	660	1258.4	830.54	7.18
LAPPL	2	1200	1	600	382.98	229.79	2.19
LPGCL	3	1980	0	0	0	0	0.00
NPL	2	1400	1	700	745.25	521.68	4.25
PPGCL (Jaypee)	3	1980	0	0	0	0	0.00
RPSCL	4	1200	3	900	1201.17	360.35	3.43
RWPL (JSW)	8	1080	1	135	77.78	10.5	0.11
TSPL	3	1980	0	0	0	0	0.00
WESTERN							
ACB	4	325	4	330	1036.25	111.8	3.93
AMNEPL	4	246	0	0	0	0	0.00
APL	14	7920	2	990	1132.17	508.35	0.73
BALCO	2	600	1	300	1823.52	547.06	10.41
BLAPPL	1	45	0	0	0	0	0.00
CGPL	5	4000	4	3200	4539.8	3631.84	10.36
DBPCL	2	1200	2	1200	1736.4	1041.84	9.91
DIPL	2	600	1	300	102.48	30.74	0.58
EPGL	2	1200	1	600	1200.32	720.19	6.85
ESSARPML	1	600	1	600	697.48	418.49	7.96
GCEL	2	1370	0	0	0	0	0.00
GEPL	2	120	0	0	0	0	0.00
GIPCL	4	500	1	125	564.12	70.52	1.61
GMR ENERG	2	600	0	0	0	0	0.00
IEPL	1	270	0	0	0	0	0.00
JHAPL	1	600	1	600	239.98	143.99	2.74

ORGANIZATION NAME	Number of Units	Total CAPACITY (MW)	Number of Units	Capacity	Duration (Hrs)	Energy Loss (MU)	Energy Loss as % of Max. Poss. gen. of Total Utility Capacity Reviewed
JPL	8	3400	0	0	0	0	0.00
JPPVL	4	1820	4	1820	2102.1	994.42	6.24
JSWEL	4	1200	3	730	1767.16	456.21	4.34
KWPCL	1	600	0	0	0	0	0.00
LANCO	2	600	2	600	1073.72	322.12	6.13
MBPMPL	2	1200	1	600	1164.4	698.64	6.65
MCCPL	1	300	1	300	501.73	150.52	5.73
RattanIndia	6	1620	0	0	0	0	0.00
RIL (DAHANU)	2	500	2	500	806.83	201.71	4.61
RKMPPPL	3	1080	0	0	0	0	0.00
SCPL	2	100	2	100	458.29	22.92	2.62
SKS	1	300	0	0	0	0	0.00
SPL	6	3960	2	1320	1329.05	877.17	2.53
SVPPPL	1	63	0	0	0	0	0.00
TATA PCL	3	1250	2	750	949.38	326.47	2.98
TRNE	2	600	0	0	0	0	0.00
VESPL	1	35	0	0	0	0	0.00
VIP	2	600	0	0	0	0	0.00
VVL	1	135	0	0	0	0	0.00
WPCL	7	2340	0	0	0	0	0.00
TOR. POW. (UNOSUGEN)	5	422	3	362	1397.06	168.57	4.56
SOUTHERN							
CEPL	2	1200	0	0	0	0	0.00
HNPC	2	1040	0	0	0	0	0.00
IBPIL	2	300	0	0	0	0	0.00
ITPCL	2	1200	1	600	1258.05	754.83	7.18
JSWEL	4	860	3	730	1767.16	456.21	6.06
MEL	2	300	0	0	0	0	0.00
SEIL	2	1320	1	660	429.73	283.62	2.45
SEPL	4	600	0	0	0	0	0.00
SGPL	2	1320	2	1320	932.25	615.28	5.32
ST-CMSECP	1	250	0	0	0	0	0.00
UPCL	2	1200	0	0	0	0	0.00
EASTERN							
ADHUNIK	2	540	0	0	0	0	0.00
CESC	9	1125	3	567.5	1650.35	342.58	3.48
GMR ENERG	3	1050	0	0	0	0	0.00
HEL	2	600	1	300	295.6	88.68	1.69
IBPIL	1	350	0	0	0	0	0.00
JITPL	2	1200	1	600	178.45	107.07	1.02
MPL	2	1050	1	525	1484	779.1	8.47
SEL	4	1200	0	0	0	0	0.00
TATA PCL	2	240	2	240	421.53	50.58	2.41
HYEL	2	300	0	0	0	0	0.00
Private Sector	208	74016	70	23634.5	42319.88	16750.35	2.63
GRAND TOTAL	633	194336.5	276	78283.5	273067.2	70904.82	4.30

PLANNED MAINTENANCE DURING FINANCIAL YEAR 2017-18								Annex-3.1
Name Of Station	Unit No.	Cap (in MW)	Date Of Outage	Date Of Return	Outage hrs	Outage days	MU Loss	Energy loss as % of Pos. Gen.
INDIRA GANDHI STPP	2	500	14-Oct-17	24-Oct-17	263.98	11	131.99	3.01
INDIRA GANDHI STPP	2	500	19-Nov-17	29-Nov-17	255.5	11	127.75	2.92
MAHATMA GANDHI TPS	2	660	1-Apr-17	23-May-17	1258.4	52	830.54	14.37
RAJPURA TPP	2	700	7-Apr-17	8-May-17	745.25	31	521.68	8.51
KOTA TPS	7	195	24-Sep-17	11-Oct-17	404.08	17	78.8	4.61
BARSINGSAR LIGNITE	1	125	2-Apr-17	9-Apr-17	171.92	7	21.49	1.96
BARSINGSAR LIGNITE	2	125	1-May-17	24-May-17	557.62	23	69.7	6.37
BARSINGSAR LIGNITE	2	125	29-Oct-17	5-Nov-17	172.3	7	21.54	1.97
CHHABRA TPP	1	250	15-Aug-17	25-Sep-17	992.6	41	248.15	11.33
CHHABRA TPP	2	250	2-May-17	9-Jun-17	909.7	38	227.42	10.38
CHHABRA TPP	3	250	8-Aug-17	29-Sep-17	1252.58	52	313.14	14.3
CHHABRA TPP	4	250	2-Jul-17	24-Jul-17	509.23	21	127.31	5.81
PARICHHA TPS	5	250	20-Nov-17	31-Dec-17	1000.23	42	250.06	11.42
ANPARA C TPS	2	600	29-Oct-17	14-Nov-17	382.98	16	229.79	4.37
SINGRAULI STPS	1	200	1-Apr-17	15-May-17	1065.72	44	213.14	12.17
SINGRAULI STPS	2	200	4-Mar-18	31-Mar-18	660.92	28	132.18	7.54
SINGRAULI STPS	3	200	21-Nov-17	29-Dec-17	929.28	39	185.86	10.61
SINGRAULI STPS	6	500	26-Mar-18	31-Mar-18	120.03	5	60.02	1.37
RIHAND STPS	2	500	21-Mar-18	31-Mar-18	251.58	10	125.79	2.87
RIHAND STPS	3	500	30-Aug-17	9-Sep-17	233.6	10	116.8	2.67
RIHAND STPS	6	500	3-Jul-17	31-Jul-17	673.5	28	336.75	7.69
UNCHAHAHAR TPS	1	210	25-Oct-17	28-Nov-17	798.32	33	167.65	9.11
DADRI (NCTPP)	4	210	18-Aug-17	17-Sep-17	735.63	31	154.48	8.4
DADRI (NCTPP)	6	490	3-Feb-18	27-Mar-18	1268.83	53	621.73	14.48
TANDA TPS	1	110	1-Apr-17	9-May-17	920.93	38	101.3	10.51
TANDA TPS	3	110	9-Jul-17	31-Jul-17	517.25	22	56.9	5.9
ROSA TPP Ph-I	2	300	29-Jan-18	18-Feb-18	480.67	20	144.2	5.49
ROSA TPP Ph-I	3	300	4-Dec-17	25-Dec-17	515.28	21	154.58	5.88
ROSA TPP Ph-I	4	300	1-Apr-17	9-Apr-17	205.22	9	61.57	2.34
MAQSOODPUR TPS	1	45	24-Feb-18	31-Mar-18	858.77	36	38.64	9.8
MAQSOODPUR TPS	2	45	21-Feb-18	31-Mar-18	923.82	38	41.57	10.55
KHAMBARKHERA TPS	1	45	16-Feb-18	31-Mar-18	1044.4	44	47	11.92
KHAMBARKHERA TPS	2	45	18-Feb-18	5-Mar-18	364.9	15	16.42	4.17
BARKHERA TPS	1	45	21-Feb-18	5-Mar-18	289.85	12	13.04	3.31
BARKHERA TPS	2	45	21-Feb-18	31-Mar-18	919.97	38	41.4	10.5
KUNDARKI TPS	1	45	18-Feb-18	5-Mar-18	341.4	14	15.36	3.9
KUNDARKI TPS	2	45	18-Feb-18	31-Mar-18	978.97	41	44.05	11.18
UTRAULA TPS	1	45	11-Feb-18	31-Mar-18	1156.05	48	52.02	13.2
UTRAULA TPS	2	45	12-Feb-18	5-Mar-18	503.97	21	22.68	5.75
UKAI TPS	4	200	1-Apr-17	21-May-17	1213.27	51	242.65	13.85
GANDHI NAGAR TPS	5	210	22-Jul-17	26-Aug-17	858.77	36	180.34	9.8
SIKKA REP. TPS	3	250	10-Jul-17	3-Aug-17	583	24	145.75	6.66
SIKKA REP. TPS	4	250	15-Dec-17	8-Jan-18	580.67	24	145.17	6.63
KUTCH LIG. TPS	1	70	20-Jul-17	12-Aug-17	564.75	24	39.53	6.45
KUTCH LIG. TPS	3	75	24-Aug-17	22-Sep-17	717.27	30	53.8	8.19
AKRIMOTA LIG TPS	1	125	1-Sep-17	3-Oct-17	780.17	33	97.52	8.91

PLANNED MAINTENANCE DURING FINANCIAL YEAR 2017-18								Annex-3.1
Name Of Station	Unit No.	Cap (in MW)	Date Of Outage	Date Of Return	Outage hrs	Outage days	MU Loss	Energy loss as % of Pos. Gen.
AKRIMOTA LIG TPS	2	125	30-Oct-17	2-Dec-17	804.07	34	100.51	9.18
SALAYA TPP	2	600	1-Apr-17	21-May-17	1200.32	50	720.19	13.7
SABARMATI (D-F STATIONS)	1	120	19-Oct-17	7-Nov-17	464.6	19	55.75	5.3
SABARMATI (D-F STATIONS)	2	121	9-Dec-17	20-Dec-17	250.78	10	30.34	2.86
SABARMATI (D-F STATIONS)	3	121	7-Nov-17	6-Dec-17	681.68	28	82.48	7.78
SURAT LIG. TPS	3	125	25-Jul-17	18-Aug-17	564.12	24	70.52	6.44
MUNDRA UMTTP	3	800	18-May-17	14-Jul-17	1384.57	58	1107.66	15.81
MUNDRA UMTTP	4	800	11-Sep-17	20-Oct-17	943.33	39	754.66	10.77
SATPURA TPS	8	210	1-Jul-17	2-Aug-17	770.15	32	161.73	8.79
SHRI SINGHAJI TPP	1	600	2-Oct-17	17-Nov-17	1112.72	46	667.63	12.7
KORBA-II	3	50	1-Apr-17	10-Apr-17	229.67	10	11.48	2.62
KORBA-III	1	120	1-Apr-17	3-May-17	790	33	94.8	9.02
DSPM TPS	2	250	1-Apr-17	13-Apr-17	298.07	12	74.52	3.4
KORBA-WEST TPS	1	210	18-Nov-17	6-Dec-17	430.17	18	90.34	4.91
KORBA-WEST TPS	2	210	31-Jul-17	8-Sep-17	934.45	39	196.23	10.67
KORBA-WEST TPS	4	210	23-Oct-17	20-Nov-17	659.43	27	138.48	7.53
MARWA TPS	2	500	15-Feb-18	7-Mar-18	468.73	20	234.36	5.35
SANJAY GANDHI TPS	1	210	14-Sep-17	30-Sep-17	385.5	16	80.96	4.4
SANJAY GANDHI TPS	2	210	25-Jul-17	10-Aug-17	396.13	17	83.19	4.52
SANJAY GANDHI TPS	3	210	15-Aug-17	8-Sep-17	590.85	25	124.08	6.74
SANJAY GANDHI TPS	5	500	28-Jun-17	1-Aug-17	816.7	34	408.35	9.32
BINA TPS	1	250	30-Jul-17	17-Aug-17	450.88	19	112.72	5.15
BINA TPS	2	250	1-Jul-17	22-Jul-17	507.57	21	126.89	5.79
MAHAN TPP	1	600	11-Aug-17	9-Sep-17	697.48	29	418.49	7.96
SASAN UMTTP	2	660	1-Aug-17	1-Sep-17	746.53	31	492.71	8.52
SASAN UMTTP	6	660	20-Sep-17	14-Oct-17	582.52	24	384.46	6.65
NIGRI TPP	1	660	1-Jul-17	28-Jul-17	666.77	28	440.07	7.61
ANUPPUR TPP	1	600	19-Sep-17	7-Nov-17	1164.4	49	698.64	13.29
KORBA STPS	1	200	28-Jul-17	27-Aug-17	729.38	30	145.88	8.33
KORBA STPS	2	200	2-Jan-18	3-Feb-18	777.48	32	155.5	8.88
KORBA STPS	5	500	22-Nov-17	23-Dec-17	765.65	32	382.82	8.74
KORBA STPS	7	500	30-Jun-17	24-Jul-17	575.7	24	287.85	6.57
SIPAT STPS	1	660	27-Apr-17	2-Jun-17	843.2	35	556.51	9.63
SIPAT STPS	3	660	25-Oct-17	17-Dec-17	1281.43	53	845.74	14.63
SIPAT STPS	5	500	4-Feb-18	19-Mar-18	1021.73	43	510.86	11.66
VINDHYACHAL STPS	3	210	3-Jul-17	6-Aug-17	823.07	34	172.84	9.4
VINDHYACHAL STPS	4	210	5-Mar-18	28-Mar-18	572.15	24	120.15	6.53
VINDHYACHAL STPS	5	210	8-Aug-17	31-Aug-17	560.1	23	117.62	6.39
VINDHYACHAL STPS	6	210	1-Feb-18	25-Feb-18	580.83	24	121.97	6.63
VINDHYACHAL STPS	10	500	5-Sep-17	6-Oct-17	744.48	31	372.24	8.5
VINDHYACHAL STPS	11	500	3-Aug-17	29-Aug-17	618.07	26	309.04	7.06
VINDHYACHAL STPS	12	500	1-Apr-17	21-Apr-17	499.25	21	249.62	5.7
PATHADI TPP	1	300	21-Aug-17	10-Sep-17	496.02	21	148.81	5.66
PATHADI TPP	2	300	5-Dec-17	29-Dec-17	577.7	24	173.31	6.59
KASAIPALLI TPP	1	135	1-Apr-17	10-Apr-17	235.3	10	31.77	2.69
KASAIPALLI TPP	2	135	23-Aug-17	14-Sep-17	533.35	22	72	6.09
RATIJA TPS	1	50	17-Jun-17	3-Jul-17	365.77	15	18.29	4.18
CHAKABURA TPP	2	30	1-Jan-18	9-Jan-18	213.72	9	6.41	2.44

PLANNED MAINTENANCE DURING FINANCIAL YEAR 2017-18								Annex-3.1
Name Of Station	Unit No.	Cap (in MW)	Date Of Outage	Date Of Return	Outage hrs	Outage days	MU Loss	Energy loss as % of Pos. Gen.
BHILAI TPS	2	250	4-Oct-17	1-Nov-17	669.63	28	167.41	7.64
BARADARHA TPS	1	600	5-Aug-17	7-Sep-17	807.78	34	484.67	9.22
BARADARHA TPS	2	600	22-Sep-17	31-Oct-17	928.62	39	557.17	10.6
BANDAKHAR TPP	1	300	6-May-17	27-May-17	501.73	21	150.52	5.73
KHAPARKHEDA TPS	2	210	14-Jun-17	7-Aug-17	1282.28	53	269.28	14.64
PARAS TPS	4	250	21-Jun-17	17-Jul-17	630.1	26	157.52	7.19
CHANDRAPUR(MAHARAS	4	210	22-Aug-17	30-Sep-17	913.53	38	191.84	10.43
CHANDRAPUR(MAHARAS	5	500	1-Nov-17	13-Dec-17	1005.33	42	502.66	11.48
CHANDRAPUR(MAHARAS	8	500	16-Dec-17	2-Feb-18	1174.17	49	587.08	13.4
DAHANU TPS	2	250	6-Jan-18	5-Feb-18	730.28	30	182.57	8.34
TIRORA TPS	3	660	14-Jul-17	1-Aug-17	408.27	17	269.46	4.66
KOTHAGUEDEM TPS	1	60	28-Jan-18	9-Feb-18	291.02	12	17.46	3.32
KOTHAGUEDEM TPS	2	60	22-Nov-17	7-Dec-17	362.52	15	21.75	4.14
KOTHAGUEDEM TPS	4	60	28-Oct-17	12-Nov-17	366	15	21.96	4.18
KOTHAGUEDEM TPS	5	120	8-Dec-17	20-Dec-17	296.65	12	35.6	3.39
KOTHAGUEDEM TPS	6	120	7-Oct-17	24-Oct-17	418.93	17	50.27	4.78
KOTHAGUEDEM TPS	7	120	13-Feb-18	1-Mar-18	373.27	16	44.79	4.26
KOTHAGUEDEM TPS	8	120	9-Jan-18	26-Jan-18	403.92	17	48.47	4.61
KOTHAGUEDEM TPS (NEW)	3	500	29-Jun-17	20-Jul-17	511.78	21	255.89	5.84
Dr. N.TATA RAO TPS	3	210	14-Aug-17	31-Aug-17	408.5	17	85.78	4.66
Dr. N.TATA RAO TPS	4	210	20-Jul-17	9-Aug-17	487.28	20	102.33	5.56
Dr. N.TATA RAO TPS	6	210	3-Aug-17	19-Aug-17	372.97	16	78.32	4.26
Dr. N.TATA RAO TPS	7	500	17-Jul-17	14-Aug-17	684.77	29	342.38	7.82
KAKATIYA TPS	1	500	16-Dec-17	7-Jan-18	528.18	22	264.09	6.03
KAKATIYA TPS	2	600	18-Nov-17	14-Dec-17	615.05	26	369.03	7.02
RAYALASEEMA TPS	1	210	6-Jun-17	27-Jun-17	504.73	21	105.99	5.76
RAYALASEEMA TPS	2	210	18-Sep-17	4-Oct-17	394.73	16	82.89	4.51
RAYALASEEMA TPS	3	210	22-Aug-17	13-Sep-17	526.72	22	110.61	6.01
RAYALASEEMA TPS	4	210	23-Jun-17	13-Jul-17	489.78	20	102.85	5.59
PAINAMPURAM TPP	2	660	30-Nov-17	18-Dec-17	429.73	18	283.62	4.91
RAMAGUNDEM STPS	1	200	3-Sep-17	19-Sep-17	406.72	17	81.34	4.64
RAMAGUNDEM STPS	2	200	1-Jun-17	7-Jul-17	879.65	37	175.93	10.04
RAMAGUNDEM STPS	3	200	1-Apr-17	1-May-17	725.18	30	145.04	8.28
RAMAGUNDEM STPS	4	500	20-Dec-17	3-Feb-18	1098.72	46	549.36	12.54
SIMHADRI	2	500	18-Jun-17	14-Aug-17	1352.98	56	676.49	15.44
SIMHADRI	3	500	23-Aug-17	21-Sep-17	702.15	29	351.08	8.02
SGPL TPP	1	660	7-Jul-17	28-Jul-17	508.08	21	335.33	5.8
SGPL TPP	2	660	6-Nov-17	23-Nov-17	424.17	18	279.95	4.84
RAICHUR TPS	3	210	1-Jun-17	29-Jun-17	680.25	28	142.85	7.77
RAICHUR TPS	4	210	2-Jul-17	28-Jul-17	625.63	26	131.38	7.14
RAICHUR TPS	5	210	13-Jul-17	9-Sep-17	1373.72	57	288.48	15.68
RAICHUR TPS	6	210	8-Sep-17	3-Oct-17	591.15	25	124.14	6.75
RAICHUR TPS	7	210	30-Sep-17	31-Oct-17	728.07	30	152.89	8.31
RAICHUR TPS	8	250	19-Jun-17	14-Jul-17	588.28	25	147.07	6.72
TORANGALLU TPS(SBU-I)	2	130	26-Jun-17	15-Jul-17	434.98	18	56.55	4.97
TORANGALLU TPS(SBU-II)	3	300	15-Jul-17	8-Aug-17	596.53	25	178.96	6.81
TUTICORIN TPS	1	210	28-Jun-17	14-Jul-17	392.5	16	82.42	4.48
TUTICORIN TPS	2	210	2-Feb-18	12-Feb-18	244.58	10	51.36	2.79
TUTICORIN TPS	3	210	31-May-17	12-Jun-17	303.7	13	63.78	3.47
TUTICORIN TPS	4	210	15-Jun-17	28-Jun-17	327.28	14	68.73	3.74

PLANNED MAINTENANCE DURING FINANCIAL YEAR 2017-18								Annex-3.1
Name Of Station	Unit No.	Cap (in MW)	Date Of Outage	Date Of Return	Outage hrs	Outage days	MU Loss	Energy loss as % of Pos. Gen.
TUTICORIN TPS	5	210	2-Aug-17	17-Aug-17	363.15	15	76.26	4.15
METTUR TPS	1	210	19-May-17	2-Jun-17	346.77	14	72.82	3.96
METTUR TPS	3	210	5-Jul-17	19-Jul-17	350.5	15	73.6	4
METTUR TPS	5	600	28-May-17	3-Jul-17	862.48	36	517.49	9.85
NORTH CHENNAI TPS	1	210	28-Jun-17	19-Jul-17	510.43	21	107.19	5.83
NORTH CHENNAI TPS	3	210	30-Jul-17	16-Aug-17	418.12	17	87.81	4.77
NORTH CHENNAI TPS	4	600	28-Jul-17	30-Aug-17	798.22	33	478.93	9.11
NORTH CHENNAI TPS	5	600	6-Sep-17	22-Sep-17	395.35	16	237.21	4.51
NEYVELI TPS- I	1	50	25-Aug-17	15-Sep-17	501.87	21	25.09	5.73
NEYVELI TPS- I	2	50	1-Jun-17	22-Jun-17	507.7	21	25.38	5.8
NEYVELI TPS- I	3	50	14-Jun-17	13-Jul-17	686.08	29	34.3	7.83
NEYVELI TPS- I	4	50	2-Aug-17	30-Aug-17	672.45	28	33.62	7.68
NEYVELI TPS- I	5	50	7-Sep-17	7-Oct-17	730.45	30	36.52	8.34
NEYVELI TPS- I	6	50	29-Oct-17	29-Nov-17	734.95	31	36.75	8.39
NEYVELI TPS- I	7	100	17-Jul-17	4-Aug-17	453.1	19	45.31	5.17
NEYVELI TPS- I	8	100	3-Oct-17	24-Oct-17	502.9	21	50.29	5.74
NEYVELI TPS-II	1	210	1-Sep-17	18-Sep-17	427.9	18	89.86	4.88
NEYVELI TPS-II	2	210	1-Jul-17	22-Jul-17	498.45	21	104.67	5.69
NEYVELI TPS-II	5	210	1-Aug-17	24-Aug-17	562.8	23	118.19	6.42
NEYVELI TPS-II	6	210	1-Jun-17	24-Jun-17	568.82	24	119.45	6.49
NEYVELI TPS-II	7	210	29-Sep-17	11-Oct-17	290.87	12	61.08	3.32
NEYVELI (EXT) TPS	2	210	9-May-17	29-May-17	483.33	20	101.5	5.52
NEYVELI TPS-II EXP	2	250	23-Oct-17	12-Nov-17	471.52	20	117.88	5.38
TUTICORIN (JV) TPP	1	500	25-May-17	2-Jul-17	914.88	38	457.44	10.44
TUTICORIN (JV) TPP	2	500	3-Aug-17	10-Aug-17	176.53	7	88.26	2.02
ITPCL TPP	1	600	17-Jul-17	8-Sep-17	1258.05	52	754.83	14.36
MUZAFFARPUR TPS	2	110	27-Nov-17	28-Dec-17	767.93	32	84.47	8.77
BARH II	5	660	21-Aug-17	19-Sep-17	711.28	30	469.44	8.12
KAHALGAON TPS	1	210	15-Nov-17	24-Dec-17	942.28	39	197.88	10.76
KAHALGAON TPS	2	210	5-Mar-18	31-Mar-18	647.63	27	136	7.39
KAHALGAON TPS	6	500	5-Sep-17	6-Oct-17	766.95	32	383.48	8.76
JOJOBERA TPS	3	120	25-Mar-18	31-Mar-18	151.25	6	18.15	1.73
MEJIA TPS	5	250	3-Apr-17	19-Apr-17	395.45	16	98.86	4.51
DURGAPUR STEEL TPS	1	500	11-Jul-17	29-Aug-17	1179.98	49	589.99	13.47
TALCHER (OLD) TPS	1	60	30-Dec-17	14-Jan-18	348.77	15	20.93	3.98
TALCHER (OLD) TPS	2	60	12-Apr-17	27-Apr-17	351.02	15	21.06	4.01
TALCHER (OLD) TPS	3	60	16-Jun-17	29-Jun-17	325.28	14	19.52	3.71
TALCHER (OLD) TPS	4	60	5-Sep-17	19-Sep-17	351.68	15	21.1	4.01
TALCHER (OLD) TPS	6	110	26-Jul-17	4-Aug-17	229.8	10	25.28	2.62
IB VALLEY TPS	1	210	1-Nov-17	24-Nov-17	564.47	24	118.54	6.44
TALCHER STPS	1	500	25-Nov-17	31-Dec-17	867.63	36	433.82	9.9
TALCHER STPS	3	500	10-Sep-17	21-Oct-17	991.65	41	495.82	11.32
TALCHER STPS	4	500	14-Jul-17	28-Aug-17	1090.92	45	545.46	12.45
KOLAGHAT TPS	4	210	2-Feb-18	21-Mar-18	1136.32	47	238.63	12.97
BAKRESWAR TPS	1	210	8-Jan-18	11-Feb-18	821.1	34	172.43	9.37
BAKRESWAR TPS	4	210	11-Jul-17	10-Aug-17	718.67	30	150.92	8.2
SAGARDIGHI TPS	1	300	7-Aug-17	2-Sep-17	634.55	26	190.36	7.24
SOUTHERN REPL. TPS	1	67.5	1-Jan-18	16-Jan-18	383.63	16	25.9	4.38
BUDGE BUDGE TPS	2	250	24-Nov-17	25-Dec-17	747.2	31	186.8	8.53
BUDGE BUDGE TPS	3	250	31-Oct-17	22-Nov-17	519.52	22	129.88	5.93

PLANNED MAINTENANCE DURING FINANCIAL YEAR 2017-18								Annex-3.1
Name Of Station	Unit No.	Cap (in MW)	Date Of Outage	Date Of Return	Outage hrs	Outage days	MU Loss	Energy loss as % of Pos. Gen.
HALDIA TPP	1	300	15-Jan-18	27-Jan-18	295.6	12	88.68	3.37
FARAKKA STPS	1	200	1-Apr-17	17-Apr-17	405.82	17	81.16	4.63
FARAKKA STPS	3	200	3-Aug-17	1-Sep-17	714.03	30	142.81	8.15
FARAKKA STPS	4	500	11-Mar-18	31-Mar-18	503.47	21	251.74	5.75
FARAKKA STPS	5	500	1-Apr-17	8-May-17	890.73	37	445.36	10.17
Sub Total	199	57019.5			126184.55	5255	39594.31	1440.44
JALIPA KAPURDI TPP	7	135	22-MAY-2017	25-MAY-2017	77.78	3	10.5	0.89
OBRA TPS	10	200	15-DEC-2017	16-DEC-2017	32.48	1	6.5	0.37
OBRA TPS	13	200	19-JAN-2018	21-JAN-2018	55.93	2	11.19	0.64
PARICHAH TPS	6	250	03-DEC-2017	05-DEC-2017	43.58	2	10.9	0.5
ANPARA TPS	1	210	18-APR-2017	19-APR-2017	4.88	0	1.02	0.06
ANPARA TPS	3	210	14-DEC-2017	15-DEC-2017	25	1	5.25	0.29
UNCHAHAH TPS	4	210	18-JUL-2017	22-JUL-2017	110.12	5	23.13	1.26
UNCHAHAH TPS	5	210	24-APR-2017	27-APR-2017	91.55	4	19.23	1.05
DADRI (NCTPP)	6	490	01-APR-2017	03-APR-2017	57.43	2	28.14	0.66
TANDA TPS	4	110	04-FEB-2018	07-FEB-2018	89.68	4	9.86	1.02
WANAKBORI TPS	6	210	1-Apr-17	5-Apr-17	106.83	4	22.43	1.22
DSPM TPS	1	250	02-JAN-2018	07-JAN-2018	96.67	4	24.17	1.1
SEIONI TPP	1	600	19-MAY-2017	29-MAY-2017	239.98	10	143.99	2.74
NIGRI TPP	1	660	27-FEB-2018	18-MAR-2018	476.88	20	314.74	5.44
SIPAT STPS	5	500	27-AUG-2017	01-SEP-2017	99	4	49.5	1.13
VINDHYACHAL STPS	1	210	25-APR-2017	29-APR-2017	98	4	20.58	1.12
VINDHYACHAL STPS	9	500	20-Jul-17	22-Jul-17	53.02	2	26.51	0.61
RATIJA TPS	1	50	26-DEC-2017	28-DEC-2017	63.5	3	3.18	0.72
RATIJA TPS	2	50	11-JAN-2018	12-JAN-2018	29.02	1	1.45	0.33
CHAKABURA TPP	2	30	28-Apr-17	30-Apr-17	53.88	2	1.62	0.62
NASIK TPS	4	210	10-JUL-2017	09-AUG-2017	716.68	30	150.5	8.18
KHAPARKHEDA TPS	4	210	2-Oct-17	6-Oct-17	112.85	5	23.7	1.29
TROMBAY TPS	5	500	02-JAN-2018	17-JAN-2018	356.53	15	178.26	4.07
TROMBAY TPS	8	250	18-NOV-2017	13-DEC-2017	592.85	25	148.21	6.77
DAHANU TPS	1	250	23-DEC-2017	27-DEC-2017	76.55	3	19.14	0.87
NEYVELI TPS- I	9	100	4-Dec-17	9-Dec-17	124.25	5	12.42	1.42
NEYVELI TPS-II	4	210	24-Dec-17	29-Dec-17	123.38	5	25.91	1.41
NEYVELI (EXT) TPS	1	210	30-APR-2017	04-MAY-2017	104.22	4	21.89	1.19
TUTICORIN (JV) TPP	2	500	2-Aug-17	2-Aug-17	2.15	0	1.08	0.02
MUZAFFARPUR TPS	2	110	22-Nov-17	26-Nov-17	106.68	4	11.73	1.22
MAITHON RB TPP	1	525	27-OCT-2017	28-DEC-2017	1484	62	779.1	16.94
DERANG TPP	2	600	01-NOV-2017	09-NOV-2017	178.45	7	107.07	2.04
BANDEL TPS	5	210	29-NOV-2017	07-DEC-2017	192.95	8	40.52	2.2
KOLAGHAT TPS	1	210	28-DEC-2017	04-JAN-2018	183.53	8	38.54	2.1
FARAKKA STPS	6	500	04-NOV-2017	08-NOV-2017	118.6	5	59.3	1.35
Sub Total	35	9880			6378.88	264	2351.26	72.84
YAMUNA NAGAR TPS	1	300	31-JAN-2018	31-MAR-2018	1417.55	59	425.26	16.18
SURATGARH TPS	5	250	10-MAY-2017	26-AUG-2017	2594.75	108	648.69	29.62
WANAKBORI TPS	2	210	08-JAN-2018	31-MAR-2018	1979.18	82	415.63	22.59
WANAKBORI TPS	3	210	25-JUL-2017	01-DEC-2017	3107.78	129	652.63	35.48
MUNDRA TPS	4	330	25-MAY-2017	24-JUN-2017	723.9	30	238.89	8.26
NASIK TPS	3	210	10-AUG-2017	02-OCT-2017	1289.83	54	270.86	14.72
KORADI TPS	7	210	21-JUN-2017	16-AUG-2017	1357.17	57	285.01	15.49
CHANDRAPUR(MAHARAS)	3	210	05-JUN-2017	24-JUL-2017	1168.75	49	245.44	13.34

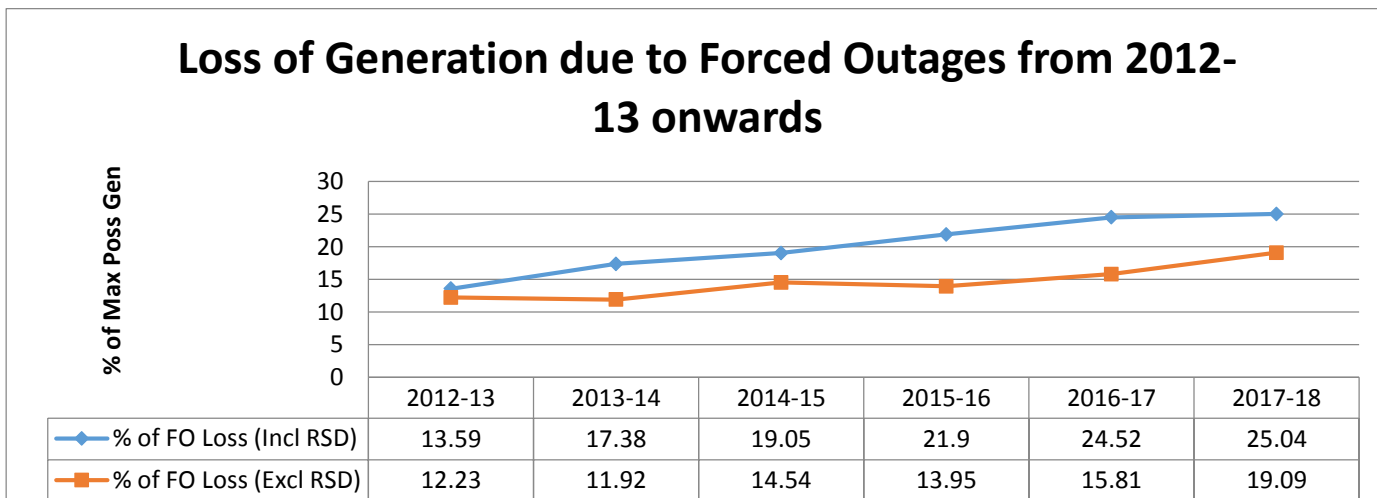
PLANNED MAINTENANCE DURING FINANCIAL YEAR 2017-18								Annex-3.1
Name Of Station	Unit No.	Cap (in MW)	Date Of Outage	Date Of Return	Outage hrs	Outage days	MU Loss	Energy loss as % of Pos. Gen.
CHANDRAPUR(MAHARAS)	7	500	01-APR-2017	20-MAY-2017	1191.28	50	595.64	13.6
JSW RATNAGIRI TPP	4	300	04-JUL-2017	04-AUG-2017	735.65	31	220.7	8.4
KOTHAGUDEM TPS (NEW)	1	250	20-JUN-2017	08-AUG-2017	1173.12	49	293.28	13.39
METTUR TPS	4	210	20-JAN-2018	06-MAR-2018	1065.63	44	223.78	12.16
JOJOBERA TPS	2	120	01-APR-2017	12-APR-2017	270.28	11	32.43	3.09
IB VALLEY TPS	2	210	13-AUG-2017	01-OCT-2017	1197.52	50	251.48	13.67
Sub Total	14	3520			19272.39	803	4799.72	15.57
KOTA TPS	5	210	19-JUL-2017	18-AUG-2017	718.28	30	150.84	8.2
KUTCH LIG. TPS	2	70	26-JUN-2017	28-JUN-2017	36.4	2	2.55	0.42
KORBA-II	3	50	17-NOV-2017	21-NOV-2017	94.53	4	4.73	1.08
KORBA STPS	3	200	25-MAY-2017	28-MAY-2017	92.58	4	18.52	1.06
DHARIWAL TPP	1	300	27-OCT-2017	01-NOV-2017	102.48	4	30.74	1.17
Sub Total	5	830			1044.27	44	207.37	2.85
PANIPAT TPS	6	210	9-Jan-18	9-Mar-18	1417.08	59	297.59	16.18
GND TPS(BHATINDA)	1	110	27-SEP-2017	31-MAR-2018	4455.33	186	490.09	50.86
ROPAR TPS	1	210	01-JAN-2018	31-MAR-2018	2160	90	453.6	24.66
ROPAR TPS	2	210	01-JAN-2018	31-MAR-2018	2160	90	453.6	24.66
GIRAL TPS	1	125	01-APR-2017	31-MAR-2018	8760	365	1095	100
GIRAL TPS	2	125	01-APR-2017	31-MAR-2018	8760	365	1095	100
OBRA TPS	9	200	11-Dec-17	31-Mar-18	2663.98	111	532.8	30.41
ANPARA TPS	2	210	20-Aug-17	14-Nov-17	2051.4	85	430.79	23.42
MUNDRA UMTTP	1	800	7-Nov-17	5-Jan-18	1414.05	59	1131.24	16.14
MUNDRA UMTTP	5	800	28-APR-2017	31-MAY-2017	797.85	33	638.28	9.11
SATPURA TPS	9	210	7-May-17	28-Aug-17	2712.5	113	569.62	30.96
SATPURA TPS	11	250	20-Jul-17	12-Oct-17	2017.95	84	504.49	23.04
SHRI SINGHAJI TPP	2	600	1-Aug-17	1-Oct-17	1472.65	61	883.59	16.81
BALCO TPS	1	300	24-Jul-17	7-Oct-17	1823.52	76	547.06	20.82
CHANDRAPUR(MAHARAS)	6	500	1-Feb-18	31-Mar-18	1415.98	59	707.99	16.16
DAMODARAM SANJEEVAI	2	800	09-MAY-2017	19-MAY-2017	241.08	10	192.86	2.75
RAYALASEEMA TPS	5	210	5-Jun-17	15-Aug-17	1714.97	71	360.14	19.58
RAICHUR TPS	1	210	17-Nov-17	31-Mar-18	3217.8	134	675.74	36.73
NEYVELI TPS-II	3	210	13-Oct-17	15-Jan-18	2276.97	95	478.16	25.99
VALLUR TPP	3	500	4-Jun-17	27-Feb-18	6435.53	268	3217.76	73.46
BOKARO `B` TPS	2	210	30-APR-2017	31-MAR-2018	8046.92	335	49.19	6.38
RAGHUNATHPUR TPP	1	600	12-JUN-2017	14-AUG-2017	1525.47	64	915.28	17.41
BOKARO TPS `A` EXP	1	500	03-JUL-2017	07-JUL-2017	85.55	4	42.77	0.98
BANDEL TPS	2	60	05-OCT-2017	25-OCT-2017	459.87	19	27.59	5.25
BONGAIGAON TPP	1	250	13-Apr-17	14-Aug-17	2957.03	123	739.26	33.76
BAKRESWAR TPS	1	210	08-SEP-2017	10-SEP-2017	66.87	3	14.04	0.76
SAGARDIGHI TPS	3	500	14-OCT-2017	16-OCT-2017	31.03	1	15.52	0.35
Sub Total	27	9120			71141.38	2963	16559.05	726.63
OBRA TPS	7	94	01-APR-2017	31-MAR-2018	8760	365	823.44	100
OBRA TPS	12	200	01-APR-2017	31-MAR-2018	8760	365	1752	100
OBRA TPS	13	200	04-MAR-2018	31-MAR-2018	663.17	28	132.63	7.57
PARICHA TPS	1	110	01-APR-2017	31-MAR-2018	8760	365	963.6	100
KORBA STPS	1	200	26-APR-2017	27-APR-2017	31.63	1	6.33	0.36
KORADI TPS	6	210	01-APR-2017	31-MAR-2018	8760	365	1839.6	100
RAICHUR TPS	2	210	10-SEP-2017	11-FEB-2018	3704.82	154	778.01	42.29
BARAUNI TPS	6	105	01-APR-2017	31-MAR-2018	8760	365	919.8	100
KAHALGAON TPS	4	210	28-MAY-2017	02-JUL-2017	846.12	35	177.69	9.66

PLANNED MAINTENANCE DURING FINANCIAL YEAR 2017-18								Annex-3.1
Name Of Station	Unit No.	Cap (in MW)	Date Of Outage	Date Of Return	Outage hrs	Outage days	MU Loss	Energy loss as % of Pos. Gen.
Sub Total	9	1539			49045.74	2043	7393.1	54.84
Total	289	81908.50			273067.5	11375	70954.82	4.3

SECTION-4 FORCED OUTAGES

4.1 Based on the analysis carried out for 633 thermal power generating units, it is seen that forced outages of generating units were due to various problems in generating equipment, auxiliary systems and also due to external reasons viz., shortage of fuel, transmission system constraints, lower demand/ schedules etc.

During the financial year 2017-18, the loss of generation on account of forced outages of units increased to **413.52 BU** from 386.18 BU in 2016-17. Forced outages loss increased marginally to **25.04%** of the maximum possible generation in 2017-18 from **24.52%** during 2016-17. The All India energy loss due to forced outage of units considered in the review as the percentage of their maximum possible generation⁶ calculated on the basis of rated capacity of the units from year 2012-13 onwards are depicted below:



As may be seen from the chart, the losses on account of RSD (Reserve Shutdown - when units remain out of operation due to lack of schedule/dispatch) have increased constantly and significantly. **The FO loss due to RSD was slightly higher than 1 % in 2012-13 and increased to around 9 % in 2016-17 and has remained quiet high at around 6% in 2017-18.**

4.2 Forced outages due to the main equipment faults accounted for **28.14%** of the total forced outages loss as per details given in the table below:

	Cause of Outage	Percentage of total forced outage losses including losses due to					
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
I.	Main Equipment						
a)	Boiler	29.04	19.91	19.68	14.96	17.25	15.61
b)	Turbine	12.49	10.33	6.9	4.33	4.55	6.39
c)	Generator	4.38	5.33	9.99	4.17	2.39	6.15
	Sub Total	45.91	35.57	36.57	23.45	24.20	28.14
II.	Auxiliaries						

⁶calculated on the basis of rated capacity of the units

a)	Boiler Aux.	10.84	5.83	4.86	3.09	1.93	1.74
b)	Turbine Aux.	3.53	1.27	2.11	1.65	1.76	0.94
	Sub-Total	14.37	7.1	6.97	4.74	3.69	2.67
III.	Boiler & Boiler Aux.	39.88	25.75	24.54	18.04	19.18	17.34
IV.	Turbine & Turbine Aux.	16.01	11.6	9.01	5.98	6.31	7.32
V.	Generator	4.38	5.33	9.99	4.17	2.39	6.15
VI.	Others	39.72	57.33	56.46	71.81	72.12	69.19
VII.	Generation loss due to Reserve Shut Down (RSD) – included in Others	9.97	30.63	23.52	36.31	35.13	23.72

4.3 EQUIPMENT OUTAGES:

A. Boiler

The generation loss due to Boiler problems decreased from **4.23%** of maximum possible generation during 2016-17 to **3.91%** during 2017-18. Tube leakages and air preheater problems were the main cause of boiler forced outages. A comparison of area/causes of outages in boiler during 2015-16, 2016-17 and 2017-18 is given below:

Sl. No.	Area/ cause of outages	No. of outages			Loss (MU)			% age of Max. possible gen.		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1	Water wall tube leakage	838	780	855	19873.85	26480.62	26236.97		1.68	1.59
2	Super heater tube leakage	146	195	106	3246.10	4581.42	3398.46	0.23	0.29	0.21
3	Re-heater tube leakage	144	143	91	2418.12	7608.51	3469.92	0.17	0.48	0.21
4	Economizer tube leakage	258	229	176	5620.78	3492.17	3171.95	0.39	0.22	0.19
5	Air pre-heater problems	112	120	108	5096.97	8688.31	8071.11	0.36	0.55	0.49
6	Furnace trouble	10	11	7	211.26	127.53	233.94	0.01	0.01	0.01
7	Boiler operational problems									
	(a) Furnace fire out/flame failure	386	333	341	1446.81	1310.12	3307.63	0.10	0.08	0.2
	(b) Furnace draft abnormal	272	218	149	1049.34	5778.59	5183.39	0.07	0.37	0.31
	(c) Drum level high/ low	161	176	154	676.82	549.34	293.11	0.05	0.03	0.02
	(d) Miscellaneous	2	4	0	304.06	103.48	0	0.02	0.01	0
8	Others boiler misc. Problem	291	279	292	6785.94	7910.84	11167.41	0.48	0.50	0.68
	TOTAL BOILER	2620	2488	2279	46730.05	66630.92	64533.9	3.28	4.23	3.91

B. Turbine

The generation loss due to Turbine problems increased from **1.12%** of maximum possible generation during 2016-17 to **1.6%** during 2017-18. Turbine bearings and eccentricity/vibrations, main steam line problem and H.P. and L.P. bypass system were major causes for turbine forced outages. A comparison of area/causes of outages in turbine during 2014-15, 2015-16 and 2017-18 is given below:

Sl. No.	Area/ cause of outages	No. of Outages			Loss (MU)			% age of Max.		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1	Turbine Bearing problems	37	23	18	2119.55	2005.10	2364.76	0.15	0.13	0.14
2	Governing /Oil System Failures	64	77	61	1217.02	688.99	1220.23	0.09	0.04	0.07
3	Turbine differential expansion	17	19	6	32.23	142.16	8.44	0	0.01	0
4	Axial shift/thrust pad problem	11	9	10	690.04	156.76	61.85	0.05	0.01	0
5	Turbine eccentricity / high	90	74	74	2602.85	4997.42	6889.46	0.18	0.32	0.42
6	Turbine rotor failure/ damaged	jlo4	3	4	67.78	132.03	503.53	0	0.01	0.03
7	Turbine control valve problem	20	33	30	258.14	895.05	1314.17	0.02	0.06	0.08
8	Condenser tube leakage/ cleaning	63	60	44	2044.91	1880.09	1033.07	0.14	0.12	0.06
9	Main Steam line problem	46	97	87	835.02	1765.05	3720.11	0.06	0.11	0.23
10	Emergency Stop Valve (ESV)	6	18	3	113.40	120.91	46.85	0.01	0.01	0
11	Condenser low vacuum	134	125	68	716.91	1344.35	1272.38	0.05	0.09	0.08
12	H.P.&L.P bypass system	19	22	17	679.41	346.12	1468.45	0.05	0.02	0.09
13	Other Misc. Problems	123	68	94	2144.30	3107.1	6502.44	0.15	0.20	0.39
Total Turbine		634	628	516	13521.58	17581.13	26405.74	0.95	1.12	1.6

C. Generator

The generation loss due to Generator problems increased from **0.59%** of maximum possible generation during 2016-17 to **1.54%** during 2017-18. Earth fault, Generator transformer tripping and generator protection/relay operation and seal oil system were the main causes of generator outages. A comparison of areas/causes of outages in generator during 2015-16, 2016-17 and 2017-18 is given below:

Sl. No.	Area/ cause of outages	No. of Outages			Loss (MU)			% age of Max. possible gen.		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1.	Stator/ Stator Earth fault	77	53	37	2720.50	1571.87	8697	0.19	0.10	0.53
2.	Rotor/ Rotor Earth Fault	36	20	14	1014.17	334.01	497.46	0.07	0.02	0.03
3	Gen. Transformer Tripping/ Damaged	25	27	17	2658.88	2310.20	4593.7	0.19	0.15	0.28
4.	Excitation Problem	47	54	43	1423.77	1206.52	1246.61	0.10	0.08	0.08
5.	Gen. Cooling System Failure	14	16	12	324.11	212.31	70.47	0.02	0.01	0
6.	Seal Oil System Problem	3	6	6	46.93	94.33	3210.44	0	0.01	0.19
7.	Generator Bearing Problem	5	5	3	878.40	7.05	118.84	0.06	0.00	0.01
8.	Fire In Turbo Gen. Bushing/	8	8	6	215.23	68.51	336.64	0.02	0.00	0.02
9.	A.V.R. Problem	22	20	18	367.33	35.02	15.43	0.03	0.00	0
10.	Generator Protection/ Relay Operation Problem	158	172	175	3027.68	2264.55	3877.81	0.21	0.14	0.23
11.	Hydrogen Pressure Problem	10	18	20	131.32	996.43	2178.52	0.01	0.06	0.13
12.	Generator Miscellaneous	41	29	25	218.31	133.00	583.47	0.02	0.01	0.04
Total Generator		446	428	376	13026.62	9233.80	25426.41	0.91	0.59	1.54

D. OTHER ELECTRICAL PROBLEMS

Details of loss of generation during 2015-16, 2016-17 and 2017-18 due to various electrical problems including switchyard area and other instruments etc. are as under:

Sl. No.	Area/ cause of outages	No. of Outages			Loss (MU)			% age of Max. possible gen.		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1.	Unit Aux. Transformer	56	74	69	922.22	3492.67	405.63	0.06	0.22	0.02
2.	Generator Transformer	80	65	60	4283.51	587.76	2144.1	0.30	0.04	0.13
3.	H.T./L.T. supply problem	32	18	18	128.60	114.54	80.78	0.01	0.01	0
4.	DC supply problem	46	43	39	973.08	154.85	272.98	0.07	0.01	0.02

Sl. No.	Area/ cause of outages	No. of Outages			Loss (MU)			% age of Max. possible gen.		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
5.	Switchyard/ Bus Bar	164	384	117	1159.39	1023.37	1020.05	0.08	0.06	0.06
6.	Breaker/isolator	18	23	24	290.88	633.49	83.63	0.02	0.04	0.01
7	Misc. fire hazards / fire in cable gallery	6	7	2	634.74	38.31	7.62	0.04	0	0
8.	Instrument fault	3	10	3	2738.2	11.59	6.38	0	0	0
9.	Mal-operation of relays	0	10	16	0	17.49	38.28	0	0	0
10.	Air supply problem	12	4	5	32.98	4.92	9.04	0	0	0
11.	Other electrical problems	401	392	319	3158.82	3605.41	3936.01	0.22	0.23	0.24
	Total	818	1030	672	14322.5	9621.40	8004.5	0.81	0.61	0.48

E. FUEL SUPPLY AND OTHER MISC. PROBLEMS:

There was a sharp increase in generation loss on account of shutdown of thermal units due to Coal and Lignite shortage to **82971.9 MU** in 2017-18 from **6218.47 MU** in the previous year. Withdrawal of units from operation due to being uneconomical or vintage units also contributed significantly to losses- over **7500 MU**.

Sl. No.	Area/ cause of outages	No. of outages			Loss (MU)			% age of Max. possible gen.		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1	Coal /Lignite Shortage	24	29	316	1623.25	6218.47	82971.9	0.08	0.39	5.03
2	Coal Feeding Problem	93	67	43	14511.45	5256.16	6429.33	1.04	0.34	0.39
3	Wet/ Poor Quality	21	14	16	287.93	120.39	932.71	0.003	0.01	0.06
4	Fuel Supply & Other Misc.	72	90	60	9238.42	7492.47	8506.62	0.52	0.48	0.52
5	Fuel Oil Problem	26	4	316	201.31	98.57	630.46	0.01	0.01	0.04
6	Ash Handling System	69	54	81	7460.51	1.46	9195.2	0.52	0.00	0.56
7	Raw Water Problem	17	24	24	4151.54	2875.79	4357.8	0.29	0.18	0.26
8	D.M. Water Problem	0	2	7	0	5866.09	1876.89	0	0.37	0.11
9	Cooling Tower Problem	3	1	8	182.75	104.30	173.76	0.01	0.006	0.01
10	E.S.P. Problem	31	18	35	3280.74	5438.47	8860.95	0.23	0.35	0.54
11	Non-Readiness Of Residual	7	3	2	1124.35	1378.29	32.21	0.08	0.09	0
12	Vintage Unit Withdrawn	27	28	8	19166.71	13878.39	1901.02	1.34	0.88	0.12
13	Uneconomical Operation	6	5	5	5344.99	7433.73	5639.5	0.37	0.47	0.34
14	Other Misc. Problems	36	264	14	5609.26	28861.12	616.46	0.19	1.83	0.04
	TOTAL MISCELLANEOUS	432	603	635	72183.21	85023.70	132125.76	4.68	5.41	8.02

F. GRID SYSTEM AND LOW SYSTEM DEMAND

About one third of total Forced outage losses occurred on account of low system demand and transmission/grid related constraints. Energy loss due to Reserve shutdown decreased from **133975.17 MU** in 2016-17 to **93149.69 MU** during 2017-18 and the generation loss due to transmission constraints decreased from **7450.97 MU** to 4779.56 MU.

Details of generation losses due to transmission constraints/ grid system problems and reserve shut down during 2015-16,2016-17 and 2017-18 are given below:-

Sl. No.	Area/ cause of outages	No. of Outages			Loss (MU)			% age of Max. possible		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1.	Transmission	261	244	201	8,814.94	7450.97	4779.56	0.62	0.47	0.29

Sl. No.	Area/ cause of outages	No. of Outages			Loss (MU)			% age of Max. possible		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
2.	Reserve Shut Down	934	1028	762	113,413.88	133975.17	93149.69	7.95	8.51	5.64
3.	NO Power purchase	16	24	24	15,602.30	32685.98	25799.51	1.09	2.08	1.56
4.	Other Commercial Reason	-	2	3	-	467.75	396.04	-	0.03	0.02
	Total	1211	1298	990	137,831.12	174579.87	124124.8	9.66	11.08	7.52

4.4 OUTAGE & ENERGY LOSS DUE TO PROBLEMS IN AUXILIARY SYSTEMS

4.4.1 Details of losses due to problems in boiler & turbine auxiliaries systems during the years 2015-16, 2016-17 and 2017-18 are given below: -

Sl. No.	Area/ cause of outages	No. of Outages			Loss (MU)			% age of Max. possible		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
I. Boiler Aux.										
	a) I.D. Fans	96	97	103	2161.50	2221.65	2415.82	0.15	0.14	0.15
	b) F.D. Fans	37	30	15	254.84	193.74	189.87	0.02	0.01	0.01
	c) P.A. Fans	127	135	106	2026.35	951.70	1146.92	0.14	0.06	0.07
	d) Milling System / RC	106	55	39	1590.23	887.20	1355.83	0.11	0.06	0.08
	e) Pipe and valves	76	62	78	775.15	325.52	959.78	0.05	0.02	0.06
	f) Boiler Aux. Misc.	61	50	40	2835.30	2865.39	1108.31	0.20	0.18	0.07
	Total Boiler Aux.	503	429	381	9643.38	7445.20	7176.52	0.68	0.47	0.43
II. Turbine Aux.										
	a) Boiler feed pump	105	87	55	961.68	967.84	525.27	0.07	0.06	0.03
	b) Condensate pump	8	6	4	31.40	31.59	99.53	0	0.00	0.01
	c) C.W. pump problems	51	57	53	1160.77	3554.80	1512.98	0.08	0.23	0.09
	d) Regenerative System	9	4	5	1178.01	377.06	576.27	0.08	0.02	0.03
	e) Pipe and valve	4	11	6	68.57	101.34	124.14	0	0.01	0.01
	f) De-aerator Problem	3	3	3	27.54	49.23	16.45	0	0.00	0
	g) Turbine Misc.	97	100	41	1731.99	1706.58	1017.41	0.12	0.11	0.06
	Total Turbine Aux.	277	268	167	5159.95	6788.43	3872.05	0.36	0.43	0.23
	Total Boiler & Turbine Aux.	780	697	548	14803.33	14233.63	11317.25	1.04	0.90	0.66

4.5 FREQUENCY OF OUTAGES AND ENERGY LOSS

4.5.1 Region-wise frequency of outages/ tripping of equipment and related energy loss during 2016-17 and 2017-18 are shown in the **Annexure 4.1**.

