

OPTCL



(Approved by OERC vide Letter No. OERC-Engg-5/98 (Vol.XIX)/ 1427 dt. 15.10.2018)

PERFORMANCE OF THE TRANSMISSION SYSTEM OF OPTCL FOR 2017-2018

[This report is prepared in pursuance of Licence Condition 16.7 & Clause 13.7 of Appendix-4B of the OERC (Conduct of Business) Regulations, 2004]

SALIENT FEATURE ON PERFORMANCE OF TRANSMISSION SYSTEM OF OPTCL DURING THE YEAR 2017-18**1. Procurement of Power:**

Source	Commission's Approval (MU)	Actual Drawl for the State Consumption (MU)	Remarks
OHPC	5881.74	5589.601	State's Maximum and Minimum demand was 4515 MW and 3171 MW respectively
Thermal(TTPS+OPGC)	6024.43	5900.135	
CPP	----	649.423	
Renewable Generation	763	686.628	
IPP	7060.49	2766.025	
EREB	6321.97	10050.643	
Net Banking +IEX+OA		-250.79	
Total	26051.63	25391.665	

2. Voltages profile of Major Grid Sub-stations**Allowable Range (245-198 KV)**

Sl. No.	Name of the 220/132 kV Grid Sub-station	Maximum Voltage in kV	Minimum Voltage in kV
1	Jaynagar	243	218
2	Theruvalli	241	203
3	Bhanjanagar	239	212
4	Chandaka	235	206
5	Narendrapur	247	197
6	Joda	240	212
7	Tarkera	243	211
8	Budhipadar	234	215
9	Duburi	239	218
10	Balasore	238	209
11	Meramundali	233	220
12	Bidanasi	244	215
13	Katapalli	236	206
14	Bhadrak	241	200
15	Paradeep	238	208
16	Bolangir	232	208
17	Mendhasal	236	207

Allowable Range (145 -122 KV)

Sl. No.	Name of the 132/33 kV Grid Sub-station	Maximum Voltage in kV	Minimum Voltage in kV
1	Cuttack	140	114
2	Berhampur	147	110
3	Puri	136	108
4	Khurda	137	120

3. System Interruptions due to Major Incident:

INTERRUPTION DUE TO MAJOR INCIDENT			
Incident Duration of Interruption No. of Interruption	Duration of Interruption (Hrs:Min:Sec)	No. of Interruption	Remarks
Snapping of Jumper / Conductor / Earth wire	75:38:00	56	The duration of interruption indicated is the sum total of interruptions occurred at different areas (S/s) during the year. However there was no total blackout experienced for the State during the year 2017-18.
Insulator Failure	07:10:00	29	
Bursting of CT / PT	0:34:00	8	
Breaker Problem	0:00:00	0	
Major System Disturbance	0:27:00	8	
Failure of LA	18:13:00	21	
Others	44:55:00	70	

Note: Issued in the Public interest. Detailed report on Performance of Transmission System of OPTCL is available in SLDC website i.e., www.sldcorissa.org.in

**COMMISSION'S OBSERVATION ON THE PERFORMANCE OF THE
TRANSMISSION SYSTEM OF OPTCL FOR 2017-18**

The salient features of the performance of transmission system of OPTCL for the year 2017-18 is given below and the detail information in support to that is available in SLDC website i.e., www.sldcorissa.org.in

A. Procurement of Power:

The Commission had approved the purchase of power by GRIDCO from various sources in the ARR & Tariff order for 2017-18 against which the actual performance have been indicated in the following table:

Source	Commission's Approval (MU)	Actual Drawl for the State Consumption (MU)	Remarks
OHPC	5881.74	5589.601	State's Maximum and Minimum demand was 4515 MW and 3171 MW respectively
Thermal(TTPS+OPGC)	6024.43	5900.135	
CPP	----	649.423	
Renewable Generation	763	686.628	
IPP	7060.49	2766.025	
EREB	6321.97	10050.643	
Net Banking +IEX+OA		-250.79	
Total	26051.63	25391.665	

There is an import of 388.1850 MU through power banking, open access, trading & IEX) and export of 638.974MU (51.521 as sales to other utilities, 127.345 on account of deviation and 460.108 through trading, OA, banking & IEX export) during the FY 2017-18. Hence, in the said financial year GRIDCO has an export of 250.79 MU on this account.

2. During FY 2017-18 the daily peak demand touched at 4515 MW maximum on dt.29.03.2018 and a minimum of 3171 MW on dt.23.11.2017. The peak demand of 4515 MW in 2017-18 is about 410 MW higher than the peak demand experienced during the previous year 2016-17 (4105 MW). The total energy drawl is 25392 MU in FY 2017-18 against 24273 MU in FY 2016-17, which indicates the enhancement in electricity consumption of around 1119 MU in the State.

B. Line Interruption:

3. OPTCL's system has faced aggregated Annual interruptions varying from 27 minutes to 75 hours at different locations on account of conductor/jumper/earth wire snapping, insulator failure, bursting of Current Transformer/Potential Transformer, breaker problem, system disturbance, Lightning Arrester failures and others. However, OPTCL has claimed that it has arranged to maintain power supply without resorting to total power failure. The same effort has been made by OPTCL in maintaining uninterrupted power supply even in the event of generation failures. It has been reported about 87.50, 82.50 and 13 hours of load restriction during the second, third and fourth quarter respectively for the FY 2017-18 on rotation basis. The load restriction has been imposed to curtail the demand. OPTCL claimed that there was no black out experienced in the State during the FY 2017-18. OPTCL should find out latest technical methods for effective utilization of existing level transmission system to increase power transfer capacity, reliability avoiding RoW problem. OPTCL is required to maintain the system to ensure power supply without interruptions in any part of the State and ISGS of Eastern Region. The Commission expects OPTCL to plan O&M and R&M activities with provision of advanced metering/protection/communication system with modern automation. Further, OPTCL should maintain S/Ss without overloading in consultation with DISCOMs with additional capacity whenever required.

C. Frequency Profile:

4. As per the provisions in Indian Electricity Grid Code Regulations, 2010, all users, SEBs, SLDCs, distribution licensee & bulk consumer shall take all possible measures to ensure that grid frequency always remains within 49.90 to 50.05 Hz band. OPTCL, in 2017-18, has experienced frequency as low as 49.63 Hz during 1st quarter and as high as 50.33 Hz during 2nd quarter. DISCOMs should be coordinated to adhere to their drawl schedule in order to reduce their drawl from the grid during low frequency and maintain grid discipline.