4.5.2 Details of Average loss per outage (in MU) due to failure of equipment and auxiliaries from the years 2012-13 to 2017-18 is shown below: -

Sl. No.	Outages	Average Loss/Outage (MU)					
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
I. Equipment							
	1. Boiler	11.85	13	17.63	17.84	26.78	28.32
	2. Turbine	19.17	26.59	29.6	21.33	28.00	51.17
	3. Generator	10.79	24.19	50.57	29.21	21.57	67.62
	4. Total Equipment	13.09	16.62	23.64	19.80	26.37	36.7
II. Auxiliaries							
	1. Boiler Aux.	24.87	21.41	25.76	19.17	17.35	18.84
	2. Turbine Aux.	14.21	7.61	24.7	18.63	25.33	23.19
	3. Total Aux.	21	16.18	25.43	18.98	20.42	20.16
III.	Boiler & Aux.	13.82	14.27	18.81	18.05	25.39	26.96
IV.	Turbine & Aux.	17.8	20.89	28.29	20.51	27.20	44.33
V.	Generator	10.79	24.19	50.57	29.21	21.57	67.62
VI.	Other Misc. Problems	17.76	42.84	63.08	89.02	94.60	115.6
	Total (Excl. RSD)	14.82	19.67	31.41	32.77	40.51	58.23
VII.	Reserve Shut Down	28.29	78.23	83.69	122.24	131.07	126.74

Sl. No.	Outages	Average Loss/Outage (MU)					2017-18
		2012-13	2013-14	2014-15	2015-16	2016-17	
	Total (Incl. RSD)	15.56	25.53	36.82	44.63	53.75	66.76

The Average losses per Outage increased from 53.75 MU during 2016-17 to 66.76 MU during 2017-18. This was mainly due to considerable increase in RSD loss in 2017-18.

4.6 DURATION PATTERN OF FORCED OUTAGES

4.6.1 There were a total of about **6026** forced outages / tripping with aggregate duration of **over 2 million** outage hours during the year 2017-18. The duration of individual outage varied from few hours to the maximum of full year. The duration pattern of forced outages of thermal units during the year 2017-18 in the country is given at **Annexure-4.2**.

4.7 LONG DURATION FORCED OUTAGES

4.7.1 Energy loss (in MUs) due to forced outages of more than 25 days during the year 2017-18 contributed to 70.38% of total forced outage losses. Details of units under forced outages for more than 25 days are given in Annexure 4.3. Western Region has maximum loss (179414.85MU) due to long forced outage and North Eastern Region had minimum MU loss (693.8MU).

4.8 DURATION PATTERN OF BOILER TUBE LEAKAGE

4.8.1 WATER WALL TUBE LEAKAGE

Duration pattern of forced outages due to water wall tube leakage during last three years is shown below: -

Period in days	2015-16(617 Units)			2016-17(649 units)			2017-18(633 units)		
	No. of	No. of	Loss	No. of	No. of	Loss	No. of	No. of	Loss
Upto-2 days	208	379	3000.04	186	346	3237.36	211	394	3799.66
>2 & up to 3	123	179	2805.39	122	185	3365.12	127	184	3929.32
>3 & up to 4	74	100	2626.75	65	86	2352.61	69	96	2886.94
>4 & up to 5	50	61	1872.31	40	42	1306.90	36	43	1526.26
>5 & up to 6	20	23	624.21	21	22	888.96	27	32	1542.24
>6 & up to 7	18	18	793.86	14	15	903.01	15	16	1018.48
>7 & up to 14	34	41	2676.47	29	38	2118.83	36	41	2913.4
>14 & up to 21	10	14	768.28	14	15	1849.14	15	17	2285.36
>21& up to 28	2	2	546.24	6	6	1277.21	7	7	1447.97
>28 & up to 30	1	1	141.16	0			1	1	49.19
> 30 days	12	20	4019.15	18	25	9181.49	18	24	4838.15
Total	324	838	19,873.85	313	780	26480.62	334	855	26236.97

As may be seen, the number of Water wall tube leakages has come down over the years . Also most of the WW leakages involved outages of less than 4 days and almost half of the outages have been for less than 2 days' duration.

4.8.2 SUPERHEATER TUBE LEAKAGE

Duration pattern of forced outages due to super heater tube leakage problems during last three years is shown below.

Period in days	2015-16 (617 units)			2016-17(649 units)			2017-18(633 units)		
	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)
Upto-2 days	45	78	464.36	49	91	520.65	24	42	234.03
>2 & up to 3	29	30	430.32	33	37	683.59	24	25	333.31
>3 & up to 4	9	10	164.65	13	21	285.90	12	13	289.71

Period in days	2015-16 (617 units)			2016-17(649 units)			2017-18(633 units)		
	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)
>4 & up to 5	7	7	232.66	8	10	118.01	5	5	122.82
>5 & up to 6	3	4	57.10	3	3	35.35	3	3	49.69
>6 & up to 7	4	4	207.61	3	3	109.01	1	1	8.66
>7 & up to 14	7	8	388.50	13	17	1160.54	5	6	785.78
>14 & up to 21	1	1	52.13	4	5	665.93	4	4	433.1
>21 & up to 28	1	1	110.34	2	2	99.74	2	2	260.85
>28 & up to 30	1	1	453.60	0	0		0	0	
> 30 days	2	2	684.81	3	3	814.72	3	4	870.46
Total	87	146	3246.10	100	195	4581.42	68	106	3398.46

4.8.3 REHEATER TUBE LEAKAGE

Duration pattern of forced outages due to Re-heater tube leakage problems during last three years is shown below.

Period in days	2015-16 (617 units)			2016-17(649 units)			2017-18(633 units)		
	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)
Upto-2 days	56	89	811.87	50	76	621.01	27	40	280.06
>2 & up to 3	20	26	531.61	28	32	511.37	13	13	284.87
>3 & up to 4	12	12	342.87	12	14	417.63	12	12	307.68
>4 & up to 5	4	4	77.94	5	5	253.79	7	7	210.84
>5 & up to 6	5	5	158.23	2	2	102.65	4	4	127.67
>6 & up to 7	0	0	0	1	1	46.71	1	2	204.42
>7 & up to 14	3	3	216.76	5	6	301.78	6	7	582.42
>14 & up to 21	0	0	0	0	0	0	0	0	
>21 & up to 28	2	2	214.92	0	0	0	1	1	183.89
>28 & up to 30	0	0	0	0	0	0	0	0	
> 30 days	2	2	29.59	6	7	5353.56	4	5	1288.06
Total	86	144	2418.12	88	143	7608.51	65	91	3469.92

4.8.4 ECONOMISER TUBE LEAKAGE

Duration pattern of forced outages due to Economizer tube leakage problems during the last three years is shown below:

Period in days	2015-16 (617 units)			2016-17(649 units)			2017-18(633 units)		
	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)	No. of	No. of	Loss (MU)
Upto-2 days	91	164	948.96	95	152	989.22	59	98	489.78
>2 & up to 3	36	44	626.94	29	36	571.94	23	24	350.99
>3 & up to 4	14	17	230.15	15	15	468.44	19	22	549.67
>4 & up to 5	5	5	137.67	6	6	240.26	5	5	124.88
>5 & up to 6	6	8	137.62	6	6	174.18	5	6	227.09
>6 & up to 7	2	2	40.25	0	0	0	2	2	105
>7 & up to 14	4	4	228.10	8	9	423.02	12	12	707.63
>14 & up to 21	8	8	759.48	1	1	43.48	1	1	90.1
>21 & up to 28	1	1	28.76	0	0	0	1	1	125.08
>28 & up to 30	1	1	34.74	0	0	0	0	0	
> 30 days	3	3	2413.15	3	4	581.62	5	5	401.72
Total	131	258	5620.78	132	229	3492.17	101	176	3171.95

4.9 BOILER TUBE LEAKAGEDURATIONPATTERN (CAPACITY GROUPWISE)

Capacity group-wise details of boiler tube leakage problems during the year 2017-18 are given below:

Capacity (MW)	No. of Units	Water Wall		Super heater		Economizer		Re-heater		Total	
		No. of	No. of	No. of	No. of	No. of	No. of	No. of	No. of	No. of	No. of
660-800	62	28	152	7	16	4	12	4	14	34	194
490-600	134	91	261	8	8	21	24	17	19	99	312
300-360	41	15	21	1	1	2	2	3	3	15	27

Capacity (MW)	No. of Units	Water Wall		Super heater		Economizer		Re-heater		Total	
		No. of	No. of	No. of	No. of	No. of	No. of	No. of	No. of	No. of	No. of
250-270	73	32	67	14	18	15	21	5	5	43	111
210-210	140	88	186	18	31	32	68	27	46	106	331
195-200	26	20	36	2	2	2	5	3	4	20	47
100-150	81	30	113	5	9	12	22	5	5	34	149
25-99	72	30	95	13	29	13	28	1	2	34	154
Total	691	362	1083	75	130	105	194	69	112	419	1519

It is seen that the incidences of tube failures have been significantly lower in the supercritical units (660-800 MW group) amongst all capacity groups.

4.10 FORCED OUTAGE – UTILITY WISE

The forced outages of thermal generating units under various Central Sector Utilities, Private Sector and State Electricity Boards- /-Power Generating Corporations, is given below:

ORGANIZATION NAME	Number of Units	Total CAPACITY (MW)	Number of Units	Capacity	Duration (Hrs)	Energy Loss (MU)	Energy Loss as % of Max. Poss. gen. of Total Utility Capacity Reviewed
Central Sector							
APCPL	3	1500	3	1500	4121	2060.596	15.68
BRBCL	2	500	2	500	10767	2691.769	78.98
DVC	23	7640	23	7640	57222	17848.54	26.67
K.B.U.N.L	4	610	4	610	17094	2699.672	54.90
NLC	22	3240	22	3240	13067	2232.215	7.86
NSPCL	2	500	1	250	109	29.60599	0.68
NTECL	3	1500	3	1500	7151	3575.284	27.21
NTPC Ltd.	106	38755	106	38755	93404	34883.56	10.80
NTPL	2	1000	2	1000	1468	733.9921	8.38
PVUNL	5	455	5	455	26203	2384.486	92.53
CENTRAL Total	172	55700	172	55555	238225	69939	14.93
State Sector							
NORTHERN							
HPGCL	8	2720	8	2720	30123	9410.258	39.49
IPGPCL	2	135	2	135	17520	1182.6	100.00
PSPCL	14	2620	14	2620	60697	11809.65	51.46
RRVUNL	21	5190	20	5600	51790	14322.88	31.50
UPRVUNL	28	5923	25	5519	53459	9093.021	17.80
WESTERN							
BECL	2	500	2	500	12391	3097.657	70.72
CSPGCL	15	3280	15	3280	22546	2504.165	8.72
GMDCL	2	250	2	250	1288	160.9883	7.35
GSECL	24	4480	24	4480	50114	8806.404	24.03
MAHAGENCO	31	10380	30	10170	83173	23049	25.65
MPPGCL	14	4080	14	4080	30792	8831.589	24.71
SOUTHERN							
APGENCO	13	3410	13	3410	7603	1863.494	7.56
APPDCL	2	1600	2	1600	6962	5569.772	39.74
KPCL	11	3420	11	3420	21905	10405.22	38.34
RPCL	2	1600	2	1600	13785	11028.06	79.22
SCCL	2	1200	2	1200	1153	691.951	6.58
TNGDCL	15	4320	15	4320	25859	6815.557	18.01
TSGENCO	14	2882.5	14	2882.5	9801	1196.121	4.74
EASTERN							
BSEB	2	210	1	105	7012	799.0886	43.44
DPL	3	660	3	660	13460	2333.715	40.36
OPGC	2	420	2	420	317	66.51628	1.81
TVNL	2	420	2	420	5682	1193.22	32.43
WBPDCL	22	4860	22	4860	52985	11131.85	26.15
NORTH EAST							
APGPCL	2	60	60	17,520	526	100.00	60

ORGANIZATION NAME	Number of Units	Total CAPACITY (MW)	Number of Units	Capacity	Duration (Hrs)	Energy Loss (MU)	Energy Loss as % of Max. Poss. gen. of Total Utility Capacity Reviewed
State Total	253	64620.5	247	64311.5	597936	145888.4	26.36
Private Sector							
NORTHERN							
APL	2	1320	2	1320	8014	5288.912	45.74
BEPL	10	450	10	450	49357	2221.085	56.34
GPGL (GVK)	2	540	2	540	9246	2496.297	52.77
JhPL(HR)	2	1320	2	1320	2064	1362.415	11.78
LAPPL	2	1200	2	1200	1095	656.9306	6.25
LPGL	3	1980	3	1980	8224	5428.135	31.30
NPL	2	1400	2	1400	2238	1566.354	12.77
PPGCL (Jaypee)	3	1980	3	1980	13539	8936.023	54.24
RPSC	4	1200	4	1200	2885	865.5837	8.23
RWPL (JSW)	8	1080	8	1080	8965	1210.291	12.79
TSPL	3	1980	3	1980	7016	4630.848	26.70
WESTERN							
ACB	4	325	5	325	11066	511.3813	17.96
AMNEPL	4	246	4	246	35040	2154.96	100.00
APL	14	7920	2	1320	8014	5288.912	7.62
BALCO	2	600	2	600	4539	1361.656	25.91
BLAPPL	1	45	1	45	5107	249.4302	63.28
CGPL	5	4000	5	4000	3429	2743.358	7.83
DBPCL	2	1200	2	1200	2326	1395.529	13.28
DIPL	2	600	2	600	6785	2035.553	38.73
EPGL	2	1200	2	1200	9419	5651.532	53.76
ESSARPMPL	1	600	1	600	806	525.0488	9.99
GCEL	2	1370	2	1370	13431	9200.046	76.66
GEPL	2	120	2	120	17520	1051.2	100.00
GIPCL	4	500	4	500	4022	502.7049	11.48
GMR ENERG	2	600	2	600	2891	867.4356	16.50
IEPL	1	270	1	270	6994	2049.571	86.66
JHAPL	1	600	1	600	3037	1977.812	37.63
JPL	8	3400	8	3400	35692	16205.96	54.41
JPPVL	4	1820	4	1820	3217	1387.381	8.70
JSWEL	4	1200	4	1200	6643	1992.992	18.96
KWPCL	1	600	1	600	6963	4177.614	79.48
LANCO	2	600	2	600	1176	352.9179	6.71
MBPMPL	2	1200	2	1200	2783	1669.557	15.88
MCCPL	1	300	1	300	577	172.9739	6.58
RattanIndia	6	1620	6	1620	29117	7861.495	55.40
RIL (DAHANU)	2	500	2	500	505	126.1556	2.88
RKMPL	3	1080	3	1080	11773	4238.11	56.51
SCPL	2	100	2	100	1486	74.31519	8.48
SKS	1	300	0	0	0	0	0.00
SPL	6	3960	6	3960	2116	1396.549	4.03
SVPP	1	63	1	63	7703	485.2809	87.93
TATA PCL	3	1250	2	240	44	5.257213	0.05
TRNE	2	600	2	600	5616	1684.925	33.43
VESPL	1	35	1	35	8760	306.6	100.00
VIP	2	600	2	600	4281	1284.341	24.44
VVL	1	135	1	135	8760	1182.6	100.00
WPCL	7	2340	7	2340	26073	5940.033	37.83
TOR. POW.	5	422	5	422	16882	573.3994	15.51
SOUTHERN							
CEPL	2	1200	2	1200	7606	4563.751	43.41
HNPC	2	1040	2	1040	7559	3930.705	43.15
IBPIL	2	300	2	300	17520	2628	100.00
ITPCL	2	1200	2	1200	3931	2358.79	22.44
JSWEL	4	860	4	1200	6643	1992.992	26.45
MEL	2	300	2	300	11309	1696.361	64.55
SEIL	2	1320	2	1320	608	400.9947	3.47
SEPL	4	600	4	600	31939	4790.889	91.15
SGPL	2	1320	2	1320	857	565.7871	4.89
ST-CMSECP	1	250	1	250	3231	807.7499	36.88

ORGANIZATION NAME	Number of Units	Total CAPACITY (MW)	Number of Units	Capacity	Duration (Hrs)	Energy Loss (MU)	Energy Loss as % of Max. Poss. gen. of Total Utility Capacity Reviewed
UPCL	2	1200	2	1200	4632	2779.478	26.44
EASTERN							
ADHUNIK	2	540	2	540	5273	1423.598	30.09
CESC	9	1125	9	1125	43558	2722.963	27.63
GMR ENERG	3	1050	2	600	2891	867.4356	9.43
HEL	2	600	2	600	55	16.58888	0.32
IBPIL	1	350	2	300	16142	2421.303	78.97
JITPL	2	1200	2	1200	8115	4868.92	46.32
MPL	2	1050	2	1050	624	327.6556	3.56
SEL	4	1200	4	2400	15926	9555.506	90.90
TATA PCL	2	240	2	240	44	5.257213	0.25
HYEL	2	300	2	300	9022	1246.835	100.0
Private Sector	208	74016	208	74916	659266	196,123	30.75
GRAND TOTAL	633	194336.5	626	194617.5	1405790	413525.94	25.04

4.11 REGION WISE PERFORMANCE

North Eastern Region had the lowest energy loss due to forced outages (21.21%)& Western region showed highest energy loss due to forced outages(26.64%). The region wise summary of forced outages of thermal generating units is given below:

Sl. No.	REGION	No. of Units	Capacity (MW)	FORCED OUTAGE				
				No. of Units	Capacity (MW)	Duration (Hrs.)	Energy Loss (MU)	Energy Loss as % of Max. Possible generation OF Regional capacity
1	NORTHERN	153	42303	149	42309	726603.6	97477.34	26.61
2	WESTERN	233	79111	231	78351	638226.41	179414.85	26.64
3	SOUTHERN	122	39712.5	122	39712.5	215776.87	74765.64	22.53
4	EASTERN	121	32650	120	33745	443760.07	61174.32	22.11
5	NORTH EASTERN	4	560	2	500	18192.81	693.8	21.21
	ALL INDIA	633	194336.5	624	194617.5	2042559.76	413525.95	25.04

Annexure 4.1**REGION-WISE FREQUENCY OF OUTAGES/ TRIPPING OF EQUIPMENT AND RELATED ENERGY LOSS****DURING 2016-17 AND 2017-18**

Particulars of outages	Northern Region		Western Region		Southern Region		Eastern Region		North- Eastern		All India	
	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18
I. Boiler												
1. No. of outages	615	509	796	801	544	505	525	453	8	11	2488.00	2279
2. MU Loss	10463.85	14574.57	26921.49	23146.96	11762.79	13043.03	17428.92	13668.5	53.88	100.83	66630.92	64533.9
3. % age of total F.O	11.36	14.95	14.95	12.9	25.08	17.45	26.23	22.34	8.84	14.53	17.25	15.61
II. Turbine												
1. No. of outages		101	236	220	544	100	525	94	2	1	628.00	516
2. MU Loss	1893.81	5311	9544.40	11299.31	11762.79	5086.63	17428.92	4707.93	16.64	0.88	17581.13	26405.74
3. % age of total	2.06	5.45	5.30	6.3	25.08	6.8	26.23	7.7	2.73	0.13	4.55	6.39
III. Generator												
1. No. of outages	115	80	119	110	143	103	109	81	4	2	428.00	376
2. MU Loss	1464.21	5178.11	3480.66	9226.69	3426.71	2498.29	2699.58	8515.24	5.97	8.08	9233.80	25426.41
3. % age of total F.O	1.59	5.31	1.93	5.14	7.31	3.34	4.06	13.92	0.98	1.16	2.39	6.15
IV. Boiler Auxiliary												
1. No. of outages	132	79	146	173	112	53	78	71	2	5	429.00	381
2. MU Loss	1559.12	811.41	4069.79	5124.14	2543.67	591.03	1739.29	637.46	1.99	12.48	7445.20	7176.52
3. % age of total	1.69	0.83	2.26	2.86	5.42	0.79	2.62	1.04	0.33	1.8	1.93	1.74
V. Turbine Auxiliary												
1. No. of outages	80	39	90	53	73	49	76	24	1	2	268.00	167
2. MU Loss	474.41	370.3	2218.93	1315.15	1457.39	1223.04	356.90	957.69	1.40	5.86	6788.43	3872.05
3. % age of total	0.51	0.38	1.23	0.73	3.11	1.64	0.54	1.57	0.23	0.84	1.76	0.94
VI. Miscellaneous												
1. No. of outages	1106	809	913	850	43	401	54	410	3	5	2944.00	2475
2. MU Loss	76293.73	71231.94	133852.5	129302.6	2245.25	52323.61	1848.44	32687.51	529.53	565.67	278502.56	286111.33
3. % age of total F.O	82.79	73.08	74.33	72.07	4.79	69.98	2.78	53.43	86.89	81.53	72.12	69.19
VII. Total excluding												
1. No. of outages	1757	1290	1950	2005	424	1052	498	1047	20	26	6150.00	5420
2. MU Loss	42728.25	58415.97	117842.7	136396.9	25463	47427.88	42363.8	52304.44	609.4	693.8	250526.8	320376.25
3. FO Loss as % of	12.90	18.38	18.92	22.51	54.29	16.62	63.77	21.21	24.03	22.44	16.13	19.17
VIII. Reserve												
1. No. of outages	392	376	461	261	100	195	75	105			934	937
2. MU Loss	47931.098	39061.37	58541.26	43017.86	15684.73	27337.76	11818.08	8869.88			113413.88	93149.69
3. % age of total F.O	65.11	40.07	41.68	23.98	11.28	36.56	20.49	14.5			36.31	22.58
IX. Total including												
1. No. of outages	2186	1617	2300	2207	191	1211	131	1133	20	26	7185.00	6194

Particulars of outages	Northern Region		Western Region		Southern Region		Eastern Region		North- Eastern		All India	
	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18
2. MU Loss	92149.12	97477.34	180087.8	179414.85	15684.73	74765.64	11818.06	61174.32	609.40	693.8	386182.04	413525.94
3. FO loss as %age of Max. Possible	26.70	26.61	27.84	26.64	33.44	22.52	17.79	22.11	22.44	21.21	24.52	25.04

Annexure-4.2**DURATION PATTERN OF FORCED OUTAGES****All India:-**

Number of units considered	:	633	
Number of units involved	:	626	
All India possible generation	:	1651687.26	MU
All India energy loss on account of forced outage	:	413525.94	MU

DURATION	No.of units	No. of Outages	MU loses	% OF All India F.O. Loss	% All India Poss. gen
Upto 3 Hrs	312	795	454	0.11	0.0275
>3 & up to 6 Hrs	334	702	964	0.23	0.0584
>6 & up to 12 Hrs	247	532	1,197	0.29	0.0725
>12 & up to 18 Hrs	143	245	796	0.19	0.0482
>18 & up to 24 Hrs	132	205	1,025	0.25	0.0620
>1 & up to 2 Days	348	801	7,110	1.72	0.4305
>2 & up to 3 Days	284	542	9,624	2.33	0.5828
>3 & up to 4 Days	245	388	10,106	2.44	0.6119
>4 & up to 5 Days	167	222	6,757	1.63	0.4091
>5 & up to 6 Days	135	176	6,772	1.64	0.4101
>6 & up to 7 Days	93	116	5,786	1.40	0.3504
>7 & up to 8 Days	94	114	5,549	1.34	0.3360
>8 & up to 9 Days	84	104	5,646	1.37	0.3419
>9 & up to 10 Days	61	74	4,717	1.14	0.2856
>10 & up to 11 Days	64	71	5,850	1.41	0.3542
>11 & up to 12 Days	47	53	4,045	0.98	0.2450
>12 & up to 13 Days	48	51	4,555	1.10	0.2758
>13 & up to 14 Days	37	38	3,904	0.94	0.2364
>14 & up to 15 Days	35	36	3,167	0.77	0.1917
>15 & up to 16 Days	38	40	4,403	1.06	0.2666
>16 & up to 17 Days	40	42	5,006	1.21	0.3031
>17 & up to 18 Days	30	31	3,474	0.84	0.2103
>18 & up to 19 Days	18	18	2,546	0.62	0.1542
>19 & up to 20 Days	27	28	3,770	0.91	0.2283
>20 & up to 21 Days	16	16	2,254	0.55	0.1365
>21 & up to 22 Days	13	14	2,719	0.66	0.1647
>22 & up to 23 Days	17	18	3,531	0.85	0.2138
>23 & up to 24 Days	16	17	3,873	0.94	0.2345
>24 & up to 25 Days	18	18	2,883	0.70	0.1746
Over 25 Days	318	519	291,043	70.38	17.6234
Total	626	6026	413,525	100.00	25.0400

Annexure-4.2**Northern Region**

Number of units in the Region	:	153
Number of units involved	:	149
Regional possible generation	:	366381 MU
Regional energy loss on account of forced outage	:	97477.34 MU

Duration	No of	No of	Loss	% age of	% age of	% of	% of
Upto 3 Hrs	76	168	97	0.100	0.027	0.02	0.0059
>3 & up to 6 Hrs	82	169	229	0.235	0.063	0.06	0.0139
>6 & up to 12 Hrs	57	81	227	0.233	0.062	0.05	0.0138
>12 & up to 18 Hrs	28	36	174	0.179	0.048	0.04	0.0105
>18 & up to 24 Hrs	22	25	146	0.150	0.040	0.04	0.0089
>1 & up to 2 Days	84	162	1,737	1.782	0.476	0.42	0.1052
>2 & up to 3 Days	60	116	2,532	2.597	0.694	0.61	0.1533
>3 & up to 4 Days	64	100	2,778	2.850	0.761	0.67	0.1682
>4 & up to 5 Days	41	55	1,880	1.929	0.515	0.45	0.1138
>5 & up to 6 Days	41	52	1,906	1.955	0.522	0.46	0.1154
>6 & up to 7 Days	23	31	1,649	1.692	0.452	0.40	0.0999
>7 & up to 8 Days	23	28	1,530	1.570	0.419	0.37	0.0927
>8 & up to 9 Days	30	37	1,432	1.469	0.393	0.35	0.0867
>9 & up to 10 Days	15	18	1,167	1.197	0.320	0.28	0.0707
>10 & up to 11 Days	15	18	1,519	1.558	0.416	0.37	0.0920
>11 & up to 12 Days	16	19	1,379	1.415	0.378	0.33	0.0835
>12 & up to 13 Days	20	23	1,926	1.975	0.528	0.47	0.1166
>13 & up to 14 Days	11	11	1,056	1.083	0.289	0.26	0.0639
>14 & up to 15 Days	16	17	1,261	1.294	0.346	0.31	0.0764
>15 & up to 16 Days	8	8	848	0.870	0.232	0.21	0.0514
>16 & up to 17 Days	13	14	1,829	1.876	0.501	0.44	0.1107
>17 & up to 18 Days	14	14	2,041	2.094	0.559	0.49	0.1236
>18 & up to 19 Days	6	6	759	0.779	0.208	0.18	0.0460
>19 & up to 20 Days	9	9	1,437	1.474	0.394	0.35	0.0870
>20 & up to 21 Days	5	5	413	0.423	0.113	0.10	0.0250
>21 & up to 22 Days	4	4	677	0.694	0.185	0.16	0.0410
>22 & up to 23 Days	3	3	927	0.951	0.254	0.22	0.0561
>23 & up to 24 Days	6	6	1,583	1.624	0.434	0.38	0.0959
>24 & up to 25 Days	6	6	856	0.878	0.235	0.21	0.0518
Over 25 Days	89	151	61,483	63.074	16.850	14.87	3.7230
Total	149	1392	97,477	100.000	26.715	23.57	5.90

Annexure-4.2**Western Region**

Number of units in the Region	:	233
Number of units involved	:	231
Regional possible generation	:	673393.08 MU
Regional energy loss on account of forced outage	:	179414.85 MU

Duration	No. of units	No. of outages	Loss (MU)	% age of Regional F.O. Loss	% age of Regional possible generation	% age of All India F.O. Loss	% of possible All India generation
Upto 3 Hrs	107	274	176	0.098	0.026	0.04	0.0107
>3 & up to 6 Hrs	116	237	357	0.199	0.053	0.09	0.0216
>6 & up to 12 Hrs	87	156	439	0.245	0.065	0.11	0.0266
>12 & up to 18 Hrs	45	66	251	0.140	0.037	0.06	0.0152
>18 & up to 24 Hrs	39	61	366	0.204	0.054	0.09	0.0222
>1 & up to 2 Days	119	277	2,572	1.433	0.383	0.62	0.1557
>2 & up to 3 Days	109	222	4,365	2.433	0.649	1.06	0.2643
>3 & up to 4 Days	97	161	4,570	2.547	0.680	1.11	0.2767
>4 & up to 5 Days	63	81	2,594	1.446	0.386	0.63	0.1571
>5 & up to 6 Days	46	59	2,726	1.520	0.406	0.66	0.1651
>6 & up to 7 Days	33	42	2,469	1.376	0.367	0.60	0.1495
>7 & up to 8 Days	40	49	2,832	1.578	0.421	0.68	0.1715
>8 & up to 9 Days	34	43	3,141	1.751	0.467	0.76	0.1902
>9 & up to 10 Days	27	33	2,203	1.228	0.328	0.53	0.1334
>10 & up to 11 Days	24	27	2,816	1.569	0.419	0.68	0.1705
>11 & up to 12 Days	18	19	1,549	0.863	0.230	0.37	0.0938
>12 & up to 13 Days	14	14	1,637	0.912	0.244	0.40	0.0991
>13 & up to 14 Days	13	13	1,508	0.841	0.224	0.36	0.0913
>14 & up to 15 Days	4	4	823	0.458	0.122	0.20	0.0498
>15 & up to 16 Days	11	12	1,909	1.064	0.284	0.46	0.1156
>16 & up to 17 Days	19	19	2,458	1.370	0.366	0.59	0.1488
>17 & up to 18 Days	10	10	1,162	0.648	0.173	0.28	0.0704
>18 & up to 19 Days	7	7	1,221	0.680	0.182	0.30	0.0739
>19 & up to 20 Days	12	12	1,382	0.770	0.206	0.33	0.0837
>20 & up to 21 Days	4	4	648	0.361	0.096	0.16	0.0392
>21 & up to 22 Days	8	9	2,108	1.175	0.314	0.51	0.1277
>22 & up to 23 Days	11	12	2,326	1.296	0.346	0.56	0.1408
>23 & up to 24 Days	5	6	1,198	0.668	0.178	0.29	0.0725
>24 & up to 25 Days	5	5	1,300	0.725	0.193	0.31	0.0787
Over 25 Days	126	201	126,308	70.400	18.792	30.54	7.6483
Total	231	2135	179,415	100.000	26.693	43.39	10.86

Annexure-4.2**Eastern Region**

Number of units in the Region	:	121
Number of units involved	:	57
Regional possible generation	:	276712.8 MU
Regional energy loss on account of forced outage	:	61174.32 MU

DURATION	No. of units	No. of Outages	Loss (MU)	% age of Regional F.O. Loss	% age of Regional possible generation	% age of All India F.O. Loss	% of possible All India generation
Upto 3 Hrs	57	168	61	0.100	0.022	0.01	0.0037
>3 & up to 6 Hrs	59	169	144	0.235	0.051	0.03	0.0087
>6 & up to 12 Hrs	52	81	143	0.233	0.051	0.03	0.0086
>12 & up to 18 Hrs	32	36	109	0.179	0.039	0.03	0.0066
>18 & up to 24 Hrs	34	25	92	0.150	0.033	0.02	0.0056
>1 & up to 2 Days	61	162	1,090	1.782	0.389	0.26	0.0660
>2 & up to 3 Days	50	116	1,589	2.597	0.567	0.38	0.0962
>3 & up to 4 Days	37	100	1,744	2.850	0.622	0.42	0.1056
>4 & up to 5 Days	29	55	1,180	1.929	0.421	0.29	0.0714
>5 & up to 6 Days	22	52	1,196	1.955	0.427	0.29	0.0724
>6 & up to 7 Days	19	31	1,035	1.692	0.369	0.25	0.0627
>7 & up to 8 Days	17	28	960	1.570	0.343	0.23	0.0582
>8 & up to 9 Days	6	37	899	1.469	0.321	0.22	0.0544
>9 & up to 10 Days	11	18	732	1.197	0.261	0.18	0.0444
>10 & up to 11 Days	12	18	953	1.558	0.340	0.23	0.0577
>11 & up to 12 Days	5	19	865	1.415	0.309	0.21	0.0524
>12 & up to 13 Days	5	23	1,208	1.975	0.431	0.29	0.0732
>13 & up to 14 Days	7	11	663	1.083	0.236	0.16	0.0401
>14 & up to 15 Days	9	17	792	1.294	0.282	0.19	0.0479
>15 & up to 16 Days	7	8	532	0.870	0.190	0.13	0.0322
>16 & up to 17 Days	4	14	1,148	1.876	0.409	0.28	0.0695
>17 & up to 18 Days	2	14	1,281	2.094	0.457	0.31	0.0776
>18 & up to 19 Days	3	6	476	0.779	0.170	0.12	0.0289
>19 & up to 20 Days	2	9	902	1.474	0.322	0.22	0.0546
>20 & up to 21 Days	2	5	259	0.423	0.092	0.06	0.0157
>21 & up to 22 Days	2	4	425	0.694	0.151	0.10	0.0257
>22 & up to 23 Days	3	3	582	0.951	0.208	0.14	0.0352
>23 & up to 24 Days	1	6	994	1.624	0.354	0.24	0.0602
>24 & up to 25 Days	61	6	537	0.878	0.192	0.13	0.0325
Over 25 Days	120	151	38,585	63.074	13.764	9.33	2.3364
Total	57	1392	61,174	100.000	21.822	14.79	3.70

Annexure-4.2**Southern Region**

Number of units in the Region	:	122	
Number of units involved	:	122	
Regional possible generation	:	331928.7	MU
Regional energy loss on account of forced outage	:	74765.64	MU

DURATION	No.of	No. of	Loss	% age of	% age of	% age of	% of
Upto 3 Hrs	70	177	94	0.126	0.029	0.02	0.0057
>3 & up to 6 Hrs	75	153	231	0.308	0.070	0.06	0.0140
>6 & up to 12 Hrs	50	92	270	0.361	0.082	0.07	0.0164
>12 & up to 18 Hrs	36	48	159	0.213	0.048	0.04	0.0097
>18 & up to 24 Hrs	36	61	271	0.363	0.082	0.07	0.0164
>1 & up to 2 Days	82	196	1,629	2.179	0.493	0.39	0.0987
>2 & up to 3 Days	63	105	1,806	2.415	0.546	0.44	0.1093
>3 & up to 4 Days	45	58	1,584	2.118	0.479	0.38	0.0959
>4 & up to 5 Days	34	47	1,518	2.030	0.459	0.37	0.0919
>5 & up to 6 Days	26	38	1,617	2.163	0.489	0.39	0.0979
>6 & up to 7 Days	18	21	1,032	1.381	0.312	0.25	0.0625
>7 & up to 8 Days	14	15	619	0.828	0.187	0.15	0.0375
>8 & up to 9 Days	13	16	806	1.078	0.244	0.19	0.0488
>9 & up to 10 Days	8	11	831	1.112	0.252	0.20	0.0503
>10 & up to 11 Days	13	13	1,011	1.353	0.306	0.24	0.0612
>11 & up to 12 Days	8	10	945	1.264	0.286	0.23	0.0572
>12 & up to 13 Days	8	8	691	0.924	0.209	0.17	0.0418
>13 & up to 14 Days	6	7	968	1.295	0.293	0.23	0.0586
>14 & up to 15 Days	6	6	434	0.580	0.131	0.10	0.0263
>15 & up to 16 Days	12	13	1,138	1.523	0.344	0.28	0.0689
>16 & up to 17 Days	4	5	461	0.616	0.139	0.11	0.0279
>17 & up to 18 Days	4	4	338	0.453	0.102	0.08	0.0205
>18 & up to 19 Days	2	2	394	0.527	0.119	0.10	0.0238
>19 & up to 20 Days	4	5	707	0.946	0.214	0.17	0.0428
>20 & up to 21 Days	5	5	1,040	1.391	0.315	0.25	0.0630
>21 & up to 22 Days	1	1	94	0.126	0.029	0.02	0.0057
>22 & up to 23 Days	1	1	240	0.321	0.073	0.06	0.0145
>23 & up to 24 Days	2	2	472	0.632	0.143	0.11	0.0286
>24 & up to 25 Days	6	6	690	0.923	0.209	0.17	0.0418
Over 25 Days	39	62	52,675	70.453	15.937	12.74	3.1896
Total	122	1188	74,766	100.000	22.621	18.08	4.53

Annexure-4.2**North Eastern Region**

Number of units in the Region	:	4
Number of units involved	:	4
Regional possible generation	:	3271.68 MU
Regional energy loss on account of forced outage	:	693.8 MU

Duration	No of units	No of outages	Loss (MU)	% age of Regional F.O. loss	% age of possible Regional generation	% of All India F.O. loss	% of Possible All India generation
Upto 3 Hrs	2	5	2.52	0.36	0.08	0	0
>3 & up to 6 Hrs	2	3	2.67	0.38	0.08	0	0
>6 & up to 12 Hrs	1	2	4.14	0.6	0.13	0	0
>12 & up to 18 Hrs	2	3	11.35	1.64	0.35	0	0
>18 & up to 24 Hrs	1	2	10.52	1.52	0.32	0	0
>1 & up to 2 Days	2	2	20.23	2.92	0.62	0	0
>2 & up to 3 Days	2	4	56.56	8.15	1.73	0.01	0
>3 & up to 4 Days	2	3	60.22	8.68	1.84	0.01	0
>4 & up to 5 Days	0	0					
>5 & up to 6 Days	0	0					
>6 & up to 7 Days	0	0					
>7 & up to 8 Days	0	0					
>8 & up to 9 Days	0	0					
>9 & up to 10 Days	0	0					
>10 & up to 11 Days	0	0					
>11 & up to 12 Days	0	0					
>12 & up to 13 Days	0	0					
>13 & up to 14 Days	0	0					
>14 & up to 15 Days	0	0					
>15 & up to 16 Days	0	0					
>16 & up to 17 Days	0	0					
>17 & up to 18 Days	0	0					
>18 & up to 19 Days	0	0					
>19 & up to 20 Days	0	0					
>20 & up to 21 Days	0	0					
>21 & up to 22 Days	0	0					
>22 & up to 23 Days	0	0					
>23 & up to 24 Days	0	0					
>24 & up to 25 Days	0	0					
Over 25 Days	2	2	525.6	75.76	16.07	0.13	0.03
Total	4	26	693.8	100	21.21	0.17	0.04

Details of Units with Long Duration Forced Outages of more than 25 days on 2017-18

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible (Gen)
NORTHERN REGION									
RAJPURA TPP	2	700	11-Oct-17	13-Nov-17	33	793.77	COAL FEEDING PROBLEM IN PLANT	555.64	9.06
TALWANDI SABO TPP	1	660	18-Apr-17	21-Jun-17	65	1552.83	COAL SHORTAGE	1024.87	17.73
TALWANDI SABO TPP	2	660	17-Apr-17	20-Jun-17	64	1536.53	COAL SHORTAGE	1014.11	17.54
TALWANDI SABO TPP	3	660	18-Apr-17	23-Jun-17	66	1589.38	COAL SHORTAGE	1048.99	18.14
KAWAI TPS	1	660	3-Apr-17	6-May-17	34	806.33	TURBINE BEARING PROBLEM	532.18	9.2
KAWAI TPS	1	660	6-Jan-18	18-Mar-18	71	1705.53	COAL FEEDING PROBLEM IN PLANT	1125.65	19.47
KAWAI TPS	1	660	23-Sep-17	21-Dec-17	90	2151.25	COAL SHORTAGE	1419.83	24.56
KAWAI TPS	2	660	13-Jan-18	30-Mar-18	75	1805.83	COAL FEEDING PROBLEM IN PLANT	1191.85	20.61
KAWAI TPS	2	660	19-Aug-17	4-Oct-17	46	1113.87	COAL SHORTAGE	735.15	12.72
PRAYAGRAJ TPP	1	660	3-Jan-18	3-Mar-18	59	1414.6	COAL SHORTAGE	933.64	16.15
PRAYAGRAJ TPP	1	660	29-Apr-17	2-Jun-17	34	825.57	COAL SHORTAGE	544.88	9.42
PRAYAGRAJ TPP	2	660	2-Jun-17	14-Oct-17	134	3220.07	ROTOR/ ROTOR EARTH FAULT	2125.25	36.76
PRAYAGRAJ TPP	3	660	4-Nov-17	11-Dec-17	38	3552	COAL SHORTAGE	598.86	12.44
PRAYAGRAJ TPP	3	660	20-Feb-18	28-Mar-18	37	938.57	COAL SHORTAGE	578.48	12.01
LALITPUR TPS	1	660	22-Jan-18	5-Mar-18	42	1010.43	COAL SHORTAGE	666.88	11.53
LALITPUR TPS	2	660	26-Jan-18	31-Mar-18	65	1552.33	COAL SHORTAGE	1024.54	17.72
LALITPUR TPS	3	660	1-Apr-17	4-Jun-17	65	1548.02	GENERATOR PROTECTION RELAY OPERATION PROBLEM	1021.69	17.67
RAJIV GANDHI TPS	1	600	19-Oct-17	2-Dec-17	43	1039.1	RSD/LOW SCHEDULE	623.46	11.86
RAJIV GANDHI TPS	2	600	28-Oct-17	23-Nov-17	26	617.47	RSD/LOW SCHEDULE	370.48	7.05
KALISINDH TPS	1	600	29-Jun-17	15-Aug-17	47	1123.87	RESERVE SHUT DOWN / STANDBY UNIT	674.32	12.83
KALISINDH TPS	2	600	21-Jun-17	20-Jul-17	29	707.77	RESERVE SHUT DOWN / STANDBY UNIT	424.66	8.08
INDIRA GANDHI STPP	3	500	1-Apr-17	3-May-17	33	790.28	RESERVE SHUT DOWN / STANDBY UNIT	395.14	9.02
ANPARA TPS	5	500	2-Jun-17	1-Aug-17	60	1432.12	TURBINE VIBRATIONS HIGH	716.06	16.35
ANPARA TPS	7	500	17-Oct-17	26-Feb-18	132	3156.67	TURBINE VIBRATIONS HIGH	1578.34	36.04
ANPARA TPS	7	500	22-Aug-17	16-Oct-17	55	1311.27	MAIN STEAM LINE PROBLEM	655.64	14.97
RIHAND STPS	4	500	2-Apr-17	15-May-17	42	1015.3	SWITCH YARD/TRIPPING OF TRANSMISSION LINES/BUS BAR PROBLEM	507.65	11.59
UNCHAHAHAR TPS	6	500	1-Nov-17	31-Mar-18	150	3608.37	FURNACE DRAFT ABNORMAL	1804.19	82.61
YAMUNA NAGAR TPS	1	300	9-Jun-17	11-Jul-17	33	780.12	WATER WALL TUBE LEAKAGE	234.04	8.91
ROSA TPP Ph-I	4	300	22-Jul-17	17-Aug-17	26	634.93	COAL SHORTAGE	190.48	7.25
GOINDWAL SAHIB TPP	1	270	1-Apr-17	17-Jun-17	78	1863.5	COAL SHORTAGE	503.15	21.27
GOINDWAL SAHIB TPP	2	270	1-Apr-17	2-Aug-17	124	2966.92	REHEATER TUBE LEAKAGE	801.07	33.87
GOINDWAL SAHIB TPP	2	270	25-Jan-18	21-Mar-18	55	1315.48	ASH HANDLING SYSTEM PROBLEM	355.18	15.02
PANIPAT TPS	7	250	28-Dec-17	5-Feb-18	39	936.08	RSD/LOW SCHEDULE	234.02	10.69

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
PANIPAT TPS	8	250	1-Apr-17	4-May-17	34	813.35	RESERVE SHUT DOWN / STANDBY UNIT	203.34	9.28
PANIPAT TPS	8	250	10-Jun-17	5-Jul-17	26	618.78	RESERVE SHUT DOWN / STANDBY UNIT	154.7	7.06
PANIPAT TPS	8	250	22-Sep-17	27-Nov-17	66	1586.13	RSD/LOW SCHEDULE	396.53	18.11
GH TPS (LEH.MOH.)	3	250	9-Nov-17	11-Jan-18	62	1499.07	RSD/LOW SCHEDULE	374.77	17.11
GH TPS (LEH.MOH.)	3	250	31-Jan-18	8-Mar-18	35	849.92	RSD/LOW SCHEDULE	212.48	9.7
GH TPS (LEH.MOH.)	4	250	1-Aug-17	10-Sep-17	40	957.38	RSD/LOW SCHEDULE	239.35	10.93
GH TPS (LEH.MOH.)	4	250	20-Oct-17	31-Dec-17	72	1730.48	RSD/LOW SCHEDULE	432.62	19.75
SURATGARH TPS	1	250	1-Jan-18	1-Mar-18	59	1426.03	GENERATOR PROTECTION RELAY OPERATION PROBLEM	356.51	16.28
SURATGARH TPS	1	250	11-May-17	4-Jul-17	54	1288.02	RSD/LOW SCHEDULE	322.01	14.7
SURATGARH TPS	2	250	1-Apr-17	4-May-17	33	792.47	RSD/LOW SCHEDULE	198.12	9.05
SURATGARH TPS	2	250	4-Jul-17	18-Aug-17	45	1081.58	RSD/LOW SCHEDULE	270.4	12.35
SURATGARH TPS	2	250	8-Dec-17	6-Jan-18	29	703.15	RSD/LOW SCHEDULE	175.79	8.03
SURATGARH TPS	2	250	9-Oct-17	23-Nov-17	45	1071.12	COAL SHORTAGE	267.78	12.23
SURATGARH TPS	2	250	23-Feb-18	30-Mar-18	35	842.92	FUEL SUPPLY & OTHER MISC. PROBLEMS	210.73	9.62
SURATGARH TPS	3	250	1-Apr-17	4-May-17	34	804.2	RESERVE SHUT DOWN / STANDBY UNIT	201.05	9.18
SURATGARH TPS	3	250	10-Sep-17	8-Nov-17	58	1397.38	COAL SHORTAGE	349.35	15.95
SURATGARH TPS	3	250	12-Jun-17	15-Jul-17	33	791.82	RSD/LOW SCHEDULE	197.96	9.04
SURATGARH TPS	3	250	16-Jul-17	20-Aug-17	34	824.33	RSD/LOW SCHEDULE	206.08	9.41
SURATGARH TPS	4	250	1-Apr-17	4-May-17	33	803.7	RSD/LOW SCHEDULE	200.93	9.17
SURATGARH TPS	4	250	27-May-17	13-Jul-17	46	1111.92	RSD/LOW SCHEDULE	277.98	12.69
SURATGARH TPS	5	250	1-Apr-17	5-May-17	34	816.25	RSD/LOW SCHEDULE	204.06	9.32
SURATGARH TPS	6	250	1-Apr-17	4-May-17	33	797.02	RSD/LOW SCHEDULE	199.26	9.1
SURATGARH TPS	6	250	11-Sep-17	8-Nov-17	58	1399.58	COAL SHORTAGE	349.9	15.98
SURATGARH TPS	6	250	16-May-17	20-Aug-17	95	2285.95	RSD/LOW SCHEDULE	571.49	26.1
CHHABRA TPP	3	250	13-Dec-17	11-Feb-18	60	1428.45	GENERATOR STATOR DAMAGED	357.11	16.31
BADARPUR TPS	4	210	16-Oct-17	31-Mar-18	166	3984.47	POLLUTION PROBLEM	836.74	45.48
BADARPUR TPS	5	210	16-Oct-17	31-Mar-18	166	3984.02	POLLUTION PROBLEM	836.64	45.48
PANIPAT TPS	5	210	1-Apr-17	16-Jul-17	106	2553.58	RSD/LOW SCHEDULE	536.25	29.15
PANIPAT TPS	5	210	15-Oct-17	6-Mar-18	142	3414.38	RESERVE SHUT DOWN / STANDBY UNIT	717.02	38.98
PANIPAT TPS	5	210	19-Aug-17	13-Oct-17	55	1316.45	RESERVE SHUT DOWN / STANDBY UNIT	276.45	15.03
PANIPAT TPS	6	210	1-Apr-17	6-May-17	36	857.02	RSD/LOW SCHEDULE	179.97	9.78
PANIPAT TPS	6	210	6-Nov-17	23-Dec-17	47	1116.65	RESERVE SHUT DOWN / STANDBY UNIT	234.5	12.75
PANIPAT TPS	6	210	9-May-17	19-Jul-17	71	1711.85	RESERVE SHUT DOWN / STANDBY UNIT	359.49	19.54
GH TPS (LEH.MOH.)	1	210	1-Aug-17	9-Sep-17	39	938.37	RSD/LOW SCHEDULE	197.06	10.71
GH TPS (LEH.MOH.)	1	210	10-Oct-17	2-Jan-18	84	2013.55	RSD/LOW SCHEDULE	422.85	22.99

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
GH TPS (LEH.MOH.)	1	210	13-Jan-18	10-Feb-18	28	666.83	RSD/LOW SCHEDULE	140.03	7.61
GH TPS (LEH.MOH.)	2	210	1-Aug-17	15-Sep-17	44	1067.33	RSD/LOW SCHEDULE	224.14	12.18
GH TPS (LEH.MOH.)	2	210	16-Oct-17	1-Jan-18	77	1844.03	RSD/LOW SCHEDULE	387.25	21.05
ROPAR TPS	1	210	20-Aug-17	21-Sep-17	32	763.83	RSD/LOW SCHEDULE	160.4	8.72
ROPAR TPS	1	210	23-Sep-17	26-Dec-17	93	2239.25	RSD/LOW SCHEDULE	470.24	25.56
ROPAR TPS	1	210	31-May-17	17-Aug-17	78	1865.17	RSD/LOW SCHEDULE	391.69	21.29
ROPAR TPS	2	210	12-Jul-17	15-Aug-17	33	796.92	RSD/LOW SCHEDULE	167.35	9.1
ROPAR TPS	2	210	16-Oct-17	23-Dec-17	68	1638.33	RSD/LOW SCHEDULE	344.05	18.7
ROPAR TPS	2	210	19-Aug-17	21-Sep-17	33	781.5	RSD/LOW SCHEDULE	164.12	8.92
ROPAR TPS	3	210	1-Apr-17	25-May-17	54	1307.33	RSD/LOW SCHEDULE	274.54	14.92
ROPAR TPS	3	210	17-Oct-17	31-Mar-18	164	3939.33	RSD/LOW SCHEDULE	827.26	44.97
ROPAR TPS	3	210	31-Jul-17	15-Sep-17	45	1080.42	RSD/LOW SCHEDULE	226.89	12.33
ROPAR TPS	4	210	1-Aug-17	10-Sep-17	40	971.25	RSD/LOW SCHEDULE	203.96	11.09
ROPAR TPS	4	210	18-Oct-17	10-Mar-18	143	3421.42	RSD/LOW SCHEDULE	718.5	39.06
ROPAR TPS	5	210	14-Nov-17	11-Jan-18	58	1382.33	RSD/LOW SCHEDULE	290.29	15.78
ROPAR TPS	5	210	24-Apr-17	15-Jun-17	53	1260.42	RSD/LOW SCHEDULE	264.69	14.39
ROPAR TPS	6	210	2-Feb-18	8-Mar-18	33	802.25	RSD/LOW SCHEDULE	168.47	9.16
ROPAR TPS	6	210	14-Aug-17	8-Sep-17	25	608.92	RSD/LOW SCHEDULE	127.87	6.95
ROPAR TPS	6	210	19-Jun-17	20-Jul-17	31	746	RSD/LOW SCHEDULE	156.66	8.52
ROPAR TPS	6	210	19-Oct-17	31-Dec-17	73	1755.17	RSD/LOW SCHEDULE	368.59	20.04
ROPAR TPS	6	210	24-Apr-17	26-May-17	32	761.67	RSD/LOW SCHEDULE	159.95	8.69
KOTA TPS	3	210	15-Jun-17	14-Jul-17	29	684.87	TURBINE MISC.	143.82	7.82
KOTA TPS	3	210	22-Jul-17	19-Aug-17	28	667.9	WATER WALL TUBE LEAKAGE	140.26	7.62
KOTA TPS	4	210	20-Jun-17	15-Aug-17	56	1355.35	RSD/LOW SCHEDULE	284.62	15.47
KOTA TPS	5	210	1-Apr-17	1-May-17	30	721.8	RSD/LOW SCHEDULE	151.58	8.24
KOTA TPS	5	210	13-Jun-17	9-Jul-17	26	624.82	RSD/LOW SCHEDULE	131.21	7.13
DADRI (NCTPP)	1	210	11-Nov-17	10-Dec-17	29	701.57	RSD/LOW SCHEDULE	147.33	8.01
DADRI (NCTPP)	2	210	11-Nov-17	15-Dec-17	34	810.58	RSD/LOW SCHEDULE	170.22	9.25
DADRI (NCTPP)	2	210	20-Jun-17	18-Jul-17	28	678.52	RSD/LOW SCHEDULE	142.49	7.75
DADRI (NCTPP)	3	210	10-Jun-17	5-Jul-17	25	607.32	RSD/LOW SCHEDULE	127.54	6.93
OBRA TPS	10	200	31-Aug-17	29-Oct-17	59	1410.28	GENERATOR PROTECTION RELAY OPERATION PROBLEM	282.06	16.1
OBRA TPS	13	200	25-Jul-17	23-Aug-17	28	683.65	COAL FEEDING PROBLEM IN PLANT	136.73	7.8
JALIPA KAPURDI TPP	4	135	3-Sep-17	9-Oct-17	37	883.2	BOILER MISC. PROBLEM	119.23	10.08
JALIPA KAPURDI TPP	5	135	2-May-17	28-May-17	26	628.23	BOILER MISC. PROBLEM	84.81	7.17
GND TPS(BHATINDA)	1	110	1-Apr-17	29-Jul-17	119	2864.67	RSD/LOW SCHEDULE	315.11	32.7
GND TPS(BHATINDA)	1	110	2-Aug-17	25-Sep-17	55	1310.83	RESERVE SHUT DOWN / STANDBY UNIT	144.19	14.96
GND TPS(BHATINDA)	2	110	1-Apr-17	16-Jun-17	77	1845.75	RSD/LOW SCHEDULE	203.03	21.07
GND TPS(BHATINDA)	2	110	22-Jun-17	23-Sep-17	93	2232.05	RSD/LOW SCHEDULE	245.53	25.48

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
GND TPS(BHATINDA)	2	110	25-Sep-17	31-Mar-18	187	4497.85	RSD/LOW SCHEDULE	494.76	51.34
GND TPS(BHATINDA)	3	110	20-Jun-17	6-Aug-17	47	1129.92	RSD/LOW SCHEDULE	124.29	12.9
GND TPS(BHATINDA)	3	110	22-Sep-17	31-Mar-18	191	4582.97	RSD/LOW SCHEDULE	504.13	52.32
GND TPS(BHATINDA)	4	110	1-Apr-17	16-May-17	46	1097.5	RSD/LOW SCHEDULE	120.73	12.53
GND TPS(BHATINDA)	4	110	19-Jun-17	6-Aug-17	48	1148.53	RSD/LOW SCHEDULE	126.34	13.11
GND TPS(BHATINDA)	4	110	23-Sep-17	31-Mar-18	189	4537.42	RSD/LOW SCHEDULE	499.12	51.8
KOTA TPS	1	110	1-Apr-17	4-May-17	33	793.72	RSD/LOW SCHEDULE	87.31	9.06
KOTA TPS	1	110	1-Feb-18	31-Mar-18	58	1397.53	COAL SHORTAGE	153.73	15.95
KOTA TPS	1	110	19-Jun-17	14-Jul-17	25	608.18	RSD/LOW SCHEDULE	66.9	6.94
KOTA TPS	1	110	21-Jul-17	18-Aug-17	28	662.73	RSD/LOW SCHEDULE	72.9	7.57
KOTA TPS	1	110	27-Sep-17	28-Oct-17	31	733.82	RSD/LOW SCHEDULE	80.72	8.38
KOTA TPS	2	110	1-Apr-17	3-May-17	33	787.32	MAIN STEAM LINE PROBLEM	86.61	8.99
KOTA TPS	2	110	19-Jun-17	15-Jul-17	26	615.77	RSD/LOW SCHEDULE	67.73	7.03
KOTA TPS	2	110	21-Jul-17	18-Aug-17	28	662.33	RSD/LOW SCHEDULE	72.86	7.56
KOTA TPS	2	110	27-Sep-17	28-Oct-17	30	725.93	RSD/LOW SCHEDULE	79.85	8.29
PARICHA TPS	2	110	3-Jul-17	1-Sep-17	60	1445.33	RSD/LOW SCHEDULE	158.99	16.5
PARICHA TPS	2	110	21-Oct-17	23-Feb-18	125	2989.42	BOILER MISC. PROBLEM	328.84	34.13
PANKI TPS	3	105	5-Jul-17	4-Aug-17	31	6467.05	RSD/LOW SCHEDULE	77.98	9.26
PANKI TPS	4	105	1-Jul-17	6-Aug-17	36	6563.92	RSD/LOW SCHEDULE	91.38	10.86
HARDUAGANJ TPS	7	105	2-Jul-17	17-Oct-17	107	2562.27	RSD/LOW SCHEDULE	269.04	29.25
HARDUAGANJ TPS	7	105	24-Oct-17	23-Feb-18	122	2932.28	RSD/LOW SCHEDULE	307.89	33.47
BADARPUR TPS	1	95	1-Apr-17	31-Mar-18	365	8760	POLLUTION PROBLEM	832.2	100
BADARPUR TPS	2	95	1-Apr-17	31-Mar-18	365	8760	POLLUTION PROBLEM	832.2	100
BADARPUR TPS	3	95	1-Apr-17	31-Mar-18	365	8760	POLLUTION PROBLEM	832.2	100
OBRA TPS	8	94	1-Apr-17	31-Mar-18	365	8760	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	823.44	100
RAJGHAT TPS	1	67.5	1-Apr-17	31-Mar-18	365	8760	RSD/LOW SCHEDULE	591.3	100
RAJGHAT TPS	2	67.5	1-Apr-17	31-Mar-18	365	8760	RSD/LOW SCHEDULE	591.3	100
HARDUAGANJ TPS	5	60	1-Apr-17	31-Mar-18	365	8760	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	525.6	299.18
OBRA TPS	2	50	1-Jul-17	31-Mar-18	274	6575.17	Other Commercial Reason	328.76	224.56
MAQSOODPUR TPS	1	45	5-Jul-17	17-Jan-18	196	4701.32	RSD/LOW SCHEDULE	211.56	53.67
MAQSOODPUR TPS	2	45	2-Jul-17	17-Jan-18	199	4780.58	RSD/LOW SCHEDULE	215.13	54.57
KHAMBARKHERA TPS	1	45	2-Jul-17	17-Jan-18	199	4779.03	RSD/LOW SCHEDULE	215.06	54.56
KHAMBARKHERA TPS	2	45	2-Jul-17	17-Jan-18	199	4784.17	RSD/LOW SCHEDULE	215.29	54.61
BARKHERA TPS	1	45	3-Jul-17	17-Jan-18	198	4757.25	RSD/LOW SCHEDULE	214.08	54.31
BARKHERA TPS	2	45	3-Jul-17	17-Jan-18	198	4758.35	RSD/LOW SCHEDULE	214.13	54.32
KUNDARKI TPS	1	45	5-Jul-17	17-Jan-18	196	4704.35	RSD/LOW SCHEDULE	211.7	53.7
KUNDARKI TPS	2	45	3-Jul-17	17-Jan-18	198	4761.08	RSD/LOW SCHEDULE	214.25	54.35
UTRAULA TPS	1	45	3-Jul-17	17-Jan-18	198	4760.8	RSD/LOW SCHEDULE	214.24	54.35

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
UTRAULA TPS	2	45	3-Jul-17	17-Jan-18	198	4763.37	RSD/LOW SCHEDULE	214.35	54.38
OBRA TPS	1	40	1-Apr-17	31-Mar-18	365	8760	WATER WALL TUBE LEAKAGE	350.4	299.18
SUB TOTAL	146	37484			12724.533	319585.85		58663.63	
WESTERN REGION									
MUNDRA UMTTP	1	800	8-Jun-17	6-Jul-17	27	652.45	BOILER MISC. PROBLEM	521.96	7.45
RAIKHEDA TPP	1	685	1-Apr-17	15-Jun-17	76	1823.6	NO Power purchase agreement	1249.17	20.82
RAIKHEDA TPP	1	685	22-Jul-17	31-Mar-18	253	6070.07	RSD/LOW SCHEDULE	4158	69.29
RAIKHEDA TPP	2	685	1-Apr-17	4-Oct-17	187	4479.92	NO Power purchase agreement	3068.75	51.14
RAIKHEDA TPP	2	685	15-Oct-17	15-Jan-18	91	2195.73	NO Power purchase agreement	1504.08	25.07
MUNDRA TPS	5	660	1-Nov-17	31-Mar-18	150	3600.28	AIR PREHEATERS PROBLEM	2376.18	41.1
MUNDRA TPS	5	660	3-May-17	23-Jun-17	51	1222.55	COAL SHORTAGE	806.88	13.96
MUNDRA TPS	6	660	20-Oct-17	31-Mar-18	162	3891.67	COAL SHORTAGE	2568.5	44.43
MUNDRA TPS	6	660	27-Apr-17	19-Jun-17	53	1273.47	COAL SHORTAGE	840.49	14.54
MUNDRA TPS	7	660	23-Sep-17	21-Oct-17	29	694.7	COAL SHORTAGE	458.5	7.93
MUNDRA TPS	7	660	28-Feb-18	31-Mar-18	31	744.83	COAL SHORTAGE	491.59	8.5
MUNDRA TPS	8	660	24-Jul-17	29-Aug-17	35	850.47	MILLING SYSTEM /RC FEEDER PROBLEM	561.31	9.71
MUNDRA TPS	9	660	24-Jan-18	31-Mar-18	67	1598.75	COAL SHORTAGE	1055.18	18.25
SASAN UMTTP	3	660	16-May-17	15-Jun-17	29	707.57	TURBINE CONTROL VALVE PROBLEM	467	8.08
MAUDA TPS	3	660	2-Dec-17	4-Jan-18	33	795	COAL SHORTAGE	524.7	9.08
MAUDA TPS	3	660	6-May-17	16-Jun-17	41	980.57	E.S.P.MISCELLANEOUS	647.18	11.19
MAUDA TPS	3	660	27-Jun-17	9-Aug-17	43	1029.28	RSD/LOW SCHEDULE	679.32	11.75
MAUDA TPS	4	660	5-Jan-18	27-Feb-18	53	1273.28	COAL SHORTAGE	840.36	29.15
KORADI TPS	9	660	7-Sep-17	31-Oct-17	55	1318.48	AIR PREHEATERS PROBLEM	870.2	15.05
KORADI TPS	9	660	31-Jan-18	3-Mar-18	31	737.65	COAL SHORTAGE	486.85	8.42
TIRORA TPS	1	660	7-Aug-17	6-Sep-17	31	735.87	AIR PREHEATERS PROBLEM	485.67	8.4
TIRORA TPS	2	660	2-Jan-18	20-Feb-18	49	1176.55	H.P. AND L.P. bypass system	776.52	13.43
TIRORA TPS	2	660	11-Aug-17	18-Sep-17	38	918.87	FURNACE DRAFT ABNORMAL	606.45	10.49
TIRORA TPS	2	660	20-Feb-18	31-Mar-18	39	944	COAL SHORTAGE	623.04	10.78
TIRORA TPS	3	660	17-Nov-17	3-Jan-18	47	1121.5	AIR PREHEATERS PROBLEM	740.19	12.8
TIRORA TPS	4	660	6-Sep-17	6-Oct-17	30	721.25	COAL SHORTAGE	476.03	8.23
TIRORA TPS	4	660	20-Feb-18	31-Mar-18	39	942	COAL SHORTAGE	621.72	10.75
SALAYA TPP	1	600	23-Jan-18	31-Mar-18	67	1613.15	COAL SHORTAGE	967.89	18.41
SALAYA TPP	1	600	31-Oct-17	18-Dec-17	48	1149.1	COAL SHORTAGE	689.46	13.12
SALAYA TPP	2	600	24-Oct-17	31-Mar-18	158	3795.58	COAL SHORTAGE	2277.35	43.33
SALAYA TPP	2	600	29-May-17	23-Jun-17	25	608.52	Coal Transportation Problems	365.11	6.95
SHREE SINGAJI TPP	1	600	4-Apr-17	1-May-17	27	637.13	RSD/LOW SCHEDULE	382.28	7.27
SHREE SINGAJI TPP	1	600	9-Jun-17	9-Jul-17	29	706.78	RESERVE SHUT DOWN / STANDBY UNIT	424.07	8.07
SHREE SINGAJI TPP	2	600	1-Apr-17	2-May-17	32	764.18	RSD/LOW SCHEDULE	458.51	8.72

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
SHREE SINGAJI TPP	2	600	29-May-17	1-Aug-17	63	1517.17	RSD/LOW SCHEDULE	910.3	17.32
SEIONI TPP	1	600	4-Jun-17	20-Aug-17	78	1868.97	TURBINE VIBRATIONS HIGH	1121.38	21.34
SEIONI TPP	1	600	13-Sep-17	11-Oct-17	29	684.42	COAL SHORTAGE	410.65	7.81
ANUPPUR TPP	2	600	1-Apr-17	10-May-17	39	942.95	FURNACE DRAFT ABNORMAL	565.77	10.76
AKALTARA TPS	2	600	28-Feb-18	31-Mar-18	32	768	COAL SHORTAGE	303.07	67.89
AKALTARA TPS	3	600	4-Feb-18	15-Mar-18	39	946.12	TURBINE MISC. PROBLEMS	567.67	10.8
BARADARHA TPS	1	600	7-Dec-17	1-Jan-18	25	608.7	COAL SHORTAGE	365.22	6.95
AVANTHA BHANDAR	1	600	22-May-17	31-Mar-18	313	7513.8	STATOR/ STATOR EARTH FAULT	4508.28	85.77
TAMNAR TPP	1	600	11-Jun-17	30-Sep-17	112	2687.18	RSD/LOW SCHEDULE	1612.31	30.68
TAMNAR TPP	1	600	30-Apr-17	27-May-17	27	638.1	ASH HANDLING SYSTEM PROBLEM	382.86	7.28
TAMNAR TPP	2	600	27-May-17	24-Jun-17	28	673	MAIN STEAM LINE PROBLEM	403.8	7.68
TAMNAR TPP	3	600	1-Apr-17	26-Oct-17	209	5005.03	RSD/LOW SCHEDULE	3003.02	57.14
TAMNAR TPP	3	600	25-Nov-17	31-Mar-18	126	3030.32	ASH HANDLING SYSTEM PROBLEM	1818.19	34.59
TAMNAR TPP	4	600	1-Apr-17	9-Jun-17	70	1675.78	NO Power purchase agreement	1005.47	19.13
TAMNAR TPP	4	600	5-Jan-18	31-Mar-18	85	2042.75	RESERVE SHUT DOWN / STANDBY UNIT	1225.65	23.32
TAMNAR TPP	4	600	24-Jun-17	28-Nov-17	157	3757.12	RSD/LOW SCHEDULE	2254.27	42.89
UKAI TPS	6	500	5-Jun-17	18-Aug-17	74	1778.98	ROTOR/ ROTOR EARTH FAULT	889.49	20.31
VINDHYACHAL STPS	7	500	7-Jun-17	5-Jul-17	28	667.67	GEN. TRANSFORMER PROTECTION RELAY OPERATION PROBLEM	333.84	7.62
MAUDA TPS	2	500	20-Jun-17	28-Jul-17	38	916.45	RSD/LOW SCHEDULE	458.23	10.46
BHUSAWAL TPS	5	500	15-Jul-17	15-Aug-17	31	744	RSD/LOW SCHEDULE	372	8.49
CHANDRAPUR(MAHARASHTRA) STPS	6	500	4-Jan-18	1-Feb-18	27	658.5	WATER SHORTAGE DUE TO DROUGHT	329.25	7.52
TROMBAY TPS	6	500	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	4380	100
UCHPINDA TPP	1	360	10-Jul-17	14-Aug-17	35	848.3	GEN. TRANSFORMER TRIPPING/ DAMAGED	305.39	9.68
UCHPINDA TPP	1	360	13-Feb-18	18-Mar-18	33	782.88	COAL SHORTAGE	281.84	8.94
UCHPINDA TPP	2	360	1-Apr-17	17-Jun-17	78	1865.18	NO Power purchase agreement	671.46	21.29
UCHPINDA TPP	2	360	1-Dec-17	31-Dec-17	31	743.98	GENERATOR MISCLLANEOUS MAINTENANCE	267.83	8.49
UCHPINDA TPP	2	360	1-Feb-18	28-Feb-18	28	671.98	GENERATOR MISCLLANEOUS MAINTENANCE	241.91	7.67
UCHPINDA TPP	2	360	1-Jan-18	31-Jan-18	31	743.98	GENERATOR MISCLLANEOUS MAINTENANCE	267.83	8.49
UCHPINDA TPP	2	360	1-Mar-18	31-Mar-18	31	743.98	GENERATOR MISCLLANEOUS MAINTENANCE	267.83	8.49
UCHPINDA TPP	2	360	1-Nov-17	30-Nov-17	30	719.98	GENERATOR MISCLLANEOUS MAINTENANCE	259.19	8.22
UCHPINDA TPP	2	360	1-Oct-17	31-Oct-17	31	743.98	GENERATOR MISCLLANEOUS MAINTENANCE	267.83	8.49
UCHPINDA TPP	2	360	1-Sep-17	30-Sep-17	30	719.98	GENERATOR MISCLLANEOUS MAINTENANCE	259.19	8.22
UCHPINDA TPP	2	360	22-Jul-17	31-Aug-17	40	964.57	HYDROGEN PRESSURE PROBLEM	347.25	11.01
UCHPINDA TPP	3	360	14-Nov-17	31-Mar-18	138	3312	NON STABILISED UNIT	259.2	19.87

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
MUNDRA TPS	1	330	7-Jan-18	31-Mar-18	84	2009.23	COAL SHORTAGE	663.05	22.94
MUNDRA TPS	2	330	20-Jan-18	31-Mar-18	70	1681.5	COAL SHORTAGE	554.9	19.2
MUNDRA TPS	3	330	21-Jan-18	10-Mar-18	48	1144.75	COAL SHORTAGE	377.77	13.07
MUNDRA TPS	3	330	22-Jul-17	10-Sep-17	50	1191.08	COAL SHORTAGE	393.06	13.6
MUNDRA TPS	4	330	14-Dec-17	31-Mar-18	108	2583.28	COAL SHORTAGE	852.48	29.49
BALCO TPS	2	300	7-Nov-17	27-Jan-18	82	1963.2	I.D. FANS PROBLEM	588.96	22.41
NAWAPARA TPP	1	300	1-Apr-17	17-May-17	46	1110.08	I.D. FANS PROBLEM	333.02	12.67
NAWAPARA TPP	1	300	19-May-17	21-Jun-17	34	814	RAW WATER SUPPLY MISC.	244.2	9.29
NAWAPARA TPP	2	300	9-Jul-17	8-Sep-17	61	1473.28	COAL FEEDING PROBLEM IN PLANT	441.98	18.32
NAWAPARA TPP	2	300	20-May-17	24-Jun-17	35	837.77	RAW WATER SUPPLY MISC.	251.33	10.42
JSW RATNAGIRI TPP	1	300	20-Feb-18	31-Mar-18	39	947.9	TURBINE VIBRATIONS HIGH	284.37	10.82
JSW RATNAGIRI TPP	2	300	2-Dec-17	28-Feb-18	89	2133.6	RESERVE SHUT DOWN / STANDBY UNIT	640.08	24.36
JSW RATNAGIRI TPP	2	300	31-May-17	11-Sep-17	103	2470.28	RESERVE SHUT DOWN / STANDBY UNIT	741.08	28.2
GMR WARORA TPS	1	300	16-Aug-17	16-Sep-17	32	756.48	COAL SHORTAGE	226.94	8.64
GMR WARORA TPS	2	300	3-Oct-17	31-Oct-17	28	680.92	COAL SHORTAGE	204.28	7.77
BUTIBORI TPP	1	300	13-Jun-17	7-Oct-17	117	2799.45	COAL SHORTAGE	839.84	31.96
BUTIBORI TPP	1	300	30-Jan-18	9-Mar-18	38	911.52	COAL SHORTAGE	273.46	10.41
DHARIWAL TPP	1	300	1-Apr-17	6-May-17	36	859.38	NO Power purchase agreement	257.81	9.81
DHARIWAL TPP	1	300	1-Jun-17	1-Oct-17	122	2929.88	RSD/LOW SCHEDULE	878.96	33.45
DHARIWAL TPP	1	300	1-Nov-17	15-Mar-18	135	3238.2	RSD/LOW SCHEDULE	971.46	36.97
BELA TPS	1	270	1-Apr-17	10-Nov-17	223	5363.25	UNECONOMICAL OPERATION	1448.08	61.22
BELA TPS	1	270	21-Nov-17	20-Dec-17	29	691.92	TURBINE VIBRATIONS HIGH	186.82	7.9
BELA TPS	1	270	30-Dec-17	31-Mar-18	91	2184.1	NO Power purchase agreement	589.71	24.93
AMARAVATI TPS	1	270	12-Dec-17	13-Jan-18	32	765.42	RSD/LOW SCHEDULE	206.66	8.74
AMARAVATI TPS	1	270	24-May-17	12-Aug-17	81	1932.88	RSD/LOW SCHEDULE	521.88	22.06
AMARAVATI TPS	2	270	9-Jun-17	9-Aug-17	61	1472.6	RSD/LOW SCHEDULE	397.6	16.81
AMARAVATI TPS	2	270	10-Nov-17	17-Dec-17	37	888.52	COAL SHORTAGE	239.9	10.14
AMARAVATI TPS	3	270	5-Jun-17	10-Aug-17	65	1570.78	RSD/LOW SCHEDULE	424.11	17.93
AMARAVATI TPS	3	270	17-Sep-17	12-Dec-17	87	2080.9	COAL SHORTAGE	561.84	23.75
AMARAVATI TPS	3	270	27-Feb-18	31-Mar-18	33	792	COAL SHORTAGE	213.84	9.04
AMARAVATI TPS	4	270	9-Jun-17	2-Sep-17	86	2056.35	RSD/LOW SCHEDULE	555.21	23.47
AMARAVATI TPS	4	270	10-Feb-18	24-Mar-18	42	999.78	COAL SHORTAGE	269.94	11.41
AMARAVATI TPS	4	270	15-Apr-17	24-May-17	39	938.4	COAL SHORTAGE	253.37	10.71
AMARAVATI TPS	5	270	9-Jun-17	12-Aug-17	64	1544.5	RSD/LOW SCHEDULE	417.02	17.63
AMARAVATI TPS	5	270	15-Apr-17	5-Jun-17	51	1225.78	Coal Transportation Problems	330.96	13.99
AMARAVATI TPS	5	270	17-Sep-17	19-Jan-18	125	2992.82	COAL SHORTAGE	808.06	34.16
NASIK (P) TPS	1	270	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	2365.2	100
BHAVNAGAR CFBC TPP	1	250	22-Jun-17	5-Aug-17	44	1051.65	MAIN STEAM LINE PROBLEM	262.91	12.01

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
BHAVNAGAR CFBC TPP	2	250	1-Apr-17	20-Jun-17	80	1928.4	NON STABILISED UNIT	482.1	22.01
BHAVNAGAR CFBC TPP	2	250	22-Aug-17	31-Mar-18	221	5311.43	LIGNITE SHORTAGE	1327.86	60.63
BHAVNAGAR CFBC TPP	2	250	22-Jul-17	22-Aug-17	31	740.8	RSD/LOW SCHEDULE	185.2	8.46
BINA TPS	2	250	10-Oct-17	14-Nov-17	36	858.4	COAL SHORTAGE	214.6	9.8
BINA TPS	2	250	27-Aug-17	25-Sep-17	30	711.12	COAL SHORTAGE	177.78	8.12
OP JINDAL TPS	1	250	25-Jun-17	27-Dec-17	185	4445.68	RESERVE SHUT DOWN / STANDBY UNIT	1111.42	50.75
OP JINDAL TPS	2	250	1-Oct-17	14-Nov-17	44	1066.4	COAL SHORTAGE	266.6	12.17
OP JINDAL TPS	2	250	11-Feb-18	31-Mar-18	49	1176	RESERVE SHUT DOWN / STANDBY UNIT	294	13.42
OP JINDAL TPS	3	250	17-Nov-17	31-Mar-18	134	3218.27	COAL SHORTAGE	804.57	36.74
OP JINDAL TPS	4	250	24-Sep-17	29-Jan-18	127	3048	COAL SHORTAGE	762	34.79
OP JINDAL TPS	4	250	29-Jan-18	31-Mar-18	62	1487.98	COAL SHORTAGE	372	16.99
PARAS TPS	3	250	29-Nov-17	9-Jan-18	40	964.42	COAL FEEDING SYSTEM FAILURE.	241.11	11.01
PARLI TPS	6	250	14-Jun-17	9-Aug-17	57	1360.42	RSD/LOW SCHEDULE	340.11	15.53
PARLI TPS	6	250	14-Oct-17	14-Nov-17	31	746.38	RSD/LOW SCHEDULE	186.6	8.52
PARLI TPS	7	250	3-Dec-17	19-Feb-18	77	1856.42	COAL SHORTAGE	464.11	21.19
PARLI TPS	7	250	12-Oct-17	13-Nov-17	33	783	RSD/LOW SCHEDULE	195.75	8.94
PARLI TPS	7	250	13-Jun-17	15-Aug-17	64	1531.65	RSD/LOW SCHEDULE	382.91	17.48
PARLI TPS	8	250	17-Jun-17	28-Sep-17	103	2474.5	RSD/LOW SCHEDULE	618.63	28.25
GANDHI NAGAR TPS	3	210	28-Jun-17	27-Jul-17	29	687.52	RSD/LOW SCHEDULE	144.38	7.85
GANDHI NAGAR TPS	4	210	16-Jun-17	26-Jul-17	39	945.55	RSD/LOW SCHEDULE	198.57	10.79
WANAKBORI TPS	1	210	19-Jun-17	19-Aug-17	60	1444.1	RESERVE SHUT DOWN / STANDBY UNIT	303.26	16.49
WANAKBORI TPS	2	210	19-Jun-17	8-Aug-17	50	1204.63	RSD/LOW SCHEDULE	252.97	13.75
WANAKBORI TPS	3	210	29-Jun-17	24-Jul-17	25	605.08	RESERVE SHUT DOWN / STANDBY UNIT	127.07	6.91
WANAKBORI TPS	4	210	1-Jul-17	18-Aug-17	48	1162.38	RSD/LOW SCHEDULE	244.1	13.27
WANAKBORI TPS	5	210	29-Jun-17	6-Aug-17	38	907.78	RSD/LOW SCHEDULE	190.63	10.36
WANAKBORI TPS	6	210	29-Jun-17	18-Aug-17	51	1212.93	RSD/LOW SCHEDULE	254.72	13.85
SATPURA TPS	7	210	1-Apr-17	19-Aug-17	141	3373.5	RESERVE SHUT DOWN / STANDBY UNIT	708.44	41.96
SATPURA TPS	7	210	14-Sep-17	3-Jan-18	112	2682.77	COAL SHORTAGE	563.38	33.37
SATPURA TPS	8	210	1-Apr-17	5-May-17	34	818.77	RSD/LOW SCHEDULE	171.94	9.35
SATPURA TPS	8	210	8-May-17	30-Jun-17	52	1253.7	RSD/LOW SCHEDULE	263.28	14.31
SATPURA TPS	9	210	28-Aug-17	31-Mar-18	215	5162.92	GEN. TRANSFORMER PROTECTION RELAY OPERATION PROBLEM	1084.21	58.94
SANJAY GANDHI TPS	3	210	21-Jun-17	18-Jul-17	27	643.05	RSD/LOW SCHEDULE	135.04	7.34
NASIK TPS	3	210	6-Mar-18	31-Mar-18	26	623.98	COAL SHORTAGE	131.04	7.12
NASIK TPS	5	210	7-Jan-18	3-Mar-18	54	1306.23	COAL SHORTAGE	274.31	14.91
NASIK TPS	5	210	9-Aug-17	6-Sep-17	28	676.78	RESERVE SHUT DOWN / STANDBY UNIT	142.12	7.73
NASIK TPS	5	210	16-Nov-17	19-Dec-17	33	802.92	COAL SHORTAGE	168.61	9.17

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
KORADI TPS	7	210	1-Nov-17	26-Nov-17	26	616.52	COAL SHORTAGE	129.47	7.04
KORADI TPS	7	210	7-Jan-18	31-Mar-18	83	1999	COAL SHORTAGE	419.79	22.82
KORADI TPS	7	210	12-Sep-17	25-Oct-17	44	1051	COAL SHORTAGE	220.71	12
KHAPARKHEDA TPS	1	210	8-Sep-17	23-Oct-17	45	1078.38	COAL SHORTAGE	226.46	12.31
KHAPARKHEDA TPS	1	210	11-Jul-17	7-Aug-17	26	628.22	RSD/LOW SCHEDULE	131.93	7.17
KHAPARKHEDA TPS	1	210	18-Nov-17	15-Dec-17	27	651.5	COAL SHORTAGE	136.82	7.44
KHAPARKHEDA TPS	1	210	27-Feb-18	31-Mar-18	32	774	COAL SHORTAGE	162.54	8.84
KHAPARKHEDA TPS	3	210	12-Jul-17	8-Aug-17	27	643.67	WATER WALL TUBE LEAKAGE	135.17	7.35
KHAPARKHEDA TPS	3	210	12-Sep-17	22-Feb-18	163	3922.93	COAL SHORTAGE	823.82	44.78
KHAPARKHEDA TPS	4	210	13-Jul-17	2-Oct-17	81	1940.4	PIPES and VALVES BOILER SIDE	407.48	22.15
BHUSAWAL TPS	2	210	1-Apr-17	31-Mar-18	365	8760	RSD/LOW SCHEDULE	1839.6	299.18
BHUSAWAL TPS	3	210	13-Jun-17	12-Aug-17	60	1434.73	RSD/LOW SCHEDULE	301.29	16.38
BHUSAWAL TPS	3	210	14-Feb-18	15-Mar-18	29	694.98	COAL SHORTAGE	145.95	7.93
BHUSAWAL TPS	3	210	27-Aug-17	28-Oct-17	62	1487.27	FURNACE DRAFT ABNORMAL	312.33	16.98
BHUSAWAL TPS	3	210	31-Oct-17	29-Nov-17	29	696.3	COAL SHORTAGE	146.22	7.95
PARLI TPS	4	210	1-Apr-17	31-Mar-18	365	8760	UNECONOMICAL OPERATION	1839.6	100
PARLI TPS	5	210	1-Apr-17	31-Mar-18	365	8760	UNECONOMICAL OPERATION	1839.6	100
CHANDRAPUR(MAHARASHTRA) STPS	3	210	3-Dec-17	31-Mar-18	119	2854.42	WATER SHORTAGE DUE TO DROUGHT	599.43	32.58
CHANDRAPUR(MAHARASHTRA) STPS	3	210	12-Sep-17	23-Oct-17	42	1007.67	COAL SHORTAGE	211.61	11.5
CHANDRAPUR(MAHARASHTRA) STPS	3	210	25-Oct-17	26-Nov-17	33	791.15	ECONOMISER TUBE LEAKAGE	166.14	9.03
CHANDRAPUR(MAHARASHTRA) STPS	4	210	3-Dec-17	31-Mar-18	118	2841.78	WATER SHORTAGE DUE TO DROUGHT	596.77	32.44
CHANDRAPUR(MAHARASHTRA) STPS	4	210	29-Oct-17	26-Nov-17	29	686.58	GOVERNING SYSTEM PROBLEM	144.18	7.84
SATPURA TPS	6	200	1-Apr-17	18-Aug-17	140	3349.83	RSD/LOW SCHEDULE	669.97	41.66
SATPURA TPS	6	200	14-Oct-17	8-Dec-17	55	1315.95	COAL SHORTAGE	263.19	16.37
KASAI PALLI TPP	1	135	1-Mar-18	31-Mar-18	31	736.8	WATER WALL TUBE LEAKAGE	99.47	8.41
SALORA TPP	1	135	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	1182.6	100
WARDHA WARORA TPP	1	135	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	1182.6	100
WARDHA WARORA TPP	2	135	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	1182.6	100
WARDHA WARORA TPP	3	135	26-Aug-17	20-Nov-17	85	2048.2	ASH HANDLING SYSTEM PROBLEM	276.51	23.38
SURAT LIG. TPS	2	125	12-Jul-17	15-Aug-17	34	822.9	RSD/LOW SCHEDULE	102.86	9.39
UKAI TPS	1	120	1-Apr-17	31-Mar-18	365	8760	EXCITATION PROBLEM	1051.2	299.18
UKAI TPS	2	120	1-Apr-17	31-Mar-18	365	8760	RESERVE SHUT DOWN / STANDBY UNIT	1051.2	299.18
SIKKA REP. TPS	1	120	1-Apr-17	31-Mar-18	365	8760	RSD/LOW SCHEDULE	1051.2	299.18
SIKKA REP. TPS	2	120	1-Apr-17	31-Mar-18	365	8760	ASH HANDLING SYSTEM PROBLEM	1051.2	299.18
KUTCH LIG. TPS	4	75	27-Oct-17	7-Dec-17	40	962.13	REHEATER TUBE LEAKAGE	72.16	10.98
KUTCH LIG. TPS	1	70	4-Jan-18	2-Feb-18	29	702.73	WATER WALL TUBE LEAKAGE	49.19	8.02

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
SVPL TPP	1	63	22-Apr-17	22-May-17	30	723.53	WATER WALL TUBE LEAKAGE	45.58	8.26
SVPL TPP	1	63	28-May-17	31-Mar-18	307	7379.28	TURBINE ROTOR FAILURE/DAMAGED	464.89	84.24
MIHAN TPS	1	61.5	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	538.74	100
MIHAN TPS	2	61.5	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	538.74	100
MIHAN TPS	3	61.5	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	538.74	100
MIHAN TPS	4	61.5	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	538.74	100
GEPL TPP Ph-I	1	60	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	525.6	100
GEPL TPP Ph-I	2	60	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	525.6	100
KORBA-II	1	50	5-Jul-17	31-Mar-18	269	6458.23	WATER WALL TUBE LEAKAGE	322.91	73.72
KORBA-II	1	50	28-Apr-17	1-Jul-17	64	1534.32	WATER WALL TUBE LEAKAGE	76.72	17.52
KORBA-II	2	50	23-Apr-17	25-May-17	32	768.98	I.D. FANS PROBLEM	38.45	8.78
KORBA-II	2	50	23-Oct-17	31-Mar-18	159	3819.12	MILLING SYSTEM /RC FEEDER PROBLEM	190.96	43.6
RATIJA TPS	1	50	28-Dec-17	10-Feb-18	44	1053.38	TURBINE VIBRATIONS HIGH	52.67	12.03
NIWARI TPP	1	45	7-Nov-17	2-Feb-18	88	2102.7	RSD/LOW SCHEDULE	94.62	24
NIWARI TPP	1	45	18-May-17	7-Oct-17	142	3411.75	COAL FEEDING PROBLEM IN PLANT	153.53	38.95
KATGHORA TPP	1	35	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	306.6	100
SABARMATI (C STATION)	15	30	1-Apr-17	5-May-17	35	833.25	RSD/LOW SCHEDULE	25	9.51
SABARMATI (C STATION)	15	30	5-May-17	31-Mar-18	330	7926.08	RSD/LOW SCHEDULE	237.78	90.48
SABARMATI (C STATION)	16	30	1-Apr-17	5-May-17	35	832.67	RSD/LOW SCHEDULE	24.98	9.51
SABARMATI (C STATION)	16	30	5-May-17	31-Mar-18	330	7926.25	RSD/LOW SCHEDULE	237.79	90.48
SWASTIK KORBA TPP	1	25	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	219	100
SUB TOTAL	199	65907			19989	479780.47		124766.02	
SOUTHERN REGION									
DAMODARAM SANJEEVAIAH TPS	1	800	6-Sep-17	1-Nov-17	55	1326.67	COAL SHORTAGE	1061.34	15.14
DAMODARAM SANJEEVAIAH TPS	1	800	23-Nov-17	6-Jan-18	43	1036.47	COAL SHORTAGE	829.18	11.83
DAMODARAM SANJEEVAIAH TPS	1	800	28-May-17	9-Jul-17	42	1011.17	RSD/LOW SCHEDULE	808.94	11.54
DAMODARAM SANJEEVAIAH TPS	2	800	14-Nov-17	20-Jan-18	66	1587.3	COAL SHORTAGE	1269.84	18.12
DAMODARAM SANJEEVAIAH TPS	2	800	28-Jun-17	25-Aug-17	58	1390.12	RSD/LOW SCHEDULE	1112.1	15.87
KUDGI STPP	2	800	28-Feb-18	31-Mar-18	32	767.38	RSD/LOW SCHEDULE	613.9	35.53
YERMARUS TPP	1	800	1-Apr-17	20-Jun-17	81	1942.77	BOILER MISC. PROBLEM	1554.22	22.18
YERMARUS TPP	1	800	9-Aug-17	8-Nov-17	91	2184.47	FURNACE FIRE OUT /FLAME FAILURE	1747.58	24.94
YERMARUS TPP	1	800	24-Jun-17	29-Jul-17	34	819.75	COAL FEEDING PROBLEM IN PLANT	655.8	9.36
YERMARUS TPP	1	800	25-Jan-18	23-Feb-18	29	698.47	TURBINE MISC. PROBLEM	558.78	7.97
YERMARUS TPP	2	800	7-Apr-17	31-Mar-18	358	8595.88	COAL SHORTAGE	6876.7	98.13
BELLARY TPS	3	700	16-Sep-17	13-Nov-17	58	1399.33	RSD/LOW SCHEDULE	979.53	32.04
BELLARY TPS	3	700	29-Nov-17	25-Jan-18	56	1354.95	COAL SHORTAGE	948.47	31.02
UDUPI TPP	1	600	7-Jul-17	23-Sep-17	77	1857.88	HYDROGEN PRESSURE PROBLEM	1114.73	21.21
UDUPI TPP	2	600	19-May-17	15-Jun-17	27	658.42	AIR PREHEATERS PROBLEM	395.05	7.52

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
UDUPI TPP	2	600	31-Oct-17	31-Dec-17	61	1471.45	CONDENSER LOW VACCUM	882.87	16.8
NORTH CHENNAI TPS	5	600	22-Nov-17	20-Feb-18	90	2151.87	TURBINE BEARING PROBLEM	1291.12	24.56
MUTHIARA TPP	1	600	14-Apr-17	7-Sep-17	147	3516.38	COAL SHORTAGE	2109.83	40.14
MUTHIARA TPP	1	600	30-Nov-17	19-Feb-18	81	1950.5	RSD/LOW SCHEDULE	1170.3	22.27
MUTHIARA TPP	2	600	26-Sep-17	9-Nov-17	45	1070.25	RSD/LOW SCHEDULE	642.15	12.22
ITPCL TPP	2	600	15-May-17	17-Jul-17	63	1508.35	RSD/LOW SCHEDULE	905.01	17.22
ITPCL TPP	2	600	30-Nov-17	23-Jan-18	54	1302.58	RSD/LOW SCHEDULE	781.55	14.87
VIZAG TPP	1	520	10-Jan-18	31-Mar-18	80	1924	RSD/LOW SCHEDULE	1000.48	21.96
VIZAG TPP	1	520	23-Jun-17	28-Jul-17	35	834.88	RSD/LOW SCHEDULE	434.14	9.53
VIZAG TPP	2	520	2-Feb-18	31-Mar-18	57	1369.32	RSD/LOW SCHEDULE	712.05	15.63
VIZAG TPP	2	520	7-Jun-17	27-Jul-17	50	1207.62	RSD/LOW SCHEDULE	627.96	13.79
BELLARY TPS	1	500	1-Apr-17	19-Aug-17	140	3364.22	D.M. WATER PROBLEM	1682.11	38.4
BELLARY TPS	1	500	13-Dec-17	17-Jan-18	35	848.17	GENERATOR PROTECTION RELAY OPERATION PROBLEM	424.09	9.68
BELLARY TPS	1	500	17-Sep-17	30-Oct-17	43	1022.85	RSD/LOW SCHEDULE	511.43	11.68
BELLARY TPS	2	500	1-Nov-17	12-Dec-17	41	992	COAL SHORTAGE	496	11.32
BELLARY TPS	2	500	7-Jun-17	13-Sep-17	98	2348.6	RAW WATER SUPPLY MISC.	1174.3	26.81
BELLARY TPS	2	500	25-Jan-18	8-Mar-18	42	1002.87	RSD/LOW SCHEDULE	501.44	11.45
TORANGALLU TPS(SBU-II)	3	300	31-May-17	15-Jul-17	44	1056.15	RSD/LOW SCHEDULE	316.85	12.06
TORANGALLU TPS(SBU-II)	4	300	19-Oct-17	20-Mar-18	152	3641.3	RESERVE SHUT DOWN / STANDBY UNIT	1092.39	41.57
NEYVELI TPS-II EXP	2	250	23-May-17	20-Jun-17	28	668.8	FBHE (FLUIDISED BED HEAT EXCHANGER) PROBLEM	167.2	7.63
NEYVELI TPS(Z)	1	250	14-Sep-17	6-Nov-17	52	1257.73	RESERVE SHUT DOWN / STANDBY UNIT	314.43	14.36
Dr. N.TATA RAO TPS	1	210	9-Sep-17	2-Dec-17	84	2016.02	COAL SHORTAGE	423.36	23.01
Dr. N.TATA RAO TPS	2	210	13-Oct-17	6-Jan-18	85	2034.92	COAL SHORTAGE	427.33	23.23
RAICHUR TPS	1	210	18-Sep-17	31-Oct-17	43	1024	RSD/LOW SCHEDULE	215.04	11.69
TUTICORIN TPS	1	210	14-Dec-17	22-Jan-18	38	915.45	RSD/LOW SCHEDULE	192.24	10.45
TUTICORIN TPS	1	210	26-Aug-17	5-Oct-17	40	965.57	RSD/LOW SCHEDULE	202.77	11.02
TUTICORIN TPS	2	210	15-Aug-17	4-Oct-17	50	1205.1	RSD/LOW SCHEDULE	253.07	13.76
METTUR TPS	1	210	13-Jan-18	3-Mar-18	49	1165.67	TURBINE VIBRATIONS HIGH	244.79	13.31
METTUR TPS	2	210	25-Sep-17	22-Oct-17	27	658.45	RESERVE SHUT DOWN / STANDBY UNIT	138.27	7.52
SIMHAPURI TPS	1	150	1-Apr-17	31-Mar-18	365	8760	RSD/LOW SCHEDULE	1314	100
SIMHAPURI TPS	2	150	1-Apr-17	31-Mar-18	365	8760	RSD/LOW SCHEDULE	1314	100
SIMHAPURI TPS	3	150	10-Apr-17	31-Mar-18	356	8535.2	RSD/LOW SCHEDULE	1280.28	97.43
SIMHAPURI TPS	4	150	7-Apr-17	31-Mar-18	359	8610.58	RSD/LOW SCHEDULE	1291.59	98.29
THAMMINAPATNAM TPS	1	150	25-Apr-17	15-Aug-17	113	2710.87	RSD/LOW SCHEDULE	406.63	30.95
THAMMINAPATNAM TPS	1	150	31-Oct-17	31-Mar-18	151	3624.08	RSD/LOW SCHEDULE	543.61	41.37
THAMMINAPATNAM TPS	2	150	1-Nov-17	31-Mar-18	150	3611.77	BOILER MISC. PROBLEM	541.77	41.23
THAMMINAPATNAM TPS	2	150	27-Jun-17	15-Aug-17	49	1171.05	BOILER MISC. PROBLEM	175.66	13.37

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
TUTICORIN (P) TPP	1	150	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	1314	100
TUTICORIN (P) TPP	2	150	1-Apr-17	31-Mar-18	365	8760	NO Power purchase agreement	1314	100
TORANGALLU TPS(SBU-I)	1	130	15-Aug-17	9-Sep-17	26	612.82	RSD/LOW SCHEDULE	79.67	7
KOTHAGUDEM TPS	3	60	20-May-17	31-Mar-18	316	7578.62	TURBINE CONTROL VALVE PROBLEM	454.72	86.51
SUB TOTAL	56	25150			5941	142621.09		49890.66	
EASTERN REGION									
RAGHUNATHPUR TPP	1	600	14-Nov-17	28-Dec-17	45	1072.42	COAL SHORTAGE	643.45	12.24
RAGHUNATHPUR TPP	1	600	27-Sep-17	27-Oct-17	30	712.8	COAL SHORTAGE	427.68	8.14
RAGHUNATHPUR TPP	2	600	1-Apr-17	28-Jun-17	89	2128.93	FUEL SUPPLY & OTHER MISC. PROBLEMS	1277.36	24.3
RAGHUNATHPUR TPP	2	600	9-Aug-17	18-Nov-17	100	2406	COAL SHORTAGE	1443.6	27.47
RAGHUNATHPUR TPP	2	600	27-Dec-17	31-Mar-18	95	2277	FURNACE DRAFT ABNORMAL	1366.2	25.99
STERLITE TPP	1	600	1-Apr-17	31-Mar-18	365	8760	out from installed capacity/plf calculation	0	0
STERLITE TPP	2	600	8-Feb-18	22-Mar-18	43	1021.13	GENERATOR PROTECTION RELAY OPERATION PROBLEM	612.68	11.66
STERLITE TPP	2	600	28-Jun-17	9-Jan-18	195	4685.05	SEAL OIL SYSTEM PROBLEM	2811.03	53.48
DERANG TPP	1	600	5-May-17	31-Oct-17	180	4308.97	Coal Transportation Problems	2585.38	49.19
DERANG TPP	1	600	24-Dec-17	28-Feb-18	66	1576.62	ASH HANDLING SYSTEM PROBLEM	945.97	18
DERANG TPP	2	600	1-Apr-17	31-May-17	61	1462.63	Coal Transportation Problems	877.58	16.7
DERANG TPP	2	600	9-Nov-17	30-Dec-17	51	1225.45	MAIN STEAM LINE PROBLEM	735.27	13.99
MEJIA TPS	8	500	7-Aug-17	12-Jan-18	158	3792.65	TURBINE MISC. PROBLEMS	1896.33	43.3
KODARMA TPP	1	500	1-Apr-17	16-May-17	45	1080.38	TURBINE MISC.	540.19	12.33
KODARMA TPP	1	500	16-Jun-17	11-Jul-17	25	605.93	MAIN STEAM LINE PROBLEM	302.97	6.92
SAGARDIGHI TPS	3	500	1-Apr-17	3-May-17	32	776.15	TURBINE VIBRATIONS HIGH	388.08	8.86
SAGARDIGHI TPS	4	500	9-Nov-17	22-Dec-17	43	1036.43	VARIOUS STEAM LEAKAGES	518.22	11.83
SAGARDIGHI TPS	4	500	12-May-17	6-Jul-17	55	1319.05	COAL SHORTAGE	659.53	15.06
KAMALANGA TPS	1	350	9-Dec-17	7-Feb-18	61	1454.77	COAL SHORTAGE	509.17	16.61
KAMALANGA TPS	1	350	13-May-17	21-Jul-17	70	1678.87	FUEL SUPPLY & OTHER MISC. PROBLEMS	587.6	19.17
KAMALANGA TPS	1	350	27-Sep-17	1-Nov-17	35	845.13	COAL SHORTAGE	295.8	9.65
KAMALANGA TPS	2	350	15-Aug-17	26-Sep-17	43	1022.07	COAL SHORTAGE	357.72	11.67
UTKAL TPP (IND)	1	350	1-Apr-17	31-Mar-18	365	8760	TRANSMISSION CONSTRAINTS	3066	100
SAGARDIGHI TPS	1	300	3-Jan-18	29-Jan-18	26	612.97	REHEATER TUBE LEAKAGE	183.89	7
SAGARDIGHI TPS	2	300	16-Nov-17	4-Jan-18	49	1169.08	SUPER HEATER TUBE LEAKAGE	350.72	13.35
D.P.L. TPS	7	300	20-Oct-17	24-Nov-17	35	831.4	UNECONOMICAL OPERATION	249.42	9.49
MAHADEV PRASAD STPP	2	270	7-Sep-17	31-Mar-18	206	4937.97	ROTOR/ ROTOR EARTH FAULT	1333.25	56.37
NABI NAGAR TPP	1	250	1-Apr-17	2-Aug-17	123	2957.77	NO Power purchase agreement	739.44	33.76
NABI NAGAR TPP	1	250	30-Oct-17	30-Nov-17	31	755.12	WATER WALL TUBE LEAKAGE	188.78	8.62
NABI NAGAR TPP	2	250	10-Sep-17	30-Oct-17	50	1201.1	NON STABILISED UNIT	300.28	23.61
NABI NAGAR TPP	2	250	30-Nov-17	31-Mar-18	121	2907.62	RSD/LOW SCHEDULE	726.91	57.15

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Gen)
MEJIA TPS	5	250	22-Sep-17	31-Mar-18	191	4583.85	WATER WALL TUBE LEAKAGE	1145.96	52.33
SANTALDIH TPS	5	250	26-May-17	25-Dec-17	213	5113.03	STATOR/ STATOR EARTH FAULT	1278.26	58.37
D.P.L. TPS	8	250	12-Dec-17	9-Mar-18	87	2090.6	ELECTRICAL MISCELLANEOUS PROBLEMS	522.65	23.87
D.P.L. TPS	8	250	27-Jul-17	2-Sep-17	37	883.68	SUPER HEATER TUBE LEAKAGE	220.92	10.09
TENUGHAT TPS	1	210	14-Jun-17	13-Jul-17	29	693.2	COAL FEEDING PROBLEM IN PLANT	145.57	7.91
TENUGHAT TPS	1	210	25-Jul-17	27-Aug-17	33	790.48	RSD/LOW SCHEDULE	166	9.02
TENUGHAT TPS	2	210	1-Apr-17	6-Jun-17	67	1602.43	RSD/LOW SCHEDULE	336.51	18.29
DURGAPUR TPS	4	210	4-Aug-17	26-Sep-17	53	1265.22	SEAL OIL SYSTEM PROBLEM	265.7	14.44
BOKARO `B` TPS	1	210	11-Apr-17	16-May-17	35	8515.83	REHEATER TUBE LEAKAGE	177.89	23.07
BOKARO `B` TPS	3	210	1-Apr-17	2-May-17	32	757	REHEATER TUBE LEAKAGE	158.97	8.64
BOKARO `B` TPS	3	210	2-Oct-17	1-Dec-17	60	1444.43	COAL SHORTAGE	303.33	16.49
BOKARO `B` TPS	3	210	4-Aug-17	28-Sep-17	55	1319.9	RSD/LOW SCHEDULE	277.18	15.07
BOKARO `B` TPS	3	210	24-Jun-17	4-Aug-17	41	975.07	P.R.D.S. FAILURE.	204.76	11.13
MEJIA TPS	1	210	14-Feb-18	30-Mar-18	44	1060.23	ECONOMISER TUBE LEAKAGE	222.65	12.1
MEJIA TPS	1	210	31-Oct-17	5-Dec-17	36	856.98	FURNACE DRAFT ABNORMAL	179.97	9.78
MEJIA TPS	2	210	2-Dec-17	2-Jan-18	31	750.47	RSD/LOW SCHEDULE	157.6	8.57
MEJIA TPS	2	210	5-Apr-17	19-May-17	44	1060.53	STATOR/ STATOR EARTH FAULT	222.71	12.11
MEJIA TPS	2	210	25-Jul-17	22-Aug-17	29	692	RSD/LOW SCHEDULE	145.32	7.9
MEJIA TPS	3	210	22-Aug-17	18-Sep-17	27	648.65	GENERATOR PROTECTION RELAY OPERATION PROBLEM	136.22	7.4
MEJIA TPS	4	210	20-May-17	22-Jun-17	34	807.78	RSD/LOW SCHEDULE	169.63	9.22
MEJIA TPS	4	210	23-Jul-17	6-Oct-17	75	1803.85	COAL SHORTAGE	378.81	20.59
MEJIA TPS	4	210	23-Jun-17	21-Jul-17	29	690.08	ELECTRICAL MISCELLANEOUS PROBLEMS	144.92	7.88
KOLAGHAT TPS	2	210	1-Apr-17	21-Jun-17	82	1957.25	POLLUTION PROBLEM	411.02	22.34
KOLAGHAT TPS	2	210	22-Oct-17	16-Nov-17	25	601.82	GEN. TRANSFORMER PROTECTION RELAY OPERATION PROBLEM	126.38	6.87
KOLAGHAT TPS	3	210	1-Apr-17	31-Mar-18	365	8760	POLLUTION PROBLEM	1839.6	100
KOLAGHAT TPS	6	210	11-Jun-17	24-Jan-18	228	5468.78	STATOR/ STATOR EARTH FAULT	1148.44	62.43
MUZAFFARPUR TPS	3	195	5-Jan-18	20-Feb-18	45	1083.68	C.W. PUMP PROBLEM	211.32	12.37
MUZAFFARPUR TPS	3	195	10-Apr-17	11-Jul-17	92	2203.88	WATER WALL TUBE LEAKAGE	429.76	25.16
MUZAFFARPUR TPS	3	195	11-Aug-17	14-Oct-17	64	1528.75	RAW WATER NOT AVAILABLE/LOW INTAKE CANAL LEVEL	298.11	17.45
MUZAFFARPUR TPS	4	195	1-Jul-17	3-Aug-17	34	812.93	NON STABILISED UNIT	158.52	12.36
MUZAFFARPUR TPS	4	195	4-Nov-17	23-Dec-17	49	1181.6	RAW WATER NOT AVAILABLE/LOW INTAKE CANAL LEVEL	230.41	17.97
HIRANMAYE TPP	1	150	2-Dec-17	31-Mar-18	120	2874.88	NON STABILISED UNIT	107.23	12.26
HIRANMAYE TPP	1	150	13-Aug-17	31-Mar-18	231	5544	NON STABILISED UNIT	199.7	22.83
CHANDRAPURA(DVC) TPS	2	130	1-Jun-17	1-Jul-17	30	7274.4	TURBINE VIBRATIONS HIGH	93.6	19.61
CHANDRAPURA(DVC) TPS	3	130	18-Aug-17	31-Mar-18	226	5419.42	WATER WALL TUBE LEAKAGE	704.52	61.87
PATRATU TPS	9	110	1-Apr-17	31-Mar-18	365	8760	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	79.2	14.02

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
PATRATU TPS	10	110	1-Apr-17	31-Mar-18	365	8760	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	79.2	14.02
MUZAFFARPUR TPS	1	110	3-Jul-17	23-Aug-17	51	1220.53	WATER WALL TUBE LEAKAGE	134.26	13.93
MUZAFFARPUR TPS	1	110	4-Apr-17	1-May-17	27	654.67	TEST RUN SUBSEQ.TO MAJ. REPAIR	72.01	7.47
MUZAFFARPUR TPS	2	110	1-Apr-17	20-May-17	50	1196.87	Coal Transportation Problems	131.66	13.66
MUZAFFARPUR TPS	2	110	4-Feb-18	8-Mar-18	32	776.93	WATER WALL TUBE LEAKAGE	85.46	8.87
MUZAFFARPUR TPS	2	110	18-Jul-17	22-Aug-17	35	831.37	NO COAL LINKAGE	91.45	9.49
TALCHER (OLD) TPS	5	110	22-Sep-17	12-Nov-17	51	1219.62	STATOR/ STATOR EARTH FAULT	134.16	13.92
D.P.L. TPS	6	110	1-Apr-17	24-Jun-17	85	2039.8	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	224.38	23.29
D.P.L. TPS	6	110	5-Nov-17	31-Mar-18	146	3512.28	ELECTRICAL MISCELLANEOUS PROBLEMS	386.35	40.09
D.P.L. TPS	6	110	27-Jun-17	4-Nov-17	130	3126.65	POLLUTION PROBLEM	343.93	35.69
PATRATU TPS	7	105	1-Apr-17	31-Mar-18	365	8760	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	75.6	14.02
BARAUNI TPS	7	105	7-May-17	22-Mar-18	319	7649.07	WATER WALL TUBE LEAKAGE	803.15	87.32
PATRATU TPS	6	90	1-Apr-17	31-Mar-18	365	8760	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	64.8	14.02
SOUTHERN REPL. TPS	2	67.5	24-Jan-18	5-Mar-18	39	946	RSD/LOW SCHEDULE	63.86	10.8
BANDEL TPS	3	60	14-Oct-17	31-Mar-18	169	4050.25	SUPER HEATER TUBE LEAKAGE	243.02	46.24
BANDEL TPS	3	60	15-Aug-17	23-Sep-17	39	929.97	SUPER HEATER TUBE LEAKAGE	55.8	10.62
BANDEL TPS	3	60	20-Apr-17	20-May-17	30	721.73	WATER WALL TUBE LEAKAGE	43.3	8.24
BANDEL TPS	4	60	1-Dec-17	31-Mar-18	121	2898.4	MISC. SHORT DURATION MAINTENANCE WORKS	173.9	33.09
BANDEL TPS	4	60	21-Jun-17	20-Sep-17	91	2191.27	SEAL OIL SYSTEM PROBLEM	131.48	25.02
TITAGARH TPS	1	60	1-Apr-17	31-Mar-18	365	8760	RESERVE SHUT DOWN / STANDBY UNIT	525.6	100
TITAGARH TPS	2	60	1-Apr-17	31-Mar-18	365	8760	RESERVE SHUT DOWN / STANDBY UNIT	525.6	100
TITAGARH TPS	3	60	1-Apr-17	31-Mar-18	365	8760	RESERVE SHUT DOWN / STANDBY UNIT	525.6	100
TITAGARH TPS	4	60	1-Apr-17	31-Mar-18	365	8760	RESERVE SHUT DOWN / STANDBY UNIT	525.6	100
PATRATU TPS	4	40	1-Apr-17	31-Mar-18	365	8760	VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	28.8	14.02
STERLITE TPP	3	0	1-Apr-17	31-Mar-18	365	8760	out from installed capacity/plf calculation	0	◆
STERLITE TPP	4	0	1-Apr-17	31-Mar-18	365	8760	out from installed capacity/plf calculation	0	◆
HIRANMAYE TPP	2	150	31-Dec-17	31-Mar-18	90	2162.8	COAL SHORTAGE	324.42	◆
SUB TOTAL	94	23582.5			11286.296	284986.35		45713.23	
NORTH EASTERN REGION									
CHANDRAPUR(ASSAM) TPS	1	30	1-Apr-17	31-Mar-18	365	8760	UNECONOMICAL OPERATION	262.8	299.18
CHANDRAPUR(ASSAM) TPS	2	30	1-Apr-17	31-Mar-18	365	8760	UNECONOMICAL OPERATION	262.8	299.18
SUB TOTAL	2	60			730	17520		525.6	

Station	Unit No.	Capacity (MW)	Date Of Outage	Date of Return	Outage DAYS	Outage Hours	Reason	MU Loss	% of Unit Max Possible(Generation)
GRAND TOTAL	497	152183.5			50670.829	1244493.76		279559.14	

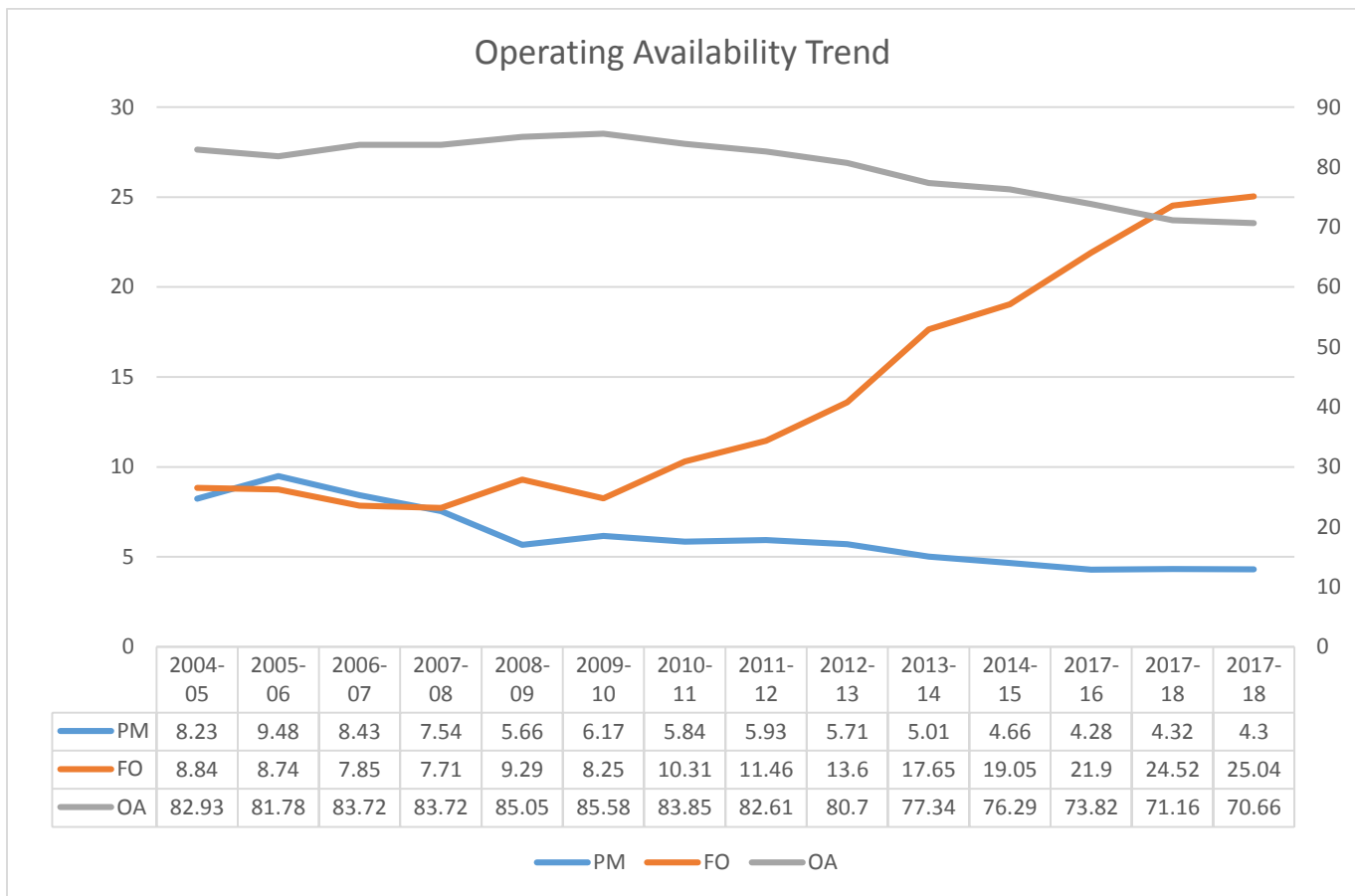
SECTION-5 OPERATING AVAILABILITY

5.1 Based on the Planned Maintenance undertaken and Forced Outages occurred as brought out in Section 3 and 4 respectively, the Operating Availability for the 633 Thermal Generating Units aggregating to **1,94,336.5 MW**, covered in the Review, has been computed in this section.