D. Voltage Profile:

5. The EHT voltage, as per Regulations 3(1)(b) of Central Electricity Authority(Grid Standards) Regulations, 2010 should be in the range 122-145 kV for voltage at 132 kV, 198-245 kV for voltage at 220 KV and 380-420 kV for 400 kV level. OPTCL has however experienced 197 kV minimum and 247 kV maximum in its 220 kV system and 108 kV minimum and 147 kV maximum in its 132 kV system. OPTCL is advised to take suitable measures to maintain the voltage profile within the allowable limit. OPTCL should also monitor the reactive drawl of DISCOMs from its grid S/S and wherever DISCOM draw excessive reactive load at low voltage condition, it shall take up with them for remedial

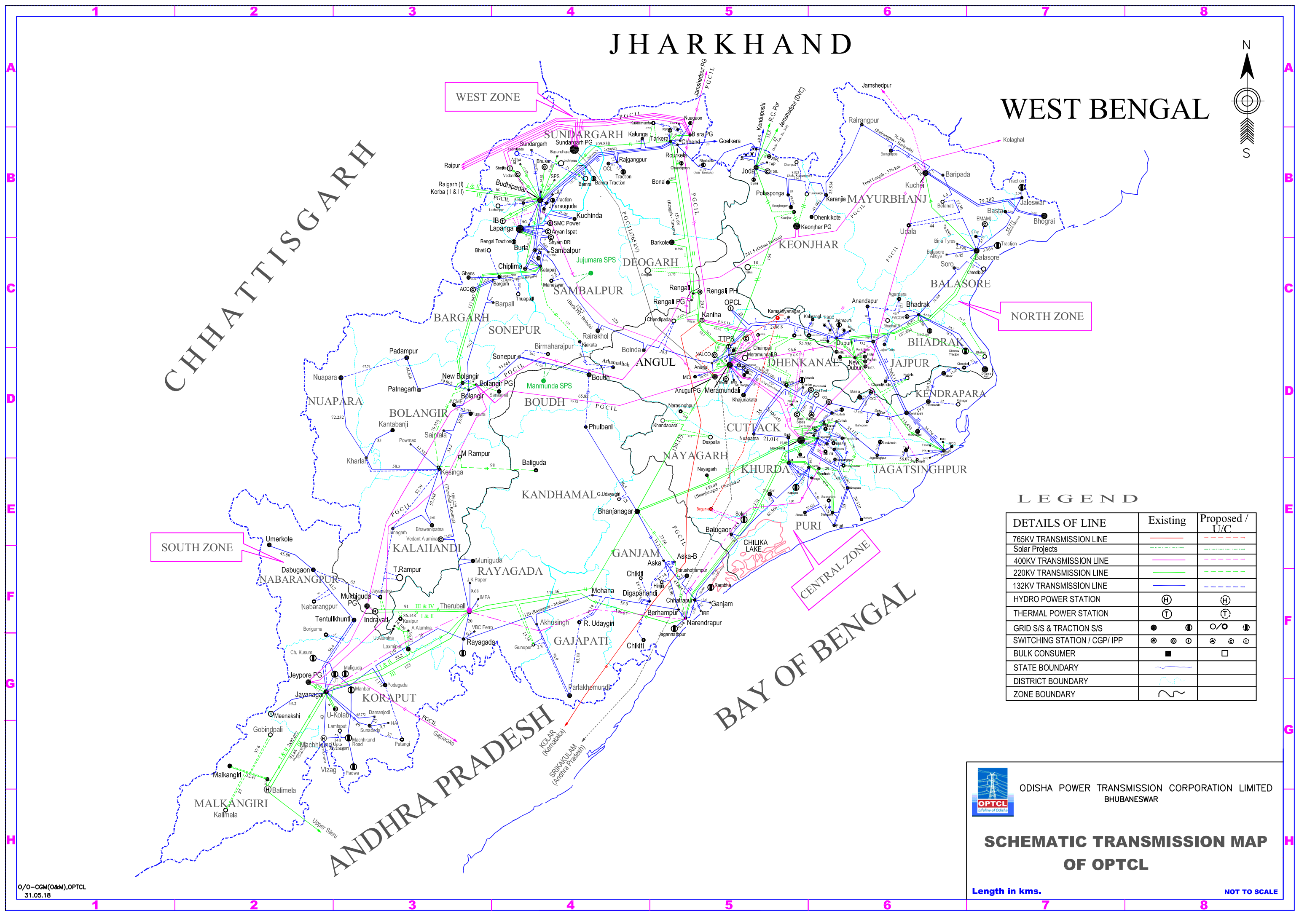
measure. Further, OLTC of the Power Transformers should be in healthy condition and all the field engineers and staff should be continuously trained to operate OLTC during peak and low load condition of the day.

E. Load Restriction:

6. M/s. OPTCL has claimed that the load restriction due to non-availability of the transmission capacity as 'NIL' which in turn indicates that during FY 2017-18 that OPTCL system availability was 100%. The projects in the pipe-line already approved by the Commission should be completed by OPTCL within the time schedule to avoid cost & time over-run. Simultaneously, OPTCL needs to avoid under loading of lines & reduce reactive power to minimise system losses and should conduct comprehensive system study before proceeding for any network expansion plan. In order to resolve the local RoW issues, OPTCL should take up the matter with local elected representatives and District Administration to resolve the local RoW issues. Local/ regional benefits of better quality of supply should be informed to the public through mass communication.

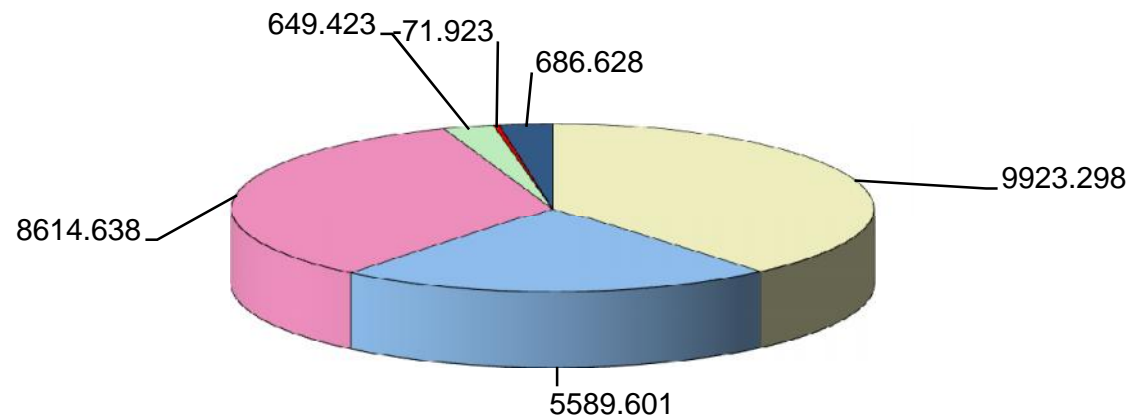
F. Efficient Operation of Transmission System:

7. SLDC, being the nerve center of the electricity sector in Odisha should strengthen its IT, communication infrastructure etc. and train its staff's appropriately for efficient functioning. SLDC to act independently in accordance with law, while granting Open Access to the Users.



GRID DEMAND FOR THE YEAR 2017-18

[Total Drawal 25391.665 MU]