During the year 2017-18, the overall Operating Availability of **70.66%** has been achieved by the generating units under review. It was lower than the overall Operating Availability of 71.16% achieved during last year. Main reasons for lower Operating Availability vis-à-vis 2016-17 is the increase in losses due to Reserve Shut Down, No Power Purchase Agreement and coal shortages. Slightly higher losses on account of equipment outages were also seen in 2017-18 and the planned maintenance was also slightly lower as compared to 2016-17. Details of various components of Forced outage/shutdown and losses have been detailed in Section 4.

Forced and planned shutdown and corresponding Operating Availability of units reviewed from 2004-05 onwards are shown below:

OPERATING AVAILABILITY				
YEAR	Unavailability (%)			Operating Availability (%)
	Planned	Forced	Total	
2004-05	8.23	8.84	17.07	82.93
2005-06	9.48	8.74	18.22	81.78
2006-07	8.43	7.85	16.28	83.72
2007-08	7.54	7.71	15.23	83.72
2008-09	5.66	9.29	14.95	85.05
2009-10	6.17	8.25	14.42	85.58
2010-11	5.84	10.31	16.15	83.85
2011-12	5.93	11.46	17.39	82.61
2012-13	5.71	13.6	19.31	80.70
2013-14	5.01	17.65	22.66	77.34
2014-15	4.66	19.05	23.71	76.29
2015-16	4.28	21.90	26.18	73.82
2016-17	4.32	24.52	28.84	71.16
2017-18	4.30	25.04	29.34	70.66



5.2 UNITWISE/ STATIONWISE OPERATING AVAILABILITY

The details of the stations/units showing highest Operating Availability during the year 2017-18 are highlighted below.

- Thirty-one Thermal Power stations achieved Operating Availability between 90% to 99%.
- Nine generating units achieved Operating Availability of more than 99 %. Some units achieved Operating Availability of 100% but these were mostly units commissioned towards the end of the year with short operating period.
- The details of these Thermal stations/generating units are as follows: -

Thermal Stations achieving the Operating Availability of 99 % to 90%

Stations with Operating Availability (%) more than 90% during 2017-18					
SL. NO.	STATION NAME	ORGANISATION NAME	STATE NAME	CAPACITY	OP. AV. (%)
1	HALDIA TPP	HEL	WEST BENGAL	600	97.97
2	JOJOBERA TPS	TATA PCL	JHARKHAND	240	97.32
3	AMARKANTAK EXT TPS	MPPGCL	MADHYA PRADESH	210	97.19
4	RAMAGUNDEM - B TPS	TSGENCO	TELANGANA	62.5	96.8
5	NEYVELI (EXT) TPS	NLC	TAMIL NADU	420	96
6	BHILAI TPS	NSPCL	CHHATTISGARH	500	95.31

Stations with Operating Availability (%) more than 90% during 2017-18					
SL. NO.	STATION NAME	ORGANISATION NAME	STATE NAME	CAPACITY	OP. AV. (%)
7	DSPM TPS	CSPGCL	CHHATTISGARH	500	95.26
8	BUDGE BUDGE TPS	CESC	WEST BENGAL	750	94.61
9	TANDA TPS	NTPC Ltd.	UTTAR PRADESH	440	94.35
10	VINDHYACHAL STPS	NTPC Ltd.	MADHYA PRADESH	4760	94.28
11	KORBA STPS	NTPC Ltd.	CHHATTISGARH	2600	93.93
12	RIHAND STPS	NTPC Ltd.	UTTAR PRADESH	3000	93.56
13	SINGRAULI STPS	NTPC Ltd.	UTTAR PRADESH	2000	93.52
14	SASAN UMTTP	SPL	MADHYA PRADESH	3960	93.37
15	KAHALGAON TPS	NTPC Ltd.	BIHAR	2340	93.34
16	SABARMATI (D-F STATIONS)	TOR. POW. (UNOSUGEN)	GUJARAT	362	93.17
17	SINGARENI TPP	SCCL	TELANGANA	1200	93.13
18	TALCHER STPS	NTPC Ltd.	ORISSA	3000	92.85
19	TALCHER (OLD) TPS	NTPC Ltd.	ORISSA	460	92.64
20	PAINAMPURAM TPP	SEIL	ANDHRA PRADESH	1320	92.52
21	DAHANU TPS	RIL (DAHANU)	MAHARASHTRA	500	92.26
22	RAMAGUNDEM STPS	NTPC Ltd.	TELANGANA	2600	92.18
23	BARH II	NTPC Ltd.	BIHAR	1320	91.76
24	KORBA-WEST TPS	CSPGCL	CHHATTISGARH	1340	91.64
25	SIPAT STPS	NTPC Ltd.	CHHATTISGARH	2980	90.83
26	BAKRESWAR TPS	WBPCDC	WEST BENGAL	1050	90.73
27	CHAKABURA TPP	ACB	CHHATTISGARH	30	90.7
28	ANPARA C TPS	LAPPL	UTTAR PRADESH	1200	90.7
29	FARAKKA STPS	NTPC Ltd.	WEST BENGAL	2100	90.52
30	NEYVELI TPS-II	NLC	TAMIL NADU	1470	90.27
31	NEYVELI TPS- I	NLC	TAMIL NADU	500	90.25

Thermal Generating Units achieving the Operating Availability of 100 % to 99%

Units with Operating Availability(%) more than 99% during 2017-18						
SL. No.	Station Name	Unit No.	Organization name	State name	Capacity	OP. AV. (%)
1	RAYALASEEMA TPS	6	APGENCO	ANDHRA PRADESH	600	100
3	HIRANMAYE TPP	2	HYEL	WEST BENGAL	150	100
3	SINGRAULI STPS	5	NTPC Ltd.	UTTAR PRADESH	200	99.72
4	TALCHER STPS	5	NTPC Ltd.	ORISSA	500	99.67
5	RIHAND STPS	5	NTPC Ltd.	UTTAR PRADESH	500	99.58
6	HALDIA TPP	2	HEL	WEST BENGAL	300	99.44
7	VINDHYACHAL STPS	9	NTPC Ltd.	MADHYA PRADESH	500	99.36
8	VINDHYACHAL STPS	13	NTPC Ltd.	MADHYA PRADESH	500	99.28
9	BAKRESWAR TPS	2	WBPCDC	WEST BENGAL	210	99.26

5.3 SECTORWISE OPERATING AVAILABILITY

5.3.1 Among different Sectors, the Central Sector achieved highest overall Operating Availability of 83.54 % during 2017-18 and this was higher than the last year Operating Availability of 81.21 %. The Operating Availability of Private sector decreased to 65.87% from 68.67% during 2017-18. The Operating Availability of State sector was 65.17 % vis-à-vis 65.54 % in 2017-18. The Sector Wise Planned Maintenance, forced outages and Operating Availability of generating units for the last three years were as under: -

SECTOR	Planned Maintenance (%)			Forced Outage (%)			Operating Availability (%) (100-PM%-FO %)		
	15-16	16-17	2017-18	15-16	16-17	2017-18	15-16	16-17	2017-18
1. Central	4.71	4.93	4.73	14.74	13.86	11.73	80.55	81.21	80.57
2. State	5.34	5.88	5.84	26.30	28.58	28.99	68.36	65.54	67.67
3. Private	2.93	2.53	2.64	23.50	28.80	31.49	73.57	68.67	65.87

5.4 CAPACITY GROUP WISE OPERATING AVAILABILITY

5.4.1 The capacity group wise Planned Maintenance, Forced Outages and Operating Availability for 2017-18 and previous two years is given in the Table below. The Operating Availability of capacity group 25-99 MW and 100-150 MW are on lower side – the main causes are Reserve Shut Down, vintage units closed for operation and commercial reasons in some units.

Capacity Group	Planned Maintenance (%)			Forced Outages (%)			Operating Availability (%)		
	15-16	16-17	2017-18	15-16	16-17	2017-18	15-16	16-17	2017-18
660-800	2.72	2.97	2.78	16.66	19.52	26.77	80.62	77.51	70.45
490-600	4.16	4.46	4.15	18.26	20.11	20.27	77.58	75.43	75.58
300-360	1.99	2.56	2.5	17.45	22.47	26.64	80.56	74.97	70.86
250-250	4.31	2.97	3.35	29.79	35.27	30.38	65.90	61.76	66.27
210-210	4.74	4.70	6.21	22.02	28.58	23.86	73.24	66.72	69.93
195-200	11.81	10.40	9.46	7.53	12.06	11.24	80.66	77.54	79.3
100-150	5.39	8.23	7.82	38.48	41.92	41.39	56.13	49.85	50.79
25-99	5.56	6.52	5.09	50.62	54.55	55.74	43.82	38.93	39.17
ALL INDIA	4.28	4.32	4.32	21.90	24.52	25.04	73.82	71.16	70.66

5.5 REGIONWISE OPERATING AVAILABILITY

Eastern Region had the highest overall Operating Availability of 74.52% followed by Southern region with Operating Availability of 72.44 %. All other regions had Operating Availability of around 70%.The Region-wise Planned Maintenance, Forced outages and Operating Availability of generating units for the year 2017-18 are furnished as under: -

Region	Planned Maintenance (%)	Forced Outage (%)	Operating Availability (%)
NORTHERN	4.38	26.61	69.01
WESTERN	4.18	26.64	69.18
SOUTHERN	5.04	22.52	72.44
EASTERN	3.37	22.11	74.52
NORTH EASTERN	22.6	21.21	56.19

Region	Planned Maintenance (%)	Forced Outage (%)	Operating Availability (%)
ALL INDIA TOTAL	4.3	25.04	70.66

5.6 MAKEWISE OPERATING AVAILABILITY:

5.6.1 The Planned Maintenance Forced outage and Operating Availability of units of different make during 2017-18 and previous two years were as under:

Make of Units TG / BOILER	Planned Maintenance (%)			Forced Outage (%)			Operating Availability (%)		
	15-16	16-17	2017-18	15-16	16-17	2017-18	15-16	16-17	2017-18
BHEL/BHEL	4.88	4.84	5.04	23.12	25.81	24.82	72.00	69.35	70.14
BHEL/ABL	3.89	1.20	3.65	47.21	43.05	29.88	48.9	55.75	66.47
CHINA/CHINA	2.77	3.44	2.44	19.87	22.99	27.26	77.36	73.57	70.3
RUSSIA/RUSSIA	5.34	4.15	5.24	17.99	13.94	8.05	76.67	81.91	86.71
OTHER	4.38	4.12	4.38	19.86	21.42	23.58	75.76	74.46	72.04
ALL MAKE	4.28	4.32	4.3	22.20	24.52	25.04	73.52	71.16	70.66

As may be seen, the Operating Availability of 86.71% achieved by RUSSIA/RUSSIA make units was the highest among the units of different makes. However, this is a small Capacity Group with major share of central sector units which had very high Operating Availability.

5.6.2 Major share of the units/capacity belongs to China/China and BHEL/BHEL make groups – While BHEL/BHEL group shows marginal increase in Operating Availability, the China/China group has shown sharp decline in Operating Availability vis-à-vis 2016-17. Both, China/China and BHEL/BHEL make groups show similar Operating Availability of **about 70 %**; however, there is a remarkable difference between these groups in the losses/outages due to Reserve Shut Down (RSD) and other such outages not attributable to unit performance. BHEL/BHEL make units have higher such losses as compared to China/China make group and thus accounting for the above factor, the BHEL/BHEL make shows slightly considerably higher Operating Availability than the China/China make.

Further, the share of larger size units (more than 500 MW) is around 68 % in China/China make group which is much higher than the BHEL/BHEL make group where this share is around 50 %. As may be seen from table at 5.4.1, the larger size Capacity Group have much higher Operating Availability. Thus considering the above aspect, the Operating Availability of BHEL/BHEL make group would be further higher than the China/China group

5.6.3 The Other/Other make group also showed high Operating Availability due to very large share of over 75 % of higher size units of more than 500 MW and supercritical units. This group comprises of large numbers of new supercritical units manufactured by indigenous manufacturer like L&T MHI Toshiba, Dossan etc.

5.6.4 The BHEL/ABL make group is a small group with total capacity of around 2120 MW comprising mostly of old units.

5.7 OPERATING AVAILABILITY OF SYSTEMS

The Operating Availability of different systems / areas during the years 2016-17 and 2017-18 are shown in the Table below. It may be seen that equipment availability in 2016-17 has been marginally higher in some of the areas, and the lower overall Operating Availability in 2017-18 is due to higher unavailability due to "Other" reasons.

Systems / Areas	OPERATING AVAILABILITY	
	2017-18	2017-18
BOILER & AUXILIARIES	95.30	95.66
TURBINE & AUXILIARIES	98.45	98.17
GENERATOR	99.41	98.46
OTHERS	78.00	78.38
Over All	71.16	70.66

5.8 MONTHWISE OPERATING AVAILABILITY

During the year 2017-18, the highest Operating Availability of 77.21% was achieved during April '17 and lowest Operating Availability of 66.81% during July '17. Month wise Planned Maintenance (%), Forced outage (%) and Operating Availability (%) during 2016-17 and 2017-18 are shown below:

Month	Unavailability				Operating Availability (%)	
	Planned (%)		Forced (%)		2017-16	2017-18
	2016-17	2017-18	2017-16	2017-18		
April	4.6	3.18	10.5	19.61	85.75	77.21
May	2.93	3.54	27.78	19.83	69.09	76.63
June	5.58	3.81	22.82	25.87	72.96	70.32
July	5.88	6.57	24.11	26.63	69.61	66.81
August	5.71	6.79	28.97	23.34	64.89	69.87
September	5.39	4.89	25.53	23.39	70.38	71.72
October	4.66	3.60	23.46	25.36	73.63	71.04
November	4.3	4.28	24.38	26.36	72.54	69.36
December	3.75	4.28	25.7	26.56	70.02	69.16
January	3.09	2.83	22.41	25.20	74.15	71.97
February	3.77	3.06	21.91	25.25	74.11	71.69
March	4.46	3.04	30.28	24.12	66.01	72.84
April –March	4.28	4.30	24.52	25.04	71.16	70.66

5.9 OPERATING AVAILABILITY – ORGANISATION WISE

Organization wise Operating Availability in respect of Central Sector, State Sector and Pvt. Utilities during 2017-18 is given below:

Sl. No.	Organization/	No of units	Capacity	PM (%)	FO (%)	OP. Av. (%)
CENTRAL SECTOR						
1	NTPC Ltd.	108	38965	4.17	10.8	85.03
2	APCPL	3	1500	1.98	15.68	82.34
3	BRBCL	2	500	0	78.98	21.02
4	DVC	23	7640	2.53	26.67	70.8
5	K.B.U.N.L	4	610	1.96	54.9	43.14
6	NLC	22	3240	5.82	7.86	86.32
7	NSPCL	2	500	3.82	0.68	95.5
8	NTECL	3	1500	24.49	27.21	48.3
9	NTPL	2	1000	6.24	8.38	85.38
10	PVUNL	5	0	0	92.53	7.47
	CENTRAL SECTOR	174	54905	4.5	14.93	80.57
STATE SECTOR						
NORTHERN REGION						
1	HPGCL	8	2720	3.03	39.49	57.48

Sl. No.	Organization/	No of units	Capacity	PM (%)	FO (%)	OP. Av. (%)
2	IPGPCL	2	135	0	100	0
3	PSPCL	14	2620	6.09	51.46	42.45
4	RRVUNL	21	5190	8.76	31.5	59.74
5	UPRVUNL	28	5563	9.63	17.8	72.57
WESTERN REGION						
6	BECL	2	500	0	70.72	29.28
7	CSPGCL	15	3280	3.02	8.72	88.26
8	GMDCL	2	250	9.04	7.35	83.61
9	GSECL	24	4000	5.19	24.03	70.78
10	MAHAGENCO	31	10170	6.49	25.65	67.86
11	MPPGCL	14	4080	9.75	24.71	65.54
SOUTHERN REGION						
12	APGENCO	13	3410	5.56	7.56	86.88
13	APPDCL	2	1600	1.38	39.74	58.88
14	KPCL	11	3420	8.99	38.34	52.67
15	RPCL	2	1600	0	79.22	20.78
16	SCCL	2	1200	0	6.58	93.42
17	TNGDCL	15	4320	5.66	18.01	76.33
18	TSGENCO	14	2882.5	5.63	4.74	89.63
EASTERN REGION						
19	DPL	3	660	0	40.36	59.64
20	OPGC	2	420	10.06	1.81	88.13
21	TVNL	2	420	0	32.43	67.57
22	WBPDC	22	4860	2.09	26.15	71.76
NORTH EASTERN						
1	APGPCL	2	60	0	100	0
	STATE SECTOR	251	63300.5	5.97	26.36	67.67
PRIVATE UTILITY						
WESTERN REGION						
1	RIL (DAHANU)	2	500	4.61	2.88	92.51
2	TATA PCL	3	1250	2.98	0.05	96.97
3	TOR. POW. (UNOSUGEN)	5	422	4.56	15.51	79.93
4	CESC	9	1125	3.48	27.63	68.89
	PRIVATE UTILITY	19	3297	3.6	26.34	70.06
PRIVATE IPPs						
NORTHERN REGION						
1	APL	2	1320	4.4	45.74	49.86
2	BEPL	10	450	8.43	56.34	35.23
3	GPGSL (GVK)	2	540	0	52.77	47.23
4	JhPL(HR)	2	1320	7.18	11.78	81.04
5	LAPPL	2	1200	2.19	6.25	91.56
6	LPGCL	3	1980	0	31.3	68.7
7	NPL	2	1400	4.25	12.77	82.98
8	PPGCL (Jaypee)	3	1980	0	54.24	45.76
9	RPSCCL	4	1200	3.43	8.23	88.34
10	RWPL (JSW)	8	1080	0.11	12.79	87.1
11	TSPL	3	1980	0	26.7	73.3
WESTERN REGION						
12	ACB	4	325	3.93	17.96	78.11
13	AMNEPL	4	246	0	100	0
14	APL	14	7920	4.4	45.74	49.86
15	BALCO	2	600	10.41	25.91	63.68
16	BLAPPL	1	45	0	63.28	36.72
17	CGPL	5	4000	10.36	7.83	81.81
18	DBPCL	2	1200	9.91	13.28	76.81
19	DIPL	2	600	0.58	38.73	60.69
20	EPGL	2	1200	6.85	53.76	39.39
21	ESSARPMPL	1	600	7.96	9.99	82.05
22	GCEL	2	1370	0	76.66	23.34

Sl. No.	Organization/	No of units	Capacity	PM (%)	FO (%)	OP. Av. (%)
23	GEPL	2	120	0	100	0
24	GIPCL	4	500	1.61	11.48	86.91
25	GMR ENERG	2	600	0	16.5	83.5
26	IEPL	1	270	0	86.66	13.34
27	JHAPL	1	600	2.74	37.63	59.63
28	JPL	8	3400	0	54.41	45.59
29	JPPVL	4	1820	6.24	8.7	85.06
30	JSWEL	4	1200	4.34	18.96	76.7
31	KWPCL	1	600	0	79.48	20.52
32	LANCO	2	600	6.13	6.71	87.16
33	MBPMPL	2	1200	6.65	15.88	77.47
34	MCCPL	1	300	5.73	6.58	87.69
35	RKMPPPL	3	1080	0	56.51	43.49
36	RattanIndia	5	1350	0	55.4	44.6
37	SCPL	2	100	2.62	8.48	88.9
38	SPL	6	3960	2.53	4.03	93.44
39	STPL	1	270	0	100	0
40	SVPPPL	1	63	0	87.93	12.07
41	TRNE	2	600	0	33.43	66.57
42	VESPL	1	35	0	100	0
43	VIP	2	600	0	24.44	75.56
44	VVL	1	135	0	100	0
45	WPCL	7	2340	0	37.83	62.17
SOUTHERN						
46	CEPL	2	1200	0	43.41	56.59
47	HNPC	2	1040	0	43.15	56.85
48	IBPIL	2	300	0	100	0
49	ITPCL	2	1200	7.18	22.44	70.38
50	JSWEL	4	860	4.34	18.96	76.7
51	MEL	2	300	0	64.55	35.45
52	SEIL	4	2640	2.45	3.47	94.08
53	SEPL	4	600	0	91.15	8.85
54	ST-CMSECP	1	250	0	36.88	63.12
55	UPCL	2	1200	0	26.44	73.56
EASTERN						
56	ADHUNIK	2	540	0	30.09	69.91
57	GMR ENERG	3	1050	0	16.5	83.5
58	HEL	2	600	1.69	0.32	97.99
59	HYEL	2	150	0	116.74	-16.74
60	IBPIL	1	350	0	100	0
61	JITPL	2	1200	1.02	46.32	52.66
62	MPL	2	1050	8.47	3.56	87.97
63	SEL	4	1200	0	90.9	9.1
64	TATA PCL	2	240	2.98	0.05	96.97
	PRIVATE IPP	188	70269	2.59	31.74	65.67
	ALL INDIA	633	194336.5	4.3	25.07	70.66

SECTION-6 CAPACITY GROUPWISE PERFORMANCE

- 6.1** This section covers the performance analysis of various capacity groups of thermal units during last three years. As on 31st March 2018, capacity group-wise disposition of 633 units considered in the review is as shown below:

Capacity Group Wise Disposition of thermal units												
Capacity	BHEL/BHEL		BHEL/ABL		RUSSIA/RUSSI A		CHINA/CHINA		OTHER/OTHER		TOTAL	
	NO.	CAP. (MW)	NO.	CAP. (MW)	NO.	CAP. (MW)	NO.	CAP. (MW)	NO.	CAP. (MW)	NO.	CAP. (MW)
25-99	16	1158	0	0	14	720	9	429	35	1762.5	74	4069.5
100-150	48	5632	2	230	3	300	18	2475	11	1480	82	10117
195-200	23	4580	0	0	0	0	0	0	3	600	26	5180
210-210	116	24360	9	1890	10	2100	0	0	5	1050	140	29400
250-270	68	17200	0	0	0	0	0	0	5	1270	73	18470
300-360	0	0	0	0	0	0	42	13100	0	0	42	13100
490-600	101	52370	0	0	0	0	25	15000	8	4000	134	71370
660-800	13	8900	0	0	0	0	27	17820	22	15910	62	42630
Total	385	114200	11	2120	27	3120	121	48824	89	26072.5	633	194336.5

6.2 CAPACITY GROUPWISE PERFORMANCE

Capacity group wise performance of these 633 thermal units is discussed in the subsequent paragraphs.

6.2.1 660-800 MW CAPACITY GROUP (SUPERCRITICAL UNITS)

- 6.2.1.1** In the year 2017-18, 66 super critical units were operational in the grid, out of these, 62 units which had been reckoned for PLF calculation by the end of the year have been considered in the Review. The Plant load factor of the group was **59.46%**. Performance of 660-800 MW capacity group units during the years 2015-16,2016-17 and 2017-18 are given below: -

Sl. No.	PARTTICULARS	2015-16	2016-17	2017-18
1	UNITS COMMISSIONED BY HE END OF THE YEAR			
	(a) Number	51	60	66
	(b) Capacity (MW)	34,950	41310.0	45550
2	UNITS REVIEWED			
	(a) Number	45	55	62
	(b) Capacity (MW)	30,785	37550.0	42630
	(c) Generation (MU)	164,079.75	189688.54	212028.83
3	Planned Maintenance (%)	2.72	2.97	2.78
4	Forced outage (%)	16.66	19.52	26.77
5	Operating Availability (%)	80.62	77.51	70.45
6	Plant Load Factor (%)	69.36	65.40	59.46

As may be seen, this Capacity Group showed almost similar Operating Availability to the overall Operating Availability of the units considered in the review.

During the year 2017-18, energy losses due to forced outage in respect of 660-800 MW capacity group unit was **95308.18** MU. The maximum energy loss of 52538.61MU was due to Misc. (Elect. /Mech.). These accounted for more than 55% of the total forced outage losses of the group. Details of Forced outages and energy loss of 660-800 MW capacity group units and areas of outages for the years 2016-17 and 2017-18 are shown below:

Area/ cause of Outage of 660-800 MW capacity group	No. of Outages		MU Loss		% of Group Forced outage	
	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
I. EQUIPMENT						
1. Boiler	144	203	7876.99	20227.37	14.02	21.22
2. Turbine	51	62	4155.36	4887.83	7.40	5.13
3. Generator	30	31	920.19	4463.32	1.64	4.68
Total	225	296	12952.54	29578.52	23.06	31.03
II. AUXILIARIES						
1. Boiler	49	47	2117.26	2194.08	3.77	2.3
2. Turbine	46	36	2125.62	1294.07	3.78	1.36
Total	95	83	4242.89	3488.15	7.55	3.66
III. Boiler & Boiler Aux.	193	250	9994.25	22421.45	17.79	23.53
IV. Turbine & Turbine Aux.	97	98	6280.99	6181.9	11.18	6.49
V. Generator	30	31	920.19	4463.32	1.64	4.68
VI. Misc. (Elect. /Mech.)	167	184	24738.07	52538.61	44.04	55.12
VII. Total excluding RSD of	487	563	41933.50	85605.28	74.66	89.82
VIII. RSD	54	23	14235.51	9702.9	25.34	10.18
Total	541	586	56169.01	95308.18	100.00	100

The details of the area/causes of forced outages and energy loss of this capacity group unit during the years 2016-17 and 2017-18 are given below.

Area/ cause of outage (660-800 MW Capacity group)	No. of Outages		MU Loss		% of Group F.O.	
	16-17	17-18	16-17	17-18	16-17	17-18
I. Equipment						
A. Boiler						
1. Water Wall Tube Leakage	49	76	3031.72	5055.58	5.40	5.3
2. Super Heater Tube Leakage	8	8	759.11	1105.64	1.35	1.16
3. Reheater Tube Leakage	5	7	159.30	587.24	0.28	0.62
4. Economizer Tube Leakage	4	6	74.56	136.38	0.13	0.14
5. Air Preheaters Problem	19	23	1437.16	5603.26	2.56	5.88
6. Furnace Trouble	0		0		0	
7. Boiler Operational Problems		28		2339.73		2.45
(A) FURNACE FIRE OUT/FLAME FAILURE	15	6	276.41	618.97	0.49	0.65
(B) FURNACE DRAFT ABNORMAL	4	0	143.42	0	0.26	0
8. Others	40	49	1995.30	4780.56	3.55	5.02
Total Boiler	144	203	7876.99	20227.37	14.02	21.22
B. Turbine						
1. Turbine Bearing Problem	0	2		729.45		0.77
2. Governing / Oil System Problem	5	7	109.86	203.83	0.20	0.21

Area/ cause of outage (660-800 MW Capacity group)	No. of Outages		MU Loss		% of Group F.O.	
	16-17	17-18	16-17	17-18	16-17	17-18
3.Turbine Differential Expansion Problem	3	0	8.94		0.02	
4.Turbine Axial Shift/ Thrust Pad Problem	0	0				
5.Turbine Eccentricity/ High Vibration	3	6	331.77	125.92	0.59	0.13
6.Turbine Rotor Failure/Damaged				706.46		0.74
7.Turbine Control Valve Problem	2	3	498.86	249.4	0.89	0.26
8.Condenser Tube Leakage	9	5	1000.49	520.19	1.78	0.55
9.Main Steam Line Problem	12	12	548.66		0.98	
10.Emergency Safety Valve Closure						
11.Condenser Low Vacuum	0	7		125.53		0.13
12. H.P. & L.P. Bypass System	3	3	184.95	954.62	0.33	1
13.Turbine Misc. Problems	14	17	1472.05	1272.42	2.62	1.34
Total Turbine	51	62	4155.36	4887.83	7.40	5.13
C. Generator						
1. Stator/ Stator Earth Fault	3	3	39.88	686.42	0.07	0.72
2. Rotor/ Rotor Earth Fault	0	2		128.6		0.13
2. Gen. Transformer Tripping/ Damaged	2	2	7.79	2133.36	0.01	2.24
3. Excitation Problem	1	2	5.43	8.27	0.01	0.01
4. Gen. Cooling System Failure	0	1		13.55		0.01
5. Seal Oil System Problem	0	0				
6. Fire In Gen. Bushing/ Bushing Failure	0	0				
6. Generator Bearing Problem	0					
7. A.V.R. Problem	2	0	11.13		0.02	
8. Generator Protection/ Relay Operation Problem	18	14	395.07	1060.68	0.70	1.11
9. Hydrogen Pressure Problem	2	5	449.15	235.82	0.80	0.25
10. Generator Miscellaneous Maintenance	2	2	11.73	196.62	0.02	0.21
Total Generator	30	31	920.19	4463.32	1.64	4.68
II.Auxiliaries						
A. Boiler Auxiliaries						
1. I.D. Fans Problem	8	7	665.43	89.43	1.17	0.09
2. F.D. Fans Problem	5	0	48.97	0	0.09	0
3. P.A. Fans Problem	16	19	229.60	408.78	0.41	0.43
4. Milling System /RC Feeder Problem	8	4	531.90	844.1	0.95	0.89
5. PIPES And VALVES BOILER SIDE	2	2	50.20	196.94	0.09	0.21
6. Boiler Aux. Misc. Problems	10	15	601.16	654.83	1.07	0.69
Total Boiler Aux.	49	47	2117.26	2194.08	3.77	2.3
B. Turbine Auxiliaries						
7. Boiler Feed Pump/Motor Problem	13	10	310.92	91.04	0.55	0.1
8. Condensate Pump Problem	2	2	28.76	94	0.05	0.1
9. C.W. Pump Problem	18	13	1185.84	357.16	2.11	0.37
10. Regenerative System Problem	1	4	234.38	573.17	0.42	0.6
11. Turbine Pipes & Valves Problem	2	1	65.21	66.48	0.12	0.07
12. Deaerator Problem	1	0	3.54	0	0.01	0
13. Turbine Misc.	9	6	296.97	112.22	0.53	0.12
Total Turbine Aux.	46	36	2125.62	1294.07	3.78	1.36
Total Boiler & Turbine Aux.	95	83	4242.89	3488.15	7.55	3.66
III. Other Misc. Mechanical & Electrical Problems						
Other Electrical Problems						
1. Unit Aux./Station Transformer Problems	2	4	441.78	11.52	0.79	0.01
2. Gen. Transformer Tripping/ Damaged	10	9	126.38	33.52	0.23	0.04

Area/ cause of outage (660-800 MW Capacity group)	No. of Outages		MU Loss		% of Group F.O.	
	16-17	17-18	16-17	17-18	16-17	17-18
3. H.T./L.T. Supply Problem	4	0	88.34		0.16	
4. DC Supply Problem	3	2	91.36	116.06	0.01	0.12
5. Switch Yard/Bus Bar Problem	17	5	453.61	22.43	0.61	0.02
6. Breaker/Isolator Problems	3	2	9.26	57.74	0.02	0.06
7. Electrical Miscellaneous Problems	38	31	1567.92	286.03	2.83	0.3
Total Other Electrical Problems	89	53	2778.65	527.3	5.43	0.55
B. Fuel Supply And Other Misc. Problems						
9. Coal FEEDING PROBLEM	8	2	623.52	263.16	1.11	0.28
12. Fuel Oil Problem	0	4		388.83		0.41
13. Cooling Tower Problem	0	0				
14. Ash Handling System Problem	5	8	798.51	904.16	1.42	0.95
15. Raw Water Problem	6	1	3041.46	135.1	5.41	0.14
16. E.S.P. / Pollution Problem	0	4		942.51		0.99
17. Non-Readiness Of Residual Work Of New Unit	1	0	183.63		0.33	
18. Vintage Unit Withdrawn And Closed For		15		4921.27		5.16
19. Fuel Supply & Other Misc. Problems	16	64	2393.22	37572.36	4.27	39.42
21. Coal Shortage	4	1	1143.55	292.97	2.04	0.31
22. Lignite Shortage	0	4	0	316.77	0	0.33
Total Fuel Supply And Other Misc. Problems	50	103	11014.81	45737.13	19.61	47.99
Grid System						
24. Transmission Constraints/ Grid Disturbance	34	26	2364.91	680.74	4.21	0.71
25. Reserve Shut Down/ Low Schedule	54	23	14235.51	9702.9	25.34	10.18
27. NO Power Purchase Agreement	3	4	8572.83	5882.85	15.26	6.17
28. Other Commercial Reason	1	0	6.86		0.01	
Total Grid System	92	53	25180.11	16266.48	44.82	47.66
Total Miscellaneous	137	209	209	62530.91	66.06	96.2

6.2.2 490-600 MW CAPACITY GROUP

6.2.2.1 Performance of 490-600 MW capacity group units during the years 2015-16,2016-17 and 2017-18 are given below: -

S.N.	PARTICULARS	2015-16	2016-17	2017-18
1	Units Commissioned By The End Of The Year			
	(a) Number	129	132	134
	(b) Capacity (MW)	68670	70370	71370
2	Units Reviewed			
	(a) Number	118	132	134
	(b) Capacity (MW)	62750	70370	71370
	(c) Generation (MU)	331017.39	372792.82	386890.16
3	Planned Maintenance (%)	4.16	4.46	4.15
4	Forced outage (%)	18.26	20.11	20.27
5	Operating Availability (%)	77.58	75.43	75.58
6	Plant Load Factor (%)	65.03	63.15	63.11

6.2.2.2 Details of outages and energy loss of 490-600 MW capacity group units on account of outages of various equipment and auxiliaries for the previous three years are shown below.

Area/ cause of Outage	No.of Outages			MU Loss			% of Group F.O.		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
I. Equipment									
1. Boiler	455	584	501	15613.45	36117.83	19759.2	16.76	30.84	15.95
2. Turbine	106	151	131	4182.48	6240.42	14336.45	4.49	5.33	11.57
3. Generator	87	111	82	3569.04	2701.90	12460.51	3.83	2.31	10.06
Total	648	846	714	23364.97	45060.15	46556.16	25.08	38.48	37.59
II. Auxiliaries									
1. Boiler	97	104	97	1631.33	1159.83	1779.97	1.75	0.99	1.44
2. Turbine	58	79	44	996.64	2914.64	1766.23	1.07	2.49	1.43
Total	155	183	141	2627.97	4074.46	3546.2	2.82	3.48	2.86
III. Boiler & Boiler Aux.	552	688	598	17244.78	37277.66	21539.16	18.51	31.83	17.39
IV. Turbine & Turbine Aux.	164	230	175	5179.11	9155.06	16102.68	5.56	7.82	13
V. Generator	87	111	82	3569.04	2701.90	12460.51	3.83	2.31	10.06
VI. Misc. (Elect. /Mech.)	281	335	340	33065.92	29918.66	47938.06	35.49	25.55	36.18
VII. Total excluding RSD of the Group	1084	1364	1195	59058.86	79053.28	98040.41	63.39	67.51	76.63
VIII. RSD	156	168	109	34118.69	38052.53	21470.42	36.62	32.49	23.37
Total	1240	1532	1304	93177.54	117105.81	119510.83	100	100	100

6.2.2.3 The details of the area/causes of forced outages and energy loss of this capacity group unit during the years 2015-16,2016-17 and 2017-18 are given below.

Area/ cause of outage (490-600MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
I. Equipments									
A. Boiler									
1. Water Wall Tube Leakage	172	229	261	5953.72	14767.25	9891.38	6.39	12.61	7.99
2. Super Heater Tube Leakage	21	32	8	1243.72	1989.70	343.03	1.33	1.70	0.28
3. Reheater Tube Leakage	52	40	19	1231.31	3736.90	637.14	1.32	3.19	0.51
4. Economizer Tube Leakage	35	42	24	3614.57	1454.18	963.27	3.88	1.24	0.78
5. Air Preheaters Problem	33	38	18	969.16	5504.65	1530.35	1.04	4.70	1.24
6. Furnace Trouble	4	1	2	143.24	4.52	114.25	0.15	0.0	0.09
7. Boiler Operational Problems									
(A) Furnace Fire Out/Flame Failure	50	74	77	284.98	476.04	438.62	0.31	0.41	0.35
(B) Furnace Draft Abnormal	26	33	22	255.35	5142.54	3788.97	0.27	4.39	3.06
(C) Drum Level High/ Low	31	51	33	156.23	276.48	167.84	0.17	0.24	0.14
8. Others	31	44	37	1761.16	2765.57	1884.36	1.89	2.36	1.52
Total Boiler	455	58	501	15613.45	36117.83	19759.2	16.76	30.84	15.95
B. Turbine									
1.Turbine Bearing Problem	6	7	3	438.19	1321.41	1399.29	0.47	1.13	1.13
2.Governing / Oil System Problem	8	14	10	415	381.17	464.98	0.45	0.33	0.38
3.Turbine Differential Expansion	4	5	1	10.78	74.71	2.62	0.01	0.06	0
4.Turbine Axial Shift/ Thrust Pad	0	1	2		31.41	2.58		0.03	0
5.Turbine Eccentricity/ High Vibration	22	21	29	1380.23	2173.89	5023.36	1.48	1.86	4.06
6.Turbine Rotor Failure/Damaged		1	0		127.42			0.11	
7.Turbine Control Valve Problem	6	6	7	195.3	185.21	19.5	0.21	0.16	0.02
8.Condenser Tube Leakage/ Cleaning	5	5	8	190.09	252.34	465.07	0.2	0.22	0.38
9.Main Steam Line Problem	12	42	27	190.15	1000.65	2345.54	0.2	0.85	1.89
10.Emergency Safety Valve Closure	3	5	0	74.98	72.83		0.08	0.06	
11.Condenser Low Vacuum	16	25	18	125.58	353.57	1078.32	0.13	0.30	0.87

Area/ cause of outage (490-600MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
12. H.P. & L.P. Bypass System	7	7	6	243.75	115.35	195.51	0.26	0.10	0.16
13.Turbine Misc. Problem	17	12	20	918.41	150.44	3339.68	0.99	0.13	2.7
Total Turbine	106	151	131	4182.48	6240.42	14336.45	4.49	5.33	11.57
C. Generator									
1. Stator/ Stator Earth Fault	14	15	6	184.49	1169.55	4673.57	0.2	1.00	3.77
2. Rotor/ Rotor Earth Fault	3	4	1	91.37	22.18	30	0.1	0.02	0.02
3. Gen. Transformer Tripping/ Damaged	3	6	4	16.58	175.16	1046.17	0.02	0.15	0.84
4. Excitation Problem	7	12	3	1088.72	92.15	83.52	1.17	0.08	0.07
5. Gen. Cooling System Failure	3	7	4	227.01	178.27	23.06	0.24	0.15	0.02
6. Seal Oil System Problem	1	1	1	7.52	65.00	2811.03	0.01	0.06	2.27
7. Fire In Turbo Gen. Bushing/ Bushing Failure	1	1	1	1.63	2.22	110.06	0	0	0.09
8. Generator Bearing Problem	2	3	3	93.27	10.80	322.05	0.1	0.01	0.26
9. A.V.R. Problem	6	7	0	208.89	17.63		0.22	0.02	
10. Generator Protection/ Relay	38	43	50	1536.26	649.65	1679.58	1.65	0.55	1.36
11. Hydrogen Pressure Problem	2	4	4	36.64	285.22	1426.25	0.04	0.24	1.15
12. Generator Miscellaneous	7	8	5	76.65	34.08	255.21	0.08	0.03	0.21
Total Generator	87	111	82	3569.04	2701.90	12460.51	3.83	2.31	10.06
II Auxiliaries									
A. Boiler Auxiliaries									
1. I.D. Fans Problem	17	20	32	239.99	361.56	809.65	0.26	0.31	0.65
2. F.D. Fans Problem	6	6	5	94.32	24.68	173.5	0.1	0.02	0.14
3. P.A. Fans Problem	32	47	29	410.01	439.71	433.85	0.44	0.38	0.35
4. Milling System /RC Feeder Problem	3	1	1	196.16	2.15	28.49	0.21	0.00	0.02
5. Pipes And Valves Boiler Side	31	19	27	554.53	146.06	252.73	0.6	0.12	0.2
6. Boiler Aux. Misc. Problems	8	11	3	136.32	185.67	81.74	0.15	0.16	0.07
Total Boiler Aux.	97	104	97	1631.33	1159.83	1779.97	1.75	0.99	1.44
B. Turbine Auxiliaries									
1. Boiler Feed Pump/Motor Problem	29	33	18	298.65	208.85	336.56	0.32	0.18	0.27
2. Condensate Pump Problem	4	1	1	20.66	0.62	1.75	0.02	0.00	0
3. C.W. Pump Problem	11	17	9	544.54	1360.09	675.85	0.58	1.16	0.55
4. Regenerative System Problem	0	2	0	0	139.70	0	0	0.12	0
5. Turbine Pipes & Valves Problem	0	0	3	0	0	44	0	0.00	0.04
6. Deaerator Problem	0	1	0	0	34.85	0	0	0.03	0
7. Turbine Misc.	14	25	13	132.79	1170.54	708.07	0.14	1.00	0.57
Total Turbine Aux.	58	79	44	996.64	2914.64	1766.23	1.07	2.49	1.43
Total Boiler & Turbine Aux.	155	183	141	2627.97	4074.46	3546.2	2.82	3.48	2.86
III Others Misc. Problems									
A. Other Electrical Problems									
1. Unit Aux. Transformer/ Station Transformer Problems	12	28	18	38.4	2892.04	267.84	0.04	2.47	0.22
2. Gen. Transformer Tripping/ Damaged	21	18	15	328.55	342.50	724.11	0.35	0.29	0.58
3. H.T./L.T. Supply Problem	4	2	5	50.8	8.39	72.66	0.05	0.01	0.06
4. Dc Supply Problem	5	9	5	17.12	24.51	32.79	0.02	0.02	0.03
5. Switch Yard/Bus Bar Problem	14	40	35	64.13	283.75	858.47	0.07	0.24	0.69
6. Breaker / Isolator Problems	3	3	3	265.56	10.07	8.54	0.29	0.01	0.01
7. Misc. Fire Hazards / Fire In Cable Gallery	1	3	0	1.59	32.04		0	0.03	
8. Instrumentation Problem	0	0							

Area/ cause of outage (490-600MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
9. Air Supply Problem	1	1	1	4.1	2.62	2.29	0	0.00	0
10. Electrical Miscellaneous Problems	88	105	84	1094.8	1541.32	1793.45	1.17	1.32	1.45
Total Other Electrical Problems	169	219	166	1865.05	5137.24	3760.15	3.49	4.39	3.04
B. Fuel And Other Misc. Problems									
12. Lignite Feeding Problem	2	3	1	1793.74	722.65	0.44	1.93	0.62	0
13. Coal Feeding Problem	15	23	3	6483.31	3009.46	100.82	6.96	2.57	0.08
14. Wet/ Poor Quality Coal	1	2	4	24.81	76.84	166.74	0.03	0.07	0.13
15. Fuel Oil Problem	2	1	3	3.46	93.45	109.78	0	0.08	0.09
16. Cooling Tower Problem	1	0	1	11.14		1.32	0.01		0
17. Ash Handling System Problem	20	14	28	6245.3	880.15	5551.33	6.7	0.75	4.48
18. Raw Water Problem	6	7	7	805.32	323.70	1614.74	0.86	0.28	1.3
19. D.M. Water Problem	0	2	4		104.30	1872.77		0.09	1.51
20. E.S.P. / Pollution Problem	2	1	7	224.91	1281.83	579.95	0.24	1.09	0.47
21. Non-Readiness Of Residual	2	0	19	109.28		1727.22	0.12		1.39
23. Fuel Supply & Other Misc. Problems	20	10	2	1397.81	876.91	232.84	1.5	0.75	0.19
24. Other Misc. Problems	8	8	76	3049.53	1235.74	20771.95	0.48	1.06	15.29
25. Coal Shortage	9	9	4	1230.56	2635.92	3995.11	1.32	2.25	3.23
26. Vintage Unit Withdrawn and Closed for Operation		1	7		93.84	1614.74		0.08	1.3
Total Fuel Supply And Other Misc Problems	88	81	166	21379.2	18175.62	38339.75	20.15	15.52	29.46
C. Grid System									
27. Transmission Constraints/ Grid Disturbance	40	36	12	6698.26	181.10	452.69	7.19	0.15	0.37
28. Reserve Shut Down	156	168	109	34118.69	38052.53	21470.42	39.35	32.49	23.37
29. No Power Purchase	1	2	2	3123.44	5964.00	5385.47	3.35	5.09	4.35
30. Other Commercial Reason		1	0		460.89			0.39	
Total Grid System	197	207	123	46489.29	44658.51	34786.58	49.89	38.12	28.09
Total Miscellaneous	454	288	455	68531.35	67971.37	63087.18	73.53	58.04	59

6.2.3 300-360 MW CAPACITY GROUP

6.2.3.1 Plant load factor of 300-360 MW capacity group units during the financial year 2017-18 have lesser than the national average PLF%. Performance of 300-360 MW capacity group units during the year 2015-16, 2016-17 and 2017-18 is given below:-

S.N.	PARTTICULARS	2015-16	2016-17	2017-18
1	Units Commissioned By The End Of The Year			
	(a) Number	38	39	42
	(b) Capacity (MW)	11840	12140	13100
2	Units Reviewed			
	(a) Number	37	39	42
	(b) Capacity (MW)	11490	12140	13100
	(c) Generation (MU)	60158.30	62468.62	63674.21
3	Planned Maintenance (%)	1.99	2.56	2.5
4	Forced outage (%)	17.45	22.47	26.64
5	Operating Availability (%)	80.56	74.97	70.86
6	Plant Load Factor (%)	65.12	59.91	57.25

Area/ cause of outage of (300-360MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
7.Turbine Control Valve Problem	0	2	1		14.66	1.97		0.06	0.01
8.Condenser Tube Leakage/ Cleaning	7	4	3	301.8	102.73	156.3	1.88	0.44	0.53
9.Main Steam Line Problem	1	2	8	0.2	2.18	155.25	0	0.01	0.53
10.Emergency Safety Valve Closure									
11.Condenser Low Vacuum	5	7	1	220.09	281.84	1.51	1.37	1.20	0.01
12. H.P. & L.P. Bypass System	0		2			62.03			0.21
13.Turbine Misc. Problem	5	2	7	423.96	310.20	1360.64	2.64	1.32	4.64
Total Turbine	33	46	37	1661.86	1662.33	2494.25	10.35	7.10	8.51
C. Generator									
1. Stator/ Stator Earth Fault	3	1	0	7.49	2.06		0.05	0.01	
2. Gen. Transformer Tripping/	0	0	0						
2. Rotor/ Rotor Earth Fault	2	0	1	7.01		305.39	0.04		1.04
3. Excitation Problem	3	3	5	3.69	21.28	5.32	0.02	0.09	0.02
4. Gen. Cooling System Failure	3	2	1	18.87	2.20	26.51	0.12	0.01	0.09
5. Seal Oil System Problem			1			1.03			0
6. Fire In Turbo Gen. Bushing/ Bushing Failure									
6. Generator Bearing Problem									
7. A.V.R. Problem									
8. Generator Protection/ Relay	7	7	5	57.41	8.13	4.55	0.36	0.03	0.02
9. Hydrogen Pressure Problem	0	1	2		122.02	295.21		0.52	1.01
10. Generator Miscellaneous	1	7	1	1.81	60.55	95.41	0.01	0.26	0.33
Total Generator	19	21	16	96.29	216.24	733.41	0.6	0.92	2.5
A. Boiler Auxiliaries									
1. I.D. Fans Problem	10	15	11	378.4	765.85	1048.79	2.36	3.27	3.58
2. F.D. Fans Problem	1	3	1	0.63	91.73	0.82	0	0.39	0
3. P.A. Fans Problem	9	4	8	259.07	2.88	131.68	1.61	0.01	0.45
4. Milling System /RC Feeder Problem	3	4	0	79.09	105.49	0	0.49	0.45	0
5. PIPES And VALVES BOILER SIDE	2	0	1	1.5	0	1.27	0.01	0.00	0
6. Boiler Aux. Misc. Problems	1	1	8	0.55	1.12	233.97	0	0.00	0.8
Total Boiler Aux.	26	27	29	719.24	967.07	1416.53	4.48	4.13	4.83
B. Turbine Auxiliaries									
1. Boiler Feed Pump/Motor Problem	8	3	0	210.51	27.69	0	1.31	0.12	0
2. Condensate Pump Problem	0	0	0	0	0	0	0	0	0
3. C.W. Pump Problem	3	4	1	38.18	804.62	64.46	0.24	3.44	0.22
4. Regenerative System Problem	0	0	0	0	0	0	0	0	0
5. Turbine Pipes & Valves Problem	0	1	0	0	3.03	0	0	0.01	0
6. Deaerator Problem	0	0	1	0	0	3.58	0	0	0.01
7. Turbine Misc.	4	3	1	38.88	20.14	0.26	0.24	0.09	0
Total Turbine Aux.	15	11	3	287.58	855.47	68.3	1.79	3.65	0.23
Total Boiler & Turbine Aux.	41	38	32	1006.82	1822.54	1484.84	6.27	7.78	5.06
III Others Misc. Problems									
A. Other Electrical Problems									
1. Unit Aux. Transformer/ Station Transformer Problems	3	6	6	3.91	6.19	49.66	0.02	0.03	0.17
2. Gen. Transformer Tripping/ Damaged	6	1	1	12.23	1.71	99.11	0.08	0.01	0.34
3. H.T./L.T. Supply Problem	2	0	0	9.52			0.06		
4. Dc Supply Problem	4	0	1	674.28		30.77	4.2		0.1
5. Switch Yard/Bus Bar Problem	7	6	5	676.38	36.72	28.82	4.21	0.16	0.1

Area/ cause of outage of (300-360MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
6. Breaker/Isolator Problems	0	1	0		1.37			0.01	
7. INSTRUMENTATION PROBLEM			1			1.54			0.01
8. Electrical Miscellaneous Problems	11	15	15	49.35	19.10	18.7	0.31	0.08	0.06
Total Other Electrical Problems	33	29	29	1425.67	65.08	228.6	8.88	0.29	0.78
B. Fuel And Other Misc. Problems									
8. Coal Feeding Problem	3	4	1	1900.22	205.10	9.1	11.83	0.88	0.03
9. FUEL FEEDING PROBLEM			3			592.52			2.02
10. WET / POOR QUALITY COAL			2			147.58			0.5
11. Raw Water Problem	0	2	6		611.05	171.08		2.61	0.58
12. Fuel Oil Problem	0	0	13	-	-	540.72	-	-	1.84
13. Cooling Tower Problem	1	1	2	21.01	1.46	495.53	0.13	0.01	1.69
14. Ash Handling System Problem	10	7	0	166.53	211.69		1.04	0.90	
15. E.S.P. / Pollution Problem	1	3	1	215.54	405.86	24.87	1.34	1.73	0.08
16. Fuel Supply & Other Misc. Problems	6	2	5	487.3	422.81	841.67	3.03	1.81	2.87
17. Other Misc. Problems	1	5	38	0.84	45.12	9550.23	0.01	0.19	29.16
18. Coal Shortage	0	7	1		873.42	95.41			0.33
Total Fuel Supply And Other Misc Problems	28	32	72	2791.44	2887.67	12468.71	17.38	12.33	39.1
16. Grid System									
17. Transmission Constraints/ Grid Disturbance	9	28	14	108.97	4088.64	3263.82	0.68	17.46	11.13
18. Reserve Shut Down/ Low Schedule	43	54	37	4818.38	5318.09	4881.91	30.01	22.71	20.06
19. Other Commercial Reason			2			929.28			3.17
20. NO Power Purchase Agreement	2	3	1	2635.2	5479.18	52.69	16.41	23.39	0.18
Total Grid System	54	85	54	7562.55	14885.9	10127.7	47.1	63.56	34.54
Total Miscellaneous	115	146	155	11779.6	17838.6	21825.01	73.36	76.17	74.42

6.2.4 250-270 MWCAPACITY GROUP

6.2.4.1 The 250-270 MW capacity group units saw a growth in PLF and operating availability. Forced outage losses of this capacity group units decreased from 35.27% in 2016-17 to 30.38% in 2017-18. Detail performance of 250-270 MW capacity group units during the years 2015-16,2016-17 and 2017-18 are given below:

S.N.	PARTTICULARS	2015-16	2016-17	2017-18
1	Units Commissioned By The End Of The Year			
	(a) Number	69	73	79
	(b) Capacity (MW)	17470	18490	20050
2	Units Reviewed			
	(a) Number	64	73	73
	(b) Capacity (MW)	16180	18490	18470
	(c) Generation (MU)	80118.41	80929.51	91470.6
3	Planned Maintenance (%)	4.31	2.97	3.35
4	Forced outage (%)	29.79	35.27	30.38
5	Operating Availability (%)	65.9	61.76	66.27
6	Plant Load Factor (%)	57.45	53.36	57.33

6.2.4.2 The details of area/ causes of forced outage and MU losses of 250-270 MW capacity group for the years 2015-16,2016-17 and 2017-18 are shown below:

Area/ cause of Outage of (250-270) MW capacity group	No. of Outages			MU Loss			% of Group F.O.		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
I. Equipment									
1. Boiler	312	312	273	4417.38	6266.35	6410.17	10.68	11.72	13.22
2. Turbine	56	72	61	434.79	1414.00	1425.1	1.05	2.64	2.94
3. Generator	64	54	47	4128.77	1014.92	3572.77	9.98	1.90	7.37
Total	432	438	381	8980.95	8695.26	11408.05	21.71	16.27	23.53
ii. Auxiliaries									
1. Boiler	77	61	41	2823.08	2129.47	191.09	6.83	3.98	0.39
2. Turbine	21	19	15	221.73	151.79	65.56	0.54	0.28	0.14
Total	98	80	56	3044.81	2281.26	256.65	7.36	4.27	0.53
III. Boiler & Boiler Aux.	389	373	314	7240.46	8395.82	6601.27	17.51	15.71	13.62
IV. Turbine & Turbine	77	91	76	656.52	1565.79	1490.66	1.59	2.93	3.07
V. Generator	64	54	47	4128.77	1014.92	3572.77	9.98	1.90	7.37
VI. Misc. (Elect. /Mech.)	185	171	184	14155.23	12138.96	22954.95	34.22	22.71	39.59
VII. Total excluding RSD of the Group	715	689	621	26180.98	23115.48	34619.65	63.3	43.24	63.65
VIII. RSD	144	202	155	15181.04	30343.86	15622.27	36.7	56.76	36.35
Total	859	891	776	41362.02	53459.34	50241.92	100	100	100

6.2.4.3 Breakup of the forced outage and energy loss of 250-270 MW capacity group units due to equipment and auxiliaries during 2015-16,2016-17 and 2017-18 are given below:

Area/ cause of outage (250-270 MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
I. EQUIPMENTS									
A. Boiler									
1. Water Wall Tube Leakage	87	79	67	1894.69	1384.81	2657.29	4.58	2.59	5.48
2. Super Heater Tube Leakage	9	8	18	138.42	510.07	692.5	0.33	0.95	1.43
3. Reheater Tube Leakage	14	5	5	114.48	1570.98	898.59	0.28	2.94	1.85
4. Economiser Tube Leakage	25	12	21	404.86	190.28	402.87	0.98	0.36	0.83
5. Air Preheaters Problem	15	12	12	272.42	1150.07	165.43	0.66	2.15	0.34
6. Furnace Trouble	1	1	3	59.48	57.15	116.92	0.14	0.11	0.24
7. Boiler Operational Problems									
(A) Furnace Fire Out/Flame	62	55	38	376.5	162.71	70.01	0.91	0.31	0.14
(B) Furnace Draft Abnormal	38	62	21	409.79	136.42	95.29	0.99	0.26	0.2
(C) Drum Level High/ Low	32	43	38	145.38	102.21	28.65	0.35	0.19	0.06
8. Others	29	35	50	601.35	998.63	1282.63	1.45	1.87	2.65
Total Boiler	312	312	273	4417.38	6266.35	6410.17	10.68	11.72	13.22
B. Turbine									
1. Turbine Bearing Problem	1	1	3	2.62	15.05	67.62	0.01	0.03	0.14
2. Governing / Oil System	8	8	5	32.78	11.95	11.04	0.08	0.02	0.02
3. Turbine Differential Expansion Problem	1	2	5	0.44	2.99	5.82	0	0.01	0.01
4. Turbine Axial Shift/ Thrust Pad Problem	1	1	1	46.22	12.58	49	0.11	0.02	0.1

Area/ cause of outage (250-270 MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
5. Turbine Eccentricity/ High	5	10	5	65.17	1144.87	383.55	0.16	2.14	0.79
6. Turbine Rotor Failure/Damaged	0	1	0		0.26			0	
7. Turbine Control Valve Problem	1	1	4	0.47	15.17	34.96	0	0.03	0.07
8. Condenser Tube Leakage/ Cleaning	2	6	1	8.96	48.35	10.74	0.02	0.09	0.02
9. Main Steam Line Problem	7	19	16	88.91	73.70	517.44	0.21	0.14	1.07
10. Emergency Safety Valve									
11. Condenser Low Vacuum	12	13	9	33.24	8.98	27.43	0.08	0.02	0.06
12. H.P. & L.P. Bypass	3	2	2	12.35	7.97	229.67	0.03	0.01	0.47
13. Turbine Misc. Problem	15	8	10	143.63	72.13	87.82	0.35	0.13	0.18
Total Turbine	56	72	61	434.79	1414.00	1425.1	1.05	2.64	2.94
C. Generator									
1. Stator/ Stator Earth Fault	6	8	7	779.31	194.86	1744.67	1.88	0.36	3.6
2. Rotor/ Rotor Earth Fault	1	7	0	1226.38	525.10		2.96	0.98	
3. Gen. Transformer Tripping/	22	0	3	866.06		1336.06	2.09		2.76
4. Excitation Problem	3	4	3	11.98	4.19	4.02	0.03	0.01	0.01
5. Gen. Cooling System		0							
6. Seal Oil System Problem	0	1	2		1.08	1.22		0	0
7. Fire In Turbo Gen. Bushing/ Bushing Failure	0	0	0						
8. Generator Bearing Problem	1	0		0.52			0		
9. A.V.R. Problem	2	2	1	1.61	1.98	0.72	0.00	0	0
10. Generator Protection/	28	27	28	1230.14	238.51	442.55	2.97	0.45	0.91
11. Hydrogen Pressure	1	3	1	12.78	47.49	13.02	0.03	0.09	0.03
12. Generator Miscellaneous	0	2	2		1.71	30.52		0	0.06
Total Generator	64	54	47	4128.77	1014.92	3572.77	9.98	1.90	7.37
Ii Auxiliaries									
A. Boiler Auxiliaries									
1. I.D. Fans Problem	6	14	8	5.08	33.28	40.75	0.01	0.06	0.08
2. F.D. Fans Problem	6	4	2	18.73	8.45	4.02	0.05	0.02	0.01
3. P.A. Fans Problem	21	16	14	410.21	39.75	31.48	0.99	0.07	0.06
4. Milling System /RC Feeder	26	8	6	399.43	38.15	104.14	0.97	0.07	0.21
5. PIPES And VALVES BOILER	10	9	10	111.94	66.33	9.42	0.27	0.12	0.02
6. Boiler Aux. Misc. Problems	8	10	1	1877.68	1943.50	1.28	4.54	3.64	0
Total Boiler Aux.	77	61	41	2823.08	2129.47	191.09	6.83	3.98	0.39
B. Turbine Auxiliaries									
7. Boiler Feed Pump/Motor	9	5	7	8.15	40.75	33.73	0.02	0.08	0.07
8. Condensate Pump Problem	0	0	0	0	0	0	0	0	0
9. C.W. Pump Problem	3	2	3	1.98	1.38	6.14	0	0	0.01
10. Regenerative System	0	0	0	0	0	0	0	0	0
11. Turbine Pipes & Valves	2	0	0	61.46	0	0	0.15	0	0
12. Deaerator Problem	0	0	0	0	0	0	0	0	0
13. Turbine Misc.	7	12	5	150.14	109.66	25.69	0.36	0.21	0.05
Total Turbine Aux.	21	19	15	221.73	151.79	65.56	0.54	0.28	0.14
Total Boiler & Turbine Aux.	98	80	56	3044.81	2281.26	256.65	7.36	4.27	0.53
III. Others Misc. Problems									
A. Other Electrical Problems									

Area/ cause of outage (250-270 MW Capacity group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
1. Unit Aux. Transformer/ Station Transformer Problems	9	9	5	15.17	40.20	9.15	0.04	0.08	0.02
2. Gen. Transformer Tripping/	7	8	11	1906.8	37.01	10.02	4.61	0.07	0.02
3. H.T./L.T. Supply Problem	10	2	3	27.6	2.84	4.21	0.07	0.01	0.01
4. Dc Supply Problem	4	2	5	20.21	1.42	45.27	0.05	0	0.09
5. Switch Yard/Bus Bar	6	26	7	36.72	85.62	10.44	0.09	0.16	0.02
6. Breaker/Isolator Problems	3	1	1	2.07	11.90	2.86	0.01	0.02	0.01
7. Misc. Fire Hazards / Fire In Cable Gallery	0	0	3	0	0	222.14	0		0.46
8. Instrumentation Problem	0	2	0	0	5.76		0	0.01	
10. Air Supply Problem	0	2	0	0	1.56		0	0	
11. Electrical Miscellaneous Problems	65	58	52	270.26	81.07	893.21	0.65	0.15	1.84
Total Other Electrical	104	110	87	2278.84	1907.79	1197.3	5.52	3.56	2.47
B. Fuel And Other Misc., Problems									
12. Lignite Feeding Problem	5	0	9	419.37	-	425.76	1.01	-	0.88
13. Coal Feeding Problem	8	7	2	1218.82	194.8	253.1	2.95	0.36	0.52
14. Wet/ Poor Quality Coal	3	2	0	1.58	1.34		0	0	
15. Fuel Oil Problem	9	1	0	8.44	2.08		0.02	0	
16.COOLING TOWER PROBLEM			1			1.36			0
17. Ash Handling System	10	3	6	162.44	312.07	658.17	0.39	0.58	1.36
18. Raw Water Problem	2	1	3	1627.96	1047.36	255.65	3.94	1.96	0.53
19. E.S.P. / Pollution Problem	1	2	1	320.38	86.16	100.81	0.77	0.16	0.21
20. Non-Readiness Of Residual Work Of New Unit	1	2	2	6.64	1194.66	32.21	0.02	2.23	0.07
21. Fuel Supply & Other Misc.	12	13	1	1777.35	1634.44	5.7	4.3	3.06	0.01
22. Other Misc. Problems	1	1	3	19.37	19.75	2222.14	0.05	0.04	0.46
23. Coal Shortage	0	3	44	0	1548.19	9771.95	0	2.90	20.16
24. Coal Transportation	0	0	2	0	0	399.37	0	0	0.82
Total Fuel Supply And Other Misc. Problems	53	35	96	5574.51	4890.58	14126.22	13.48	9.14	27.31
C. Grid System									
25. Transmission Constraints/ Grid Disturbance	26	20	17	1558.52	154.24	123.8	3.77	0.29	0.26
26. Reserve Shut Down	144	202	155	15181.04	30343.86	15622.27	36.7	56.76	36.35
27. NO Power Purchase	1	2	3	2371.68	2821.20	3694.35	5.73	5.28	7.62
Total Grid System	171	224	175	19111.2	33319.30	21440.42	46.2	62.33	44.42
28. Uneconomical Operation	1	1	1	2371.68	2365.20	1448.08	5.73	4.42	2.99
Total Miscellaneous	329	370	359	29336.3	43633.08	37320.64	70.93	81.6	77.00

6.2.5 210 MWCAPACITY GROUP

6.2.5.1 The Plant Load Factor of 210 MW capacity group units increased from 57.99% in 2016-17 to 60.9% in 2017-18. Performance of 210 MW capacity group units during the years 2015-16,2016-17 and 2017-18 are given below: -

Particulars	210 MW		
	15-16	16-17	17-18
1. Units commissioned by the end of the year			
(a) Number	143	143	140
(b) Capacity MW	30030	30030	29400
2. Units considered in the review			
(a) Number	143	143	140
(b) Capacity MW	30030	30030	29400
(c) Generation (MU)	164237.6	147317.37	152193.8
3. Planned Maintenance (%)	4.74	4.70	6.21
4. Forced Outage (%)	22.02	28.58	23.86
5. Operating Availability (%)	73.24	66.72	69.93
6. Plant Load Factor (%)	63.03	57.99	59.34

6.2.5.2 The details of forced outage for 210 MW capacity group due to equipment and auxiliaries units during the 2015-16,2016-17 and 2017-18 are given below:-

Area/ cause of Outage of 210MW capacity group	No. of Outages			MU Loss			% of Group F.O.		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
I. EQUIPMENTS									
1. Boiler	701	574	562	8232.6	7969.80	6402.16	14.17	10.83	10.65
2. Turbine	156	138	115	2248.52	2232.09	1620.92	3.87	3.03	2.7
3. Generator	96	112	112	2426.44	2953.20	2233.26	4.18	4.01	3.72
Total	953	824	789	12907.57	12155.09	10256.35	22.22	17.87	17.07
II. AUXILIARIES									
1. Boiler	87	73	65	773.01	32112.39	723.57	1.33	0.42	1.2
2. Turbine	55	33	28	570.15	169.09	262.08	0.98	0.23	0.44
Total	142	106	93	1343.16	481.48	985.65	2.31	0.65	1.64
III. Boiler & Boiler Aux.	788	647	627	9005.61	8282.19	7125.73	15.5	11.25	11.86
IV. Turbine & Turbine	211	171	143	2818.67	2401.18	1883	4.85	3.26	3.13
V. Generator	96	112	112	2426.44	2953.20	2233.26	4.18	4.01	3.72
VI. Misc. (Elect. /Mech.)	273	257	285	14770.6	7151.52	27132.98	25.43	9.72	31.68
VII. Total excluding RSD of the Group	1368	1187	1167	29021.32	20788.10	38374.97	49.96	28.25	50.39
VIII. RSD	345	495	414	29061.43	52808.81	23014.44	50.03	71.25	49.61
Total	3081.00	1682	1581	58082.75	73596.91	61389.41	100	100	100

6.2.5.3 Break-up of the area/ cause of forced outages and energy loss for 210 MW units for the years 2015-16,2016-17 and 2017-18 are shown below: -

Area/ cause of outage (210 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
I. EQUIPMENTS									
A. Boiler									
1. Water Wall Tube Leakage	237	150	186	4457.51	3710.80	2421.28	7.67	5.04	4.03
2. Super Heater Tube Leakage	37	50	31	655.06	511.93	374.4	1.13	0.70	0.62
3. Reheater Tube Leakage	46	64	46	549.7	1547.36	859.68	0.95	2.10	1.43
4. Economiser Tube Leakage	97	102	68	1014.88	1200.37	1382.34	1.75	1.63	2.3

Area/ cause of outage (210 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
5. Air Preheaters Problem	23	20	24	165.7	255.45	367.27	0.29	0.35	0.61
6. Furnace Trouble	0	3	1	0	37.61	1.36	0	0.05	0
7. Boiler Operational Problems									
(A) Furnace Fire Out/Flame Failure	107	79	93	395.42	122.60	236.39	0.68	0.17	0.39
(B) Furnace Draft Abnormal	68	47	44	122.84	293.46	543.94	0.21	0.40	0.91
(C) Drum Level High/ Low	36	32	33	295.07	86.99	28.95	0.51	0.12	0.05
8. Others	50	27	36	576.43	203.32	186.55	0.99	0.28	0.31
Total Boiler	701	574	562	8232.6	7969.80	6402.16	14.17	10.83	10.65
B. Turbine									
1. Turbine Bearing Problem	11	4	6	278.55	11.98	129.51	0.48	0.02	0.22
2. Governing / Oil System Problem	9	13	20	226.6	47.37	431.29	0.39	0.06	0.72
3. Turbine Differential Expansion	5	2	0	9.09	3.55		0.02	0	
4. Turbine Axial Shift/ Thrust Pad	2	5	3	3.2	110.97	6.8	0.01	0.15	0.01
5. Turbine Eccentricity/ High Vibration	12	12	12	508.92	995.94	412.93	0.88	1.35	0.69
6. Turbine Rotor Failure/Damaged	0		3	0		38.64	0		0.06
7. Turbine Control Valve	6	13	9	28.68	178.02	86.44	0.05	0.24	0.14
8. Condenser Tube Leakage/ Cleaning	16	18	8	727.85	235.13	57.13	1.25	0.32	0.1
9. Main Steam Line Problem	8	9	12	59.05	57.16	81.24	0.1	0.08	0.14
10. Emergency Safety Valve Closure	2	3	1	38.19	16.94	1.18	0.07	0.02	0
11. Condenser Low Vacuum	41	36	19	29.01	125.19	28.5	0.05	0.17	0.05
12. H.P. & L.P. Bypass System	6	7	3	41.34	35.24	24.55	0.07	0.05	0.04
13. Turbine Misc. Problem	38	16	1	298.05	414.59	1.53	0.51	0.56	0
Total Turbine	156	138	115	2248.52	2232.09	1620.92	3.87	3.03	2.7
C. Generator									
1. Stator/ Stator Earth Fault	14	18	12	1179.58	106.98	1435.97	2.03	0.15	2.39
2. Rotor/ Rotor Earth Fault	4	5	2	107.56	112.82	23.75	0.19	0.15	0.04
3. Gen. Transformer Tripping/ Damaged	12	7	6	671.56	1709.35	16.48	1.16	2.32	0.03
4. Excitation Problem	16	17	16	16.26	63.05	24.52	0.03	0.09	0.04
5. Gen. Cooling System Failure	5	6	2	2.89	21.54	6.11	0	0.03	0.01
6. Seal Oil System Problem	0	0	1			265.7			0.44
7. Generator Bearing Problem	0	2	0		1.78			0	
8. Fire In Turbo Gen. Bushing/ Bushing	1	4	1	115.56	16.92	2.94	0.2	0.02	0
9. A.V.R. Problem	6	3	14	146.16	2.27	13.13	0.25		0.02
10. Generator Protection/ Relay Operation Problem	24	42	50	72.04	842.68	344.31	0.12	1.14	0.57
11. Hydrogen Pressure Problem	2	4	4	18.65	69.80	96.21	0.03	0.09	0.16
12. Generator Miscellaneous Maintenance	12	4	4	96.19	5.01	4.14	0.17	0.01	0.01
Total Generator	96	112	112	2426.44	2953.20	2233.26	4.18	4.01	3.72
Ii. Auxiliaries									
A. Boiler Auxiliaries									
1. I.D. Fans Problem	21	13	13	409.32	125.41	98.85	0.7	0.17	0.16
2. F.D. Fans Problem	11	8	4	13.87	17.79	5.51	0.02	0.02	0.01
3. P.A. Fans Problem	16	19	14	81.16	48.87	54.09	0.14	0.07	0.09
4. Milling System /RC Feeder Problem	8	1	1	154.99	7.13	10.8	0.27	0.01	0.02
5. PIPES And VALVES BOILER SIDE	20	27	26	79.27	35.85	441.58	0.14	0.05	0.73
6. Boiler Aux. Misc. Problems	11	5	7	34.4	77.35	112.74	0.06	0.11	0.19
Total Boiler Aux.	87	73	65	773.01	312.39	723.57	1.33	0.42	1.2
B. Turbine Auxiliaries									
7. Boiler Feed Pump/Motor Problem	13	10	7	17.19	99.86	15.93	0.03	0.14	0.03

Area/ cause of outage (210 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
8. Condensate Pump Problem	1	0	0	0.43	0	0	0	0	0
9. C.W. Pump Problem	5	3	11	13.78	7.71	65.48	0.02	0.01	0.11
10. Regenerative System Problem	2	1	1	5.25	2.99	3.11	0.01	0	0.01
11. Turbine Pipes & Valves Problem	2	4	1	7.11	11.52	11.63	0.01	0.02	0.02
12. Deaerator Problem	1	0	1	8.59	0	12.45	0.01	0	0.02
13. Turbine Misc.	31	15	7	517.78	47.02	153.48	0.89	0.06	0.26
Total Turbine Aux.	55	33	28	570.15	169.09	262.08	0.98	0.23	0.44
Total Boiler & Turbine Aux.	142	106	93	1343.16	481.48	985.65	2.31	0.65	1.64
Iii. Others Misc. Problems									
A. Other Electrical Problems									
1. Unit Aux. Transformer/ Station Transformer Problems	16	18	21	281.96	33.63	45.16	0.49	0.05	0.08
2. Gen. Transformer Tripping/ Damaged	12	17	18	1951.31	67.69	1274.93	3.36	0.09	2.12
3. H.T./L.T. Supply Problem	2	1	1	19.46	0.52	2.4	0.03	0	0
4. Dc Supply Problem	14	12	9	113.9	23.42	20.33	0.2	0.03	0.03
5. Switch Yard/Bus Bar Problem	32	46	25	77.81	84.70	68.35	0.13	0.12	0.11
6. Breaker/Isolator Problems	8	11	3	11.44	16.77	11.18	0.02	0.02	0.02
7. Misc. Fire Hazards / Fire In Cable Gallery	3	0	1	44.96		6.24	0.08		0.01
8. FUEL SUPPLY & OTHER MISC. PROBLEMS			18			89.59			0.15
9. Instrumentation Problem	19	5	1	2621.6	6.56	1.38	4.51	0.01	0
10. Air Supply Problem	6	1	0	7.27	0.74		0.01	0	
11. Electrical Miscellaneous Problems	92	68	78	449.48	185.21	448.53	0.77	0.25	0.75
Total Other Electrical Problems	206	132	175	5579.19	419.24	1968.1	9.6	0.57	3.27
B. Fuel And Other Misc. Problems									
12. Coal Feeding Problem	0	0	5	0		339.28	0		0.56
13. Fuel Oil Problem	7	2	1	18.65	3.04	10.34	0.03	0	0.02
14. Cooling Tower Problem	0		7	0		115.19			0.19
15. Ash Handling System Problem	3	1	3	53.24	9.16	104.16	0.09	0.01	0.17
16. Raw Water Problem	8	5	3	1711.85	737.39	1206.3	2.95	1	2.01
17. D.M. Water Problem	0	0	2			2.65	0		0
18. E.S.P. / Pollution Problem	4	5	17	293.28	1134.84	4347.78	0.5	1.54	7.23
19. Vintage Unit Withdrawn And Closed For Operation	1	0	0	5.51			0.01		
20. Fuel Supply & Other Misc. Problems	19	21	18	2623.89	525.30	89.59	4.51	0.71	0.15
21. Other Misc. Problems	3	6	3	2101.31	223.84	6876.5	0.07	0.30	0.13
22. Lignite Shortage Problem	7	0	57	182.63		7129.5	0.31		11.86
23. Coal Shortage	2	2	3	37.92	20.02	1206.3	0.07	0.03	2.01
Total Fuel Supply And Other Misc	63	42	119	7780.28	2653.59	21427.5	13.39	3.59	24.33
C. Grid System									
24. Transmission Constraints/ Grid Disturbance	16	34	9	18.94	403.36	0.03	0.03	0.55	0.1
25. Reserve Shut Down	349	495	414	29061.4	52808.8	23014.4	50.03	71.75	49.61
Total Grid System	365	529	423	29080.4	53212.1	23072.5	50.06	72.30	49.71
26. Uneconomical Operation	3	2	2	1392.19	3675.33	3679.2	2.40	4.99	6.12
Total Miscellaneous	637	705	719	43832	59960.3	50150.3	75.46	81.47	83.43

6.2.6 195-200 MW CAPACITY GROUP

6.2.6.1 The forced Outage of 195-200 MW capacity group units decreased to 11.24% in 2017-18 from 12.06% in 2016-17. The PLF of the 195-210 MW Capacity Group also increased to 68.74 % in 2017-18 from 68.52 % in 2016-17. Performance details of 195-200 MW capacity group units during the years 2015-16,2016-17 and 2017-18 are given below: -

PARTICULARS	2015-16	2016-17	2017-18
1.UNITS COMMISSIONED BY THE END OF THE YEAR			
(a) Number	26	26	26
(b) Capacity (MW)	5185	5185	5180
2.UNITS CONSIDERED IN THE REVIEW			
(a) Number	25	26	26
(b) Capacity (MW)	4990	5185	5180
(c) Generation (MU)	31875.35	29857.26	30824.58
3. Planned Maintenance (%)	11.81	10.40	9.46
4. Forced outage (%)	7.53	12.06	11.24
5. Operating Availability (%)	80.66	77.54	79.3
6. Plant Load Factor (%)	72.72	68.52	68.57

6.2.6.2 Forced outage details due to equipment and auxiliaries and energy loss of 195-200 MW capacity group units for the years 2015-16,2016-17 and 2017-18 are shown below:

Area/ Cause of Outage of 195-200 MW capacity group	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
I. EQUIPMENTS									
1. Boiler	80	107	127	729.51	1493.49	1441.45	22.09	28.32	28.63
2. Turbine	13	28	14	82.83	894.41	135.54	2.51	16.96	2.69
3. Generator	18	23	22	99.33	53.72	434.62	3.01	1.02	8.63
Total	111	158	163	911.67	2441.63	2011.62	27.61	46.30	39.96
II. AUXILIARIES									
1. Boiler	34	22	26	365.09	252.19	196.61	11.05	4.78	3.91
2. Turbine	15	10	10	329.86	171.01	261.74	9.99	3.24	5.2
Total Aux.	49	32	36	694.95	423.20	458.34	21.04	8.03	9.1
III. Boiler & Boiler Aux.	114	129	153	1094.6	1745.68	1638.06	33.14	33.11	32.54
IV. Turbine & Turbine Aux.	28	38	24	412.7	1065.42	397.28	12.5	20.20	7.89
V. Generator	18	23	22	99.33	53.72	434.62	3.01	1.02	8.63
VI. Misc. (Elect. /Mech.)	32	51	44	286.13	225.61	1172.86	8.66	4.28	26.21
VII. Total excluding RSD of the Group	192	241	243	1892.76	3030.43	3642.82	57.31	58.61	75.27
VII. RSD	21	32	20	1409.77	2182.64	1244.95	42.69	41.39	24.73
Total	213	273	263	3302.53	5273.07	4887.77	100	100	100

6.2.6.3 The break-up of the area/ cause of forced outages and generation loss for 195-200 MW capacity group during the years 2015-16,2016-17 and 2017-18 are shown below: -

Area/ cause of outage (195-200 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
I. EQUIPMENTS									
A. Boiler									
1. Water Wall Tube Leakage	35	34	36	471.46	1044.39	874.59	14.28	19.81	17.37
2. Super Heater Tube Leakage	6	11	2	52.12	102.42	17.04	1.58	1.94	0.34

Area/ cause of outage (195-200 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-	16-	17-	15-16	16-17	17-18	15-16	16-17	17-18
I. EQUIPMENTS									
3. Reheater Tube Leakage	8	9	4	65.28	67.70	103.13	1.98	1.28	2.05
4. Economiser Tube Leakage	7	11	5	38.81	87.64	35.14	1.18	1.66	0.7
5. Air Preheaters Problem	3	6	8	18.17	32.23	180.54	0.55	0.61	3.59
6. Boiler Operational Problems									
(A) Furnace Fire Out/Flame Failure	11	5	38	29.44	41.15	97.78	0.89	0.78	1.94
(B) Furnace Draft Abnormal	2	5	7	2.7	12.81	30.44	0.08	0.24	0.6
(C) Drum Level High/ Low	3	15	15	5.01	39.62	25.34	0.15	0.75	0.5
7. Others	5	11	12	46.51	65.54	77.44	1.41	1.24	1.54
Total Boiler	80	107	127	729.51	1493.49	1441.45	22.09	28.32	28.63
B. Turbine									
1. Turbine Bearing Problem		2	0		9.24			0.18	
2. Governing / Oil System Problem		2	1		21.29	1.97		0.40	0.04
3. Turbine Differential Expansion									
4. Turbine Axial Shift/ Thrust Pad	1	1	1	38.08	1.39	0.84	1.15	0.03	0.02
5. Turbine Eccentricity/ High Vibration	1	3	3	0.54	37.38	26.37	0.02	0.71	0.52
6. Turbine Rotor Failure/Damaged	1	1	0	0.64	4.36		0.02	0.08	
7. Turbine Control Valve Problem	2	1	1	13.44	0.25	5.4	0.41	0	0.11
8. Condenser Tube Leakage/ Cleaning	3	2	1	22.31	112.79	4.14	0.68	2.14	0.08
9. Main Steam Line Problem	0	3	2		20.36	0.92		0.39	0.02
10. Emergency Safety Valve Closure	0	2	0		10.49			0.20	
11. Condenser Low Vacuum	3	4	1	3.62	17.35	0.85	0.11	0.33	0.02
12. H.P. & L.P. Bypass System		2	0		1.99			0.04	
13. Turbine Misc. Problems	2	5	4	4.2	657.52	95.04	0.13	12.47	1.89
Total Turbine	13	28	14	82.83	894.41	135.54	2.51	16.96	2.69
C. Generator									
1. Stator/ Stator Earth Fault	7	0	4	20.89		19.48	0.63		0.39
2. Rotor/ Rotor Earth Fault	3	1	0	4.68	2.87		0.14	0.05	
3. Excitation Problem	2	4		35.77	3.96		1.08	0.08	
4. Gen. Cooling System Failure	1	0	5	4.76		12.8	0.14		0.25
5. Seal Oil System Problem	1	1	2	26.67	7.04	0.69	0.81	0.13	0.01
6. Fire In Turbo Gen. Bushing/ Bushing Failure			0						
7. A.V.R. Problem	2	3	0	3.22	1.50		0.1	0.03	
8. Generator Protection/ Relay Operation Problem	1	10	7	2.71	13.57	289.64	0.08	0.26	5.75
9. Hydrogen Pressure Problem	0	2	4		11.14	112.02		0.21	2.23
10. Generator Miscellaneous maintenance	1	2	0	0.63	13.64		0.02	0.26	
Total Generator	18	23	22	99.33	53.72	434.62	3.01	1.02	8.63
Ii. Auxiliaries									
A. Boiler Auxiliaries									
1. I.D. Fans Problem	19	11	11	291.21	160.86	105.65	8.82	3.05	2.1
2. F.D. Fans Problem	1	1	0	0.89	0.50	0	0.03	0.01	0
3. P.A. Fans Problem	5	6	8	32.16	33.47	35.57	0.97	0.63	0.71
4. Milling System /RC Feeder Problem	4	0	0	29.39	0	0	0.89	0	0
5. PIPES And VALVES BOILER SIDE	4	2	6	10.37	23.04	49.07	0.31	0.44	0.97
6. Boiler Aux. Misc. Problems	1	2	1	1.07	34.31	6.31	0.03	0.65	0.13
Total Boiler Aux.	20	34	26	365.09	252.19	196.61	11.05	4.78	3.91
B. Turbine Auxiliaries									

Area/ cause of outage (195-200 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-	16-	17-	15-16	16-17	17-18	15-16	16-17	17-18
I. EQUIPMENTS									
7. Boiler Feed Pump/Motor Problem	2	1	7	31.77	4.36	41.41	0.96	0.08	0.82
8. Condensate Pump Problem	0	0	0	0	0	0	0	0	0
9. C.W. Pump Problem	11	6	3	281.01	154.15	220.33	8.51	2.92	4.38
10. Regenerative System Problem	0	0	0	0	0	0	0	0	0
11. Turbine Pipes & Valves Problem	0	0	0	0	0	0	0	0	0
12. Deaerator Problem	1	1	0	16.68	10.83	0	0.51	0.21	0
13. Turbine Misc.	1	2	0	0.4	1.66	0	0.01	0.03	0
Total Turbine Aux.	15	10	10	329.86	171.01	261.74	9.99	3.24	5.2
Total Boiler & Turbine Aux.	49	32	36	694.95	423.20	458.34	21.04	8.03	9.1
Iii. Others Misc. Problems									
A. Other Electrical Problems									
1. Unit Aux. Transformer/ Station Transformer Problems	0	2	5		1.61	15.14		0.03	0.3
2. Gen. Transformer Tripping/ Damaged	2	3	1	5.89	3.90	0.88	0.18	0.07	0.02
3. H.T./L.T. Supply Problem	2	1	0	8.93	2.02		0.27	0.04	
4. Dc Supply Problem	1	2	2	0.99	1.41	0.91	0.03	0.03	0.02
5. Switch Yard/Bus Bar Problem	1	5	2	3.45	7	2.07	0.1	0.13	0.04
6. INSTRUMENTATION PROBLEM			0						
7. Instrumentation Problem	0	1	3		23.08	5.95		0.44	0.12
8. Breaker / Isolator Problem	0	1	1		0.67	3.46		0.01	0.07
9. Air supply problem			2			6.54			0.13
10. Electrical Miscellaneous Problems	13	27	15	25.08	62.40	59.9	0.76	1.18	1.19
Total Other Electrical Problems	19	42	31	44.34	102.07	94.84	1.34	1.93	1.89
B. Fuel And Other Misc. Problems									
12. Lignite Feeding Problem	3	0	1	104		136.73	3.15		2.72
13. Coal Feeding Problem	0	1	0		0.57			0.01	
14. Wet/ Poor Quality Coal	0	0	0						
13. Fuel Oil Problem	1	0	0	0.3			0.01		
14. Cooling Tower Problem	0	0	1			15.3			0.3
18. Ash Handling System Problem	3	0	3	116.65		5.95	3.53		0.12
25. Other Misc. Problems	1	1	1	1.85	10.37	6.69	0.06		0.13
26. Fuel Supply & Other Misc. Problems	3	0	2	17.57		304.95	0.53	0.20	6.06
27. Coal Shortage	0	1	4		1.90	548.3		0.04	10.89
Total Fuel Supply And Other Misc Problems	11	3	12	240.37	12.85	1017.92	7.28	0.25	20.22
C. Grid System									
27. Transmission Constraints/ Grid Disturbance	2	6	3	1.41	110.69	54.15	0.04	2.10	1.08
28. Reserve Shut Down	21	32	20	1409.7	2182.64	1244.95	42.69	41.39	24.73
TOTAL GRID SYSTEM	23	38	23	1411.1	2293.33	1299.1	42.73	43.49	25.81
Total Miscellaneous	53	83	87	1695.9	2408.25	3793.54	51.35	45.67	75.35

6.2.7 100-150 MWCAPACITY GROUP

6.2.7.1. Performance details of 100-150 MW capacity group units during the years 2015-16,2016-17 and 2017-18 are given below: -

Area/ cause of outage (100-150 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-	16-	2017-	15-16	16-17	2017-18	15-16	16-17	2017-
(A) Furnace Fire Out/Flame Failure	122	85	31	144.9	182.77	87.97	0.35	0.49	0.28
(B) Furnace Draft Abnormal	83	38	29	157.59	25.65	24.02	0.38	0.07	0.08
(C) Drum Level High/ Low	39	18	11	27.08	28.36	28.34	0.07	0.08	0.09
8. Others	110	89	83	1841.3	1503.17	2541.75	4.45	4.03	7.99
Total Boiler	575	433	315	4214.71	3784.21	5951.6	10.18	10.15	18.71
B. Turbine									
1. Turbine Bearing Problem	9	3	2	690.03	14.83	37.59	1.67	0.04	0.12
2. Governing / Oil System Problem	24	15	6	133.09	96.88	101.74	0.32	0.26	0.32
3. Turbine Differential Expansion Problem	6	5	0	10.51	37.57		0.03	0.10	
4. Turbine Axial Shift/ Thrust Pad Problem	2	0	0	2.01			0		
5. Turbine Eccentricity/ High Vibration	22	6	5	545.9	27.78	94.54	1.32	0.07	0.3
6. Turbine Rotor Failure/Damaged	2	0	0	57.06			0.14		
7. Turbine Control Valve Problem	4	2	1	18.64	1.03	0.43	0.05		0
8. Condenser Tube Leakage/ Cleaning	17	13	7	128.54	123.99	54.69	0.31	0.33	0.17
9. Main Steam Line Problem	8	3	4	11.48	61.07	93.93	0.03	0.16	0.3
10. Emergency Safety Valve Closure	0	4	1		18.75	45.61		0.05	0.14
11. Condenser Low Vacuum	43	27	7	260.01	545.15	8.13	0.63	1.46	0.03
12. H.P. & L.P. Bypass System	1	1	0	0.22	0.61		0		
13. Turbine Misc. Problem	21	8	0	67.28	17.57		0.16	0.05	
Total Turbine	159	87	42	1924.78	945.24	447	4.65	2.53	1.41
C. Generator									
1. Stator/ Stator Earth Fault	13	1	3	546.69	58	135.24	1.32	0.16	0.43
2. Gen. Transformer Tripping/ Damaged	4	6	3	323.3	37.2	1.3	0.78	0.1	0
3. Rotor/ Rotor Earth Fault	0	3	1		0.71	49.96		0	0.16
4. Excitation Problem	9	8	4	18.03	960.65	1090.86	0.04	2.58	3.43
5. Gen. Cooling System Failure	0	1	2		10.29	0.55		0.03	0
6. Fire In Turbo Gen. Bushing/ Bushing Failure	3	1	1	5.8	40.79	11.55	0.01	0.11	0.04
7. Generator Bearing Problem	0	2	1		3.05	0.24		0.01	0
8. A.V.R. Problem	3	2	2	3.13	0.51	0.72	0.01	0	0
9. Generator Protection/ Relay Operation Problem	29	15	9	29.58	114.09	14.63	0.07	0.31	0.05
10. Hydrogen Pressure Problem	4	1	0	50.25	3.94		0.12	0.01	
11. Generator Miscellaneous Maintenance	12	1	3	12.1	0.5	0.96	0.03	0	0
Total Generator	77	42	29	988.89	1236.2	1306	2.39	3.31	4.11
II. Auxiliaries									
A. Boiler Auxiliaries									
1. I.D. Fans Problem	15	13	15	209.56	83.39	171.74	0.51	0.22	0.54
2. F.D. Fans Problem	4	3	1	57.71	1.62	3.44	0.14	0	0.01
3. P.A. Fans Problem	24	22	10	147.94	134.34	21.89	0.36	0.36	0.07
4. Milling System /RC Feeder Problem	9	10	1	9.87	17.15	5.74	0.02	0.05	0.02
5. PIPES And VALVES BOILER SIDE	6	2	4	9.05	2.64	1.44	0.02	0.01	0
6. Boiler Aux. Misc. Problems	14	6	4	52.89	11.38	16.18	0.13	0.03	0.05
Total Boiler Aux.	72	56	35	487.01	250.53	220.44	1.18	0.67	0.69
B. Turbine Auxiliaries									
7. Boiler Feed Pump/Motor Problem	18	22	3	62.66	143.15	1.47	0.18	0.35	0
8. Condensate Pump Problem	1	1	0	2.64	4.83	0	0.01	0.01	0
9. C.W. Pump Problem	5	10	6	151.91	52.9	113.76	0.43	0.13	0.36
10. Regenerative System Problem	0	1	0	0	0.23	0	0	0	0
11. Turbine Pipes & Valves Problem	6	0	1	21.92	0	2.03	0.06	0	0.01

Area/ cause of outage (100-150 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-	16-	2017-	15-16	16-17	2017-18	15-16	16-17	2017-
12. Deaerator Problem	0	0	0	0	0	0	0	0	0
13. Turbine Misc.	14	22	4	728.94	88.62	6.78	2.08	0.21	0.02
Total Turbine Aux.	44	56	14	968.07	289.72	124.03	2.76	0.7	0.39
Total Boiler & Turbine Aux.	127	128	49	4804.99	776.73	344.47	13.71	2.08	1.08
III. Others Misc. Problems									
A. Other Electrical Problems									
1. Unit Aux. Transformer/ Station Transformer Problems	8	8	5	22.15	6.07	2.44	0.06	0.02	0.01
2. Gen. Transformer Tripping/ Damaged	8	17	2	3.8	30.33	0.98	0.01	0.08	0
3. H.T./L.T. Supply Problem	2	7	1	1.01	5.1	0.48	0	0.01	0
4. Dc Supply Problem	8	15	5	56.22	141.32	20.57	0.16	0.38	0.06
5. Switch Yard/Bus Bar Problem	13	26	11	121.17	45.25	18.58	0.35	0.12	0.06
6. Breaker/Isolator Problems	0	2	2		2.55	2.7		0.01	0.01
7. Misc. Fire Hazards / Fire In Cable Gallery	3	2	0	85.22	588.19		0.24	1.58	
8. FUEL SUPPLY & OTHER MISC. PROBLEMS			7			98.44			0.31
9. Instrumentation Problem	0	12	0		97.29			0.26	
10. Air Supply Problem	0	2	1		0.65	0.13		0.00	0
11. Electrical Miscellaneous Problems	56	58	24	230.28	113.22	429.46	0.66	0.30	1.35
Total Other Electrical Problems	108	149	58	1029.97	1029.97	573.79	3.12	2.76	1.8
B. Fuel and Other Misc. problem									
12. Coal Feeding Problem	1	0		64.07	0.69		0.18	0	
13. Lignite Feeding Problem	19	0	2	121.16	430.08	2.54	0.35	1.15	.01
15. Wet/ Poor Quality Coal	7	0	5	94.87		8.44	0.23		0.03
16. Fuel Oil Problem	4	2	2	29.31	3.04	16.66	0.07	0.01	0.05
17. Cooling Tower Problem	0	0							
18. Ash Handling System Problem	8	1	10	167.54	9.16	1370.32	0.4	0.02	4.31
19. Raw Water Problem	1	5	4	6.61	737.39	102.18	0.02	1.98	0.32
21. E.S.P. / Pollution Problem	15	5	2	494.16	1134.84	378.01	1.19	3.04	1.19
22. Non-Readiness Of Residual Work Of	1	0	0	1.67			0		
23. Vintage Unit Withdrawn And Closed For Operation	13	0	4	12648.96		458.38	30.54		1.44
26. Other Misc. Problems	12	6	4	97.29	223.84	4292.85	0.23	0.60	0.29
27. Fuel Supply & Other Misc. Problems	16	21	7	1392.84	525.30	98.44	3.36	1.41	0.31
28. Coal Shortage	1	2	20	7.06	20.02	368.19	0.02	0.05	1.16
29. Coal Transportation Problems			4			165.16			0.52
Total Fuel Supply And Other Misc. Problems	98	42	70	15371.1	3084.36	7261.17	37.1	8.27	9.84
27. Transmission Constraints/ Grid Disturbance	49	34	28	106.48	403.36	132.3	0.26	1.08	0.42
28. Reserve Shut Down	150	495	64	14249.49	12833.41	10508.71	34.40	34.41	42.2
29. NO Power Purchase Agreement	4	0	5	1433.08		6175.8	3.46	0.00	19.42
Total Grid System	203	529	97	15789.1	13236.77	19727.98	38.12	35.49	62.04
30. Uneconomical Operation	1	2		1317.6	3675.33		3.18	9.85	
Total Miscellaneous	451	531	225	33507.7	21026.43	23428.9	80.90	56.37	73.68

6.2.8 25-99MW (<100MW) CAPACITY GROUP

6.2.8.1 Performance of 25-99 MW capacity group units during the year 2016-17 continued to be much below national average mainly due to uneconomic operation and frequent outages in these units – most of which are vintage units. However, several new units have also got added in this group over last 5 to 7 years. Performance details of these units during 2015-16,2016-17 and 2017-18 are given below: -

PARTTICULARS	2015-16	2016-17	2017-18
1.Units Commissioned By The End Of The Year			
(a) Number	84	85	74
(b) Capacity (MW)	4729.5	4779.5	4069.5
2.Units Considered In The Review			
(a) Number	83	85	74
(b) Capacity (MW)	4704.5	4779.5	4069.5
(c) Generation (MU)	13152.11	13202.78	10398.16
3. Planned Maintenance (%)	5.56	6.52	5.09
4. Forced outage (%)	50.62	54.55	55.74
5. Operating Availability (%)	43.82	38.93	39.17
6. Plant Load Factor (%)	33.63	37.83	30.20

6.2.8.2 Forced outage details due to equipment and auxiliaries and energy loss of 25-99MWcapacity group units for the years 2015-16,2016-17 and 2017-18 are shown below:

Area/ cause of Outage	No.of Outages			MU Loss			% of Group F.O.		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
I. EQUIPMENT									
1. Boiler	297	262	218	1272.23	1241.35	2069.32	6.08	6.25	10.52
2. Turbine	75	55	54	241.09	37.29	1058.66	1.15	0.19	5.38
3. Generator	59	35	41	257.3	137.44	223.78	1.23	0.69	1.14
Total	431	352	313	1770.62	1416.08	3351.75	8.46	7.13	17.03
II. AUXILIARIES									
1. Boiler	70	37	41	522.33	256.46	454.24	2.5	1.29	2.31
2. Turbine	35	36	18	255.56	66.55	32.06	1.22	0.34	0.16
Total	105	73	59	777.89	323.01	486.3	3.72	1.63	2.47
III. Boiler & Boiler Aux.	367	299	259	1794.55	1497.82	2523.55	8.58	7.54	12.83
IV. Turbine & Turbine	110	91	72	496.65	103.84	1090.72	2.37	0.52	5.54
V. Generator	59	35	41	257.3	137.44	223.78	1.23	0.69	1.14
VI. Misc. (Elect. /Mech.)	340	376	240	13939.69	13021.24	9134.29	66.64	65.57	46.42
VII. Total excluding RSD of the Group	876	801	612	16488.19	14760.32	12972.34	78.82	74.33	65.93
VIII. RSD	62	135	103	4430.52	5098.60	6704.09	21.18	25.67	34.07
Total	938	936	715	20918.71	19858.92	19676.43	100	100	100

6.2.8.3 The break-up of the area/causes of forced outages and energy loss of 25-99 MW capacity group units during the years 2015-16,2016-17 and 2017-18 are given below: -

Area/ cause of outage (25-99 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
I. EQUIPMENTS									
A. Boiler									
1. WATER WALL TUBE LEAKAGE	110	93	95	633.8	644.02	1295.76	3.03	3.24	6.59

Area/ cause of outage (25-99 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-16	16-17	17-18	15-16	16-17	17-18	15-16	16-17	17-18
2. SUPER HEATER TUBE LEAKAGE	28	53	29	118.31	364.54	455.48	0.57	1.84	2.31
3. REHEATER TUBE LEAKAGE	5	1	2	39.87	2.55	79.33	0.19	0.01	0.4
4. ECONOMISER TUBE LEAKAGE	57	34	28	256.24	114.82	92.28	1.22	0.58	0.47
5. AIR PREHEATERS PROBLEM	4	2	3	38.02	5.42	3.57	0.18	0.03	0.02
6. FURNACE TROUBLE	5	5	1	8.53	6.40	1.4	0.04	0.03	0.01
7. BOILER OPERATIONAL PROBLEMS									
(A) Furnace Fire Out/Flame Failure	14	12	16	5.03	8.46	23.94	0.02	0.04	0.12
(B) Furnace Draft Abnormal	37	26	15	19.89	22	10.44	0.1	0.11	0.05
(C) Drum Level High/ Low	11	9	13	17.75	7.31	6.92	0.08	0.04	0.04
8. OTHERS	26	27	16	134.78	65.83	100.19	0.64	0.33	0.51
Total Boiler	297	262	218	1272.23	1241.35	2069.32	6.08	6.25	10.52
B. Turbine									
1. TURBINE BEARING PROBLEM	6	1	2	34.41	0.13	1.3	0.16		0.01
2. GOVERNING / OIL SYSTEM PROBLEM	6	11	6	12.71	1.39	0.65	0.06	0.01	0
3. TURBINE DIFFERENTIAL EXPANSION PROBLEM	1	1	0	1.41	0.67		0.01		
4. TURBINE AXIAL SHIFT/ THRUST PAD PROBLEM	2	1	3	12.56	0.41	2.64	0.06		0.01
5. TURBINE ECCENTRICITY/ HIGH VIBRATION	22	5	5	85	0.34	70.95	0.41		0.36
6. TURBINE ROTOR FAILURE/DAMAGED	1	0	1	10.08		464.89	0.05		2.36
7. TURBINE CONTROL VALVE PROBLEM	0	6	4		2.05	459.02		0.01	2.33
8. CONDENSER TUBE LEAKAGE/ CLEANI	6	3	11	22.88	4.28	35.59	0.11	0.02	0.18
9. MAIN STEAM LINE PROBLEM	2	7	6	0.38	1.27	5.61	0	0.01	0.03
10. Emergency Safety Valve closure	1	4	1	0.22	1.90	0.06	0		0
11. CONDENSER LOW VACCUM	10	13	6	4.47	12.26	2.11	0.02	0.06	0.01
12. H.P. & L.P. bypass system	0		1			2.07			0.01
13. TURBINE MISC. PROBLEM	18	3	8	56.96	12.58	13.75	0.27	0.06	0.07
Total Turbine	75	55	54	241.09	37.29	1058.66	1.15	0.19	5.38
C. Generator									
1. STATOR/ STATOR EARTH FAULT	20	7	2	2.04	0.53	1.66	0.01		0.01
2. ROTOR/ ROTOR EARTH FAULT	2	1	1	51.72	0.04	11.66	0.25		0.06
3. GEN. TRANSFORMER TRIPPING/ DAMAGED	2	5	5	12.28	50	8.42	0.06	0.25	0.04
4. EXCITATION PROBLEM	4	5	5	3.35	55.81	17.31	0.02	0.28	0.09
5. GEN. COOLING SYSTEM FAILURE			1			0.29			0
6. SEAL OIL SYSTEM PROBLEM	0	2	1		14.76	131.48		0.07	0.67
7. FIRE IN TURBO GEN. BUSHING/ BUSHING FAILURE	1	0	1	0.07		0.1	0		0
8. GENERATOR BEARING PROBLEM	2	0	2	130.59		8.78	0.62		0.04
9. A.V.R. PROBLEM	3	1	1	4.32		0.85	0.02		0
10. GENERATOR PROTECTION/ RELAY OPERATION PROBLEM	19	10	13	19.75	2.85	42.37	0.09	0.01	0.22
11. HYDROGEN PRESSURE PROBLEM	1	1	0	13	7.66		0.06	0.04	
12. GENERATOR MISCLLANEOUS MAINTENANCE	5	3	9	20.18	5.78	0.86	0.1	0.03	0
Total Generator	59	35	41	257.3	137.44	223.78	1.23	0.69	1.14
A. Boiler Auxiliaries									
1. I.D. FANS PROBLEM	4	3	6	7.47	35.86	50.94	0.04	0.18	0.26
2. F.D. FANS PROBLEM	4	0	2	2.73	0	2.57	0.01	0	0.01
3. P.A. FANS PROBLEM	2	5	4	12.32	23.08	29.59	0.06	0.12	0.15

Area/ cause of outage (25-99 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-	16-	17-	15-16	16-17	17-18	15-16	16-17	17-18
4. MILLING SYSTEM /RC FEEDER	49	23	26	472.67	185.24	362.55	2.26	0.93	1.84
5. PIPES and VALVES BOILER SIDE	3	1	2	8.49	1.40	7.33	0.04	0.01	0.04
6. BOILER AUX. MISC. PROMLEMS	8	5	1	18.66	10.89	1.25	0.09	0.05	0.01
Total Boiler Aux.	70	37	41	522.33	256.46	454.24	2.5	1.29	2.31
B. Turbine Auxiliaries									
7. BOILER FEED PUMP/MOTOR PROBLEM	14	6	3	74.04	8.21	5.12	0.35	0.04	0.03
8. CONDENSATE PUMP PROBLEM	2	2	1	5.48	1.15	3.77	0.03	0.01	0.02
9. C.W. PUMP PROBLEM	4	2	7	2.94	5.79	9.8	0.01	0.03	0.05
10. REGENERATIVE SYSTEM PROBLEM	0	0	0	0	0	0	0	0	0
11. TURBINE PIPES & VALVES PROBLEM	0	1	1	0	4.76	2.03	0	0.02	0.01
12. DEAERATOR PROBLEM	1	0	1	2.26	0	0.42	0.01	0	0
13. TURBINE MISC.	14	25	5	170.85	46.65	10.91	0.82	0.23	0.06
Total Turbine Aux.	35	36	18	255.56	66.55	32.06	1.22	0.34	0.16
Total Boiler & Turbine Aux.	105	73	59	777.89	323.01	486.3	3.72	1.63	2.47
III. OTHERS MISC. PROBLEMS									
A. Other Electrical Problems									
1. UNIT AUX. TRANSFORMER/ STATION TRANSFORMER PROBLEMS	3	2	5	8.97	0.53	4.74	0.04	0	0.02
2. GEN. TRANSFORMER TRIPPING/ DAMAGED	10	3	3	10.53	6.66	0.55	0.05	0.03	0
3. H.T./L.T. SUPPLY PROBLEM	3	2	8	4.57	0.45	1.03	0.02	0	0.01
4. DC SUPPLY PROBLEM	1	9	10	1.12	3.37	6.28	0.01	0.02	0.03
5. SWITCH YARD/BUS BAR PROBLEM	65	215	27	22.86	45.57	10.91	0.11	0.23	0.06
6. BREAKER/ISOLATOR PROBLEMS	0	0	13			0.61			0
7. MISC. FIRE HAZARDS / FIRE IN	0	4	1		6.27	1.37		0.03	0.01
8. INSTRUMENTATION PROBLEM	1	1	0	0.07	0.26		0		
9. FUEL SUPPLY & OTHER MISC. PROBLEMS			6			297.94			1.51
10. Air supply problem	3	0	1	20.96		0.09	0.1		0
11. ELECTRICAL MISCELLANEOUS PROBLEMS	57	32	22	79.88	77.75	26.96	0.38	0.39	0.14
TOTAL OTHER ELECTRICAL PROBLEMS	158	280	96	148.96	140.86	350.47	0.71	0.71	1.78
FUEL SUPPLY AND OTHER MISC PROBLEMS									
12. COAL FEEDING PROBLEM	4	2	0	16.98	7.38		0.08	0.04	
13. WET/ POOR QUALITY COAL	6	4	6	31.24	13.58	167.45	0.14	0.07	0.85
14. FUEL OIL PROBLEM	1	0	1	0.1		0.69	0		0
15. COOLING TOWER PROBLEM	0	0	0						
16. ASH HANDLING SYSTEM PROBLEM	12	7	13	42.88	11.10	66.35	0.2	0.06	0.34
17. RAW WATER PROBLEM	0	3	0		105.12			0.53	
28. E.S.P. / POLLUTION PROBLEM	6	4	3	1677.84	2516.93	2496.6	8.02	12.67	12.69
19. NON-READINESS OF RESIDUAL	1	0	0	1.63			0.01		
20. VINTAGE UNIT WITHDRAWN AND CLOSED FOR OPERATION	13	13	4	6512.24	5338.88	1442.64	31.13	26.88	7.33
21. FUEL SUPPLY & OTHER MISC. PROBLEMS	15	12	2	1408.59	822.04	177	6.73	4.14	0.9
22. OTHER MISC. PROBLEMS	1	2	6	2.77	1.15	297.94	0.01	0.01	1.51
23. LIGNITE SHORTAGE	1	0	3	9.93		54.54	0.05		0.28
24. COAL SHORTAGE	1	0	10	3.85		44.23	0.02		0.22
TOTAL FUEL SUPPLY AND OTHER MISC PROBLEMS	82	65	48	9848.69	8870.33	4747.44	47.06	44.67	24.12
C. Grid System									

Area/ cause of outage (25-99 MW Cap. group)	No. of Outages			MU Loss			% of Group F.O. Loss		
	15-	16-	17-	15-16	16-17	17-18	15-16	16-17	17-18
27. TRANSMISSION Constraints/ GRID	104	41	92	156.14	13.87	11	0.75	0.07	0.06
28. RESERVE SHUT DOWN	62	135	103	4430.52	5098.60	6704.09	21.18	25.67	34.07
TOTAL GRID SYSTEM	166	176	195	4586.66	5112.46	6715.09	21.93	25.74	34.13
29. NO Power purchase agreement	7	9	8	3522.38	3733.37	3731.76	16.42	18.72	18.97
30. UNECONOMICAL OPERATION	1	1	1	263.52	262.8	262.8	1.23	1.32	1.34
Total Miscellaneous	407	531	348	18370.2	18119.82	10195.82	87.77	91.24	51.8

SECTION-7

PARTIAL UNAVAILABILITY AND NON – UTILIZATION OF ENERGY DUE TO SYSTEM LOAD VARIATION

7.1 Partial unavailability implies that units are operational but are not able to operate at their rated capacity due to the following: -

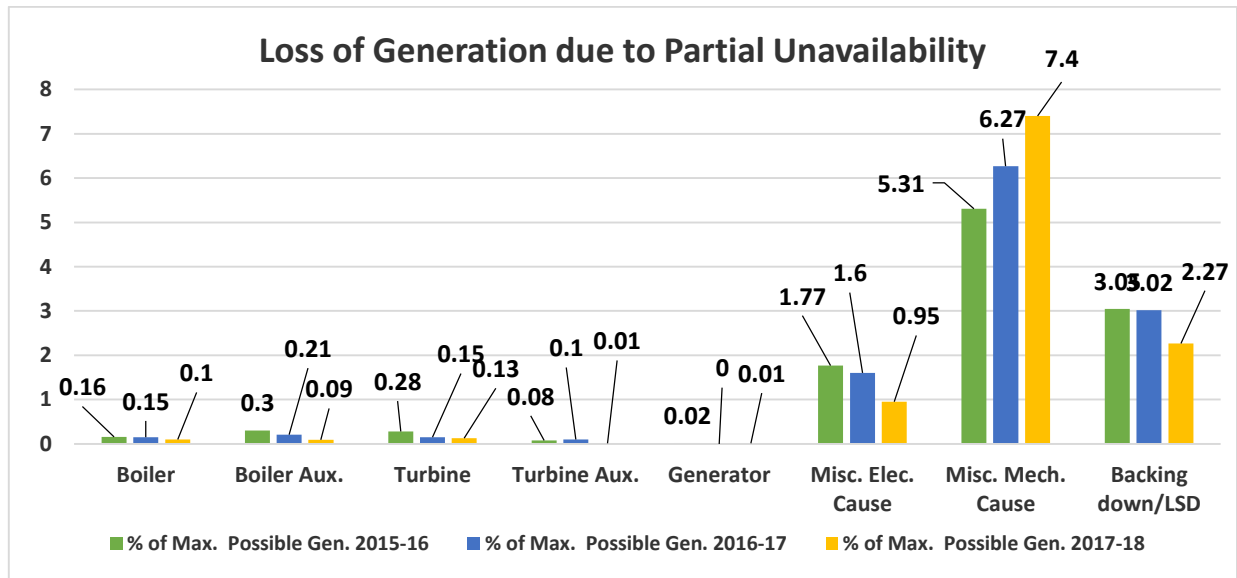
- i) Due to **internal constraints in equipment or auxiliaries** as a result of which the operating units could not deliver the rated output despite no grid constraints.
- ii) Due to **external constraints not attributable to the generating unit/station** such as shortage of fuel or cooling water and low demand (including grid constraints) resulting in reduced generation of the units vis-à-vis their rated capacity.