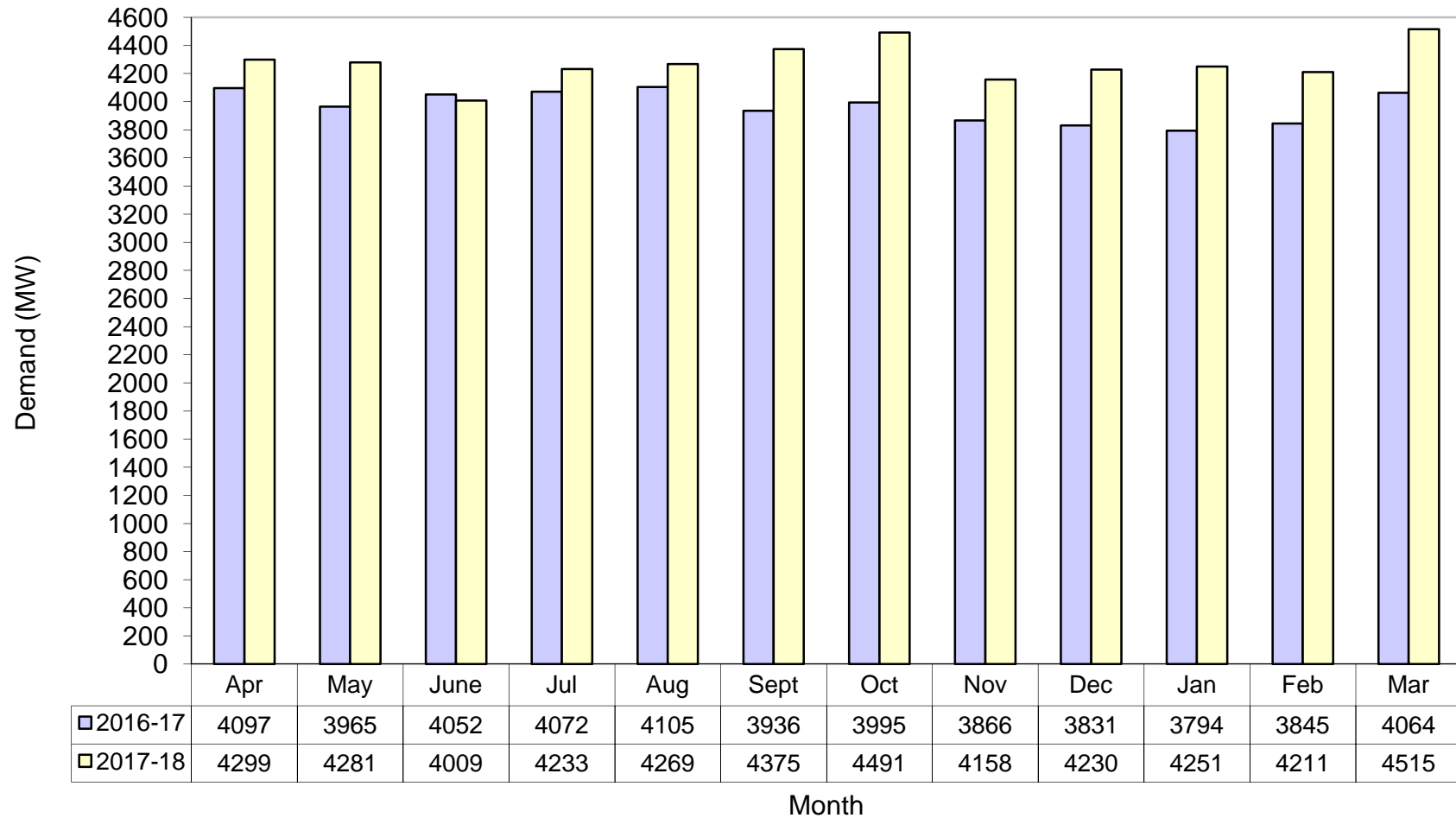


Net EREB Total Hydro NET Thermal (OPGC + TTPS+IPP) CPP Net (BankingPower+IEX+STOA) Renewable Energy

DAILY PEAK DEMAND (MW) EXCLUDING TRADING FOR THE YEAR 2017-18

Day	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Max	Min
1	3903	3734	3630	3641	3997	3502	3965	4158	3622	3485	3860	3867	4158	3485
2	3699	4004	3735	3932	3695	3726	3840	3807	3597	3543	3832	3839	4004	3543
3	3726	3785	3819	3773	3700	3859	3985	3839	3524	3580	3895	4254	4254	3524
4	3682	4281	4009	3727	3802	3897	4056	3747	3625	3666	3888	4238	4281	3625
5	4026	4207	3857	4233	3760	3824	3944	3739	3799	3734	3971	3959	4233	3734
6	4033	3721	3682	4008	3939	3968	4095	3823	3668	3733	4105	4141	4141	3668
7	4068	3847	3848	3738	3828	4035	4277	3613	3676	3666	4133	3969	4277	3613
8	3997	3743	3753	3799	3831	3909	4338	3659	3365	3658	4145	3947	4338	3365
9	4033	3573	3763	3734	3861	3886	4231	3486	3558	3693	3956	3992	4231	3486
10	4064	3922	3540	3699	4152	3870	4438	3519	3574	3821	3985	3987	4438	3519
11	4042	3721	3316	3909	4109	3929	4349	3669	3686	3856	3937	4009	4349	3316
12	3934	4054	3402	3599	3887	3658	4150	3774	3633	4013	4211	4060	4211	3402
13	3994	3642	3746	3620	3827	3781	4102	3828	3687	4081	3841	4005	4102	3620
14	3964	3874	3432	3802	3798	3958	4283	3840	3675	3977	3881	4384	4384	3432
15	4119	3913	3254	4000	3870	4023	3911	3466	3552	3709	4068	4471	4471	3254
16	3694	4006	3785	3892	4076	4104	3985	3511	3595	4111	3768	3777	4111	3511
17	4160	4122	3751	4050	3843	4246	4095	3417	3884	3906	3752	3966	4246	3417
18	3988	3928	3653	3977	3869	3941	4147	3289	3685	3885	3884	4032	4147	3289
19	3751	3809	3825	3594	3750	3842	3917	3181	3756	3965	3922	4358	4358	3181
20	3937	3693	3551	3689	3970	3984	3805	3271	3552	4111	3967	4018	4111	3271
21	3963	3989	3239	3944	3953	4273	4309	3208	3573	3919	4036	4435	4435	3208
22	4267	3946	3801	3768	4012	4052	4188	3314	3615	3866	3962	4277	4277	3314
23	3986	4026	3544	3480	3879	4243	4491	3171	3964	3998	3768	4115	4491	3171
24	4104	3893	3259	3755	3899	4319	4276	3381	3959	3915	4015	4041	4319	3259
25	4081	4044	3428	3827	4085	4147	4093	3507	3880	4015	3930	4063	4147	3428
26	4299	3749	3630	3775	4269	4375	4083	3459	3603	3781	4025	4078	4375	3459
27	4123	3859	3657	3663	3892	4181	4426	4069	4230	4046	4060	4055	4426	3657
28	4111	3654	3614	3922	3538	4075	4345	4085	3933	4251	4080	4091	4345	3538
29	3949	3866	3738	3976	3989	4108	3984	3627	4010	4185	4211	4515	4515	3627
30	3976	3808	3607	3723	3974	3944	4058	3519	3661	3957		4098	4098	3519
31		3958		3794	3995		4000		3591	3856		3767	4000	3591
MAX	4299	4281	4009	4233	4269	4375	4491	4158	4230	4251	4211	4515	4515	3734
MIN	3682	3573	3239	3480	3538	3502	3805	3171	3365	3485	3752	3767	4000	3171