7.2 OVERALL PARTIAL UNAVAILABILITY

Energy loss due to partial unavailability of the thermal generating units considered in the Review decreased to **10.96%** of the maximum possible generation in 2017-18 from 11.48 % in 2016-17. **The energy loss due to partial unavailability on account of miscellaneous problems such as poor quality coal, coal shortages, backing down continued to be the main cause for Partial Unavailability of units.** The broad details of energy loss due to Partial Unavailability of the thermal generating units due to various factors/equipment on All India basis for the years, 2015-16, 2016-17 and 2017-18 are given below: -

Sl. No	Constraint Area	MU Loss			% Total Partial Loss			% of Max. Possible Gen.		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
1	Boiler	2312.5	2309.89	1700.73	1.48	1.28	0.94	0.16	0.15	0.1
2	Boiler Aux.	4233.6	3247.02	1464.28	2.7	1.80	0.81	0.3	0.21	0.09
	Boiler + Boiler Aux.	6546.11	5556.91	3165	4.18	3.07	1.75	0.46	0.35	0.19
3	Turbine	3960.01	2288.25	2143.44	2.53	1.27	1.18	0.28	0.15	0.13
4	Turbine Aux.	1189.48	1528.01	188.36	0.76	0.84	0.1	0.08	0.10	0.01
	Turbine + Turbine	5149.49	3816.26	2331.8	3.29	2.11	1.29	0.36	0.24	0.14
5	Generator	304.35	32.48	159.32	0.19	0.02	0.09	0.02	0.00	0.01
6	Electrical	25321.56	25247.46	15618.32	16.17	13.96	8.63	1.77	1.60	0.95
7	Other Miscellaneous	75779.87	98702.69	122241.31	48.39	54.57	67.53	5.31	6.27	7.4
	Total	113101.38	133355.81	143515.75	72.22	73.73	79.28	7.93	8.47	8.69
8	Backing down/LSD	43509.47	47507.70	37503.4	27.78	26.27	20.72	3.05	3.02	2.27
	Grand Total	156610.85	180863.51	181019.15	100	100	100	10.99	11.48	10.96

The pictorial representation of the loss of generation on account of Partial Unavailability of various parts in the main equipment & auxiliaries and because of low system demand including grid constraints during the financial years 2015-16, 2016-17 and 2017-18 is given below: -



7.3 REGION-WISE ENERGY LOSS DUE TO PARTIAL UNAVAILABILITY:

Region wise broad details of the energy loss due to Partial Unavailability of the thermal generating units due to various equipment’s during the period 2016-17 and 2017-18 are shown below: -

All Figures are % of Maximum Possible Generation

Type of Equip.	Northern Region		Western Region		Southern Region		Eastern Region		ALL INDIA	
	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18	16-17	17-18
Main Equipment ⁷	5	3.61	5	2.98	4	4.92	3	2.7	4	3.46
Axillaries	0	0.04	0	0.15	0	0.06	0	0.09	0	0.1
Other Reasons	5	7.24	5	6.87	6	7.67	8	8.5	6	7.4
Total	11	10.9	10	10	11	12.65	12	11.3	11	10.96

Region-wise details of Partial Unavailability due to various long and short duration constraints in the main equipment and its auxiliaries during 2017-18 (in MUs) are given in **Annexure 7.1**. The cause wise partial unavailability of thermal Units during 2017-18 are given in Annexur 7.2

7.4 CAPACITY GROUP-WISE PARTIAL UNAVAILABILITY:

The Partial Unavailability in different capacity groups during the years 2015-16,2016-17and 2017-18 are shown below:

Capacity Group(MW)	Partial Unavailability loss as percentage of Maximum Possible Generation (%)											
	Main equipment			Auxiliary			Others			Total		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
660-800	1.35	1.28	1.64	0.02	0.12	0.03	0.44	0.75	3.11	1.8	2.15	4.79
490-600	1.56	1.67	1.11	0.08	0.06	0.01	2.42	3.20	3.25	4.06	4.93	4.37
300-360	0.48	0.51	0.36	0.03	0.01	0	0.32	0.42	0.43	0.83	0.94	0.79
250-270	0.54	0.52	0.24	0.03	0.04	0.02	0.23	0.30	0.62	0.79	0.86	0.87
210-210	0.66	0.67	0.65	0.09	0.03	0.04	1.17	0.86	0.89	1.93	1.57	1.58
195-200	0.06	0.05	0.01	0.03	0.00	0	0.16	0.22	0.29	0.26	0.28	0.3
100-150	0.25	0.25	0.15	0.06	0.06	0.01	0.3	0.22	0.25	0.61	0.54	0.41
25-99	0.18	0.04	0.1	0.01	0.01	0	0.15	0.16	0.07	0.34	0.21	0.17

⁷ Includes partial loss due to Low System Demand (LSD)

Total	5.29	4.99	4.26	0.38	0.34	0.11	5.31	6.15	8.9	10.99	11.48	13.27
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7.5 MAKE-WISE PARTIAL UNAVAILABILITY

Make-wise energy loss due to Partial Unavailability of the thermal generating units in terms of percentage of All India Maximum Possible Generation during 2016-17 and 2017-18 are shown below. **The trend in 2017-18 is largely similar to 2016-17**

Make of Units	PARTIAL UNAVAILABILITY (%)			
	(% of make-wise Maximum Possible Generation)		(% of All India Maximum Possible Gener	
	2016-17	2017-18	2016-17	2017-2018
BHEL/BHEL	10.38	10.55	5.97	6.2
BHEL/ABL	17.23	16.39	0.21	0.16
RUSSIA/RUSSIA	14.93	12.72	0.26	0.2
CHINA/CHINA	14.30	11.75	3.62	2.91
OTHER/OTHER	12.46	13.38	1.42	1.5
ALL MAKES	11.50	10.98	11.48	10.96

7.6 SECTOR WISE PARTIAL UNAVAILABILITY INCLUDING LOW SYSTEM DEMAND:

Sector wise details of energy loss due to Partial Unavailability of the thermal generating units in terms of percentage of All India Maximum Possible Generation during 2016-17 and 2017-18 are shown below. As may be seen, the state sector faced higher Partial Unavailability.

Year	Central Sector	Private Sector	State Sector	All India Average
2016-2017	2.91	3.86	4.71	11.48
2017-2018	3.22	3.68	4.07	10.96

7.7 NON – UTILISATION OF ENERGY DUE TO SYSTEM LOAD VARIATION

During the year 2017-18, some thermal units faced Partial Unavailability due to low schedule from the beneficiaries. Such Loss of energy due to backing down of coal/lignite based units decreased from 43,509.47 MU in 2016-17 to 37503.4 MU in 2017-18. Also, the losses due to reserve shutdown (RSD) of units decreased from **133975.17** MU during 2016-17 to **93149** MU during 2017-18. **Thus the RSD and low system demand together resulted into loss of 7.91 % of maximum possible generation of the units considered.** Details of non-utilization of energy due to system load variations in different regions during 2016-17 and 2017-18 are given at **Annexure 7.3.**

ANNEXURE - 7.1

REGION WISE DETAILS OF PARTIAL UNAVAILABILITY DUE TO VARIOUS LONG AND SHORT DURATION CONSTRAINTS IN THE MAIN EQUIPMENT AND ITS AUXILLIARIES DURING 2017-18 (in MU)

CAUSE OF PARTIAL LOSS (Due To Equipment & Aux	NORTHERN REGION			WESTERN REGION			SOUTHERN REGION			EASTERN REGION			NORTH EASTERN REGION			All India		
	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	Total Loss (MU)	% OF MAX. POSS. GEN.	% OF TOTAL Partial loss
MAIN BOILER	70.5	0.02	0.18	819.99	0.12	1.22	785.12	0.24	1.86	25.12	0.01	0.08	0	0	0	1700.73	0.1	0.94
BOILER AUXILIARIES	145.66	0.04	0.36	955.75	0.14	1.42	101.74	0.03	0.24	261.12	0.09	0.84	0	0	0	1464.28	0.09	0.81
BOILER & ITS AUXILIARIES	216.16	0.06	0.54	1775.74	0.26	2.64	886.87	0.27	2.1	286.24	0.1	0.92	0	0	0	3165	0.19	1.74
MAIN TURBINE	114.37	0.03	0.29	1735.17	0.26	2.57	242.66	0.07	0.57	51.24	0.02	0.16	0	0	0	2143.44	0.13	1.18
TURBINE AUXILIARIES	5.59	0	0.01	71.21	0.01	0.11	109.96	0.03	0.26	1.6	0	0.01	0	0	0	188.36	0.01	0.1
TURBINE & ITS AUXILIARIES	119.96	0.03	0.3	1806.38	0.27	2.68	352.61	0.11	0.83	52.83	0.02	0.17	0	0	0	2331.8	0.14	1.29
GENERATOR	0.1	0	0	85.54	0.01	0.13	0.1	0	0	73.58	0.03	0.24	0	0	0	159.32	0.01	0.09
ELECTRICAL	2020.73	0.55	5.06	6593.98	0.98	9.78	6525.86	1.97	15.42	477.74	0.17	1.53	0	0	0	15618.32	0.95	8.61
OTHER MISC. CAUSES	26531.4	7.24	66.41	46269.07	6.87	68.66	25446.9	7.67	60.14	23518.13	8.5	75.23	475.82	14.54	100	122241.31	7.4	67.39
TOTAL	28888.36	7.88	72.31	56530.71	8.39	83.89	33212.34	10.01	78.49	24408.52	8.82	78.07	475.82	14.54	100	143515.75	8.69	79.12
BACKING DOWN/LSD	11030.92	3.01	27.61	10825.21	1.61	16.07	8792.67	2.65	20.78	7330.42	2.48	21.92	0	0	0	37503.4	2.27	20.68
GRAND TOTAL	39919.28	0.01	0.05	67355.92	0.24	2.41	42005.01	0.54	4.23	31738.94	0.02	0.14	0	0	0	181019.15	10.96	100

Annexure 7.2

CAUSE WISE PARTIAL UNAVAILABILITY OF THERMAL UNITS DURING 2017-18

Particulars	NORTHERN REGION			WESTERN REGION			SOUTHERN REGION			EASTERN REGION			NORTH EASTERN			ALL INDIA		
	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES
MAIN BOILER																		
Pressure Parts Leakage	0.23	0	0	93.92	0.01	0.14	2.23	0	0.01	13.14	0	0.04	0	0	0	109.53	0.01	0.06
Drum Pressure Restriction	30.6	0.01	0.08	44.77	0.01	0.07	1.24	0	0	9.85	0	0.03	0	0	0	86.46	0.01	0.05
Air Heaters	24.08	0.01	0.06	370.34	0.05	0.55	165.5	0.05	0.39	0	0	0	0	0	0	559.92	0.03	0.31
Furnace	6.42	0	0.02	123.24	0.02	0.18	8.43	0	0.02	0	0	0	0	0	0	138.08	0.01	0.08
Furnace Draft	0	0	0	3.82	0	0.01	0	0	0	0	0	0	0	0	0	3.82	0	0
High Fuel Gas/ Steam Temperature	0	0	0	0.06	0	0	0	0	0	0	0	0	0	0	0	0.06	0	0
Ageing	0	0	0	0	0	0	578.71	0.17	1.37	0	0	0	0	0	0	578.71	0.04	0.32
Miscellaneous Problems - Main Boiler	9.17	0	0.02	183.84	0.03	0.27	29.01	0.01	0.07	2.14	0	0.01	0	0	0	224.16	0.01	0.12
Total Main Boiler	70.5	0.02	0.18	819.99	0.12	1.22	785.12	0.24	1.86	25.12	0.01	0.08	0	0	0	1700.73	0.1	0.94
BOILER AUX																		
I.D. Fan	113.97	0.03	0.29	209.51	0.03	0.31	17.95	0.01	0.04	105	0.04	0.34	0	0	0	446.43	0.03	0.25
P.A. Fan	5.63	0	0.01	28.08	0	0.04	17.15	0.01	0.04	0.71	0	0	0	0	0	51.57	0	0.03
F.D. Fan	3.08	0	0.01	10.04	0	0.01	1.93	0	0	5.2	0	0.02	0	0	0	20.26	0	0.01
Milling System	18.17	0	0.05	107.76	0.02	0.16	55.52	0.02	0.13	17.69	0.01	0.06	0	0	0	199.14	0.01	0.11
P.C & R.C. Feeders	4.23	0	0.01	0.34	0	0	5.98	0	0.01	0.03	0	0	0	0	0	10.57	0	0.01
ESP	0	0	0	18.85	0	0.03	0	0	0	132.48	0.05	0.42	0	0	0	151.33	0.01	0.08
Presipitators	0	0	0	293.03	0.04	0.43	0	0	0	0	0	0	0	0	0	293.03	0.02	0.16
Miscellaneous Problems-Boiler Auxiliaries	0.58	0	0	288.15	0.04	0.43	3.22	0	0.01	0	0	0	0	0	0	291.96	0.02	0.16
Total Boiler Auxiliaries	145.66	0.04	0.36	955.75	0.14	1.42	101.74	0.03	0.24	261.12	0.09	0.84	0	0	0	1464.28	0.09	0.81
BOILER & BOILER AUX																		
Boiler & Boiler Aux	216.16	0.06	0.54	1775.74	0.26	2.64	886.86	0.27	2.1	286.24	0.1	0.92	0	0	0	3165.01	0.19	1.75

Particulars	NORTHERN REGION			WESTERN REGION			SOUTHERN REGION			EASTERN REGION			NORTH EASTERN			ALL INDIA		
	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTA L REGI ONAL P.LOS S	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIO NALP.L OSS	REGIO NAL GEN. LOSS	% OF MAX. POSS.G EN.	% OF TOT AL REGI ONAL P.LO SS	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTA L REGI ONAL P.LOS S	RE GI ON AL GE N. LOS S	% OF MAX. POSS. .GEN.	% OF TOT AL REGI ONAL P.L.L OSS	REGION AL GEN. LOSS	% OF MAX. POS S	% OF TOTA L REGI ONAL P.LOS S
Total Boiler & Boiler Aux	216.16	0.06	0.54	1775.74	0.26	2.64	886.86	0.27	2.1	286.24	0.1	0.92	0	0	0	3165.01	0.19	1.75
BOILER & BOILER AUX																		
MAIN TURBINE																		
Vibrations/Eccentricity	0	0	0	5.29	0	0.01	34.43	0.01	0.08	0.13	0	0	0	0	0	39.85	0	0.02
Turbine Differential	0	0	0	25.45	0	0.04	0	0	0	0	0	0	0	0	0	25.45	0	0.01
High Curtis Wheel Pressure	0	0	0	0	0	0	0	0	0	37.31	0.01	0.12	0	0	0	37.31	0	0.02
Condenser Tube Leakages	20.57	0.01	0.05	88.29	0.01	0.13	0	0	0	0	0	0	0	0	0	108.86	0.01	0.06
Low Vacuum	6.77	0	0.02	193.98	0.03	0.29	2.57	0	0.01	0.28	0	0	0	0	0	203.6	0.01	0.11
Startup/ Shut Down	86.79	0.02	0.22	1232.38	0.18	1.83	140.63	0.04	0.33	13.51	0	0.04	0	0	0	1473.31	0.09	0.81
Axial Shift	0	0	0	0	0	0	4.17	0	0.01	0	0	0	0	0	0	4.17	0	0
Control Valve	0.25	0	0	20.25	0	0.03	43.2	0.01	0.1	0	0	0	0	0	0	63.7	0	0.04
Condenser	0	0	0	169.54	0.03	0.25	17.65	0.01	0.04	0	0	0	0	0	0	187.19	0.01	0.1
Total Main Turbine	114.37	0.03	0.29	1735.17	0.26	2.57	242.66	0.07	0.57	51.24	0.02	0.16	0	0	0	2143.44	0.13	1.18
TURBINE AUX																		
B.F. Pumps	3.43	0	0.01	34.31	0.01	0.05	8.64	0	0.02	0.78	0	0	0	0	0	47.16	0	0.03
Regenerative System	0	0	0	30.94	0	0.05	86.03	0.03	0.2	0.57	0	0	0	0	0	117.54	0.01	0.06
C.W. Pumps	2.12	0	0.01	3.36	0	0	12.32	0	0.03	0	0	0	0	0	0	17.8	0	0.01
Condensate Pump	0	0	0	1.91	0	0	2.7	0	0.01	0.25	0	0	0	0	0	4.86	0	0
Miscellaneous Problems - Turbine Aux.	0.04	0	0	0.69	0	0	0.27	0	0	0	0	0	0	0	0	1.01	0	0
Total Turbine Auxiliaries	5.59	0	0.01	71.21	0.01	0.11	109.96	0.03	0.26	1.6	0	0.01	0	0	0	188.36	0.01	0.1
TURBINE & TURBINE AUX																		
Turbine & Turbine Aux	119.96	0.03	0.3	1806.38	0.27	2.68	352.62	0.1	0.83	52.84	0.02	0.17	0	0	0	2331.8	0.14	

Particulars	NORTHERN REGION			WESTERN REGION			SOUTHERN REGION			EASTERN REGION			NORTH EASTERN			ALL INDIA		
	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSSES
Total Turbine & Turbine Aux	119.96	0.03	0.3	1806.38	0.27	2.68	352.62	0.1	0.83	52.84	0.02	0.17	0	0	0	2331.8	0.14	
GENERATOR																		
Winding Temperature	0	0	0	1.26	0	0	0.1	0	0	0	0	0	0	0	0	1.36	0	0
Generator Cooling System	0	0	0	66.72	0.01	0.1	0	0	0	0	0	0	0	0	0	66.72	0	0.04
Miscellaneous Problem Generator	0	0	0	17.56	0	0.03	0	0	0	73.58	0.03	0.24	0	0	0	91.14	0.01	0.01
Total Generator	0	0	0	85.54	0.01	0.13	0.1	0	0	73.58	0.03	0.24	0	0	0	159.22	0.01	0.05
ELECTRICAL																		
Main Transformer	0	0	0	12.51	0	0.02	0.96	0	0	0	0	0	0	0	0	13.47	0	0.01
Miscellaneous Others	0.85	0	0	32.65	0	0.05	2.05	0	0	0.16	0	0	0	0	0	35.71	0	0.02
Commercial Reason/Grid System	2019.89	0.55	5.06	6548.82	0.97	9.72	6522.85	1.96	15.42	477.58	0.17	1.53	0	0	0	15569.14	0.94	8.58
Total Electrical	2020.73	0.55	5.06	6593.98	0.98	9.78	6525.86	1.97	15.42	477.74	0.17	1.53	0	0	0	15618.32	0.95	8.61
OTHER MISCELLANEOUS CAUSES																		
Coal Shortage	96.03	0.03	0.24	5945.5	0.88	8.82	551.79	0.17	1.3	1883.41	0.68	6.02	0	0	0	8476.73	0.51	4.67
Coal Handling Problem / Feeding Trouble	70.2	0.02	0.18	280.3	0.04	0.42	1.85	0	0	26.03	0.01	0.08	0	0	0	378.38	0.02	0.21
Poor Quality/ Wet Coal	161.68	0.04	0.4	3710.14	0.55	5.51	1715.85	0.52	4.05	1456.44	0.53	4.66	0	0	0	7044.11	0.43	3.88
Fuel Oil Shortage	0	0	0	69.45	0.01	0.1	13.68	0	0.03	20.38	0.01	0.07	0	0	0	103.51	0.01	0.06
D.M. Water	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.18	0	0
Cooling Water Problems	0.35	0	0	29.14	0	0.04	0	0	0	0	0	0	0	0	0	29.49	0	0.02
Operational Problems	0.03	0	0	252.6	0.04	0.37	15.7	0	0.04	0.09	0	0	0	0	0	268.42	0.02	0.15
Air Supply Problems	3.92	0	0.01	69.96	0.01	0.1	0.94	0	0	0	0	0	0	0	0	74.82	0	0.04
Ash Handling Problems	320.22	0.09	0.8	135.94	0.02	0.2	138.04	0.04	0.33	3.39	0	0.01	0	0	0	597.59	0.04	0.33

Particulars	NORTHERN REGION			WESTERN REGION			SOUTHERN REGION			EASTERN REGION			NORTH EASTERN			ALL INDIA		
	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSS	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSS	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSS	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSS	REGI ONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSS	REGIONAL GEN. LOSS	% OF MAX. POSS. GEN.	% OF TOTAL REGIONAL P.LOSS
																		GEN.
Malfunction Of Relays/ Instrument Trouble	5.18	0	0.01	2.42	0	0	0.27	0	0	0	0	0	0	0	0	7.88	0	0
Miscellaneous Problems - Others	25873.61	7.06	64.77	35773.61	5.31	53.09	23008.77	6.93	54.38	20128.39	7.27	64.38	475.82	14.54	100	105260.2	6.37	58.03
Transmission Constraints / Evacuation Problem	26531.4	7.24	66.41	46269.07	6.87	68.66	25446.9	7.67	60.14	23518.13	8.5	75.23	475.82	14.54	100	122241.31	7.4	67.39
Total Other Miscellaneous Causes	28888.36	7.88	72.31	56530.71	8.39	83.89	33212.34	10.01	78.49	24408.52	8.82	78.07	475.82	14.54	100	143515.75	8.69	79.12
LOW SYSTEM DEMAND																		
Low System Demand	11030.92	3.01	27.61	10825.21	1.61	16.07	8792.67	2.65	20.78	6854.62	2.48	21.92	0	0	0	37503.4	2.27	18.76
Total Low System Demand	11030.92	3.01	27.61	10825.21	1.61	16.07	8792.67	2.65	20.78	6854.62	2.48	21.92	0	0	0	37503.4	2.27	1.92
Grand Total	39919.27	10.9	99.93	67355.91	10	99.95	42005.01	12.65	99.27	31263.14	11.3	100	475.82	14.54	100	181019.15	10.96	100

NON UTILIZATION OF ENERGY DUE TO SYSTEM LOAD VARIATIONS IN DIFFERENT REGIONS DURING 2016-2017-18

Region	NON UTILIZATION OF ENERGY DUE TO SYSTEM LOAD VARIATIONS IN DIFFERENT REGIONS DURING 2016-2017-18											
	Reserve Shut Down of units				Energy not utilized due to Backing down of the units				Total			
	MU		% of Maximum possible generation		MU		% of Maximum possible generation		MU		% of Maximum possible generation	
	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
Northern	47931.098	30760.1981	3.04	1.86	14018.19	11030.91	0.89	0.67	61949.288	41791.1081	3.93	2.53
Western	58541.262	33875.87009	3.72	2.05	18638.47	10825.21	1.18	0.66	77179.732	44701.08009	4.90	2.71
Southern	15684.73	21528.04454	1.00	1.30	7251.39	8792.67	0.46	0.53	22936.12	30320.71454	1.46	1.84
Eastern	11818.08	6984.887267	0.75	0.42	7599.66	6854.62	0.48	0.42	19417.74	13839.50727	1.35	0.84
North-Eastern	0	0	0.00	0.00	0	0	0.00	0.00	0	0	-	0.00
All India	133975.17	93149	8.51	5.64	47507.71	37503.41	3.02	2.27	181482.88	130652.41	11.64	7.91

SECTION-8

PATTERN OF OUTAGES AND OPERATION RELIABILITY

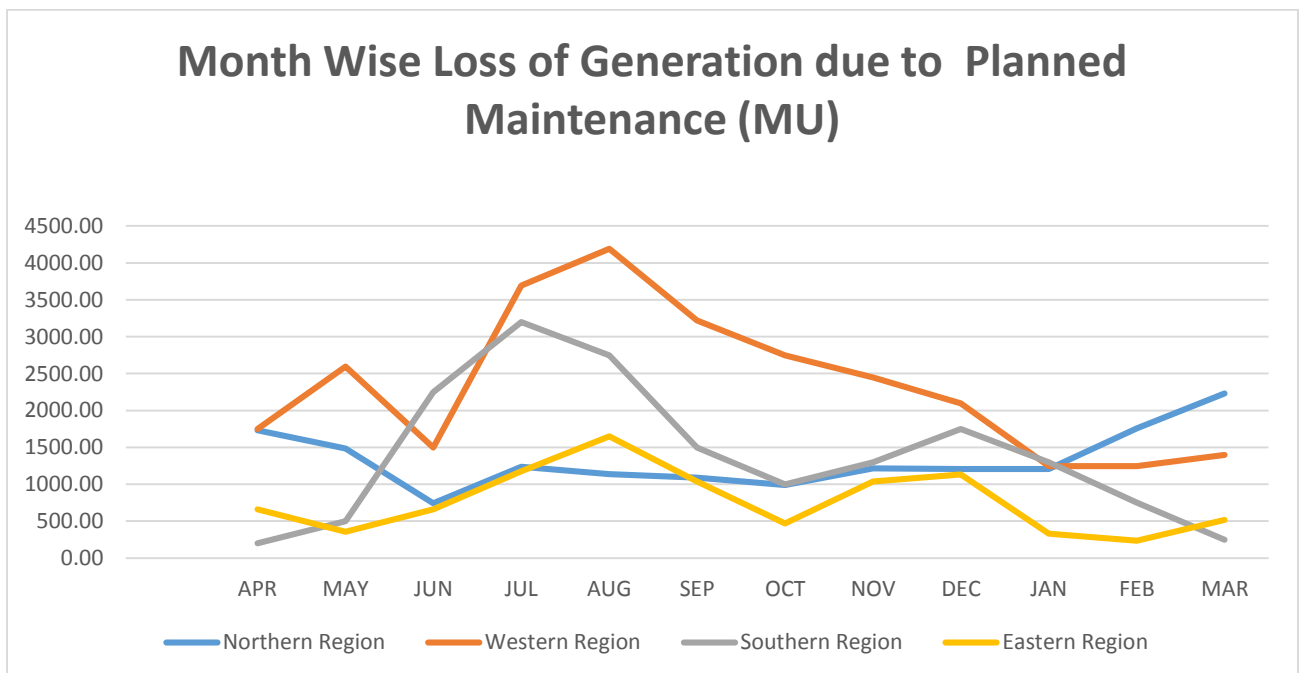
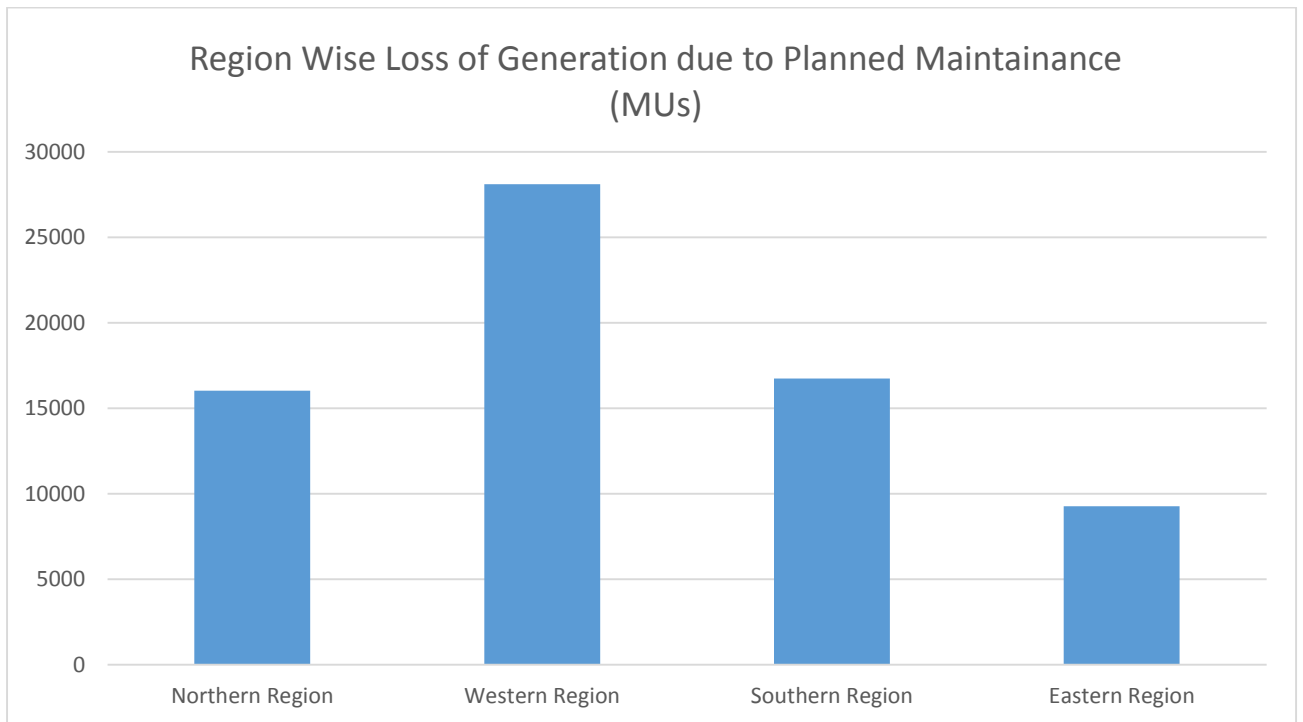
8.1 Outages of thermal units affect their operational reliability. Due to rapid addition of generation capacity over the years, the additional/reserve generation capability available has significantly increased. Thus outages of units do not significantly affect the overall generation availability and reliability in the country. However, the outages trends are indicative of the operational reliability of generating units and have been discussed in this chapter. It should also be kept in view that all unit outages are not attributable to the unit constraints and outages also occur on account of system constraints like coal shortages, transmission constraints, RSD etc. Thus the outage trend discussed in the chapter is indicative of the overall operation reliability of the units including the system constraints.

8.2 EFFECT OF PLANNED MAINTENANCE ON OPERATION RELIABILITY

Each Power Stations of the country formulated generation program for 2017-18 to meet its system requirements. All the power systems program to carry out the Planned Maintenance of their thermal units in a phased manner keeping in view the operational requirements. Region-wise month-wise details of loss of generation due to Planned Maintenance (actual) of thermal units during 2017-18 are shown below:

Region-wise and month-wise generation Loss (in MUs) due to Planned Maintenance						
MONTH	NORTHERN	WESTERN	SOUTHERN	EASTERN	NORTH EASTERN	ALL INDIA
APR	1733.26	1746.83	199.88	659.87	103.75	4443.59
MAY	1485.65	2595.29	499.70	358.22	186	5124.85
JUN	742.83	1497.28	2248.65	659.87	180	5328.63
JUL	1238.04	3693.29	3198.08	1178.35	186	9493.76
AUG	1139.00	4192.39	2748.35	1649.69	83.51	9812.93
SEP	1089.48	3219.15	1499.10	1036.95	0	6844.68
OCT	990.43	2745.02	999.40	471.34	0	5206.19
NOV	1213.28	2445.56	1299.22	1036.95	0	5995.00
DEC	1208.33	2096.19	1748.95	1131.21	0	6184.68
JAN	1208.33	1247.73	1299.22	329.94	0	4085.22
FEB	1758.02	1247.73	749.55	235.67	0	3990.97
MAR	2228.48	1397.46	249.85	518.47	0	4394.26
Total	16035.14	28123.93	16739.97	9266.52	739.26	70904.8

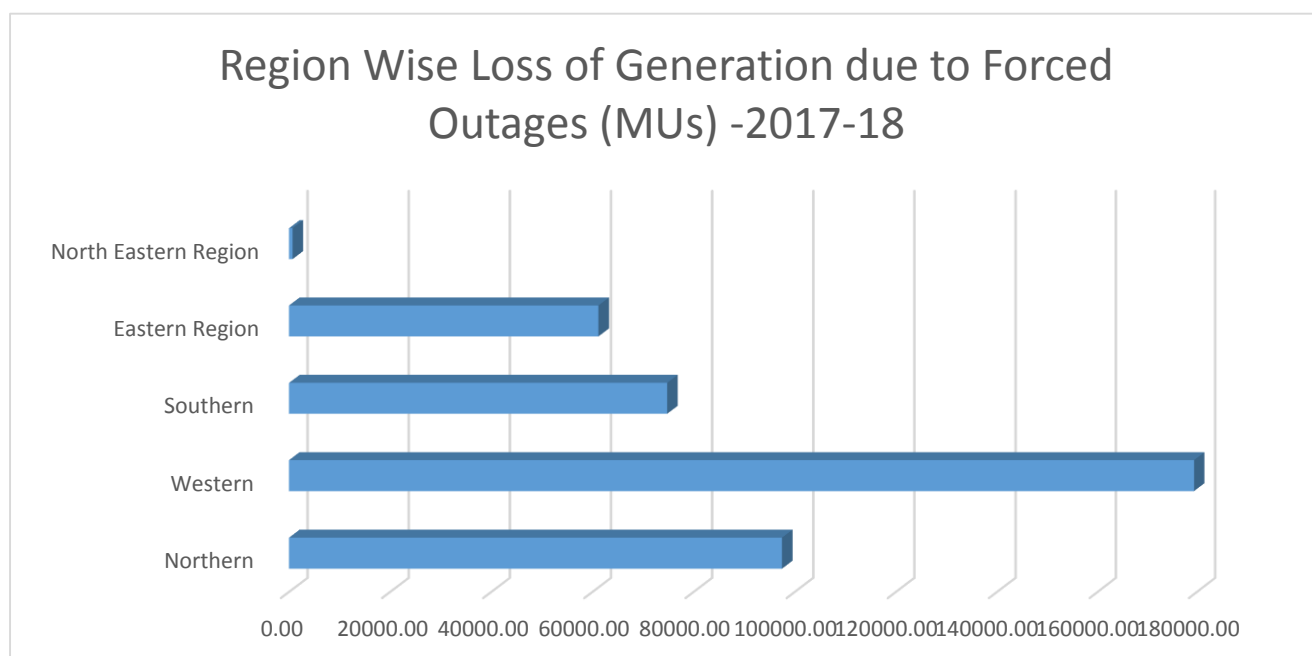
During Aug 2017 the total loss of generation (9812.93 MU) due to planned maintenance of thermal units was highest.

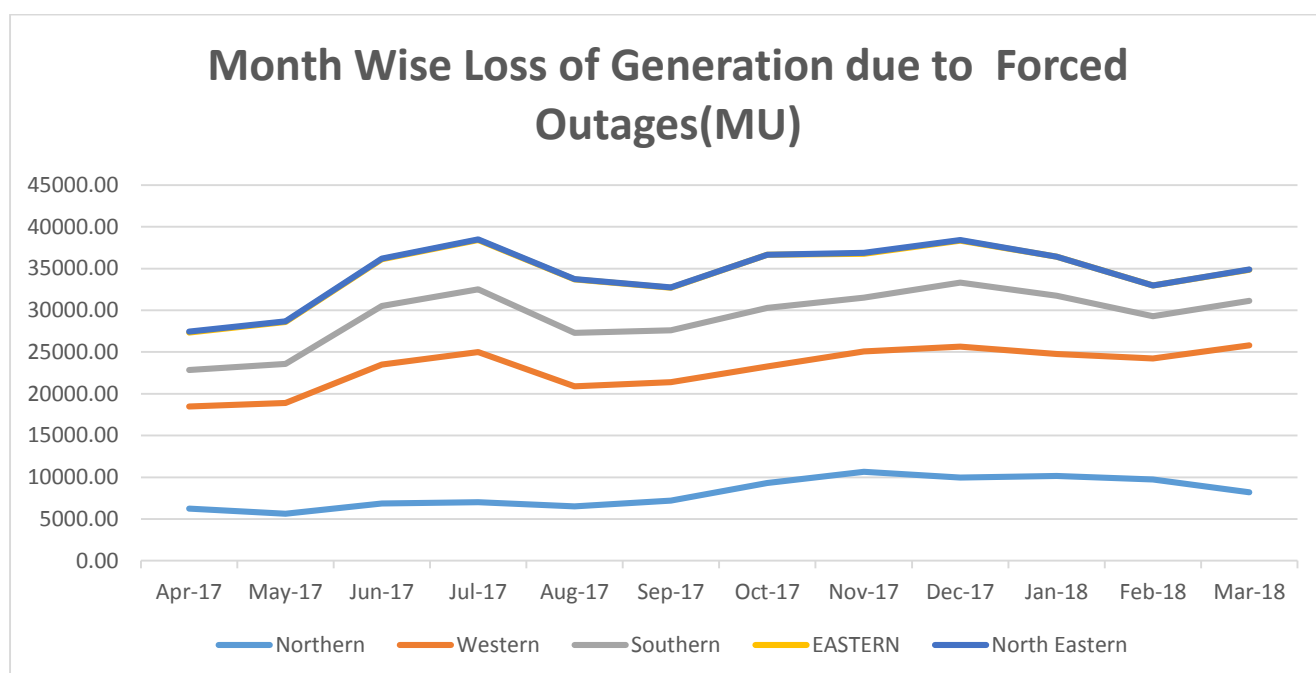


8.3 EFFECT OF FORCED OUTAGE ON GENERATION RELIABILITY

Loss of generation due to various forced outages was maximum during the month of July '17 (38497.94 MU). Loss of generation due to various forced outages was minimum (27439.88 MU) during April '17. Western Region experienced maximum forced outage losses. The Region wise and month wise generation loss due to Forced outages is given below:

Region-wise and month-wise generation Loss (in MUs) due to Forced Outage						
MONTH	NORTHERN	WESTERN	SOUTHERN	EASTERN	NORTH	ALL INDIA
APR	6256.02	12229.81	4379.60	4486.14	88.31	27439.88
MAY	5631.37	13261.37	4673.39	5015.47	90.06	28671.67
JUN	6866.50	16622.23	7041.43	5586.62	87.16	36203.93
JUL	7023.77	17958.12	7540.69	5885.30	90.06	38497.94
AUG	6524.73	14384.87	6392.15	6390.01	57.04	33748.80
SEP	7202.13	14173.62	6239.46	5075.49	33.01	32723.71
OCT	9326.63	13929.83	7019.11	6386.04	1.13	36662.73
NOV	10641.18	14424.15	6445.38	5239.36	132.86	36882.93
DEC	9950.07	15693.16	7688.66	5023.66	52.70	38408.25
JAN	10137.62	14612.22	6992.70	4665.71	28.12	36436.37
FEB	9715.68	14524.95	5029.85	3689.59	13.72	32973.78
MAR	8201.64	17600.53	5323.24	3730.93	19.63	34875.98
Total	97477.34	179414.85	74765.66	61174.33	693.80	413525.98





8.4 MEAN TIME BETWEEN FAILURE

The degree of reliability of thermal generation is directly proportionate to the Mean Time between Failures (MTBF) of the units. All India / Region wise and Capacity Group-wise details of Mean Time between Failures (MTBF) of thermal units for 2017-18 are given in **Annexure 8.1**.

8.5 CONTINUOUS UNINTERRUPTED OPERATION OF COAL/ LIGNITE BASED UNITS:

Measurement of maximum continuous uninterrupted operation between two consecutive shutdowns and/or failures of a thermal unit also provides the degree of reliability of that unit. It was observed that till the end of 31st March 2018:

- Twenty-four coal/lignite based thermal generating units continuously operated for more than 250 days. YERMARUS TPP UNIT-2 of RPCL & SIMHAPURI TPS UNIT-3 of SEPL continued to operate continuously for more than 350 days.
- Forty-Eight coal/lignite based thermal generating units (NTPC-22, CGPL-2, JSWEL-2, NLC-2, WBPDC-2, and one each of APL, BECL, CESC, DVC, GCEL, GMR ENERGY, JPL, MPL, MPPGCL, NSPCL, RKMPP, RPCL, SEPL, SPL, SVPL, TATA PCL & UPRVUNL) operated continuously for more than 200 days.

DETAILS OF UNITS OPERATED FOR MORE THAN 200 DAYS IN THE YEAR 2017-18

S. NO.	STATION NAME	UNIT NO	CAPACITY	ORGANIZATION NAME	FROM DATE	TO DATE	DAYS
1	YERMARUS TPP	2	800	RPCL	07-Apr-2017	CONTINUE TO OPERATE	357
2	SIMHAPURI TPS	3	150	SEPL	08-Apr-2017	CONTINUE TO OPERATE	357
3	TORANGALLU TPS(SBU-II)	4	300	JSWEL	20-Sep-2016	29-AUG-17	343

S. NO.	STATION NAME	UNIT NO	CAPACITY	ORGANIZATION NAME	FROM DATE	TO DATE	DAYS
4	SINGRAULI STPS	3	200	NTPC Ltd.	24-Nov-2016	29-OCT-17	340
5	OP JINDAL TPS	3	250	JPL	11-Dec-2016	04-NOV-17	328
6	RIHAND STPS	5	500	NTPC Ltd.	18-May-2017	CONTINUE TO OPERATE	316
7	NEYVELI TPS- I	8	100	NLC	26-Nov-2016	03-OCT-17	312
8	BHILAI TPS	1	250	NSPCL	06-Jun-2016	12-APR-17	311
9	SVPL TPP	1	63	SVPL	27-May-2017	CONTINUE TO OPERATE	307
10	TALCHER STPS	3	500	NTPC Ltd.	11-Nov-2016	10-SEP-17	303
11	JOJOBERA TPS	2	120	TATA PCL	14-May-2016	11-MAR-17	301
12	RIHAND STPS	4	500	NTPC Ltd.	21-May-2017	13-MAR-18	296
13	TALCHER STPS	6	500	NTPC Ltd.	09-Oct-2016	23-JUL-17	288
14	RAIKHEDA TPP	1	685	GCEL	15-Jun-2017	CONTINUE TO OPERATE	288
15	SINGRAULI STPS	1	200	NTPC Ltd.	15-May-2017	25-FEB-18	286
16	VINDHYACHAL STPS	13	500	NTPC Ltd.	19-Jun-2017	CONTINUE TO OPERATE	285
17	TIRORA TPS	5	660	APL	19-Aug-2016	28-MAY-17	282
18	SIPAT STPS	5	500	NTPC Ltd.	20-Nov-2016	27-AUG-17	280
19	SIPAT STPS	4	500	NTPC Ltd.	26-Jun-2017	CONTINUE TO OPERATE	278
20	BAKRESWAR TPS	1	210	WBPDCL	21-Jul-2016	23-APR-17	276
21	BADARPUR TPS	5	210	NTPC Ltd.	03-Jul-2017	CONTINUE TO OPERATE	271
22	MEJIA TPS	6	250	DVC	03-Jun-2017	19-FEB-18	262
23	TANDA TPS	4	110	NTPC Ltd.	21-Feb-2017	02-NOV-17	254
24	VINDHYACHAL STPS	9	500	NTPC Ltd.	22-Jul-2017	CONTINUE TO OPERATE	252
25	VINDHYACHAL STPS	2	210	NTPC Ltd.	24-Jul-2017	CONTINUE TO OPERATE	250
26	BUDGE BUDGE TPS	3	250	CESC	23-Feb-2017	31-OCT-17	250
27	JSW RATNAGIRI TPP	4	300	JSWEL	31-Oct-2016	04-JUL-17	246
28	SIPAT STPS	3	660	NTPC Ltd.	25-Feb-2017	25-OCT-17	242
29	MUNDRA UMTTP	3	800	CGPL	14-Jul-2017	08-MAR-18	237
30	VINDHYACHAL STPS	3	210	NTPC Ltd.	07-Aug-2017	CONTINUE TO OPERATE	235
31	MUNDRA UMTTP	2	800	CGPL	07-Jul-2017	27-FEB-18	234
32	KAHALGAON TPS	4	210	NTPC Ltd.	09-Oct-2016	28-MAY-17	231
33	TALCHER STPS	5	500	NTPC Ltd.	03-Feb-2017	14-SEP-17	224
34	SASAN UMTTP	1	660	SPL	27-Oct-2016	06-JUN-17	222
35	BHAVNAGAR CFBC TPP	2	250	BECL	22-Aug-2017	CONTINUE TO OPERATE	221
36	DADRI (NCTPP)	6	490	NTPC Ltd.	04-May-2017	09-DEC-17	220
37	UCHPINDA TPP	2	360	RKMPL	25-Aug-2017	CONTINUE TO OPERATE	218
38	NEYVELI TPS- I	7	100	NLC	01-Dec-2016	07-JUL-17	217
39	SINGRAULI STPS	2	200	NTPC Ltd.	23-Dec-2016	26-JUL-17	215
40	SATPURA TPS	9	210	MPPGCL	28-Aug-2017	CONTINUE TO OPERATE	214
41	MAHADEV PRASAD STPP	2	270	ADHUNIK	29-Aug-2017	CONTINUE TO OPERATE	214
42	VINDHYACHAL STPS	6	210	NTPC Ltd.	19-Nov-2016	20-JUN-17	213
43	SIPAT STPS	2	660	NTPC Ltd.	10-Nov-2016	10-JUN-17	212
44	BAKRESWAR TPS	2	210	WBPDCL	07-Sep-2017	CONTINUE TO OPERATE	205
45	RAMAGUNDEM STPS	7	500	NTPC Ltd.	23-Nov-2016	14-JUN-17	203
46	GMR WARORA TPS	2	300	GMR ENERG	28-Nov-2016	19-JUN-17	203
47	HARDUAGANJ TPS	9	250	UPRVUNL	12-Feb-2017	02-SEP-17	202
48	MAITHON RB TPP	2	525	MPL	17-Mar-2017	03-OCT-17	200

Annexure- 8.1**STATEMENT OF MEANTIME BETWEEN FAILURES OF THERMAL UNITS OUTAGES DURING 2017-18****Number of Units : 633****Capacity(in MW):194336.5**

RANGE	660-800	490-600	300-360	250-270	210-210	195-200	100-150	25-99	TOTAL
Above 270 Days	0	2	0	0	0	0	0	0	2
>180 and Up to 270 Days	0	4	0	0	0	0	1	0	5
>120 and Up to 180 Days	0	2	1	4	3	3	0	1	14
>90 and Up to 120 Days	4	3	2	2	6	2	0	0	19
>80 and Up to 90 Days	3	3	1	2	1	1	0	0	11
>70 and Up to 80 Days	2	4	2	1	3	2	2	0	16
>60 and Up to 70 Days	6	9	3	2	4	0	2	1	27
>50 and Up to 60 Days	5	7	5	2	10	2	4	2	37
>40 and Up to 50 Days	4	12	7	8	9	2	9	7	58
>30 and Up to 40 Days	8	22	2	9	11	2	5	4	63
>25 and Up to 30 Days	5	8	3	4	11	1	5	2	39
>20 and Up to 25 Days	5	19	5	6	10	1	10	5	61
>15 and Up to 20 Days	7	18	4	6	26	2	6	1	70
>10 and Up to 15 Days	7	10	4	15	21	5	4	8	74
>5 and Up to 10 Days	5	10	0	9	17	2	8	17	68
>3 and Up to 5 Days	3	1	0	1	1	0	1	5	12
>1 and Up to 3 Days	2	0	0	1	1	1	4	4	13
Up to 1 Day	3	2	1	1	3	0	13	21	44
Total	69	136	40	73	137	26	74	78	633

Northern Region**Number of Units : 153****Capacity(in MW):42303**

RANGE	660-800	490-600	300-360	250-270	210-210	195-200	100-150	25-99	TOTAL
Above 270 Days	0	0	0	0	0	0	0	0	0
>180 and Up to 270 Days	0	0	0	0	0	0	0	0	0
>120 and Up to 180 Days	0	1	0	0	1	3	0	0	5
>90 and Up to 120 Days	0	1	0	0	2	0	0	0	3
>80 and Up to 90 Days	0	0	0	0	1	1	0	0	2
>70 and Up to 80 Days	0	2	0	0	1	1	1	0	5
>60 and Up to 70 Days	0	3	0	0	1	0	0	0	4
>50 and Up to 60 Days	1	1	1	0	3	0	1	0	7
>40 and Up to 50 Days	0	3	2	2	3	0	7	0	17
>30 and Up to 40 Days	1	4	1	2	0	1	2	0	11
>25 and Up to 30 Days	1	0	0	0	2	1	1	0	5
>20 and Up to 25 Days	5	3	2	0	1	0	4	0	15
>15 and Up to 20 Days	2	1	0	1	2	2	1	0	9
>10 and Up to 15 Days	4	3	0	9	2	2	0	0	20
>5 and Up to 10 Days	2	1	0	5	9	0	4	9	30
>3 and Up to 5 Days	1	1	0	1	1	0	0	3	7
>1 and Up to 3 Days	0	0	0	0	0	1	1	0	2
Up to 1 Day	0	0	0	0	0	0	3	8	11
Total	17	24	6	20	29	12	25	20	153

Western Region**Number of Units : 233****Capacity(in MW):79111**

RANGE	660-800	490-600	300-360	250-270	210-210	195-200	100-150	25-99	TOTAL
Above 270 Days	0	2	0	0	0	0	0	0	2
>180 and up to 270 Days	0	2	0	0	0	0	0	0	2
>120 and up to 180 Days	0	1	1	3	1	0	0	1	7
>90 and up to 120 Days	4	1	1	1	4	1	0	0	12
>80 and up to 90 Days	3	2	0	2	0	0	0	0	7
>70 and up to 80 Days	2	1	2	0	1	0	0	0	6
>60 and up to 70 Days	5	5	3	1	0	0	0	0	14
>50 and up to 60 Days	4	1	2	1	2	1	0	0	11
>40 and up to 50 Days	4	1	3	3	0	1	1	0	13
>30 and up to 40 Days	4	4	1	6	3	0	2	0	20
>25 and up to 30 Days	1	5	1	1	0	0	3	2	13
>20 and up to 25 Days	0	8	3	5	4	0	2	1	23
>15 and up to 20 Days	4	8	2	2	9	0	5	0	30
>10 and up to 15 Days	2	4	4	2	13	3	2	5	35
>5 and up to 10 Days	2	4	0	2	2	0	0	4	14
>3 and up to 5 Days	0	0	0	0	0	0	0	1	1
>1 and up to 3 Days	2	0	0	1	1	0	0	0	4
up to 1 Day	2	1	0	1	3	0	3	9	19
Total	39	50	23	31	43	6	18	23	233

Southern Region**Number of Units : 122****Capacity(in MW):39712.5**

RANGE	660-800	490-600	300-360	250-270	210-210	195-200	100-150	25-99	TOTAL
Above 270 Days	0	0	0	0	0	0	0	0	0
>180 and Up to 270 Days	0	0	0	0	0	0	0	0	0
>120 and Up to 180 Days	0	0	0	0	0	0	0	0	0
>90 and Up to 120 Days	0	0	1	0	0	1	0	0	2
>80 and Up to 90 Days	0	0	0	0	0	0	0	0	0
>70 and Up to 80 Days	0	1	0	0	1	0	1	0	3
>60 and Up to 70 Days	0	1	0	0	1	0	1	0	3
>50 and Up to 60 Days	0	2	0	0	2	0	3	0	7
>40 and Up to 50 Days	0	4	1	2	4	1	0	5	17
>30 and Up to 40 Days	3	9	0	0	6	1	0	3	22
>25 and Up to 30 Days	2	0	0	1	7	0	1	0	11
>20 and Up to 25 Days	0	6	0	0	4	0	4	2	16
>15 and Up to 20 Days	1	7	0	0	8	0	0	0	16
>10 and Up to 15 Days	1	1	0	2	5	0	0	1	10
>5 and Up to 10 Days	1	1	0	1	1	0	3	0	7
>3 and Up to 5 Days	2	0	0	0	0	0	2	0	4
>1 and Up to 3 Days	0	0	0	0	0	0	2	0	2
Up to 1 Day	1	1	0	0	0	0	0	0	2
Total	11	33	2	6	39	3	17	11	122

Eastern Region**Number of Units : 121****Capacity(in MW):32650**

RANGE	660-800	490-600	300-360	250-270	210-210	195-200	100-150	25-99	TOTAL
Above 270 Days	0	0	0	0	0	0	0	0	0
>180 and up to 270 Days	0	2	0	0	0	0	1	0	3
>120 and up to 180 Days	0	0	0	1	1	0	0	0	2
>90 and up to 120 Days	0	1	0	1	0	0	0	0	2
>80 and up to 90 Days	0	1	1	0	0	0	0	0	2
>70 and up to 80 Days	0	0	0	1	0	1	0	0	2
>60 and up to 70 Days	1	0	0	1	2	0	1	1	6
>50 and up to 60 Days	0	3	2	1	3	1	0	2	12
>40 and up to 50 Days	0	4	1	1	2	0	1	2	11
>30 and up to 40 Days	0	5	0	1	2	0	1	1	10
>25 and up to 30 Days	1	3	2	2	2	0	0	0	10
>20 and up to 25 Days	0	2	0	1	1	1	0	2	7
>15 and up to 20 Days	0	2	2	2	7	0	0	1	14
>10 and up to 15 Days	0	2	0	1	1	0	2	2	8
>5 and up to 10 Days	0	4	0	1	5	2	1	4	17
>3 and up to 5 Days	0	0	0	0	0	0	1	1	2
>1 and up to 3 Days	0	0	0	0	0	0	1	4	5
up to 1 Day	0	0	1	0	0	0	5	2	8
Total	2	29	9	14	26	5	14	22	121

North East Region**Number of Units : 4****Capacity(in MW):560**

RANGE	660-800	490-600	300-360	250-270	210-210	195-200	100-150	25-99	TOTAL
Above 270 Days	0	0	0	0	0	0	0	0	0
>180 and Up to 270 Days	0	0	0	0	0	0	0	0	0
>120 and Up to 180 Days	0	0	0	0	0	0	0	0	0
>90 and Up to 120 Days	0	0	0	0	0	0	0	0	0
>80 and Up to 90 Days	0	0	0	0	0	0	0	0	0
>70 and Up to 80 Days	0	0	0	0	0	0	0	0	0
>60 and Up to 70 Days	0	0	0	0	0	0	0	0	0
>50 and Up to 60 Days	0	0	0	0	0	0	0	0	0
>40 and Up to 50 Days	0	0	0	0	0	0	0	0	0
>30 and Up to 40 Days	0	0	0	0	0	0	0	0	0
>25 and Up to 30 Days	0	0	0	0	0	0	0	0	0
>20 and Up to 25 Days	0	0	0	0	0	0	0	0	0
>15 and Up to 20 Days	0	0	0	1	0	0	0	0	0
>10 and Up to 15 Days	0	0	0	1	0	0	0	0	1
>5 and Up to 10 Days	0	0	0	0	0	0	0	0	1
>3 and Up to 5 Days	0	0	0	0	0	0	0	0	0
>1 and Up to 3 Days	0	0	0	0	0	0	0	0	0
Up to 1 Day	0	0	0	0	0	0	0	2	2
Total	0	0	0	2	0	0	0	2	4

SECTION-9 FUEL SUPPLY TO POWER STATIONS DURING 2017-18

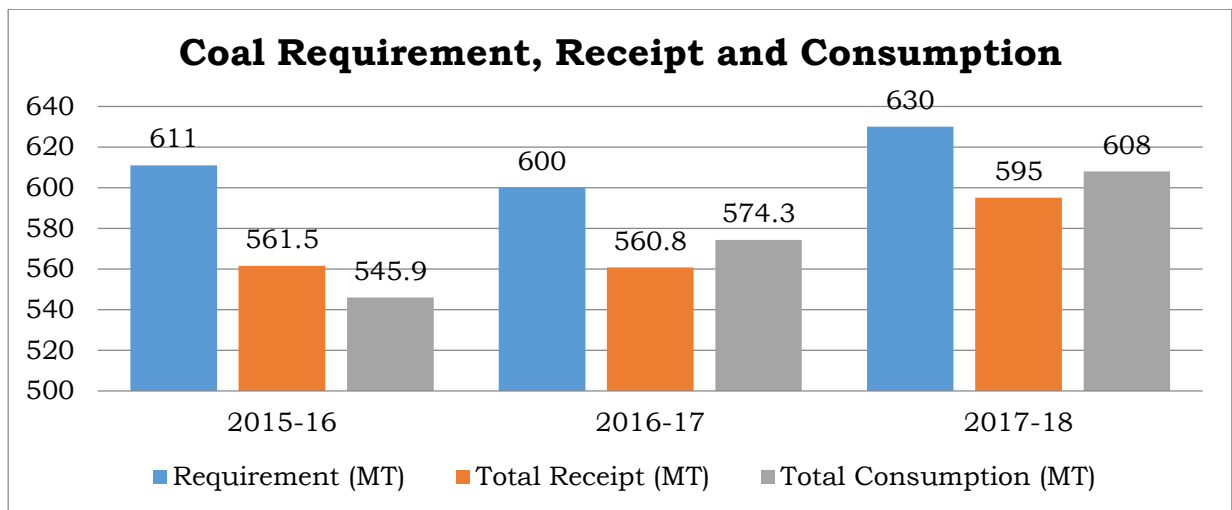
During the year 2017-18, coal supply of **156** number to coal based thermal power plants, having a total capacity of about **184463 MW** was monitored in CEA. The total coal consumption in these stations was around **608 Million Tonnes**. Further, the gas supply of **62** numbers of gas based power plants having capacity of about **23842 MW** was monitored during the year 2017-18. The total gas consumed by these gas based power plants was about **30.72 MMSCMD** (Million Metric Standard Cubic Meter per Day).

9.1 COMPARATIVE COAL SUPPLY POSITION DURING THE YEAR 2015-16, 2016-17 & 2017-18

A Summary of coal receipt and consumption at various coal based power stations monitored by CEA during the last 3 years is as under:

(Figs. in Million Tonnes)

STATUS	YEAR		
	2015-16	2016-17	2017-18
Demand/Requirement	611	600	630
Receipt (Indigenous coal)	480.9	494.7	538.6
Receipt (Imported coal)	80.6	66.1	56.4
Total Receipt (including Imported Coal)	561.5	560.8	595.0
Consumption (Including Imported coal)	545.9	574.3	608



The plant-wise coal consumption during 2017-18 is given at Annexure 9.1.

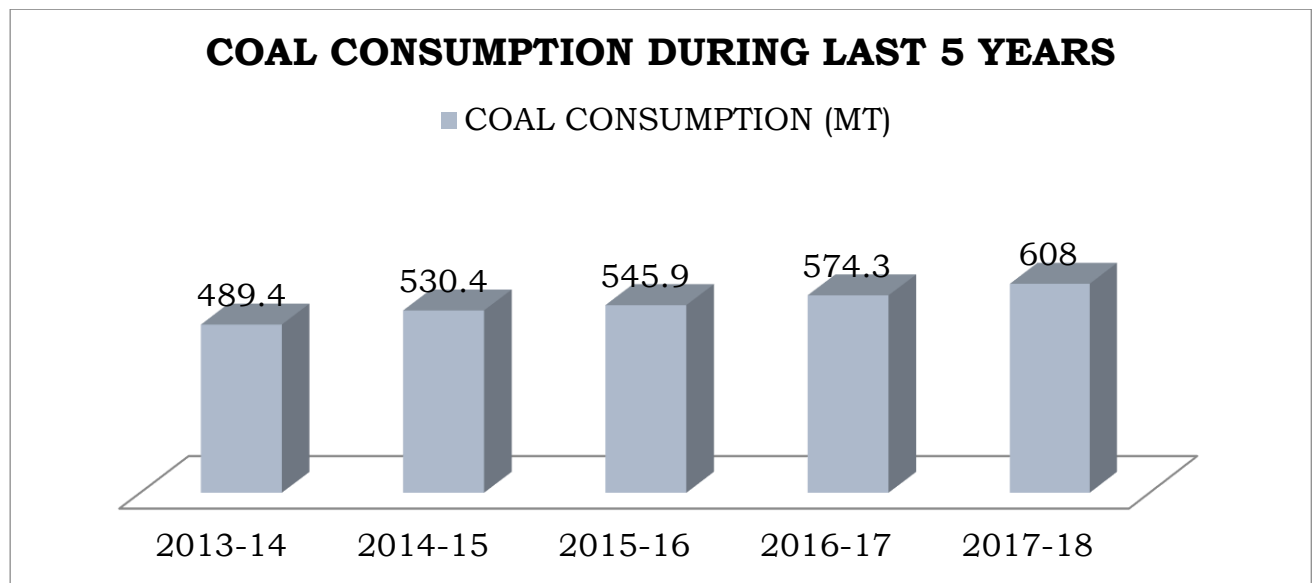
9.2 COAL CONSUMPTION TREND

All India coal consumption in coal based thermal power stations monitored by CEA during 2017-18 was about 608 Million Tonnes against 574.3 Million Tonnes during 2016-17.

Coal consumption from 2013-14 to 2017-18 is as under:

YEAR	CONSUMPTION* (Million Tonnes)
2013-14	489.4
2014-15	530.4
2015-16	545.9
2016-17	574.3
2017-18	608.0

(*Total coal consumption by the stations monitored by CEA.)



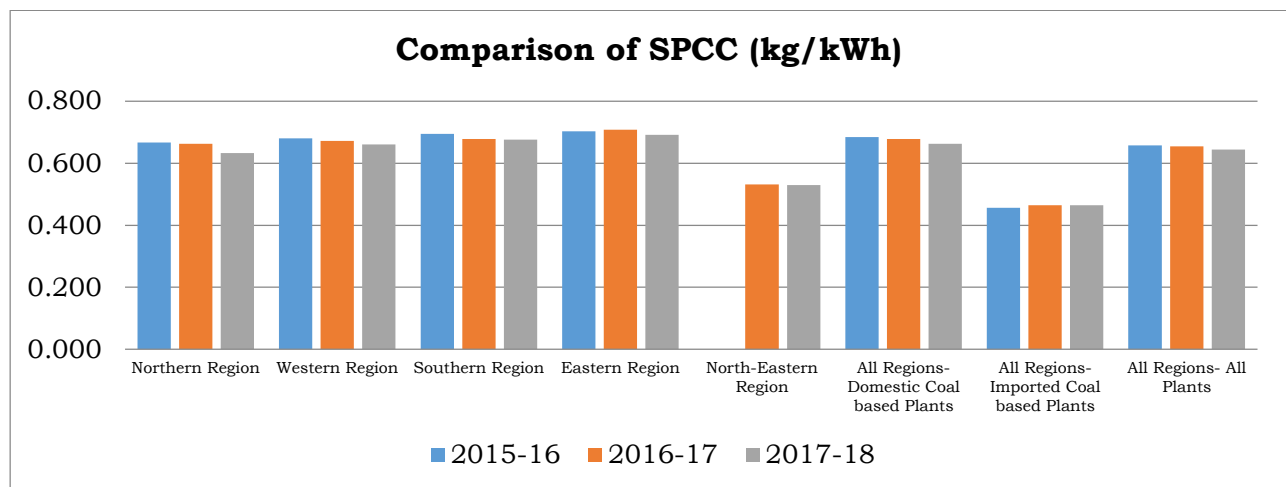
9.3 SPECIFIC COAL CONSUMPTION (kg/kWh)

Specific coal consumption (SPCC) of power plants monitored by CEA during the year 2017-18 was about 0.644 kg/kWh as compared to 0.654 kg/kWh during the year 2016-17. The region-wise details of SPCC for last three years is given as under:

Specific Coal Consumption (kg/kWh)

REGION	2015-16	2016-17	2017-18

Northern Region	0.667	0.663	0.632
Western Region	0.680	0.671	0.660
Southern Region	0.695	0.678	0.676
Eastern Region	0.703	0.708	0.691
North-Eastern Region	-	0.531	0.530
All Regions-Domestic Coal based Plants	0.684	0.678	0.662
All Regions-Imported Coal based Plants	0.456	0.465	0.464
All Regions- All Plants	0.657	0.654	0.644



Station wise details of SPCC for the last three years is given in Annexure-9.2.

9.5 COAL QUALITY ISSUES

In order to address quality concern of the coal supplied to power plants, it has been decided that coal samples shall be collected and prepared by a Single Third Party Agency appointed by power utilities and coal companies. The power utilities and coal companies shall make necessary funding arrangement for third party sampling on equal sharing basis.

9.6 GAS SUPPLY TO GAS BASED POWER STATIONS

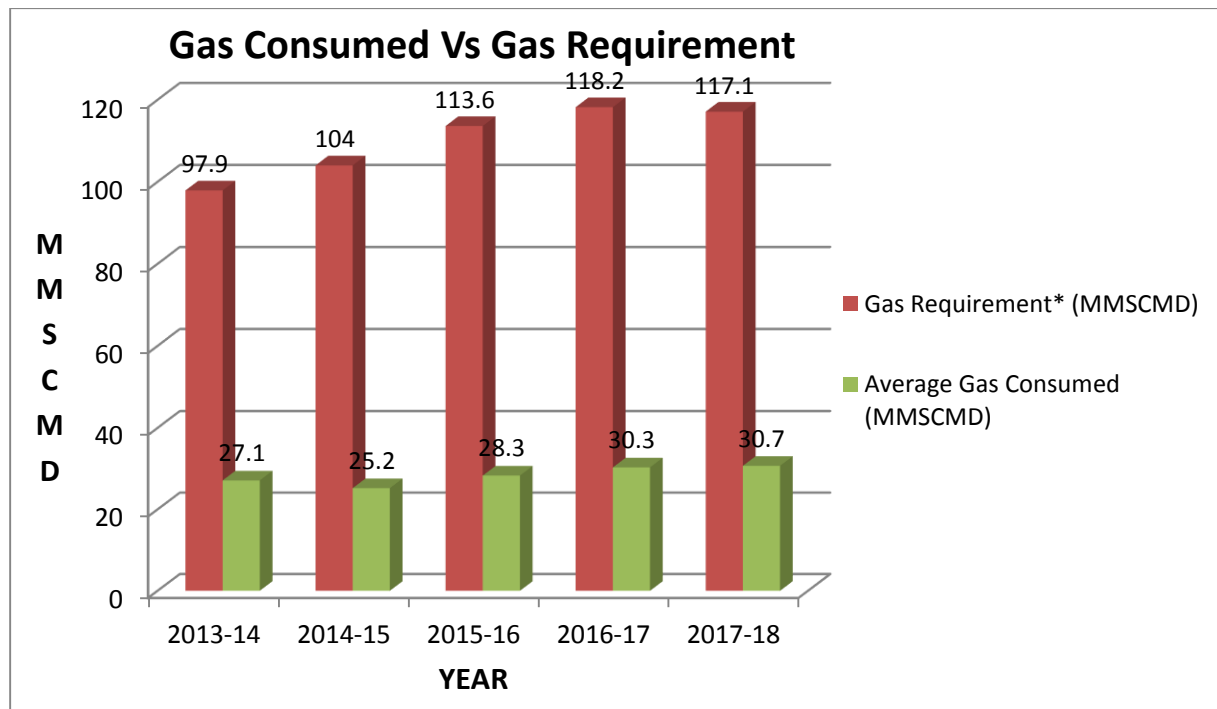
CEA monitored supply of gas to 62 gas based power stations totalling to a capacity of about 23842.2 MW (excluding liquid fuel based power plants). The details of gas consumed by the gas based power plants for the last five years is as under:

Gas Requirement and Supply Position

Years	Capacity (MW)	Gas Requirement* (MMSCMD)	Average Gas Consumed (MMSCMD)
2013-14	20385.3	97.9	27.1
2014-15	21665.6	104.0	25.2
2015-16	23075.6	113.6	28.3
2016-17	24037.2	118.2	30.3
2017-18	23842.2	117.1	30.7

MMSCMD – Million Standard Cubic Metres per Day.

*Gas requirement at 90% PLF.



The plant-wise detail of gas supplied/consumed for the year 2017-18 is at Annexure 9.3.

Annexure 9.1			
Plant wise Coal Consumption during 2017-18			
Sl.No.	Name of TPS	Capacity	Total
I	TPS Designed on Indegenous Coal		
NORTHERN REGION			
DELHI			
1	BADARPUR TPS	705	1129
2	RAJGHAT TPS	135	0
	Sub Total	840.0	1129.0
HARYANA			
3	PANIPAT TPS	920	1714
4	YAMUNA NAGAR TPS	600	2292
5	RAJIV GANDHI TPS	1200	3216
6	INDIRA GANDHI STPP	1500	5073
7	MAHATMA GANDHI TPS	1320	4400
	Sub Total	5540.0	16695.0
PUNJAB			
8	GND TPS(BHATINDA)	440	174
9	GH TPS (LEH.MOH.)	920	1795
10	ROPAR TPS	1260	1522
11	RAJPURA TPP	1400	4714
12	TALWANDI SABO TPP	1980	5830
13	GOINDWAL SAHIB TPP	540	931
	Sub Total	6540.0	14966.0
RAJASTHAN			
14	KOTA TPS	1240	4935
15	SURATGARH TPS	1500	3059
16	CHHABRA TPP	1660	3736
17	KAWAI TPS	1320	2562
18	KALISINDH TPS	1200	3788
	Sub Total	6920.0	18080.0
UTTAR PRADESH			
19	ANPARA TPS	2630	11297
20	HARDUAGANJ TPS	605	2354
21	OBRA TPS	1188	3283
22	PANKI TPS	0	305
23	PARICHHA TPS	1140	4324
24	TANDA TPS	440	2108
25	UNCHAHAR TPS	1550	4706
26	RIHAND STPS	3000	14336
27	SINGRAULI STPS	2000	10033
28	DADRI (NCTPP)	1820	6568
29	ROSA TPP Ph-I	1200	4848
30	ANPARA C TPS	1200	5051
31	BARKHERA TPS	90	154
32	MAQSOODPUR TPS	90	138
33	KHAMBARKHERA TPS	90	147
34	KUNDARKI TPS	90	145
35	UTRAULA TPS	90	150
36	PRAYAGRAJ TPP	1980	3583

Annexure 9.1			
Plant wise Coal Consumption during 2017-18			
Sl.No.	Name of TPS	Capacity	Total
37	LALITPUR TPS	1980	5213
	Sub Total	21183.0	78743.0
	TOTAL N. R.	41023.0	129613.0
WESTERN REGION			
CHHATTISGARH			
38	DSPM TPS	500	2549
39	KORBA-II	440	1730
40	KORBA-WEST TPS	1340	6505
41	KORBA STPS	2600	13111
42	PATHADI TPP	600	2605
43	BHILAI TPS	500	2322
44	SIPAT STPS	2980	14055
45	AKALTARA TPS	1800	3623
46	OP JINDAL TPS	1000	3175
47	TAMNAR TPP	2400	5132
48	BARADARHA TPS	1200	4649
49	BALCO TPS	600	1640
50	MARWA TPS	1000	3726
51	AVANTHA BHANDAR	600	433
52	BANDAKHAR TPP	300	1688
53	NAWAPARA TPP	600	2204
54	RAIKHEDA TPP	1370	877
55	UCHPINDA TPP	1080	186
	Sub Total	20910.0	70210.0
GUJARAT			
56	SABARMATI (C STATION)	422	1532
57	GANDHI NAGAR TPS	630	2493
58	UKAI TPS	1110	4285
59	WANAKBORI TPS	1470	5077
	Sub Total	3632.0	13387.0
MADHYAPRADESH			
60	AMARKANTAK EXT TPS	210	957
61	SANJAY GANDHI TPS	1340	5143
62	SATPURA TPS	1330	3561
63	VINDHYACHAL STPS	4760	24489
64	BINA TPS	500	1597
65	SASAN UMTTP	3960	17983
66	SHRI SINGHAJI TPP	1200	2604
67	ANUPPUR TPP	1200	4175
68	NIGRI TPP	1320	4437
69	MAHAN TPP	600	1921
70	SEIONI TPP	600	1055
	Sub Total	17020.0	67922.0
MAHARASHTRA			
71	BHUSAWAL TPS	1210	5106
72	CHANDRAPUR(MAHARASHTRA) STPS	2920	10657
73	KORADI TPS	2400	6895
74	KHAPARKHEDA TPS	1340	5235
75	NASIK TPS	630	2288

Annexure 9.1			
Plant wise Coal Consumption during 2017-18			
Sl.No.	Name of TPS	Capacity	Total
76	PARLI TPS	1170	2231
77	PARAS TPS	500	2293
78	DAHANU TPS	500	2170
79	WARDHA WARORA TPP	540	786
80	TIRORA TPS	3300	11007
81	AMARAVATI TPS	1350	2837
82	GMR WARORA TPS	600	2274
83	MAUDA TPS	2320	5655
84	BUTIBORI TPP	600	2065
85	DHARIWAL TPP	600	1319
86	SOLAPUR	660	776
	Sub Total	20640.0	63594.0
	TOTAL W.R.	62202.0	215113.0
SOUTHERN REGION			
ANDHRA PRADESH			
87	Dr. N.TATA RAO TPS	1760	8536
88	RAYALASEEMA TPS	1650	4992
89	SIMHADRI	2000	8642
90	DAMODARAM SANJEEVAIAH TPS	1600	2921
91	PAINAMPURAM TPP	1320	5281
92	VIZAG TPP	1040	2618
93	SGPL TPP	1320	4183
	Sub Total	10690.0	37173.0
KARNATAKA			
94	RAICHUR TPS	1720	6932
95	BELLARY TPS	1700	2460
96	KUDGI STPP	2400	2124
97	YERMARUS TPP	1600	559
	Sub Total	7420.0	12075.0
TAMIL NADU			
98	METTUR TPS	840	3680
99	METTUR TPS - II	600	1577
100	TUTICORIN TPS	1050	4060
101	NORTH CHENNAI TPS	1830	7469
102	VALLUR TPP	1500	5221
103	TUTICORIN (JV) TPP	1000	3529
	Sub Total	6820.0	25536.0
TELANGANA			
104	KOTHAGUDEM TPS	720	4077
105	RAMAGUNDEM - B TPS	62.5	339
106	RAMAGUNDEM STPS	2600	11906
107	KAKATIYA TPS	1100	4561
108	KOTHAGUDEM TPS (NEW)	1000	5321
109	SINGARENI TPP	1200	5743
	Sub Total	6682.5	31947.0
	TOTAL S. R.	31612.5	106731.0
EASTERN REGION			
BIHAR			
110	BARAUNI TPS	710	0

Annexure 9.1			
Plant wise Coal Consumption during 2017-18			
Sl.No.	Name of TPS	Capacity	Total
111	MUZAFFARPUR TPS	610	1401
112	KAHALGAON TPS	2340	12485
113	BARH II	1320	5995
114	NABI NAGAR TPP	500	599
	Sub Total	5480.0	20480.0
	JHARKHAND		
115	TENUGHAT TPS	420	1413
116	BOKARO `B` TPS	210	2038
117	CHANDRAPURA(DVC) TPS	630	2417
118	MAITHON RB TPP	1050	4218
119	KODARMA TPP	1000	3493
120	MAHADEV PRASAD STPP	540	1961
121	JOJOBERA TPS	240	782
	Sub Total	4090.0	16322.0
	ORISSA		
122	TALCHER (OLD) TPS	460	3150
123	TALCHER STPS	3000	18299
124	IB VALLEY TPS	420	2588
125	STERLITE TPP	1200	1392
126	DERANG TPP	1200	2972
127	KAMALANGA TPS	1050	3926
	Sub Total	7330.0	32327.0
	WEST BENGAL		
128	DURGAPUR TPS	210	656
129	MEJIA TPS	2340	7933
130	BANDEL TPS	450	1421
131	SAGARDIGHI TPS	1600	3918
132	SANTALDIH TPS	500	1828
133	KOLAGHAT TPS	1260	3747
134	BAKRESWAR TPS	1050	4336
135	TITAGARH TPS	240	0
136	SOUTHERN REPL. TPS	135	211
137	BUDGE BUDGE TPS	750	3586
138	D.P.L. TPS	660	1585
139	FARAKKA STPS	2100	8803
140	DURGAPUR STEEL TPS	1000	4088
141	HALDIA TPP	600	3065
142	RAGHUNATHPUR TPP	1200	1422
	Sub Total	14095.0	46599.0
	TOTAL E.R.	30995.0	115728.0
	NORTH-EASTERN REGION		
	ASSAM		
143	BONGAIGAON TPP	500	918.0
	Sub Total	500.0	918.0
	TOTAL N.E.R.	500.0	918.0
	Total All India (Indigenous Coal	166332.5	568103.0
II	Thermal Power Stations Designed on imported coal		

Annexure 9.1			
Plant wise Coal Consumption during 2017-18			
Sl.No.	Name of TPS	Capacity	Total
1	SIKKA REP. TPS	500	1335
2	MUNDRA TPS	4620	11196
3	MUNDRA UMTTP	4000	10799
4	SALAYA TPP	1200	1286
5	JSW RATNAGIRI TPP	1200	2862
6	TROMBAY TPS	1250	2452
7	SIMHAPURI TPS	600	13
8	THAMMINAPATNAM TPS	300	396
9	TORANGALLU TPS(SBU-I)	260	354
10	TORANGALLU TPS(SBU-II)	600	1044
11	UDUPI TPP	1200	2613
12	MUTHIARA TPP	1200	2430
13	ITPCL TPP	1200	3114
	Total All India (Imported Coal	18130.0	39894.0
	ALL INDIA TOTAL	184462.5	607997.0

Annexure-9.2					
Specific Coal Consumption of the Plants during 2015-16, 2016-17 and 2017-18					
Sr. No.	Name of TPS	Capacity (MW) as on 31.03.2018	SPCC (kg /kWh)		
			2015-16	2016-17	2017-18
I TPS Designed on Indigenous Coal					
NORTHERN REGION					
DELHI					
1	BADARPUR TPS	705	0.765	0.718	0.725
2	RAJGHAT TPS	135	0.901	0.000	-
	Sub Total	840.0			
HARYANA					
3	PANIPAT TPS	920	0.685	0.655	0.664
4	YAMUNA NAGAR TPS	600	0.644	0.671	0.665
5	RAJIV GANDHI TPS	1200	0.670	0.688	0.687
6	INDIRA GANDHI STPP	1500	0.720	0.756	0.656
7	MAHATMA GANDHI TPS	1320	0.647	0.635	0.601
	Sub Total	5540.0			
PUNJAB					
8	GND TPS(BHATINDA)	440	0.673	0.634	-
9	GH TPS (LEH.MOH.)	920	0.598	0.666	0.610
10	ROPAR TPS	1260	0.723	0.683	0.669
11	RAJPURA TPP	1400	0.534	0.517	0.517
12	TALWANDI SABO TPP	1980	0.667	0.708	0.681
13	GOINDWAL SAHIB TPP	540	-	-	0.629
	Sub Total	6540.0			
RAJASTHAN					
14	KOTA TPS	1240	0.667	0.651	0.684
15	SURATGARH TPS	1500	0.632	0.701	0.616
16	CHHABRA TPP	1660	0.633	0.612	-
17	KAWAI TPS	1320	-	0.491	0.506
18	KALISINDH TPS	1200	-	0.566	0.566
	Sub Total	6920.0			
UTTAR PRADESH					
19	ANPARA TPS	2630	0.756	0.721	0.680
20	HARDUAGANJ TPS	605	0.685	0.661	0.611
21	OBRA TPS	1188	0.872	0.847	0.761
22	PANKI TPS	0	0.933	0.965	0.912
23	PARICHHA TPS	1140	0.789	0.739	0.673
24	TANDA TPS	440	0.741	0.705	0.643
25	UNCHAHR TPS	1550	0.676	0.683	0.664
26	RIHAND STPS	3000	0.658	0.654	0.609
27	SINGRAULI STPS	2000	0.727	0.687	0.679
28	DADRI (NCTPP)	1820	0.647	0.628	0.661
29	ROSA TPP Ph-I	1200	0.659	0.642	0.628
30	ANPARA C TPS	1200	0.642	0.665	0.602
31	BARKHERA TPS	90	0.896	0.839	0.809
32	MAQSODPUR TPS	90	0.899	0.846	0.824
33	KHAMBARKHERA TPS	90	0.901	0.834	0.810

Annexure-9.2					
Specific Coal Consumption of the Plants during 2015-16, 2016-17 and 2017-18					
Sr. No.	Name of TPS	Capacity (MW) as on 31.03.2018	SPCC (kg /kWh)		
			2015-16	2016-17	2017-18
34	KUNDARKI TPS	90	0.849	0.853	0.755
35	UTRAULA TPS	90	0.865	0.870	0.777
36	PRAYAGRAJ TPP	1980	-	0.652	0.636
37	LALITPUR TPS	1980	-	0.654	0.609
	Sub Total	21183.0			
	TOTAL N. R.	41023.0	0.667	0.663	0.632
WESTERN REGION					
CHHATTISGARH					
38	DSPM TPS	500	0.714	0.678	0.630
39	KORBA-II	440	1.038	0.971	0.968
40	KORBA-WEST TPS	1340	0.771	0.768	0.701
41	KORBA STPS	2600	0.708	0.655	0.640
42	PATHADI TPP	600	0.686	0.664	0.629
43	BHILAI TPS	500	0.687	0.679	0.599
44	SIPAT STPS	2980	0.629	0.604	0.611
45	AKALTARA TPS	1800	0.615	0.558	0.624
46	OP JINDAL TPS	1000	0.772	0.782	0.752
47	TAMNAR TPP	2400	0.711	0.996	0.768
48	BARADARHA TPS	1200	-	0.758	0.711
49	BALCO TPS	600	-	0.653	0.709
50	MARWA TPS	1000	-	0.760	0.651
51	AVANTHA BHANDAR	600	-	0.751	0.757
52	BANDAKHAR TPP	300	-	0.677	0.759
53	NAWAPARA TPP	600	-	0.721	0.804
54	RAIKHEDA TPP	1370	-		0.641
55	UCHPINDA TPP	1080	-		0.641
	Sub Total	20910.0			
GUJARAT					
56	SABARMATI (C STATION)	422	0.569	0.646	0.581
57	GANDHI NAGAR TPS	630	0.640	0.633	0.666
58	UKAI TPS	1110	0.672	0.661	0.633
59	WANAKBORI TPS	1470	0.687	0.668	0.659
	Sub Total	3632.0			
MADHYAPRADESH					
60	AMARKANTAK EXT TPS	210	0.593	0.597	0.554
61	SANJAY GANDHI TPS	1340	0.713	0.723	0.682
62	SATPURA TPS	1330	0.822	0.737	0.709
63	VINDHYACHAL STPS	4760	0.688	0.677	0.653
64	BINA TPS	500	0.673	0.650	0.648
65	SASAN UMTTPP	3960	0.533	0.576	0.566
66	SHRI SINGHAJI TPP	1200	0.710	0.648	0.659
67	ANUPPUR TPP	1200	0.545	0.688	0.671
68	NIGRI TPP	1320	-	0.612	0.577
69	MAHAN TPP	600	-		0.658
70	SEIONI TPP	600	-		0.725

Annexure-9.2					
Specific Coal Consumption of the Plants during 2015-16, 2016-17 and 2017-18					
Sr. No.	Name of TPS	Capacity (MW) as on 31.03.2018	SPCC (kg /kWh)		
			2015-16	2016-17	2017-18
	Sub Total	17020.0			
	MAHARASHTRA				
71	BHUSAWAL TPS	1210	0.754	0.711	0.771
72	CHANDRAPUR(MAHARASHTRA) STPS	2920	0.842	0.774	0.720
73	KORADI TPS	2400	0.687	0.663	0.735
74	KHAPARKHEDA TPS	1340	0.848	0.772	0.847
75	NASIK TPS	630	0.783	0.753	0.792
76	PARLI TPS	1170	0.831	0.651	0.727
77	PARAS TPS	500	0.793	0.705	0.736
78	DAHANU TPS	500	0.567	0.575	0.614
79	WARDHA WARORA TPP	540	0.662	0.677	0.696
80	TIRORA TPS	3300	0.593	0.627	0.626
81	AMARAVATI TPS	1350	0.602	0.597	0.595
82	GMR WARORA TPS	600	0.626	0.611	0.607
83	MAUDA TPS	2320	0.707	0.681	0.709
84	BUTIBORI TPP	600	0.601	0.617	0.625
85	DHARIWAL TPP	600	-	0.640	-
86	SOLAPUR	660	-	-	-
	Sub Total	20640.0			
	TOTAL W.R.	62202.0	0.680	0.671	0.660
	SOUTHERN REGION				
	ANDHRA PRADESH				
87	Dr. N.TATA RAO TPS	1760	0.764	0.765	0.789
88	RAYALASEEMA TPS	1650	0.732	0.705	0.721
89	SIMHADRI	2000	0.693	0.671	0.734
90	DAMODARAM SANJEEVAIAH TPS	1600	-	0.579	0.591
91	PAINAMPURAM TPP	1320	-	0.522	0.537
92	VIZAG TPP	1040	-	0.766	0.787
93	SGPL TPP	1320	-	-	0.509
	Sub Total	10690.0			
	KARNATAKA				
94	RAICHUR TPS	1720	0.655	0.675	0.640
95	BELLARY TPS	1700	0.619	0.669	0.612
96	KUDGI STPP	2400	-		0.590
97	YERMARUS TPP	1600	-		0.647
	Sub Total	7420.0			
	TAMIL NADU				
98	METTUR TPS	840	0.651	0.693	0.695
99	METTUR TPS - II	600	-	0.693	0.695
100	TUTICORIN TPS	1050	0.737	0.734	0.774
101	NORTH CHENNAI TPS	1830	0.633	0.702	0.742
102	VALLUR TPP	1500	0.669	0.673	0.728
103	TUTICORIN (JV) TPP	1000	0.472	0.558	0.652
	Sub Total	6820.0			

Annexure-9.2					
Specific Coal Consumption of the Plants during 2015-16, 2016-17 and 2017-18					
Sr. No.	Name of TPS	Capacity (MW) as on 31.03.2018	SPCC (kg /kWh)		
			2015-16	2016-17	2017-18
	TELANGANA				
104	KOTHAGUDEM TPS	720	0.843	0.878	0.854
105	RAMAGUNDEM - B TPS	62.5	0.689	0.725	0.714
106	RAMAGUNDEM STPS	2600	0.653	0.642	0.631
107	KAKATIYA TPS	1100	0.640	0.626	0.617
108	KOTHAGUDEM TPS (NEW)	1000	-	0.878	0.822
109	SINGARENI TPP	1200	-	-	0.600
	Sub Total	6682.5			
	TOTAL S. R.	31612.5	0.695	0.678	0.676
	EASTERN REGION				
	BIHAR				
110	BARAUNI TPS	710	-	-	-
111	MUZAFFARPUR TPS	610	0.761	0.828	0.800
112	KAHALGAON TPS	2340	0.835	0.829	0.765
113	BARH II	1320	0.582	0.667	0.647
114	NABI NAGAR TPP	500	-	s	0.663
	Sub Total	5480.0			
	JHARKHAND				
115	TENUGHAT TPS	420	0.754	0.755	0.731
116	BOKARO `B` TPS	210	0.770	0.738	0.583
117	CHANDRAPURA(DVC) TPS	630	0.734	0.650	0.593
118	MAITHON RB TPP	1050	0.560	0.579	0.574
119	KODARMA TPP	1000	0.654	0.611	0.591
120	MAHADEV PRASAD STPP	540	0.615	0.674	0.674
121	JOJOBBERA TPS	240	-	-	0.652
	Sub Total	4090.0			
	ORISSA				
122	TALCHER (OLD) TPS	460	0.830	0.817	0.833
123	TALCHER STPS	3000	0.751	0.792	0.796
124	IB VALLEY TPS	420	0.893	0.900	0.911
125	STERLITE TPP	1200	0.693	0.748	0.754
126	DERANG TPP	1200	0.444	0.699	0.813
127	KAMALANGA TPS	1050	0.631	0.700	0.703
	Sub Total	7330.0			
	WEST BENGAL				
128	DURGAPUR TPS	210	0.827	0.741	0.693
129	MEJIA TPS	2340	0.641	0.634	0.636
130	BANDEL TPS	450	0.869	0.750	0.738
131	SAGARDIGHI TPS	1600	0.677	0.611	0.618
132	SANTALDIH TPS	500	0.671	0.617	0.621
133	KOLAGHAT TPS	1260	0.873	0.826	0.789
134	BAKRESWAR TPS	1050	0.693	0.645	0.579
135	TITAGARH TPS	240	0.719	0.717	-
136	SOUTHERN REPL. TPS	135	0.770	0.784	0.695
137	BUDGE BUDGE TPS	750	0.597	0.584	0.594

Annexure-9.2					
Specific Coal Consumption of the Plants during 2015-16, 2016-17 and 2017-18					
Sr. No.	Name of TPS	Capacity (MW) as on 31.03.2018	SPCC (kg /kWh)		
			2015-16	2016-17	2017-18
138	D.P.L. TPS	660	0.691	0.656	0.628
139	FARAKKA STPS	2100	0.693	0.683	0.659
140	DURGAPUR STEEL TPS	1000	0.688	0.645	0.629
141	HALDIA TPP	600	0.657	0.691	0.677
142	RAGHUNATHPUR TPP	1200	-	0.592	0.624
	Sub Total	14095.0			
	TOTAL E.R.	30995.0	0.703	0.708	0.691
NORTH-EASTERN REGION					
	ASSAM				
143	BONGAIGAON TPP	500	-	0.531	0.530
	Sub Total	500.0			
	TOTAL N.E.R.	500.0	-	0.531	0.530
	Total All India (Indigenous Coal Based)	166332.5	0.684	0.678	0.662
II	Thermal Power Stations Designed on imported coal	Capacity (MW) as on 31.03.2018	2015-16	2016-17	2017-18
1	SIKKA REP. TPS	500	0.610	0.519	0.530
2	MUNDRA TPS	4620	0.521	0.516	0.511
3	MUNDRA UMTTP	4000	0.386	0.393	0.407
4	SALAYA TPP	1200	0.421	0.457	0.479
5	JSW RATNAGIRI TPP	1200	0.399	0.403	0.425
6	TROMBAY TPS	1250	0.498	0.501	0.496
7	SIMHAPURI TPS	600	0.634	0.568	0.520
8	THAMMINAPATNAM TPS	300	0.687	0.692	0.674
9	TORANGALLU TPS(SBU-I)	260	0.592	-	-
10	TORANGALLU TPS(SBU-II)	600	0.240	0.441	0.447
11	UDUPI TPP	1200	0.415	0.436	0.423
12	MUTHIARA TPP	1200	-	0.623	0.622
13	ITPCL TPP	1200	-	0.510	0.544
	Total All India (Imported Coal Based)	18130.0	0.456	0.465	0.464
	ALL INDIA TOTAL	184462.5	0.657	0.654	0.644

Annexure 9.3

GAS SUPPLY/CONSUMPTION IN THE COUNTRY FOR THE YEAR 2017-18

S. No	Name of Power Station	Installed Capacity (MW)	Gen (MUs)	Gas Requirement at 90% PLF* (MMSCMD)	Gas Alloted** (MMSCMD)	GAS SUPPLIED/ CONSUMED** (MMSCMD)
(A) CENTRAL SECTOR						
1	NTPC, FARIDABAD CCPP	431.59	837.38	2.1	2.32	0.50
2	NTPC, ANTA CCPP	419.33	450.95	2.0	2.32	0.29
3	NTPC, AURAIYA CCPP	663.36	376.97	3.2	3.85	0.23
4	NTPC, DADRI CCPP	829.78	1627.81	4.0	4.01	1.01
	Sub Total (NR)	2344.06	3293.11	11.25	12.50	2.03
5	NTPC, GANDHAR(JHANORE) CCPP	657.39	3111.93	3.2	3.19	1.89
6	NTPC, KAWAS CCPP	656.2	2405.90	3.1	6.07	1.41
7	RATNAGIRI (RGPL-DHABHOL)	1967	4501.03	9.4	9.95	2.35
	Sub Total (WR)	3280.59	10018.86	15.75	19.21	5.65
8	KATHALGURI (NEEPCO)	291	1598.25	1.4	1.4	1.19
9	MONARCHAK (NEEPCO)	101	671.53	0.5	0.5	0.40
10	AGARTALA GT+ST (NEEPCO)	135	688.27	0.6	0.75	0.52
11	TRIPURA CCPP (ONGC)	726.6	4053.16	3.5	2.65	2.34
	Sub Total (NER)	1253.6	7011.21	5.98	5.30	4.45
	Total (CS)	6878.25	20323.18	32.98	37.01	12.13
(B) STATE SECTOR						
12	I.P.CCPP	270	578.80	1.3	1.55	0.42
13	PRAGATI CCGT-III	1500	2957.53	7.2	2.49	1.65
14	PRAGATI CCPP	330.4	1955.36	1.6	2.25	1.08
15	DHOLPUR CCPP	330	247.72	1.6	1.60	0.15
16	RAMGARH (RRVUNL,Jaisalmer)	273.8	1448.68	4.1	1.65	1.35
	Sub Total (NR)	2704.2	7188.09	15.77	9.54	4.65
17	PIPAVAV CCPP	702	168.06	3.4	0.00	0.11
18	DHUVARAN CCPP(GSECL)	594.72	595.78	2.9	0.94	0.31
19	HAZIRA CCPP(GSEG)	156.1	2.48	0.7	0.81	0.00
20	HAZIRA CCPP EXT	351	193.33	1.7	0.00	0.16
21	UTRAN CCPP(GSECL)	374	257.59	1.8	1.69	0.14
22	URAN CCPP (MAHAGENCO)	672	3211.70	3.2	4.90	2.15
	Sub Total (WR)	2849.82	4428.94	13.68	8.34	2.87
23	KARAIKAL CCPP (PPCL)	32.5	226.45	0.2	0.20	0.18
24	KOVIKALPAL (THIRUMAKOTTAI)	107	302.47	0.5	0.45	0.24
25	KUTTALAM (TANGEDCO)	100	349.49	0.5	0.45	0.24
26	VALUTHUR CCPP(Ramanand)	186.2	1258.51	0.9	0.89	0.74
27	GODAVARI (JEGURUPADU)	235.4	1065.12	1.0	1.31	0.66
	Sub Total (SR)	661.10	3202.04	3.04	3.30	2.05
28	LAKWA GT (ASEB, Maibella)	127.2	657.03	0.6	0.90	0.68
29	NAMRUP CCPP + ST (APGCL)	160.5	326.86	0.8	0.66	0.43

Annexure 9.3

GAS SUPPLY/CONSUMPTION IN THE COUNTRY FOR THE YEAR 2017-18

S. No	Name of Power Station	Installed Capacity (MW)	Gen (MUs)	Gas Requirement at 90% PLF* (MMSCMD)	Gas Alloted** (MMSCMD)	GAS SUPPLIED/ CONSUMED** (MMSCMD)
30	BARAMURA GT (TSECL)	58.5	178.37	0.3	0.60	0.21
31	ROKHIA GT (TSECL)	111	408.43	0.5	0.56	0.49
	Sub Total (NER)	457.2	1570.69	2.21	2.72	1.81
	Total (SS)	6672.32	16389.76	34.71	23.90	11.39
(C) PVT/IPP SECTOR						
32	RITHALA CCPP (NDPL)	108	0.00	0.5	0.40	0.00
33	GAMA CCPP	225	560.66	1.1	0.00	0.32
34	KASHIPUR CCPP(Sravanthi)	225	1062.33	1.1	0.00	0.61
	Sub Total (NR)	558.00	1622.99	2.72	0.40	0.92
35	TROMBAY CCPP (TPC)	180	1353.66	0.9	2.50	0.80
36	MANGAON CCPP	388	0.00	1.9	0.00	0.00
37	BARODA CCPP (GIPCL)	160	35.56	0.8	0.75	0.05
38	ESSAR CCPP #	300	0.00	1.4	1.17	0.00
39	PAGUTHAN CCPP (GPEC)	655	434.57	3.1	1.43	0.27
40	SUGEN CCPP (TORRENT)	1147.5	6522.62	5.5	5.35	3.25
41	UNOSUGEN CCPP	382.5	0.00	1.8	0.00	0.00
42	DGEN Mega CCPP	1200	0.00	5.8	0.00	0.00
	Sub Total (WR)	4413.00	8346.41	21.22	11.20	4.37
43	GAUTAMI CCPP	464	0.00	2.2	3.82	0.00
44	GMR - KAKINADA (Tanirvavi)	220	0.00	1.1	0.88	0.00
45	GMR-Rajamundry Energy Ltd.	768	0.00	3.7	0.00	0.00
46	GODAVARI (SPECTRUM)	208	572.40	1.0	1.04	0.36
47	JEGURUPADU CCPP (GVK) PHASE-II	220	0.00	1.0	2.22	0.00
48	KONASEEMA CCPP	445	0.00	2.1	1.78	0.00
49	KONDAPALLI EXTN CCPP .	366	0.00	1.8	1.46	0.00
50	KONDAPALLI ST-3 CCPP (LANCO)	742	0.00	3.6	0.00	0.00
51	KONDAPALLI CCPP (LANCO)	350	660.70	1.7	2.32	0.38
52	PEDDAPURAM (BSES)	220	0.00	1.1	1.09	0.00
53	VEMAGIRI CCPP	370	0.00	1.8	3.12	0.00
54	VIJESWARAN CCPP	272	1192.04	1.3	1.32	0.63
55	PCIL POWER AND HOLDINGS Ltd	30	N/A	0.1	0.12	-
56	RVK ENERGY	28	N/A	0.1	0.11	-
57	SILK ROAD SUGAR	35	N/A	0.2	0.10	-
58	LVS POWER	55	N/A	0.3	0.22	-
59	KARUPPUR CCPP (LANCO TANJORE)	119.8	480.13	0.6	0.50	0.28
60	P.NALLUR CCPP (PPN)	330.5	0.00	1.6	1.50	0.00
61	VALANTARVY CCPP	52.8	371.45	0.3	0.38	0.26
	Sub Total (SR)	5296.10	3276.72	25.37	21.98	1.92

GAS SUPPLY/CONSUMPTION IN THE COUNTRY FOR THE YEAR 2017-18

S. No	Name of Power Station	Installed Capacity (MW)	Gen (MUs)	Gas Requirement at 90% PLF* (MMSCMD)	Gas Alloted** (MMSCMD)	GAS SUPPLIED/ CONSUMED** (MMSCMD)
62	DLF ASSAM GT	24.5	-	0.1	0.10	-
	Sub Total (NER)	24.5	0.0	0.1	0.1	0.0
	Total (PVT/ IPP S)=C	10291.60	13246.12	49.42	33.68	7.21
	GRAND TOTAL=A+B+C	23842.17	49959.06	117.11	94.59	30.72

*Normative gas requirement at 90 % PLF taking GCV of gas=9000k.Cal/SCM (except for Ramgarh CCGT for which GCV is 4150 kCal/SCM), station heat rate - 2900 k.Cal/kWh for open cycle and 2000 k.Cal/kWh for combined cycle

** including E-Bid RLNG gas allotted and supplied during the year 2017-18.

MU -- Million Unit

MMSCMD - Million Standard Cubic Metres/day=MMSCM Data /(NO.OF DAYS IN A MONTH)

Out of total 515 MW capacity of Essar CCPP, 300 MW electricity is being supplied to grid & balance 215 MW is used as captive generation.

SECTION-10 GAS TURBINE PLANTS

10.1 Generation performance of 239 GT (Gas/Naphtha) based units of 65 Gas Turbine Plants (25 MW & above) aggregating to 24842.96 MW was reviewed by CEA during the year 2017-18.

10.2 DETAILS OF GAS TURBINE STATIONS AS ON 31-3-2018

Region-wise and state-wise details of gas turbine stations and units under Central, State and Private Sectors operating as on 31March 2018 are given at Annexure 10.1.

Sector-wise summary of these units are as under:

S. No.	Sector	No. of Stations	No. of units	Installed capacity
1.	Central		60	7237.91
2.	State	24	103	7048.95
3.	Pvt. Utilities+	29	76	10556.1
	Total	65	239	24842.96

Sector-wise details of gas turbine stations indicating unit-wise capacity, make, and date of synchronization / commissioning and primary fuel used are indicated in Annexure 10.2.

10.3 Performance of Gas Turbine Stations during 2017-18

Month-wise generation performance:

The prevailing gas shortage in the country led to reduction in gas-based generation and the PLF of gas based stations remained low. The PLF of gas based plants increased marginally from 22.51% (achieved in 2016-17) to 22.86% in 2017-18

Comparison of month-wise energy generation of gas based plants in the country and their average PLF during the year 2017-18 vis-à-vis 2016-17 and month wise growth rate is given below:

Month	2016-17			2017-18			2017-18 as (%) of 2016-17
	Monitored Capacity	Generatio n (BU)	PLF (%)	Monitor ed	Generati on	PLF (%)	
Apr	24454.13	3862.63	21.35	25130.88	3862.63	21.35	92.56
May	24454.13	4321.59	23.75	25130.88	4287.91	22.93	99.22
Jun	24364.13	4069.68	23.20	25130.88	4218.02	23.31	103.65
Jul	24364.13	4027.92	22.22	25130.88	4235.67	22.65	105.16
Aug	25002.63	4439.72	23.87	25130.88	4018.16	21.49	90.50
Sep	25002.63	4583.88	25.46	25130.88	4652.55	25.71	101.50
Oct	25002.63	4231.62	22.75	25095.88	5146.33	27.56	121.62
Nov	25227.63	3986.37	21.95	25095.88	4452.27	24.64	111.69
Dec	25227.63	3888.68	20.72	25095.88	4011.19	21.48	103.15
Jan	25289.88	3563.09	18.94	25095.88	3854.21	20.64	108.17
Feb	25274.88	3640.63	21.43	24842.96	3413.26	20.45	93.75
Mar	25274.88	4167.59	22.16	24842.96	4055.54	21.94	97.31
Total	25274.88	49093.95	22.51	24842.9	50207.7	22.86	102.27

Station-wise gas based generation performance:

Comparison of Station-wise energy generation from gas based plants in the country and their average PLF during the year 2017-18 with the energy generation and PLF% during the year 2016-17 is given below:

Sl. No.	Name of the Station	Capacity (MW)	GENERATION(MU)				PLF% Actual 2016-17	PLF% Actual 2017-18	% of Last Year
			Actual Generation 2016-17	2017-18		% of Target			
				Target	Actual				
CENTRAL SECTOR									
NEEPCO.									
1	AGARTALA GT	135.00	904.6	980	688.3	70.2	81.65	58.2	76.1
2	KATHALGURI CCPP	291.00	1572.6	1730	1598.2	92.4	61.69	62.7	101.6
3	MONARCHAK CCPP	101.00	172.0	0	671.5	0	19.45	75.9	390.3
	Total- NEEPCO.	527.00	2649.3	2710	2958	109.15	58.33	64.08	111.66
NTPC Ltd.									
4	ANTA CCPP	419.33	695.2	600	450.9	75.2	18.93	12.28	64.9
5	AURAIYA CCPP	663.36	535.7	802	377	47	9.22	6.49	70.4
6	DADRI CCPP	829.78	2237.0	2202	1627.8	73.9	30.77	22.39	72.8
7	FARIDABAD CCPP	431.59	1034.0	1251	837.4	66.9	27.35	22.15	81
8	GANDHAR CCPP	657.39	2358.8	1850	3111.9	168.2	40.96	54.04	131.9
9	KAWAS CCPP	656.20	1718.2	1270	2405.9	189.4	29.89	41.85	140
10	R. GANDHI CCPP	359.58	15.4	30	4.2	14	0.49	0.13	27.2
	Total- NTPC Ltd.	4017.23	8594.3	8005	8815.1	110.12	24.42	25.05	102.57
ONGC									
11	TRIPURA CCPP	726.60	4173.1	4500	4053.2	90.1	65.56	63.68	97.1
	Total- ONGC	726.60	4173.1	4500	4053.2	90.07	65.56	63.68	97.13
RGPPPL									
12	RATNAGIRI CCPP	1967.08	4557.7	4248	4501	106	23.44	23.58	98.8
	Total- RGPPPL	1967.08	4557.7	4248	4501	105.96	23.44	23.58	98.76
	Total-CENTRAL	7237.91	19974.3	19463	20327.4	104.44	30.47	31.15	101.77
STATE SECTOR									
APEPDCL									
13	JEGURUPADUCCPP	235.40	924.1	722	1065.1	147.5	44.81	51.65	115.3
APGPCL									
14	LAKWA GT	127.20	888.7	885	657	74.2	71.35	55.67	73.9
15	NAMRUP CCPP	161.25	354.9	330	326.9	99	30.15	21.79	92.1
GPPCL									
16	PIPAVAV CCPP	702.00	230.0	500	168.1	33.6	3.74	2.73	73.1
GSECL									
17	DHUVARAN CCPP	594.72	306.8	300	595.8	198.6	5.89	11.44	194.2
18	UTRAN CCPP	374.00	157.1	200	257.6	128.8	3.46	7.86	163.9
GSEGL									
19	HAZIRA CCPP	156.10	24.3	120	2.5	2.1	1.78	0.18	10.2
20	HAZIRA CCPP EXT	351.00	230.1	225	193.3	85.9	7.48	6.29	84
IPGPCL									
21	I.P.CCPP	270.00	695.5	700	578.8	82.7	29.41	24.47	83.2
JKSPDC									
22	PAMPORE GPS	175.00	0.0	0	0	0	0.00	0	0
MAHAGENCO									
23	URAN CCPP	672.00	3294.6	2500	3211.7	128.5	55.97	54.56	97.5
P&ED, Pudu.									
24	KARAIKAL CCPP	32.50	246.8	223	226.4	101.6	86.70	79.54	91.7
PRAGATI									
25	PRAGATI CCGT-III	1500.00	2047.5	2198	2957.5	134.6	15.58	22.51	144.4

Sl. No.	Name of the Station	Capacity (MW)	GENERATION(MU)				PLF%		% of Last Year
			Actual Generation 2016-17	2017-18		% of Target	Actual 2016-17	Actual 2017-18	
				Target	Actual				
26	PRAGATI CCPP	330.40	1805.4	2000	1955.4	97.8	53.04	67.56	108.3
RRVUNL									
27	DHOLPUR CCPP	330.00	124.8	201	247.7	123.2	4.32	8.57	198.4
28	RAMGARH CCPP	273.80	1425.7	1500	1448.7	96.6	59.44	60.4	101.6
TNGDCL									
29	BASIN BRIDGE	120.00		0	6.1	0	1.04	0.58	55.7
30	KOVIKALPAL CCPP	107.88	94.0	370	302.5	81.8	36.82	32.01	86.9
31	KUTTALAM CCPP	100.00	68.2	347	349.5	100.7	43.40	39.9	91.9
32	VALUTHUR CCPP	186.20	120.8	999	1258.5	126	59.27	77.16	130.2
TSECL									
33	BARAMURA GT	58.50	64.7	291.0	188.2	87.2	36.73	34.71	94.5
34	ROKHIA GT	111.00	111.8	390.0	435.9	104.7	44.83	42	93.7
WBPDCL									
35	HALDIA GT (Liq.)	40.00	0.0	0.0	0.0	0	0.00	0	0
36	KASBA GT (Liq.)	40.00	0.0	0.0	0.0	0	0.00	0	0
	Total- STATE	7048.95	112.81	13373.0	15086.4	109.93	23.94	26.49	108.68
PVT UTILITY									
TATA PCL									
37	TROMBAY CCPP	180.00	1413.1	204	177.9	153.1	89.62	85.85	95.8
	Total- PVT UTILITY	180.00	1413.1	390	408.4	153.13	89.62	85.85	95.79
IPP									
ABAN POWR									
38	KARUPPUR CCPP	119.80	479.0	491	480.1	97.8	45.64	45.75	100.2
APGPCL									
39	VIJESWARAM CCPP	272.00	691.1	600	1192	198.7	29.00	50.03	172.5
BSES(C)									
40	COCHIN CCPP (Liq.)	174.00	0.0	0	42.6	0	0.00	2.8	0
BSES(P)									
41	PEDDAPURAM CCPP	220.00	0.0	0	0	0	0.00	0	0
CIPL									
42	PEGUTHAN CCPP	655.00	280.6	300	434.6	144.9	4.89	7.57	154.9
ESSAR									
43	ESSAR CCPP	515.00	0.0	0	0	0	0.00	0	0
GAUTAMI									
44	GAUTAMI CCPP	464.00	0.0	0	0	0	0.00	0	0
GIPCL									
45	BARODA CCPP	160.00	135.1	210	35.6	16.9	9.64	2.54	26.3
46	GIPCL. GT IMP	0	203.4	180	196.2	109	-	-	96.4
GIPL									
47	GAMA CCPP	225.0	492.4	0			37.53	28.45	113.9
GMR ENERG									
48	GMR Energy Ltd	220.00	0.0	400	560.7	140.2	0.00	0	0
GREL									
49	GREL CCP	768.00	643.5	625	0	0	9.57	0	0
GVKP&IL									
50	JEGURUPADU CCP	220.00	75.1	100	0	0	3.90	0	0
SrCEPL									
51	KASHIPUR CCPP	225.00	476.6	400	1062.3	265.6	54.58	53.9	222.9
KONA									
52	KONASEEMA CCPP	445.00	0.0	0	0	0	0.00	0	0
KONDAPALI									
53	KONDAPALLI EXT	366.00	157.3	200	0	0	4.91	0	0

Sl. No.	Name of the Station	Capacity (MW)	GENERATION(MU)				PLF%		% of Last Year
			Actual Generation 2016-17	2017-18		% of Target	Actual 2016-17	Actual 2017-18	
				Target	Actual				
54	KONDAPALLI CCPP	350.00	850.3	600	660.7	110.1	15.76	21.55	77.7
55	KONDAPALLI ST-	742.00	1266.1	1400	0	0	14.44	0	0
NDPL									
56	RITHALA CCPP	108.00	0.0	0	0	0	0.00	0	0
PENNA									
57	VALANTARVY CCPP	52.80	378.2	300	371.4	123.8	81.76	80.31	98.2
PGPL									
58	MANGOAN CCPP	388.00	215.4	500	0	0	9.52	0	0
PPNPGCL									
59	P.NALLUR CCPP	330.50	189.4	200	0	0	0	0	
RELIANCE									
60	GOA CCPP (Liq.)	48.00	0.0	0	0	0	0.00	0	0
SPGL									
61	GODAVARI CCPP	208.00	1008.8	1000	572.4	57.2	55.36	31.41	56.7
TOR. POW. (SUGEN)									
62	SUGEN CCPP	1147.50	4771.5	4200	6522.6	155.3	47.47	64.89	136.7
TOR. POW. (UNOSUGEN)									
63	DGEN MEGA CCPP	1200.00	1.0	0	0	0	0.01	0	0
64	UNOSUGEN CCPP	382.50	0.0	0	0	0	0.00	0	0
VEMAGIRI									
65	VEMAGIRI CCPP	370.00	305.3	400	0	0	9.42	0	0
	Total- IPP	10376.10	12620.1	12106	12131.3	100.21	14.35	13.35	96.13
	Total- Private	10556.10	14033.2	12990	13485	103.81	15.48	14.37	96.09
	Total- All India	25274.88	49094.0	47367	50207.7	106	22.51	22.86	102.27

10.4 NEW UNITS SYNCHRONISED DURING 2017-18

No New units were Synchronized during the year 2017-18.

10.5 UNITS RETIRED/ DERATED DURING 2017-18

The details of units retired/derated during the year 2017-18 is given as under:-

S. No.	Name of Station	Unit No	Old Capacity	New
1	LAKWA GT*	GT:4	15	0
2	NAMRUP CCPP*	GT:1	20	0
3	RATNAGIRI CCPP	GT:1	240	205
4	RATNAGIRI CCPP	GT:2	240	205
5	RATNAGIRI CCPP	ST:3	260	230
6	RATNAGIRI CCPP	GT:4	240	213
7	RATNAGIRI CCPP	GT:5	240	213
8	RATNAGIRI CCPP	ST:6	260	237.54
9	RATNAGIRI CCPP	GT:7	240	213
10	RATNAGIRI CCPP	GT:8	240	213
11	RATNAGIRI CCPP	ST:9	260	237.54
12	UTRAN CCPP*	GT:1	33	0

13	UTRAN CCPP*	GT:2	33	0
14	UTRAN CCPP*	GT:3	33	0
15	UTRAN CCPP*	ST:4	45	0

*These units have retired will not be considered in further Reviews.