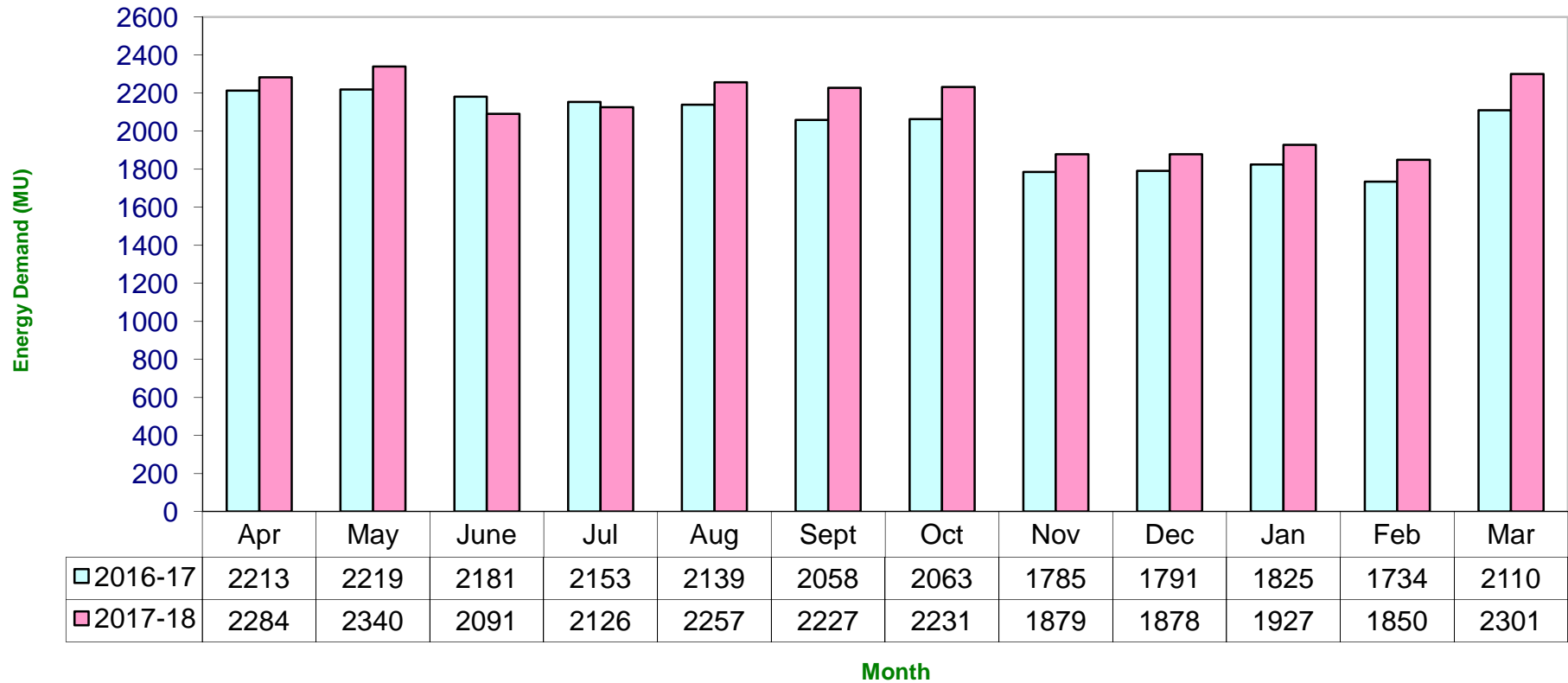
COMPARISON OF MONTHLY PEAK DEMAND (MW) EXCLUDING TRADING FOR THE YEAR ENDING 2016-17 & 2017-18