Annexure- 10.1**LIST OF REGION WISE/ STATE WISE GAS TURBINE STATIONS AS ON 31MARCH 2018**

Region/State	Central Sector			State Sector			Private Utility			Private IPP's			Total		
	No. of	No. of	Installed	No. of	No. of	Installed	No. of	No. of	Installed	No. of	No. of	Installed	No. of	No. of	Installed
NORTHERN REGION															
DELHI	0	0	0	3	18	2100.4	0	0	0	1	3	108	4	21	2208.4
HARYANA	1	3	431.59	0	0	0	0	0	0	0	0	0	1	3	431.59
JAMMU AND KASHMIR	0	0	0	1	7	175	0	0	0	0	0	0	1	7	175
RAJASTHAN	1	4	419.33	2	9	603.8	0	0	0	0	0	0	3	13	1023.13
UTTAR PRADESH	2	12	1493.14	0	0	0	0	0	0	0	0	0	2	12	1493.14
UTTARAKHAND	0	0	0	0	0	0	0	0	0	2	2	450	2	2	450
TOTAL NORTHERN REGION	4	19	2344.06	6	34	2879.2	0	0	0	3	5	558	13	58	5781.26
WESTERN REGION															
GOA	0	0	0	0	0	0	0	0	0	1	1	48	1	1	48
GUJARAT	2	10	1313.59	5	17	2177.82	0	0	0	7	21	4060	14	48	7551.41
MAHARASHTRA	1	9	1967.08	1	6	672	1	2	180	1	1	388	4	18	3207.08
TOTAL WESTERN REGION	3	19	3280.67	6	23	2849.82	1	2	180	9	23	4496	19	67	10806.49
SOUTHERN REGION															
ANDHRA PRADESH	0	0	0	1	4	235.4	0	0	0	12	37	4645	13	41	4880.4
KERALA	1	3	359.58	0	0	0	0	0	0	1	4	174	2	7	533.58
PUDUCHERRY	0	0	0	1	1	32.5	0	0	0	0	0	0	1	1	32.5
TAMIL NADU	0	0	0	4	12	514.08	0	0	0	3	5	503.1	7	17	1017.18
TOTAL SOUTHERN REGION	1	3	359.58	6	17	781.98	0	0	0	16	46	5322.1	23	66	6463.66
EASTERN REGION															
WEST BENGAL	0	0	0	2	4	80	0	0	0	0	0	0	2	4	80

TOTAL EASTERN REGION	0	0	0	2	4	80	0	0	0	0	0	0	2	4	80
NORTH EASTERN REGION															
ASSAM	1	9	291	2	14	288.45	0	0	0	0	0	0	3	23	579.45
TRIPURA	3	10	962.6	2	11	169.5	0	0	0	0	0	0	5	21	1132.1
TOTAL NORTH EASTERN REGION	4	19	1253.6	4	25	457.95	0	0	0	0	0	0	8	44	1711.55
ALL INDIA TOTAL	12	60	7237.91	24	103	7048.95	1	2	180	28	74	10376.1	65	239	24842.96

SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
CENTRAL SECTOR							
NEEPCO.							
1	AGARTALA GT	TRIPURA	Natural Gas				
				GT-1	21	BHEL	5/2/1998
				GT-2	21	BHEL	25-02-98
				GT-3	21	BHEL	29-03-98
				GT-4	21	BHEL	26-06-98
				ST-5	25.5	Thermax	23-08-15
				ST-6	25.5	Thermax	22-03-15
	AGARTALA GT				135		
2	KATHALGURI CCPP	ASSAM	Natural Gas				
				GT-1	33.5	MITS/MITS	18-03-95
				GT-2	33.5	MITS/MITS	22-03-95
				GT-3	33.5	MITS/MITS	30-06-95
				GT-4	33.5	BHEL	30-07-95
				GT-5	33.5	BHEL	2/3/1996
				GT-6	33.5	BHEL	15-10-96
				ST-7	30	BHEL	1/3/1998
				ST-8	30	BHEL	28-03-98
				ST-9	30	BHEL	5/7/1998
	KATHALGURI CCPP				291		
3	MONARCHAK CCPP	TRIPURA	Natural Gas				
				GT-1	65.4	BHEL	30-03-15
				GT-2	35.6	BHEL	14-01-16
	MONARCHAK CCPP				101		
NTPC Ltd.							
4	ANTA CCPP	RAJASTHAN	Natural Gas				
				GT-1	88.71	ABB	20-01-89
				GT-2	88.71	ABB	6/3/1989
				GT-3	88.71	ABB	4/5/1989
				ST-4	153.2	ABB	5/3/1990
	ANTA CCPP				419.33		
5	AURAIYA CCPP	UTTAR PRADESH	Natural Gas				
				GT-1	111.19	Mitsubishi, Japan	29-03-89
				GT-2	111.19	Mitsubishi, Japan	21-07-89
				GT-3	111.19	Mitsubishi, Japan	9/8/1989
				GT-4	111.19	Mitsubishi, Japan	29-09-89
				ST-5	109.3	Mitsubishi Japan	29-12-89
				ST-6	109.3	Mitsubishi Japan	12/6/1990
	AURAIYA CCPP				663.36		
6	DADRI CCPP	UTTAR PRADESH	Natural Gas				
				GT-1	130.19	SIEMENS	21-02-92
				GT-2	130.19	SIEMENS	26-03-92
				GT-3	130.19	SIEMENS	6/6/1992
				GT-4	130.19	SIEMENS	14-10-92
				ST-5	154.51	BHEL	26-02-94
				ST-6	154.51	BHEL	27-03-94
	DADRI CCPP				829.78		
7	FARIDABAD CCPP	HARYANA	Natural Gas				

Annexure- 10.2

SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
				GT-1	137.76	SIEMENS	18-10-99
				GT-2	137.76	SIEMENS	18-10-99
				ST-3	156.07	BHEL	31-07-00
	FARIDABAD CCGP				431.59		
8	GANDHAR CCGP	GUJARAT	Natural Gas				
				GT-1	144.3	ABB	17-03-94
				GT-2	144.3	ABB	31-03-94
				GT-3	144.3	ABB	20-05-94
				ST-4	224.49	ABB	30-03-95
	GANDHAR CCGP				657.39		
9	KAWAS CCGP	GUJARAT	Natural Gas				
				GT-1	106	EGT	22-03-92
				GT-2	106	EGT	25-05-92
				GT-3	106	EGT	30-06-92
				GT-4	106	EGT	27-08-92
				ST-5	116.1	GEC ALSTOM	23-02-93
				ST-6	116.1	GEC Alstom	19-03-93
	KAWAS CCGP				656.2		
10	R. GANDHI CCGP (Liq.)	KERALA	Naptha				
				GT-1	115.2	BHEL/GE	2/11/1998
				GT-2	115.2	BHEL/GE	28-02-99
				ST-3	129.18	BHEL/GE	30-10-99
	R. GANDHI CCGP (Liq.)				359.58		
	ONGC						
11	TRIPURA CCGP	TRIPURA	Natural Gas				
				GT-1	363.3	BHEL/BHEL	2/1/2013
				GT-2	363.3	BHEL/BHEL	16-11-14
	TRIPURA CCGP				726.6		
	RGPPL						
12	RATNAGIRI CCGP	MAHARASH TRA	Natural Gas				
				GT-1	205	GE/BHEL	12/11/1998
				GT-2	205	GE/BHEL	12/11/1998
				ST-3	230	GE/BHEL	12/11/1998
				GT-1	213	GE/BHEL	30-04-06
				GT-2	213	GE/BHEL	14-05-06
				ST-3	237.54	GE/BHEL	7/5/2006
				GT-1	213	GE/BHEL	28-10-07
				GT-2	213	GE/BHEL	28-10-07
				ST-3	237.54	GE/BHEL	28-10-07
					1967.08		
STATE SECTOR							
	APEPDCL						
13	JEGURUPADU CCGP PH-I	ANDHRA PRADESH	Natural Gas S				
				GT-1	52.8	ALSTOM	4/7/1996
				GT-2	52.8	ALSTOM	26-10-96
				GT-3	52.8	ALSTOM	11/12/1996
				GT-4	77	ALSTOM	1/4/1998

SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
					235.40		
	APGPCL						
14	LAKWA GT	ASSAM	Natural Gas				
				GT-2	15	WH	2/8/1981
				GT-3	15	WH	29-07-83
				GT-4	0	GE/BHEL	6/10/1986
				GT-5	20	GE/BHEL	3/1/1994
				GT-6	20	GE/BHEL	21-07-94
				GT-7	20	GE/BHEL	28-05-95
				ST-8	37.2		17-01-12
	LAKWA GT				127.2		
15	NAMRUP CAPP	ASSAM	Natural Gas				
				GT-1	0	BHEL	1/4/1987
				GT-2	21	BHEL	1/7/1987
				GT-3	21	BHEL	1/7/1987
				GT-4	11	BHEL	1/4/1992
				ST-5	24	BHEL/BHEL	6/3/1976
				ST-6	22	BHEL/BHEL	27-03-85
				GT-7	62.5	BHEL	11/01/2017
	NAMRUP CAPP				161.25		
	GPPCL						
16	PIPAVAV CAPP	GUJARAT	Natural Gas				
				ST-1	351	BHEL	5/2/2014
				ST-2	351	BHEL	22-03-13
	PIPAVAV CAPP				702		
	GSECL						
17	DHUVARAN CAPP	GUJARAT	Natural Gas				
				GT-1	67.85	BHEL	4/6/2003
				ST-2	38.77	BHEL	22-09-03
				GT-3	72	BHEL	17-03-06
				ST-4	40	BHEL	13-08-07
				GT-5	376.1		21-05-14
	DHUVARAN CAPP				594.72		
18	UTRAN CAPP	GUJARAT	Natural Gas				
				GT-1	33	GE/BHEL	17-12-92
				GT-2	33	GE/BHEL	28-12-92
				GT-3	33	GE/BHEL	7/5/1993
				ST-4	45	BHEL	17-07-93
				GT-5	240	ALSTOM	8/8/2009
				ST-6	134	ALSTOM	10/10/2009
	UTRAN CAPP				518		
	GSEGL						
19	HAZIRA CAPP	GUJARAT	Natural Gas				
				GT-1	52	ALSTOM	30-09-01
				GT-2	52	ALSTOM	30-09-01
				ST-3	52.1	ALSTOM	30-09-01
	HAZIRA CAPP				156.1		
20	HAZIRA CAPP EXT	GUJARAT	Natural Gas				
				GT-1	351	BHEL	18-02-12
	HAZIRA CAPP EXT				351		
	IPGPCL						

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SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
21	I.P.CCPP	DELHI	Natural Gas				
				GT-1	30	ALSTOM	28-05-86
				GT-2	30	ALSTOM	24-06-86
				GT-3	30	ALSTOM	31-07-86
				GT-4	30	ALSTOM	10/9/1986
				GT-5	30	ALSTOM	15-11-86
				GT-6	30	ALSTOM	14-05-86
				ST-7	30	BHEL	29-03-95
				ST-8	30	BHEL	31-10-95
				ST-9	30	BHEL	26-03-96
	I.P.CCPP				270		
	JKSPDC						
22	PAMPORE GPS (Liq.)	JAMMU AND KASHMIR	High Speed Diesel				
				GT-1	25	GE/BHEL	31-03-89
				GT-2	25	GE/BHEL	20-07-89
				GT-3	25	GE/BHEL	11/12/1989
				GT-4	25	GE/BHEL	7/1/1994
				GT-5	25	GE/BHEL	7/2/1994
				GT-6	25	GE/BHEL	4/4/1994
				GT-7	25	GE/BHEL	30-03-95
	PAMPORE GPS (Liq.)				175		
	MAHAGENCO						
23	URAN CCPP	MAHARASH TRA	Natural Gas				
				GT-5	108	KWU	1/4/1986
				GT-6	108	KWU	1/4/1986
				GT-7	108	KWU	1/4/1986
				GT-8	108	KWU	1/4/1986
				GT-9	120	SIEMENS,GERMA NY	16-03-94
				GT-10	120	SIEMENS,GERMA NY	28-10-94
	URAN CCPP P&ED, Pudu.				672		
24	KARAIKAL CCPP	PUDUCHERR Y	Natural Gas				
				GT-1	32.5	BHEL	2/7/1999
	KARAIKAL CCPP				32.5		
	PRAGATI						
25	PRAGATI CCGT-III	DELHI	Natural Gas				
				GT-1	250	BHEL	24-10-10
				GT-2	250	BHEL	17-02-11
				ST-3	250	BHEL	29-02-12
				GT-4	250	BHEL	27-06-12
				GT-5	250	BHEL	7/5/2013
				ST-6	250	BHEL	26-02-14
	PRAGATI CCGT-III				1500		
26	PRAGATI CCPP	DELHI	Natural Gas				
				GT-1	104.6	GE/BHEL	15-03-02
				GT-2	104.6	GE/BHEL	9/11/2002
				ST-3	121.2	GE/BHEL	31-01-03

SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
	PRAGATI CCPP				330.4	GE/BHEL	
	RRVUNL						
27	DHOLPUR CCPP	RAJASTHAN	Natural Gas				
				GT-1	110	BHEL	29-03-07
				GT-2	110	BHEL	16-06-07
				ST-3	110	BHEL	27-12-07
	DHOLPUR CCPP				330		
28	RAMGARH CCPP	RAJASTHAN	Natural Gas				
				GT-1	3	Import by HAL BHEL	15-11-94
				GT-2	35.5	Import by HAL BHEL	12/1/1996
				GT-3	37.5	Import by HAL BHEL	7/8/2002
				ST-4	37.8	Import by HAL BHEL	31-03-03
				GT-5	110	BHEL	20-03-13
				ST-6	50	BHEL	1/5/2014
	RAMGARH CCPP				273.8		
	TNGDCL						
29	BASIN BRIDGE GT (Liq.)	TAMIL NADU	Naptha				
				GT-1	30	SUMITOMO AND ABB	12/2/1996
				GT-2	30	SUMITOMO AND ABB	25-02-96
				GT-3	30	BHEL	1/4/1998
				GT-4	30	BHEL	1/4/1998
	BASIN BRIDGE GT (Liq.)				120		
30	KOVIKALPAL CCPP	TAMIL NADU	Natural Gas				
				GT-1	69.65	GE/BHEL	5/2/2001
				ST-2	38.23	GE/BHEL	5/2/2001
	KOVIKALPAL CCPP				107.88		
31	KUTTALAM CCPP	TAMIL NADU	Natural Gas				
				GT-1	63	GE/BHEL	27-11-03
				ST-2	37	GE/BHEL	24-03-04
	KUTTALAM CCPP				100		
32	VALUTHUR CCPP	TAMIL NADU	Natural Gas				
				GT-1	60	ANSALDO ENERGIA	24-12-02
				ST-2	34	ANSALDO ENERGIA	6/5/2008
				GT-3	59.8	BGR ENERGY SYSTEMS	13-03-03
				ST-4	32.4	BGR ENERGY SYSTEMS	31-08-08
	VALUTHUR CCPP				186.2		
	TSECL						
33	BARAMURA GT	TRIPURA	Natural Gas				
				GT-4	37.5	BHEL	27-11-02
				GT-5	21		3/8/2010
	BARAMURA GT				58.5		

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SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
34	ROKHIA GT	TRIPURA	Natural Gas				
				GT-1	8	BHEL	21-03-90
				GT-2	8	BHEL	26-11-90
				GT-3	8	BHEL	16-07-95
				GT-4	8	BHEL	15-12-95
				GT-5	8	BHEL	2/3/1997
				GT-6	8	BHEL	1/9/1997
				GT-7	21	BHEL	11/7/2002
				GT-8	21	BHEL	31-03-06
				GT-9	21	BHEL	31-08-13
	ROKHIA GT				111		
	WBPDC						
35	HALDIA GT (Liq.)	WEST BENGAL	High Speed Diesel				
				GT-1	20	John Brown, UK	4/10/1979
				GT-2	20	John Brown UK	12/12/1979
	HALDIA GT (Liq.)				40		
36	KASBA GT (Liq.)	WEST BENGAL	Naptha				
				GT-1	20	John Brown, UK	1/4/1991
				GT-2	20	John Brown UK	1/4/1991
	KASBA GT (Liq.)				40		
	PRIVATE UTILITY						
	TATA PCL						
37	TROMBAY CCPP	MAHARASH TRA	Natural Gas				
				GT-1	120	SIEMENS, GERMANY	29-07-93
				ST-2	60	SIEMENS, GERMANY	9/12/1994
	TROMBAY CCPP				180		
	IPP						
	ABAN POWR						
38	KARUPPUR CCPP	TAMIL NADU	Natural Gas				
				GT-1	70	GE	18-02-05
				ST-2	49.8	SIEMENS	15-07-05
	KARUPPUR CCPP				119.8		
	APGPCL						
39	VIJESWARAM CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	33	GE/BHEL	1/4/2012
				GT-2	33	GE/BHEL	2/3/1991
				ST-3	34	GE/BHEL	1/4/1998
				GT-4	112	BHEL/BHEL	1/4/1997
				ST-5	60	GE/BHEL	1/4/1998
	VIJESWARAM CCPP				272		
	BSES(C)						
40	COCHIN CCPP (Liq.)	KERALA	Naptha				
				GT-1	45	GE	6/6/1999
				GT-2	45	GE	6/6/1999
				ST-3	39	BHEL	6/6/1999
				GT-4	45	GE	6/6/1999

Annexure- 10.2

SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
	COCHIN CCPP (Liq.)				174		
	BSES(P)						
41	PEDDAPURAM CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	142	ANSALDO ENERGIA	26-01-02
				ST-2	78	ANSALDO ENERGIA	12/9/2002
	PEDDAPURAM CCPP				220		
	CIPL						
42	PEGUTHAN CCPP	GUJARAT	Natural Gas				
				GT-1	135	SIEMENS GERMANY	1/4/1998
				GT-2	135	SIEMENS GERMANY	1/4/1998
				GT-3	135	SIEMENS GERMANY	14-02-98
				ST-4	250	SIEMENS GERMANY	13-10-98
	PEGUTHAN CCPP				655		
	ESSAR						
43	ESSAR CCPP	GUJARAT	Natural Gas				
				GT-1	110	GE/BHEL GE	10/8/1995
				GT-2	110	GE/BHEL	10/8/1995
				GT-3	185	GE/BHEL	10/8/1995
				GT-4	110	GE/BHEL	10/8/1995
	ESSAR CCPP				515		
	GAUTAMI						
44	GAUTAMI CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	145	ALSTOM	3/5/2009
				GT-2	145	ALSTOM	3/5/2009
				ST-3	174	ALSTOM	3/5/2009
	GAUTAMI CCPP				464		
	GIPCL						
45	BARODA CCPP	GUJARAT	Natural Gas				
				GT-5	106	BHEL	26/08/97
				ST-6	54	BHEL	18/11/97
	BARODA CCPP				160		
46	GIPCL. GT IMP	GUJARAT	Natural Gas	GT-1	225		
	GIPCL. GT IMP				225		
	GIPL						
47	GAMA CCPP	UTTARAKHA ND	Natural Gas				
				GT-1	220		25/04/2016
	GAMA CCPP				220		
	GMR ENERG						
48	GMR Energy Ltd - Kakinada	ANDHRA PRADESH	Natural Gas				
				GT-1	42.5	HDEC	8/5/2001
				GT-2	42.5	HDEC	8/5/2001
				GT-3	42.5	HDEC	8/5/2001
				GT-4	42.5	HDEC	8/5/2001

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SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
				ST-5	50	ABB	8/5/2001
	GMR Energy Ltd - Kakinada				220		
	GREL						
49	GREL CCPP (Rajahmundry)	ANDHRA PRADESH	Natural Gas				
				GT-1	240	Others	12/9/2015
				ST-2	144	Others	12/9/2015
				GT-3	240	Others	5/10/2015
				ST-4	144	Others	5/10/2015
	GREL CCPP (Rajahmundry)				768		
	APEPDCL						
50	JEGURUPADU CCPP PH-II	ANDHRA PRADESH	Natural Gas				
				ST-5	140	ALSTOM	9/10/2005
				ST-6	80	ALSTOM	11/11/2005
	JEGURUPADU CCPP				220		
	GVKP&IL						
	KONA						
51	KONASEEMA CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	140	SIEMENS	1/5/2009
				GT-2	140	SIEMENS	1/5/2009
				ST-3	165	SIEMENS	30-06-10
	KONASEEMA CCPP				445		
	KONDAPALI						
52	KONDAPALLI EXTN CCPP.	ANDHRA PRADESH	Natural Gas				
				GT-1	233	GE	5/12/2009
				ST-2	133	GE	19-07-10
	KONDAPALLI EXTN CCPP.				366		
53	KONDAPALLI CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	112	GE	22-06-00
				GT-2	112	GE	22-06-00
				ST-3	126	GE	22-06-00
	KONDAPALLI CCPP				350		
54	KONDAPALLI ST-3 CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	371	BHEL/GE	7/8/2015
				GT-2	371	BHEL/GE	5/9/2015
	KONDAPALLI ST-3 CCPP				742		
	NDPL						
55	RITHALA CCPP	DELHI	Natural Gas				
				GT-1	35.75	BHEL	9/12/2010
				GT-2	35.75	BHEL	4/10/2010
				ST-3	36.5	BHEL	4/9/2011
	RITHALA CCPP				108		
	PENNA						
56	VALANTARVY CCPP	TAMIL NADU	Natural Gas				

Annexure- 10.2

SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

Sl. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
				GT-1	38		30-09-04
				ST-2	14.8		30-11-04
	VALANTARVY CCPP				52.8		
	PGPL						
57	MANGOAN CCPP	MAHARASH TRA	Natural Gas				
				GT-1	388		14/07/2016
	MANGOAN CCPP				388		
	PPNPGCL						
58	P.NALLUR CCPP	TAMIL NADU	Natural Gas				
				GT-1	330.5		22-02-01
	P.NALLUR CCPP				330.5		
	RELIANCE						
59	GOA CCPP (Liq.)	GOA	Naptha				
				GT-1	48	GE/BHEL	14-08-99
	GOA CCPP (Liq.)				48		
	SPGL						
60	GODAVARI CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	47	SIEMENS	9/1/1997
				GT-2	47	SIEMENS	1/4/1998
				GT-3	47	SIEMENS	1/4/1998
				ST-4	67	PARSONS	31-03-98
	GODAVARI CCPP				208		
	SrEPL						
61	KASHIPUR CCPP	UTTARAKHA ND		GT-1	225		20/11/16
	KASHIPUR CCPP				225		
	TOR. POW. (SUGEN)						
62	SUGEN CCPP	GUJARAT	Natural Gas				
				GT-1	382.5	SIEMENS	4/2/2009
				GT-2	382.5	SIEMENS	7/5/2009
				GT-3	382.5	SIEMENS	8/6/2009
	SUGEN CCPP				1147.5		
	TOR. POW. (UNOSUGEN)						
63	DGEN MEGA CCPP	GUJARAT					
				GT-1	400	Others	12/1/2014
				ST-2	400	Others	23-04-14
				ST-3	400	Others	9/3/2014
	DGEN MEGA CCPP				1200		
64	UNOSUGEN CCPP	GUJARAT					
				GT-1	382.5	Others	20-01-13
	UNOSUGEN CCPP				382.5		
	VEMAGIRI						
65	VEMAGIRI CCPP	ANDHRA PRADESH	Natural Gas				
				GT-1	233	CEC,USA	13-01-06
				ST-2	137	ALSTOM	8/6/2006
	VEMAGIRI CCPP				370		

Annexure- 10.2

SECTOR-WISE DETAILS OF GAS TURBINE STATIONS -2017-18

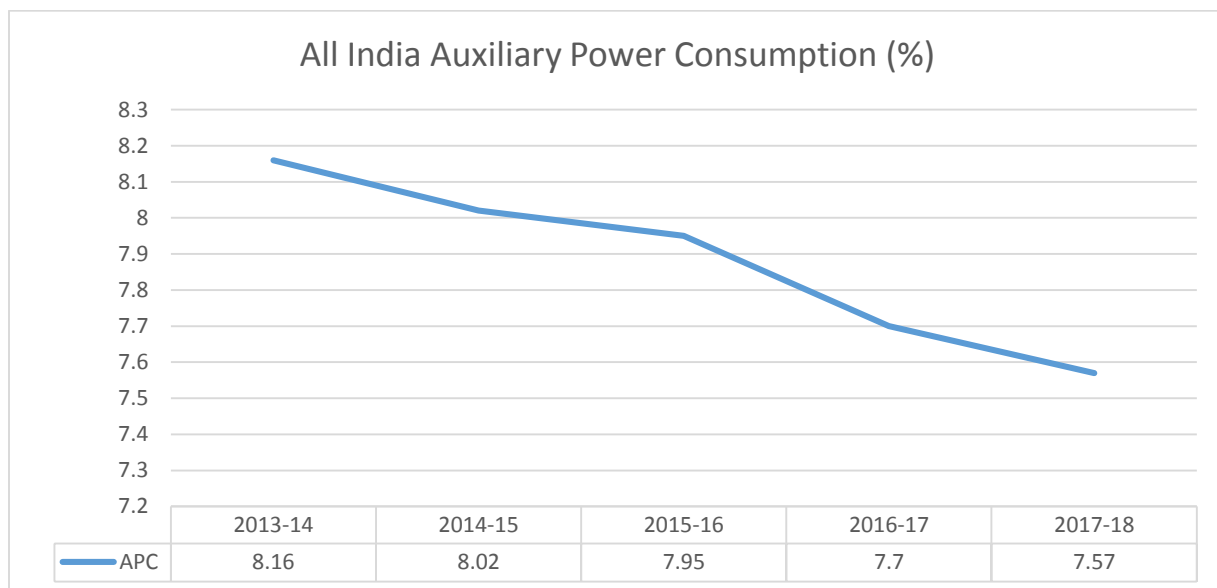
SI. No	Sector/ Organization/ Station	Location	Type of fuel used	Unit Detail	Capacity (MW)	Make	Date of Synchronization
	TOTAL ALL INDIA				24842.96		

SECTION -11

AUXILIARY POWER CONSUMPTION IN THERMAL POWER STATIONS

11.1 Auxiliary power consumption by the thermal stations comprises the power consumption by all the unit auxiliaries as well as the common station auxiliaries' requirement such as CW system, Water treatment, Coal and ash handling, Compressors, station lighting, air conditioning etc. The All India average auxiliary power consumption by the thermal stations during 2017-18 decreased to 7.01% from 7.35% during 2016-17.

11.1.1 The auxiliary power consumption by thermal power stations as percentage of gross generation from 2012-13 onwards is shown below:



11.2 REGION-WISE AUXILIARY POWER CONSUMPTION

The region-wise auxiliary power consumption as percentage of gross generation from 2013-14 onwards is shown below:-

Region	Auxiliary power consumption (%)				
	2013-14	2014-15	2015-16	2016-17	2017-18
NORTHERN	8.35	8.02	8.53	8.05	7.59
WESTERN	7.84	8.03	7.63	7.48	7.45
SOUTHERN	8.12	7.76	7.89	7.85	7.78
EASTERN	8.57	8.3	8.11	7.64	7.63
NORTH EASTERN	0	0	0	9.37	6.56
ALL-INDIA	8.16	8.02	7.95	7.70	7.57

11.3 SECTOR-WISE AUXILIARY POWER CONSUMPTION

11.3.1 The Sector-wise auxiliary power consumption as percentage of gross generation from 2013-14 onwards is shown below: -

Sector	2013-14	2014-15	2015-16	2016-17	2017-18
CENTRAL	7.4	7.02	7.16	6.99	7.01
STATE	9.23	8.95	9.28	9.03	8.41
PVT UTILITY	8.09	8.05	8.05	8.04	8.25
PRIVATE IPPS	7.82	8.15	7.51	7.22	7.41
ALL INDIA	8.16	8.02	7.95	7.70	7.57

11.4 STATIONWISE AUXILIARY POWER CONSUMPTION

11.4.1 The auxiliary power consumption of a Station depends on various factors like type of equipment provided, fuel quality, site specific conditions and operating practices/operating efficiency. The choice of milling systems, fans and Boiler Feed Pump significantly affects the auxiliary power consumption. Fuel quality affects auxiliary power consumption in fuel handling, ash disposal system and also in main plant equipment. Some Stations have site specific requirements like Cooling water taken from very long distances affecting the auxiliary power consumption. Plant operation at low load factors also considerably affects the Auxiliary power consumption.

11.4.2 While it is not possible to account for all of the above factors for comparing auxiliary power consumption of the Stations, a categorization of Stations has been made based on two major factors affecting auxiliary power consumption so as to have meaningful comparisons amongst Stations. These are

- Boiler Type – Circulating Fluidized Bed Combustion vs. Conventional Pulverized coal fired boilers.
- Type of Boiler Feed Pump – Motor driven Vs Turbine driven BFP

11.4.3 The CFBC boilers have significantly higher Auxiliary power consumption due to their higher fan power. Similarly, units with TBFP have significantly lower auxiliary power consumption. Thus Stations with significant capacity (more than 50 %) in TBFP units have been considered as a separate category. The details of overall auxiliary power consumption in these categories of Stations are as under: -

Type of Station	Auxiliary Power Consumption (%)				
	2013-14	2014-15	2015-16	2016-17	2017-18
Stations with Circulating Fluidized Bed Combustion Boilers	13.64	12.50	12.31	12.28	14.20
Stations with PC Boilers and >50 % capacity with TBFPs	6.88	6.78	6.62	6.58	6.51
Stations with PC Boilers and >50 % capacity with MBFPs	9.26	9.12	9.60	9.29	8.97
Overall	8.16	8.02	7.95	7.70	7.57

Details of Station wise auxiliary power consumption in each of the above categories from 2012-13 onwards are given at the Annex. 11.1.

11.5 STATION AUXILIARY POWER CONSUMPTION Vs. NATIONAL AVERAGE APC

Table of APC lower than National Average

STATION NAME	CAPACITY	Utility	Sector	APC_2017-18 (%)
Stations with CFBC Boiler (All India Average APC – 14.20 %)				
JALIPA KAPURDI TPP	1080	RWPL (JSW)	PVT	10.45
KUTCH LIG. TPS	290	GSECL	STATE	11.31
BARSINGSAR LIGNITE	250	NLC	CENTRAL	12.29
Stations with Motor Driven BFP (All India Average APC – 8.97%)				
BONGAIGAON TPP	500	NTPC Ltd.	CENTRAL	6.56

STATION NAME	CAPACITY	Utility	Sector	APC _2017-18 (%)
HARDUAGANJ TPS	665	UPRVUNL	STATE	6.73
BUDGE BUDGE TPS	750	CESC	PVT UTIL	7.07
KORBA-WEST TPS	1340	CSPGCL	STATE	7.13
KAMALANGA TPS	1050	GMR ENERG	PVT	7.31
TORANGALLU TPS(SBU-I)	260	JSWEL	PVT	7.42
NEYVELI (EXT) TPS	420	NLC	CENTRAL	7.7
YAMUNA NAGAR TPS	600	HPGCL	STATE	7.83
DSPM TPS	500	CSPGCL	STATE	7.91
TORANGALLU TPS(SBU-II)	600	JSWEL	PVT	7.93
BINA TPS	500	JPPVL	PVT	8.01
UKAI TPS	1350	GSECL	STATE	8.03
PATHADI TPP	600	LANCO	PVT	8.06
BAKRESWAR TPS	1050	WBPDCL	STATE	8.08
BALCO TPS	600	BALCO	PVT	8.11
ROSA TPP Ph-I	1200	RPSCL	PVT	8.13
MEJIA TPS	2340	DVC	CENTRAL	8.19
BUTIBORI TPP	600	VIP	PVT	8.22
GMR WARORA TPS	600	GMR ENERG	PVT	8.23
RAMAGUNDEM - B TPS	62.5	TSGENCO	STATE	8.27
TUTICORIN TPS	1050	TNGDCL	STATE	8.28
MAHADEV PRASAD STPP	540	ADHUNIK	PVT	8.5
WANAKBORI TPS	1470	GSECL	STATE	8.61
METTUR TPS	840	TNGDCL	STATE	8.64
DHARIWAL TPP	600	DIPL	PVT	8.66
MUNDRA UMTPP	4000	CGPL	PVT	8.7
JOJOBORA TPS	240	TATA PCL	PVT	8.77
SABARMATI (D-F STATIONS)	362	TOR. POW.	PVT UTIL	8.78
NASIK TPS	630	MAHAGENCO	STATE	8.81
Dr. N.TATA RAO TPS	1760	APGENCO	STATE	8.88
KORBA-II	200	CSPGCL	STATE	8.88
Stations with Turbine Driven BFP (All India Average APC – 6.51%)				
KAKATIYA TPS	1100	TSGENCO	STATE	5.06
BARH II	1320	NTPC Ltd.	CENTRAL	5.07
RAJPURA TPP	1400	NPL	PVT	5.08
TAMNAR TPP	2400	JPL	PVT	5.19
SHREE SINGAJI TPP	1200	MPPGCL	STATE	5.26
KODARMA TPP	1000	DVC	CENTRAL	5.36
KUDGI	1600	NTPC	CENTRAL	5.36
SASAN UMTPP	3960	SPL	PVT	5.47
MAITHON RB TPP	1050	MPL	PVT	5.49
INDIRA GANDHI STPP	1500	APCPL	CENTRAL	5.57
KAWAI TPS	1320	APL	PVT	5.61
TIRORA TPS	3300	APL	PVT	5.62
BELLARY TPS	1700	KPCL	CENTRAL	5.68
LALITPUR TPS	1980	LPGL	PVT	5.7
DURGAPUR STEEL TPS	1000	DVC	CENTRAL	5.74
AVANTHA BHANDAR	600	KWPCL	PVT	5.76
TROMBAY TPS	1250	TATA PCL	PVT UTIL	5.78
BELLARY TPS	1700	KPCL	STATE	5.91
RAJIV GANDHI TPS	1200	HPGCL	STATE	5.91

STATION NAME	CAPACITY	Utility	Sector	APC _2017-18 (%)
MAHATMA GANDHI TPS	1320	JhPL(HR)	PVT	5.95
SINGARENI TPP	1200	SCCL	STATE	5.96
KAHALGAON TPS	2340	NTPC Ltd.	CENTRAL	6.01
UDUPI TPP	1200	UPCL	PVT	6.01
RAGHUNATHPUR TPP	1200	DVC	CENTRAL	6.04
RIHAND STPS	3000	NTPC Ltd.	CENTRAL	6.29
VINDHYACHAL STPS	4760	NTPC Ltd.	CENTRAL	6.29
RAMAGUNDEM STPS	2600	NTPC Ltd.	CENTRAL	6.33
TALCHER STPS	3000	NTPC Ltd.	CENTRAL	6.4
VALLUR TPP	1500	NTECL	CENTRAL	6.46
BHUSAWAL TPS	1420	MAHAGENCO	CENTRAL	6.48
MAUDA TPS	2320	NTPC Ltd.	CENTRAL	6.48
SALAYA TPP	1200	EPGL	PVT	6.51
All India Average APC - 7.57%				

**STATIONWISE AUXILIARY POWER CONSUMPTION IN THERMAL POWER STATIONS FROM 2013-14
TO 2017-18**

STATION'S NAME	CAPACITY	2013-14	2014-15	2015-16	2016-17	2017-18
STATIONS with CFBC Boiler						
I. CENTRAL SECTOR						
BARSINGSAR LIGNITE	250	16.16	11.28	\$	13.39	12.29
NEYVELI TPS-II EXP	500	-	-	7.44	\$	\$
II. STATE SECTOR						
AKRIMOTA LIG TPS	250	16.62	15.43	15.31	15.28	15.64
BHAVNAGAR CFBC TPP	500	-	-	-	\$	\$
GIRAL TPS	250	23.72	21.36	20.28	\$	\$
KUTCH LIG. TPS	290	13.21	12.75	10.88	14.71	11.31
IV. PRIVATE IPPS						
JALIPA KAPURDI TPP	1080	11.81	10.81	11.3	12.02	10.45
SURAT LIG. TPS	500	13.01	14.51	11.65	9.88	\$
IV. ALL INDIA	3620	13.64	12.5	12.31	12.28	14.2
PC Stations with Motor Driven BFP						
I. CENTRAL SECTOR						
BADARPUR TPS	705	9.15	10.2	9.85	9.96	9.5
BARAUNI TPS	210	-	-	-	10.08	*
BHILAI TPS	500	9.06	8.61	7.3	7.52	\$
BOKARO `B` TPS	630	12.45	16	12.12	12.64	\$
BONGAIGAON TPP	500	-	-	-	9.37	6.56
CHANDRAPURA(DVC) TPS	760	10.09	9.81	9.67	*	\$
DURGAPUR TPS	210	10.72	11.14	12.74	\$	\$
MEJIA TPS	2340	9.29	8.63	8.2	7.97	8.19
MUZAFFARPUR TPS	610	20.05	11.01	13.99	*	*
NEYVELI (EXT) TPS	420	8.46	8.2	8.2	7.73	7.7
NEYVELI TPS- I	600	19.15	19.46	\$	\$	11.91
NEYVELI TPS-II	1470	8.79	6.17	9.03	9.05	9.25
NABI NAGAR TPP	500	-	-	-	\$	\$
PATRATU TPS	455	35.83	31.25	13.51	\$	\$
TALCHER (OLD) TPS	460	10.47	10.39	10.55	10.43	10.3
TANDA TPS	440	11.88	11.43	11.64	11.47	11.46
UNCHAHAHAR TPS	1550	8.85	8.79	9.06	9.03	9.24
II. STATE SECTOR						

STATION'S NAME	CAPACITY	2013-14	2014-15	2015-16	2016-17	2017-18
AMARKANTAK EXT TPS	210	9.4	9.28	9.64	9.62	9.03
BAKRESWAR TPS	1050	10.23	9.63	10.31	10.02	8.08
BANDEL TPS	450	17.17	26.12	\$	10.47	10.06
CHANDRAPUR(ASSAM) TPS	60	-	-	-	-	-
CHHABRA TPP	1000	11.62	10.66	14.17	9.72	\$
D.P.L. TPS	660	12.23	13.53	10.73	9.85	10.35
Dr. N.TATA RAO TPS	1760	7.52	8.43	9.1	8.88	8.88
DSPM TPS	500	7.8	7.75	7.8	7.86	7.91
GANDHI NAGAR TPS	630	10.12	9.17	9.64	9.85	9.27
GH TPS (LEH.MOH.)	920	7.97	7.14	8.75	8.79	\$
GND TPS(BHATINDA)	440	11.12	11.13	11.26	10.72	11.81
HARDUAGANJ TPS	665	11.3	9.02	9.36	8.44	6.73
IB VALLEY TPS	420	10.6	10.29	10.72	10.37	\$
KHAPARKHEDA TPS	1340	8.42	7.35	9.08	8.43	\$
KOLAGHAT TPS	1260	11.21	10.41	11.17	\$	10.29
KORADI TPS	2400	14.04	12.68	9.53	8.71	\$
KORBA-II	200	14.71	15.42	14.51	\$	\$
KORBA-III	240	11.63	12.37	10.94	11.27	11.6
KORBA-WEST TPS	1340	7.74	8.4	8.07	8.14	7.13
KOTA TPS	1240	9.85	10.05	10.36	11.46	11.07
KOTHAGUDEM TPS	720	11.01	10.4	12.73	10.54	9.42
METTUR TPS	840	9.33	7.97	12.68	8.57	8.64
NASIK TPS	630	11.57	11.2	10.94	10.82	8.81
OBRA TPS	1278	11.3	8.56	12.45	11.7	9.96
PANIPAT TPS	920	10.32	10.94	\$	10.34	9.75
PANKI TPS	210	13.75	13.03	\$	12.75	\$
PARAS TPS	500	10.58	11.93	10.95	10.75	10.32
PARICHA TPS	1140	10.79	7.32	10.86	10.45	\$
PARLI TPS	1170	9.52	11.26	12.17	11.21	10.27
RAICHUR TPS	1720	10.18	9.07	8.76	8.63	9.41
RAJGHAT TPS	135	14.83	14.42	-	-	-
RAMAGUNDEM - B TPS	62.5	8.42	9.71	9.76	11.1	8.27
RAYALASEEMA TPS	1650	10.77	13.34	10.63	10.23	10.04
ROPAR TPS	1260	7.02	8.8	9.05	10.73	9.06
SAGARDIGHI TPS	1600	12.57	11.53	13.35	9.87	10.61
SANJAY GANDHI TPS	1340	7.57	8.69	8.25	8.09	*
SANTALDIH TPS	500	9.9	9.25	8.76	8.58	9.3
SATPURA TPS	1330	11.22	10.17	10.06	10.33	*
SIKKA REP. TPS	740	12.33	11.37	11.06	9.95	9.66

STATION'S NAME	CAPACITY	2013-14	2014-15	2015-16	2016-17	2017-18
SURATGARH TPS	1500	9.06	9.32	10.43	9.88	\$
TENUGHAT TPS	420	7.73	11.92	12.04	12.55	13.08
TUTICORIN TPS	1050	8.07	8.16	8.21	8.25	8.28
UKAI TPS	1350	7.56	6.66	8.22	7.59	8.03
WANAKBORI TPS	1470	9.19	8.76	8.9	9.27	8.61
YAMUNA NAGAR TPS	600	9.03	8.84	8.51	8.77	7.83
III. PVT UTILITY						
BUDGE BUDGE TPS	750	8.27	8.21	8.05	8.06	7.07
DAHANU TPS	500	9.02	8.85	9.02	9.3	9.75
SABARMATI (C STATION)	60	10.37	10.04	10.65	-	-
SABARMATI (D-F STATIONS)	362	9.71	9.09	9.28	8.9	8.78
SOUTHERN REPL. TPS	135	8.64	8.51	9.89	9.46	9.48
TITAGARH TPS	240	8.24	8.43	8.97	9.62	\$
IV. PRIVATE IPPS						
AMARAVATI TPS	1350	17.51	13.91	9.9	9.54	\$
BALCO TPS	600	-	-	9.64	7.94	8.11
BANDAKHAR TPP	300	-	-	\$	9.99	9.32
BARKHERA TPS	90	10.58	9.96	9.46	9.4	9.96
BELA TPS	270	-	-	\$	\$	*
BINA TPS	500	9.73	8.15	8.15	8.56	8.01
BUTIBORI TPP	600	-	10.54	8.95	8.39	8.22
CHAKABURA TPP	30	-	11.73	11.95	\$	\$
DHARIWAL TPP	600	-	17.38	10.29	8.23	8.66
GEPL TPP Ph-I	120	16.34	\$	\$	\$	\$
GMR WARORA TPS	600	9.49	9.25	9.44	8.67	8.23
GOINDWAL SAHIB TPP	540	-	-	-	10.4	10.29
HALDIA TPP	600	-	-	9.16	8.15	9.57
Hiranmaye TPP	300	-	-	-	-	*
JOJOBERA TPS	240	10.78	9.54	9.43	\$	8.77
JSW RATNAGIRI TPP	1200	9.76	9.06	8.91	9.26	9.22
KAMALANGA TPS	1050	-	8.35	7.89	7.76	7.31
KASAIPALLI TPP	270	11.16	11.76	11.82	11.23	11.06
KATGHORA TPP	35	\$	\$	\$	\$	\$
KHAMBARKHERA TPS	90	10.71	10.06	9.8	9.28	9.59
KUNDARKI TPS	90	12.35	9.66	10.02	9.31	\$
MAHADEV PRASAD STPP	540	8.29	8.17	8.34	9.09	8.5
MAQSOODPUR TPS	90	10.44	8.61	9.72	9.23	10.02
MIHAN TPS	246	*	*	*	\$	*
MUNDRA UMTTP	4000	7.49	7.23	7.76	7.85	8.7

STATION'S NAME	CAPACITY	2013-14	2014-15	2015-16	2016-17	2017-18
NASIK (P) TPS	270	\$	\$	\$	\$	*
NAWAPARA TPP	600	-	-	-	9.85	\$
NEYVELI TPS(Z)	250	7.85	8.28	8.8	*	9.78
NIWARI TPP	45	*	19.37	\$	13.81	14.34
OP JINDAL TPS	1000	9.48	9.14	9.84	9.77	9.95
PATHADI TPP	600	10.07	9.43	8.88	8.15	8.06
RATIJA TPS	100	17.85	19.13	\$	*	13.77
ROSA TPP Ph-I	1200	6.41	8.65	8.87	8.13	8.13
SALORA TPP	135	-	12.79	\$	\$	\$
SIMHAPURI TPS	600	10.47	10.02	10.47	11.39	\$
SVPL TPP	63	\$	\$	\$	10.68	11.06
SWASTIK KORBA TPP	25	-	-	-	\$	\$
THAMMINAPATNAM TPS	300	12.91	10.7	10.61	11.79	11.68
TORANGALLU TPS(SBU-I)	260	6.91	6.94	7.12	7.23	7.42
TORANGALLU TPS(SBU-II)	600	7.87	7.25	7.48	8.21	7.93
TUTICORIN (P) TPP	300	12.35	12.38	12.34	\$	\$
UCHPINDA TPP	1080	-	-	-	*	11.76
UTRAULA TPS	90	10.68	9.78	8.64	9.33	9.37
UTKAL TPP(IND BARATH)	350	-	-	-	\$	\$
WARDHA WARORA TPP	540	10.57	10.74	11	11.77	11.34
IV. ALL India MBFP Stations	78086.5	9.26	9.12	9.49	9.29	8.97
PC Stations with Turbine Driven BFP						
I. CENTRAL SECTOR						
BARH II	1320	-	6.4	5.17	5.76	5.07
BOKARO TPS `A` EXP	500	-	-	-	\$	\$
DADRI (NCTPP)	1820	6.62	6.43	6.38	6.29	7.14
DURGAPUR STEEL TPS	1000	6.21	6.85	5.87	\$	5.74
FARAKKA STPS	2100	6.5	6.61	7.06	7.19	6.91
INDIRA GANDHI STPP	1500	6.58	6.23	6.54	6.68	5.57
KAHALGAON TPS	2340	7.9	7.24	6.99	6.89	6.01
KODARMA TPP	1000	6.9	8.01	6.12	5.55	5.36
KORBA STPS	2600	6.29	6.14	6.04	6.22	6.87
KUDGI STPP	1600	-	-	-	-	5.36
MAUDA TPS	2320	11.35	8.86	7.64	6.8	6.48
RAGHUNATHPUR TPP	1200	-	-	\$	7.97	6.04
RAMAGUNDEM STPS	2600	6.03	5.85	6.12	6.23	6.33
RIHAND STPS	3000	6.69	6.83	6.66	6.64	6.29
SIMHADRI	2000	5.76	5.48	5.56	5.49	7.71
SINGRAULI STPS	2000	7.25	7.28	7.32	7.82	\$

STATION'S NAME	CAPACITY	2013-14	2014-15	2015-16	2016-17	2017-18
SIPAT STPS	2980	6.04	5.33	5.39	5.26	8.49
SOLAPUR	660	-	-	-	-	*
TALCHER STPS	3000	6.5	5.85	6.14	6.4	6.4
TUTICORIN (JV) TPP	1000	-	-	8.59	\$	\$
VALLUR TPP	1500	7.33	7.52	7.54	7.02	6.46
VINDHYACHAL STPS	4760	6.31	6.35	6.61	6.71	6.29
II. STATE SECTOR						
ANPARA TPS	2630	8.49	8.65	8.31	8.79	7.11
BELLARY TPS	1700	6.23	6.36	6	6.91	5.91
BHUSAWAL TPS	1420	11.29	9.17	7.11	6.89	\$
CHANDRAPUR(MAHARASHTRA) STPS	2920	9.83	8.97	8.41	9.37	7.61
DAMODARAM SANJEEVAIAH TPS	1600	-	-	8.52	7.13	7.67
KAKATIYA TPS	1100	6.27	6.43	5.69	6.24	5.06
KALISINDH TPS	1200	-	8.48	9.28	6.96	6.59
KOTHAGUDEM TPS (NEW)	1000	5.97	6.32	7.96	7.91	\$
MARWA TPS	1000	-	-	\$	\$	\$
METTUR TPS - II	600	-	-	-	6.79	\$
NORTH CHENNAI TPS	1830	9.42	7.4	6.31	\$	7.97
RAJIV GANDHI TPS	1200	5.78	5.95	6.63	\$	5.91
SHREE SINGAJI TPP	1200	-	7.2	7.14	6.27	5.26
SINGARENI TPP	1200	-	-	-	6.09	5.96
YERMARUS TPP	1600	-	-	-	\$	\$
III. PVT UTILITY						
TROMBAY TPS	1250	6.11	6.08	6.5	6.41	5.78
IV. PRIVATE IPPS						
AKALTARA TPS	1800	-	7.93	7.2	\$	\$
ANPARA C TPS	1200	7.53	7.13	7.37	5.54	\$
ANUPPUR TPP	1200	-	-	7.98	8.21	7.22
AVANTHA BHANDAR	600	-	*	5.3	5.07	5.76
BARADARHA TPS	1200	-	-	6.57	5.77	\$
BINJKOTE TPP	300	-	-	-	-	\$
DERANG TPP	1200	-	7.74	\$	5.38	\$
ITPCL TPP	1200	-	-	\$	\$	7.51
KAWAI TPS	1320	6.08	5.9	5.26	5.34	5.61
LALITPUR TPS	1980	-	-	\$	7.61	5.7
MAHAN TPP	600	*	10.24	-	7.2	7.2
MAHATMA GANDHI TPS	1320	6.17	5.96	6.33	6.43	5.95
MAITHON RB TPP	1050	5.48	5.07	5.02	5.11	5.49
MUNDRA TPS	4620	7.34	7.89	7.48	7.33	7.29

STATION'S NAME	CAPACITY	2013-14	2014-15	2015-16	2016-17	2017-18
MUTHIARA TPP	1200	-	-	8.2	7.1	7.07
NIGRI TPP	1320	-	*	6.93	6	\$
PRAYAGRAJ TPP	1980	-	-	\$	7.8	7.41
RAIKHEDA TPP	1370	-	-	11.87	*	\$
PAINAMPURAM TPP	1320	-	-	4.32	\$	\$
RAJPURA TPP	1400	8.8	12.28	5.71	5.57	5.08
SALAYA TPP	1200	6.6	5.83	6.36	6.3	6.51
SASAN UMTTP	3960	-	6.99	6.29	6.14	5.47
SGPL TPP	1320	-	-	-	*	\$
SEIONI TPP	600	-	-	-	10	\$
STERLITE TPP	1200	8.53	7.59	8.1	7.53	6.99
TALWANDI SABO TPP	1980	-	11.89	7.87	5.61	7.59
TAMNAR TPP	2400	*	8.3	6.14	6.13	5.19
TIRORA TPS	3300	5.91	5.91	5.56	5.54	5.62
UDUPI TPP	1200	6.37	6.15	5.79	5.03	6.01
VIZAG TPP	1040	-	-	8.9	*	7.57
IV. ALL India TBFP Stations	112630	6.88	6.78	6.62	6.58	6.51
ALL INDIA TOTAL	194336.5	8.16	8.02	7.95	7.7	7.57

*Station data is not available.

\$ % not computed but APC account in overall APC.

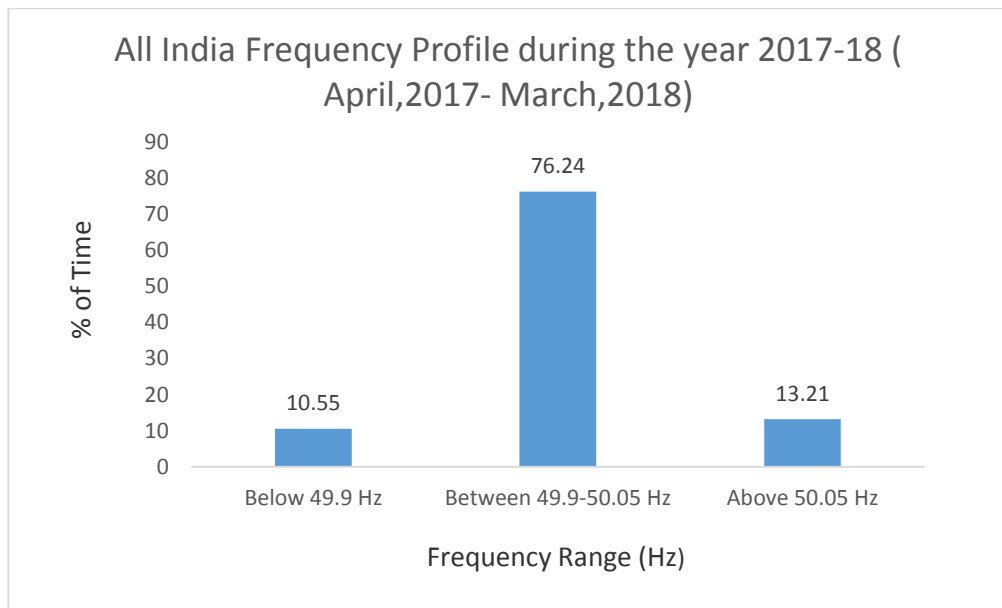
- Station did not exist or was not operational in those years.

SECTION-12

STATION OPERATION UNDER DISTURBED GRID CONDITIONS

12.1 Indian Electricity Grid Code (IEGC) specifies operating band for frequency of grid as 49.90 Hz to 50.05 Hz. The percentage of time during which the power systems of the country operated below 49.9 Hz, between 49.9 to 50.05 Hz (IEGC Band) and above 50.05 Hz and the maximum and minimum frequencies of the grid during April, 2017 to March, 2018 is given in the following table:

% of Time when Frequency was			Max. Frequency (Hz)	Min. Frequency (Hz)
Below 49.9 Hz	Between 49.9-50.05 Hz	Above 50.05 Hz		
10.55	76.24	13.21	50.32	49.62



The monthly All India Frequency Profile during the years 2017-18 and 2016-17 are shown in **Annexure-12.1** and **Annexure-12.2** respectively.

ANNEXURE-12.1**ALL INDIA FREQUENCY PROFILE (MONTH-WISE) DURING 2017-18**

Month	% of Time when Frequency was			Maximum Frequency	Minimum Frequency	Average Frequency
	Below	Between	Above			
April,2017	9.07	74.47	16.46	50.26	49.66	49.99
May,2017	9.00	71.10	19.90	50.32	49.64	49.99
June,2017	5.97	75.43	18.60	50.24	49.72	50.00
July,2017	6.52	76.32	17.17	50.23	49.69	49.99
August,2017	7.12	76.99	15.88	50.20	49.65	49.99
September,2017	11.77	78.50	9.73	50.32	49.62	49.97
October,2017	13.60	77.21	9.19	50.20	49.65	49.97
November,2017	16.91	73.53	9.56	50.27	49.62	49.97
December,2017	12.86	73.86	13.28	50.25	49.70	49.98
January,2018	11.15	77.94	10.92	50.29	49.62	49.98
February,2018	9.69	80.25	10.06	50.21	49.70	49.98
March,2018	12.99	79.29	7.72	50.25	49.68	49.97
Average	10.55	76.24	13.21	50.32	49.62	49.98

[Source: POSOCO-NLDC Website – Operational Performance Report for the month of March,2018.]

Annexure-12.2**ALL INDIA FREQUENCY PROFILE (MONTH-WISE) DURING 2016-17**

Month	% of Time when Frequency was			Maximum Frequency	Minimum Frequency	Average Frequency
	Below	Between	Above			
April,2016	12.87	69.99	17.14	50.32	49.64	49.98
May,2016	6.69	69.80	23.52	50.44	49.56	50.00
June,2016	7.66	74.07	18.26	50.37	49.65	49.99
July,2016	3.94	72.34	23.72	50.35	49.69	50.01
August,2016	5.93	73.06	21.00	50.35	49.65	50.00
September,2016	6.17	75.06	18.76	50.24	49.67	50.00
October,2016	5.52	74.71	19.76	50.25	49.76	50.00
November,2016	9.28	72.22	18.50	50.27	49.54	49.99
December,2016	11.04	69.57	19.39	50.31	49.67	49.99
January,2017	6.20	70.42	23.38	50.33	49.71	50.00
February,2017	5.31	73.74	20.95	50.34	49.76	50.00
March,2017	8.95	73.55	17.50	50.34	49.66	49.99

[Source: POSOCO-NLDC Website – Operational Performance Report for the month of March,2017.]