Annual Peak Demand : 2017-18 - 4515 MW 2016-17 - 4105 MW

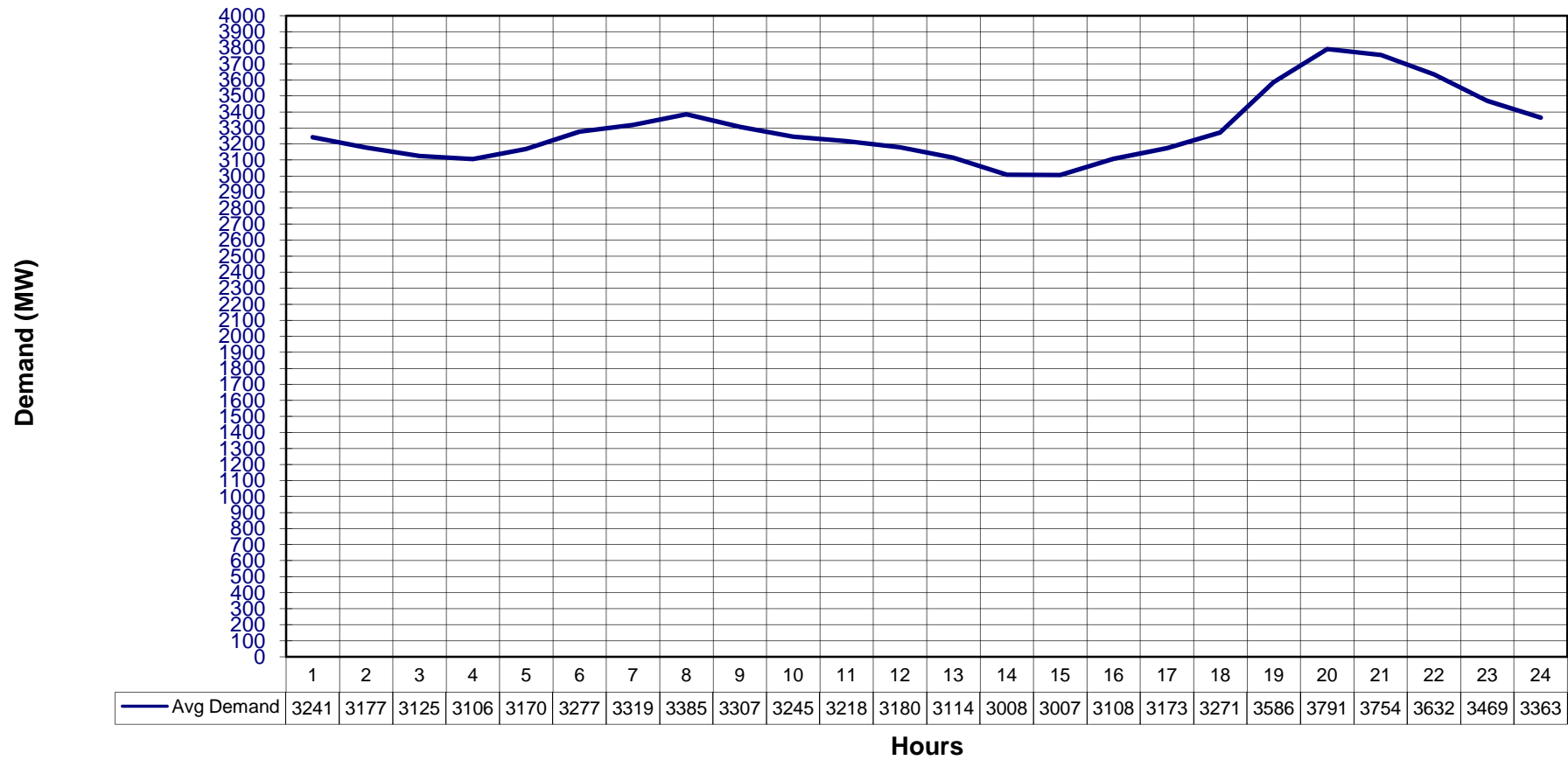
■ 2016-17 ■ 2017-18

COMPARISON OF MONTHLY ENERGY DEMAND (MU) EXCLUDING TRADING & RETURN BANKING POWER FOR THE YEAR ENDING 2016-17 & 2017-18



Annual Energy Demand : **2016-17 - 24273 MU** **2017-18 - 25392 MU**

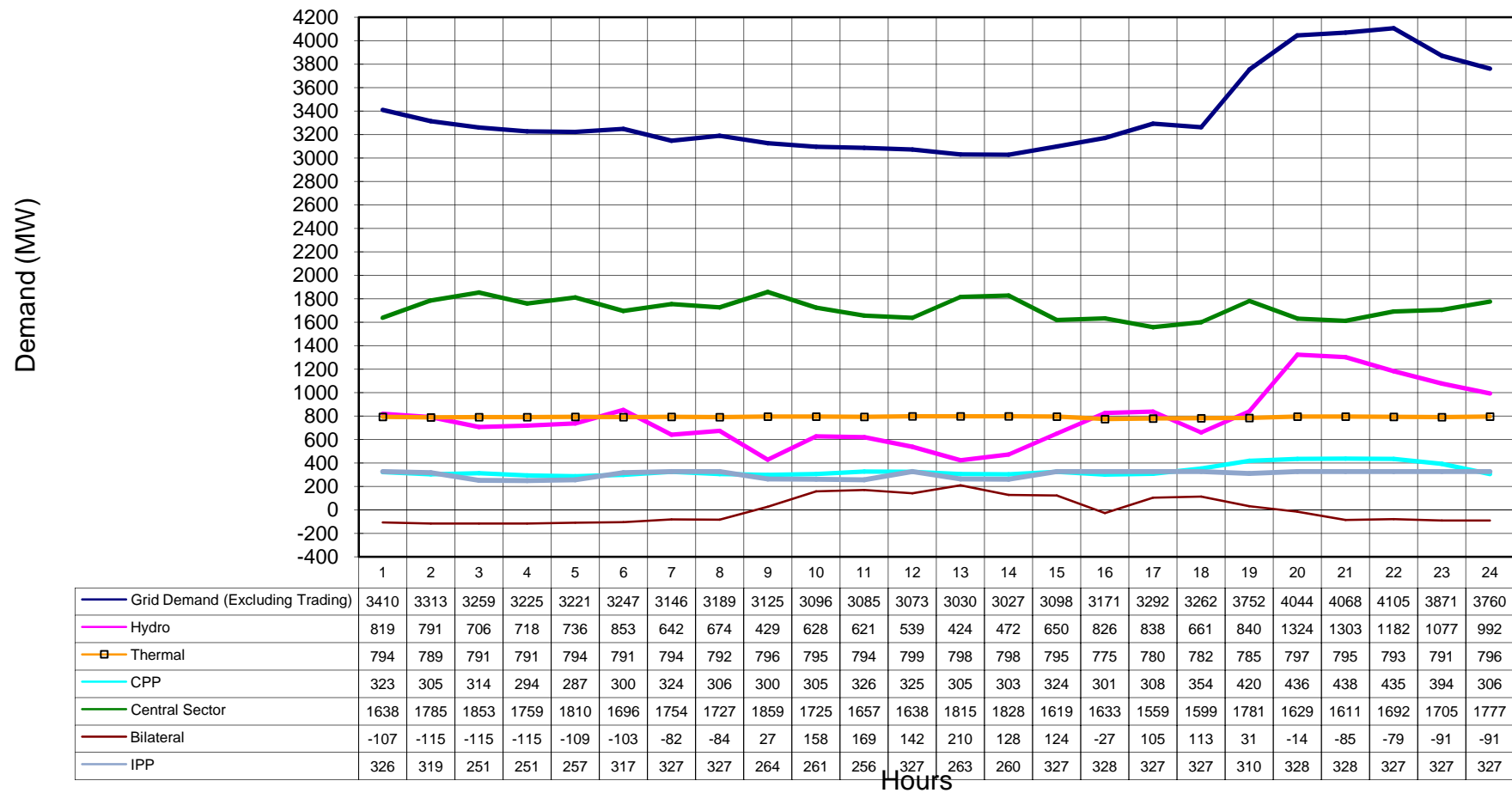
DEMAND CURVE FOR HOURLY AVERAGE DEMAND EXCLUDING TRADING FOR YEAR ENDING MARCH 2018



Hourly Average Demand (Month wise) in support of Page-6

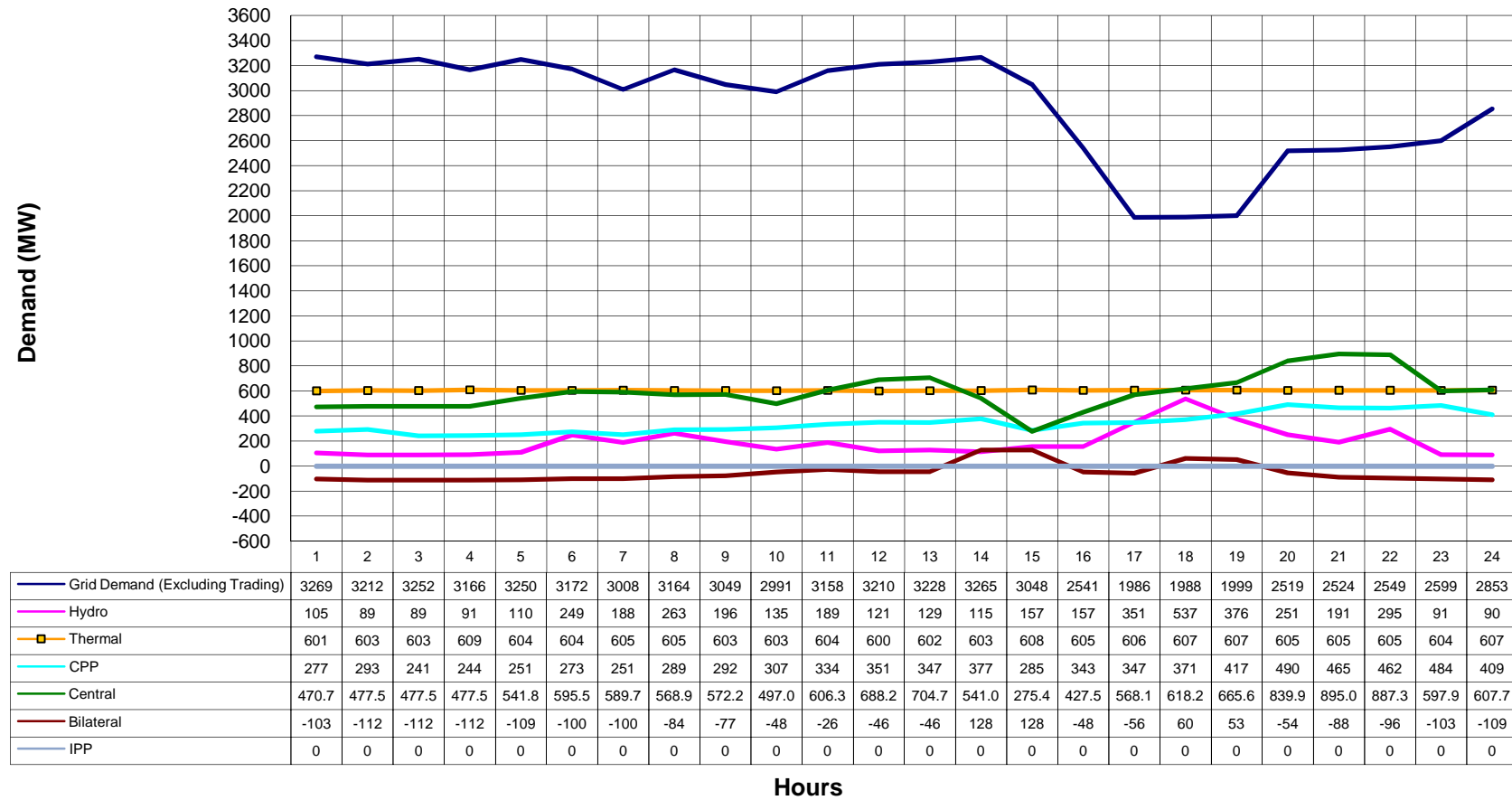
Hours-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Apr-17	3602	3525	3465	3422	3451	3430	3250	3233	3180	3189	3250	3326	3352	3328	3379	3468	3392	3166	3454	3887	3913	3842	3807	3797
May-17	3533	3458	3398	3375	3393	3300	3148	3156	3142	3198	3283	3372	3456	3465	3518	3573	3425	3112	3180	3612	3665	3666	3652	3669
Jun-17	3302	3213	3157	3105	3106	3063	3008	3027	2974	2984	3041	3118	3112	3049	3077	3129	3039	2890	2989	3437	3497	3485	3456	3367
Jul-17	3364	3283	3229	3185	3219	3254	3262	3307	3237	3193	3126	3107	3054	2985	2983	3066	3091	3088	3332	3775	3781	3693	3573	3440
Aug-17	3474	3401	3336	3316	3345	3382	3334	3355	3280	3221	3189	3163	3108	3020	3026	3084	3128	3183	3496	3833	3852	3791	3689	3647
Sep-17	3662	3598	3548	3527	3563	3603	3537	3547	3476	3444	3412	3387	3374	3329	3380	3433	3416	3435	3800	3867	3874	3817	3756	3821
Oct-17	3559	3502	3448	3423	3468	3556	3553	3605	3534	3467	3425	3368	3291	3215	3243	3351	3429	3686	4077	4090	4020	3900	3773	3673
Nov-17	2696	2624	2586	2603	2753	3010	3086	3171	3075	2994	2969	2859	2722	2539	2509	2667	2912	3319	3586	3512	3370	3227	2959	2774
Dec-17	2493	2450	2412	2419	2552	2888	3214	3389	3260	3121	3012	2883	2708	2495	2436	2611	2873	3391	3692	3635	3479	3190	2834	2608
Jan-18	2704	2667	2619	2626	2757	3063	3431	3656	3536	3349	3219	3063	2902	2684	2601	2743	2948	3357	3806	3841	3727	3467	3074	2830
Feb-18	3002	2975	2929	2920	3019	3252	3514	3659	3556	3389	3292	3179	3031	2843	2781	2923	3113	3328	3833	3950	3832	3595	3313	3120
Mar-18	3502	3432	3379	3352	3408	3520	3497	3516	3434	3387	3392	3332	3258	3142	3147	3250	3315	3294	3783	4056	4038	3909	3736	3613
Avg. Annual	3241	3177	3125	3106	3170	3277	3319	3385	3307	3245	3218	3180	3114	3008	3007	3108	3173	3271	3586	3791	3754	3632	3469	3363

HOURLY DEMAND CURVE FOR 29.03.2018 (MAX PEAK DEMAND OF THE YEAR (2017-18))



— Grid Demand (Excluding Trading)
 — Hydro
 —■— Thermal
 — CPP
 — Central Sector
 — Bilateral
 — IPP

HOURLY DEMAND CURVE FOR 23.11.2017 (MIN PEAK DEMAND OF THE YEAR 2017-18)



— Grid Demand (Excluding Trading)
 — Hydro
 —■— Thermal
 — CPP
 — Central
 — Bilateral
 — IPP

1 INSTALLED CAPACITY (AS ON 31.3.2018) ENERGY GENERATION / ENERGY DRAWAL BY OPTCL

SECTOR	Installed capacity (MW)	Energy Generation (incl. Aux) (MU)	Energy Drawal by GRIDCO (MU)
A. STATE SECTOR			
OHPC(Hydro)*	2008.5	5792.022	5589.601
OPGC (Thermal)	420	2842.351	2516.293
TTPS (Thermal)	460	3486.312	3378.684
TTPS (UI-OD)			5.158
IPPs			2766.025
CPP (Synchronised to OPTCL System)			649.423
Renewable Energy Including Co-ge	-		686.628
B. CENTRAL SECTOR			
Orissa Share			
Hydro	189.40		
Thermal	1203.03	-	10050.643
C. Banking Power+OA+Trading+IEX (Import)			388.185
TOTAL DRAWAL			26030.638
D. Banking Power+OA+Trading+IEX (Export)			460.108
E. Deviation(Export)			127.345
F. Sold to Other Utilities			51.521
Net GRIDCO demand			25391.665

Export to ICCL

26.361

Export to NALCO

8.068

* Includes Orissa share from Machhkund.

2 TRANSMISSION LINES AND SUBSTATIONS

A.CIRCUIT LINES	As on 31.03.2017	Capacity Addition in 2017-2018	As on 1.4.2018	Remark
400 kV line (ckt.km)	1129.434	3.970	1133.404	400KV Indravati-Indravati PG
220kV line (ckt.km)	5911.208	11.604	5922.812	-
132kV line (ckt.km)	6030.821	354.871	6385.692	-
B. SUBSTATIONS				
400 / 220 /132kV (nos.)	2	0	2	-
400 / 220 (nos.)	1	0	1	-
220/132/33kV (nos.)	20	1	21	(Baragarh New)
220/33kV (nos.)	7	1	8	(Bonai)
132/33 kV (nos.)	79	6	85	Tusura, Muniguda, Tirtol, Podagada, Dhenkikote, Kantabanji .
132/33/25 kV (nos.)	1	0	1	-
132/33/11 kV (nos.)	2	0	2	-
132/11 kV (nos.)	0	0	0	-
132kV Switching Stations (OPTCL)	4	0	4	-
132kV LILO Switching Stations of Industries	16	0	16	-
Total	132	8	140	-

Note: 1. (The above data in (2) are received from O & M branch of OPTCL system.)

Capacity addition details for 220kV:

1. 220 kV Bonai LILO DC

(220 kV Rengali - Tarkera Ckt-I)- 5.534 ckm

2. 220 kV Pandiabil LILO DC (Atri - Pandiabil ckt - I)- 3 ckm

3. 220 kV Pandiabil LILO DC (Atri - Pandiabil ckt -II)- 3 ckm

4. 220 kV Barqarh New LILO DC (220 kV Katapalli - New BolanqirCkt-I)- 0.07ckm

Capacity addition details for 132kV:

1. 132 kV Nuapatna LILO (on 132kV Meramundali - AratiCkt earlier termed as Chainpal - Choudwarckt-I)-35ckm

2. 132 kV Tusura LILO DC(132 kV ACME - Saintala Line) -25.438ckm

3.132 kV Salipur - Kendrapara SC(on DC Towers)- 34.4ckm

4.132 kV Kuchei - Jaleswar DC- 158.564ckm

5.132 kV Lapanga - Rengali RTSS - 12.308ckm

6.132 kV Tirtol LILO DC (Paradeep - Jagatsinghpur Line)- 10.84ckm

7.132 kV Podagada LILO DC (Jayanagar - Rayagada Line)- 2.235ckm

8.132 kV Muniguda LILO DC (On Therubali - Kestinga SC))- 3.8ckm

9.132 kV Karanjia - Dhenkikote SC (in DC Towers)- 41.902ckm

10. 132 kV Khariar - Kantabanji SC (in DC Towers)- 33ckm

11.132 kV Kantabanji Traction SC - 4ckm

Upgraded

1.132 kV Dhenkanal - Nuapatna SC (in DC Towers)-(-) 2.116ckm

2.132 kV Kuchei - Jaleswar DC (Charged a portion from Bhogarai LILO to JaleswarLoc 284 to Loc. 301)- (-)4.5ckm

3 **PERFORMANCE OF OPTCL DURING 2017 - 18**

3 A. **POWER SUPPLY SECURITY**

3 A.1 Load Restriction due to non-availability of Generation / Failure of generating Stations.

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	0.00	87.50	82.50	13.00	183.00
Percentage(%)	0.00	3.96	3.74	0.60	2.09

* —→ Load restriction imposed in the State on rotation basis to curtail the demand.

3 B. **TRANSMISSION SECURITY**

3 B.1 Load Restriction due to non-availability of Transmission capacity

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	0	0	0.00	0	0
Percentage(%)	0.00	0.00	0.00	0.00	0.00

3 B.2 Rescheduling of Generation due to non- availability of Transmission capacity

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	0	0	0	0	0
Percentage(%)	0	0	0	0	0

3 C **OVERALL PERFORMANCE**

3 C-1 **FREQUENCY**

(i) **Above 50.05 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	476.98	468.85	308.22	293.72	1547.77
Percentage(%)	21.84	21.23	13.96	13.60	17.67

(ii) **Maximum continous period beyond 50.05 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	2.63	1.40	1.63	0.78	2.63
Percentage(%)	0.12	0.06	0.07	0.04	0.03

(iii) **Maximum Frequency occurrence**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
Hz	50.33	50.32	50.27	50.30	50.33
Date/Time	<u>21.05.17</u> 18:03hr	<u>17.09.17</u> 06:04hr	<u>19.11.17</u> 06:02hr	<u>31.01.18</u> 21:59hr	<u>21.05.17</u> 18:03hr

(iv) **Below 49.9 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	155.20	147.30	267.03	184.05	753.58
Percentage(%)	7.11	6.67	12.09	8.52	8.60

(v) **Maxm. Continous period below 49.9 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	0.93	0.88	1.28	0.75	1.28
Percentage(%)	0.043	0.040	0.058	0.035	0.015

(vi) **Lowest Frequency Occurrence**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
Hz	49.66	49.63	49.65	49.64	49.63
Date/Time	<u>11.05.17</u> 15:12 hr	<u>23.09.17</u> 18:27 hr	<u>07.11.17</u> 06:41 hr	<u>31.01.18</u> 20:48hr	<u>23.09.17</u> 18:27 hr

3. C - 2 VOLTAGE PROFILE (2017-2018)

MAXIMUM VOLTAGES OF MAJOR GRID SUB-STATIONS. (220kV)

Sl. No.	Name of the Sub-station	Quarter - 1			Quarter - 2			Quarter - 3			Quarter - 4			ANNUAL		
		Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.
1	Jaynagar	242.77	06.05.17	18:15	240.748	18.09.17	16:00	240.98	04.11.17	04:30	240.00	26.01.18	02:45	242.77	06.05.17	18:15
2	Theruvai	240.86	06.05.17	18:15	238.79	20.08.17	16:00	237.23	14.10.17	10:00	236.76	09.01.18	12:00	240.86	06.05.17	18:15
3	Bhanjanagar	238.21	20.05.17	17:45	238.90	18.09.17	16:00	239.48	06.10.17	17:00	238.27	26.01.18	02:45	239.48	06.10.17	17:00
4	Chandaka	231.973	05.06.17	08:30	234.63	12.09.17	15:45	234.69	04.12.17	02:45	234.34	15.01.18	03:15	234.69	04.12.17	02:45
5	Narendrapur	246.58	06.05.17	18:15	247.10	22.09.17	15:30	239.25	19.12.17	11:30	233.82	26.01.18	02:45	247.10	22.09.17	15:30
6	Joda	239.42	13.05.17	22:45	239.36	24.07.17	06:15	240.06	20.10.17	06:15	232.32	06.01.18	03:15	240.06	20.10.17	06:15
7	Tarkera	235.84	28.06.17	13:45	237.46	14.08.17	17:00	243.17	06.12.17	10:30	239.71	08.01.18	13:15	243.17	06.12.17	10:30
8	Budhipadar	233.18	28.06.17	11:30	233.76	05.07.17	13:15	233.99	17.11.17	15:30	233.47	29.01.18	03:00	233.99	17.11.17	15:30
9	Duburi	237.226	15.06.17	17:00	237.11	23.07.17	13:30	238.96	20.10.17	07:45	238.15	11.01.18	02:15	238.96	20.10.17	07:45
10	Balasore	237.86	03.05.17	17:15	235.73	18.09.17	07:45	236.94	20.10.17	08:00	234.97	08.01.18	03:15	237.86	03.05.17	17:15
11	Meramundali	229.72	16.06.17	02:45	230.76	18.09.17	16:00	232.67	02.12.17	02:15	231.69	02.01.18	02:30	232.67	02.12.17	02:15
12	Bidanasi	234.97	03.04.17	02:45	243.52	24.09.17	20:00	237.92	28.12.17	03:00	238.73	07.01.18	01:45	243.52	24.09.17	20:00
13	Katapalli	232.95	19.05.17	00:15	231.86	17.07.17	03:15	231.11	02.12.17	02:00	235.90	01.02.18	15:15	235.90	01.02.18	15:15
14	Bhadrak	236.94	15.05.17	17:45	239.19	15.08.17	15:45	240.75	22.11.17	09:45	237.515	08.01.18	03:15	240.75	22.11.17	09:45
15	Paradeep	233.65	06.05.17	22:00	232.38	12.09.17	16:00	237.57	20.10.17	08:00	235.667	08.01.18	02:45	237.57	20.10.17	08:00
16	Bolangir	232.26	06.05.17	18:15	230.30	17.07.17	03:15	229.26	18.11.17	13:45	231.63	11.02.18	21:15	232.26	06.05.17	18:15
17	Mendhasal	232.49	15.06.17	18:00	235.32	01.09.17	17:00	236.01	04.12.17	03:00	235.61	15.01.18	03:15	236.01	04.12.17	03:00

MINIMUM VOLTAGES OF MAJOR GRID SUB-STATIONS. (220kV)

Sl. No.	Name of the Sub-station	Quarter - 1			Quarter - 2			Quarter - 3			Quarter - 4			ANNUAL		
		Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.
1	Jaynagar	219.675	09.05.17	06:30	224.06	31.07.17	11:30	219.56	29.12.17	16:15	218.17	10.03.18	15:30	218.17	10.03.18	15:30
2	Theruvai	203.11	24.04.17	20:30	213.90	22.08.17	10:15	212.34	29.12.17	16:15	211.42	10.02.18	14:45	203.11	24.04.17	20:30
3	Bhanjanagar	214.94	17.05.17	19:00	223.20	01.08.17	19:30	223.72	21.10.17	18:00	212.29	21.03.18	18:45	212.29	21.03.18	18:45
4	Chandaka	205.819	10.04.17	18:45	214.826	08.07.17	19:45	217.02	29.11.17	17:30	206.34	21.03.18	18:30	205.82	10.04.17	18:45
5	Narendrapur	196.76	09.06.17	22:00	207.49	22.08.17	10:15	211.88	21.10.17	18:00	200.39	21.03.18	18:45	196.76	09.06.17	22:00
6	Joda	211.77	16.05.17	17:15	219.91	16.09.17	19:45	217.60	08.10.17	12:00	218.17	29.03.18	20:45	211.77	16.05.17	17:15
7	Tarkera	210.84	29.05.17	15:45	216.73	15.09.17	16:15	217.14	12.10.17	11:30	223.43	21.03.18	18:45	210.84	29.05.17	15:45
8	Budhipadar	218.75	22.04.17	16:30	222.27	21.09.17	12:30	214.83	24.12.17	16:00	220.66	24.03.18	19:15	214.83	24.12.17	16:00
9	Duburi	218.23	06.04.17	21:00	223.83	06.09.17	20:00	225.97	14.10.17	18:45	219.62	21.03.18	19:00	218.23	06.04.17	21:00
10	Balasore	211.419	07.06.17	23:00	214.54	31.07.17	19:30	219.56	14.10.17	18:45	208.65	28.03.18	19:00	208.65	21.03.18	19:00
11	Meramundali	220.77	17.05.17	15:00	219.50	01.08.17	13:15	223.66	14.10.17	18:45	220.83	21.03.18	18:45	219.50	06.09.17	20:00
12	Bidanasi	215.11	28.04.17	23:15	217.54	01.08.17	14:30	217.14	23.10.17	18:15	215.06	21.03.18	15:30	215.06	21.03.18	19:00
13	Katapalli	216.38	17.05.17	11:00	217.42	08.09.17	15:45	219.62	29.12.17	18:45	206.33	15.01.18	17:15	206.33	21.03.18	19:00
14	Bhadrak	203.57	22.04.17	14:15	214.65	30.07.17	19:45	216.56	17.10.17	22:30	200.39	28.03.18	19:15	200.39	28.03.18	19:15
15	Paradeep	207.67	29.06.17	20:15	209.51	11.08.17	20:30	213.21	25.10.17	17:45	208.01	21.03.18	19:00	207.67	29.06.17	20:15
16	Bolangir	213.79	17.06.17	10:00	212.69	20.07.17	20:00	213.61	29.12.17	18:30	208.36	02.02.18	18:00	208.36	02.02.18	18:00
17	Mendhasal	206.51	18.05.17	14:45	220.08	11.09.17	23:00	218.98	21.10.17	18:00	207.84	21.03.18	18:45	206.51	18.05.17	14:45

MAXIMUM VOLTAGES OF MAJOR GRID SUB-STATIONS. (132kV)

Sl. No.	Name of the Sub-station	Quarter - 1			Quarter - 2			Quarter - 3			Quarter - 4			ANNUAL		
		Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.
1	Cuttack	139.89	03.04.17	02:45	140.35	12.09.17	16:00	138.91	22.12.17	03:15	139.25	07.01.18	01:45	140.35	12.09.17	16:00
2	Berhampur	146.82	19.04.17	21:30	138.27	30.09.17	13:30	140.52	19.12.17	11:30	138.39	26.01.18	02:45	146.82	19.04.17	21:30
3	Puri	135.56	03.04.17	03:00	134.63	16.07.17	13:00	136.14	20.10.17	03:30	134.63	15.01.18	03:00	136.14	20.10.17	03:30
4	Khurda	137.12	19.04.17	18:45	136.19	01.09.17	17:00	136.31	20.10.17	01:30	135.67	15.01.18	03:00	137.12	19.04.17	18:45

MINIMUM VOLTAGES OF MAJOR GRID SUB-STATIONS. (132kV)

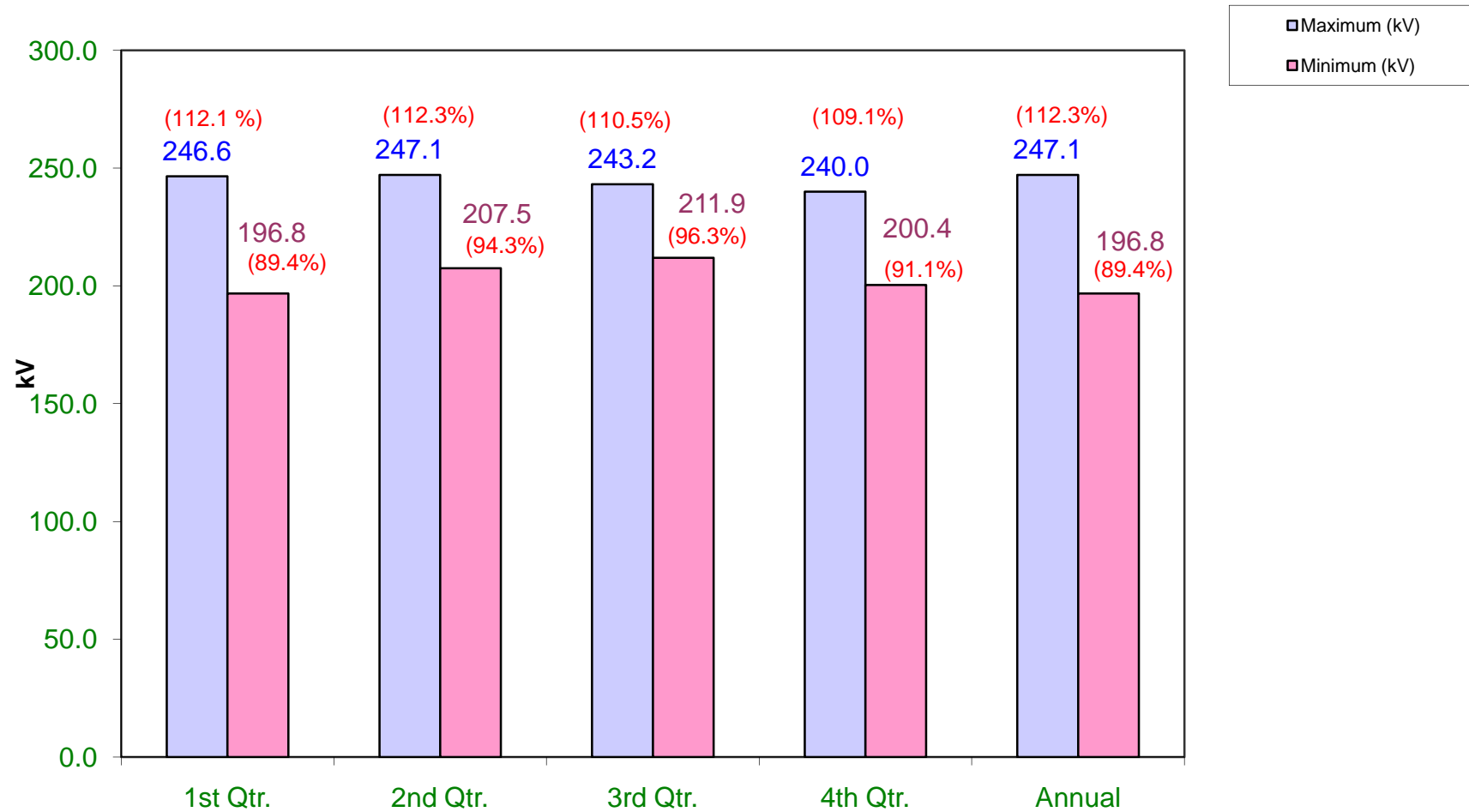
Sl. No.	Name of the Sub-station	Quarter - 1			Quarter - 2			Quarter - 3			Quarter - 4			ANNUAL		
		Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.
1	Cuttack	113.91	28.04.17	23:30	121.99	12.08.17	09:30	124.01	11.10.17	17:45	124.42	21.03.18	15:30	113.91	28.04.17	23:30
2	Berhampur	110.33	17.05.17	20:00	122.57	22.08.17	10:15	120.49	19.12.17	17:30	117.26	21.03.18	18:45	110.33	17.05.17	20:00
3	Puri	107.61	19.05.17	12:45	122.16	11.09.17	23:00	110.21	13.11.17	18:15	115.70	21.03.18	19:00	107.61	19.05.17	12:45
4	Khurda	125.28	20.06.17	12:15	125.86	23.09.17	08:15	125.57	21.10.17	08:30	119.97	21.03.18	19:00	119.97	21.03.18	19:00

Note:

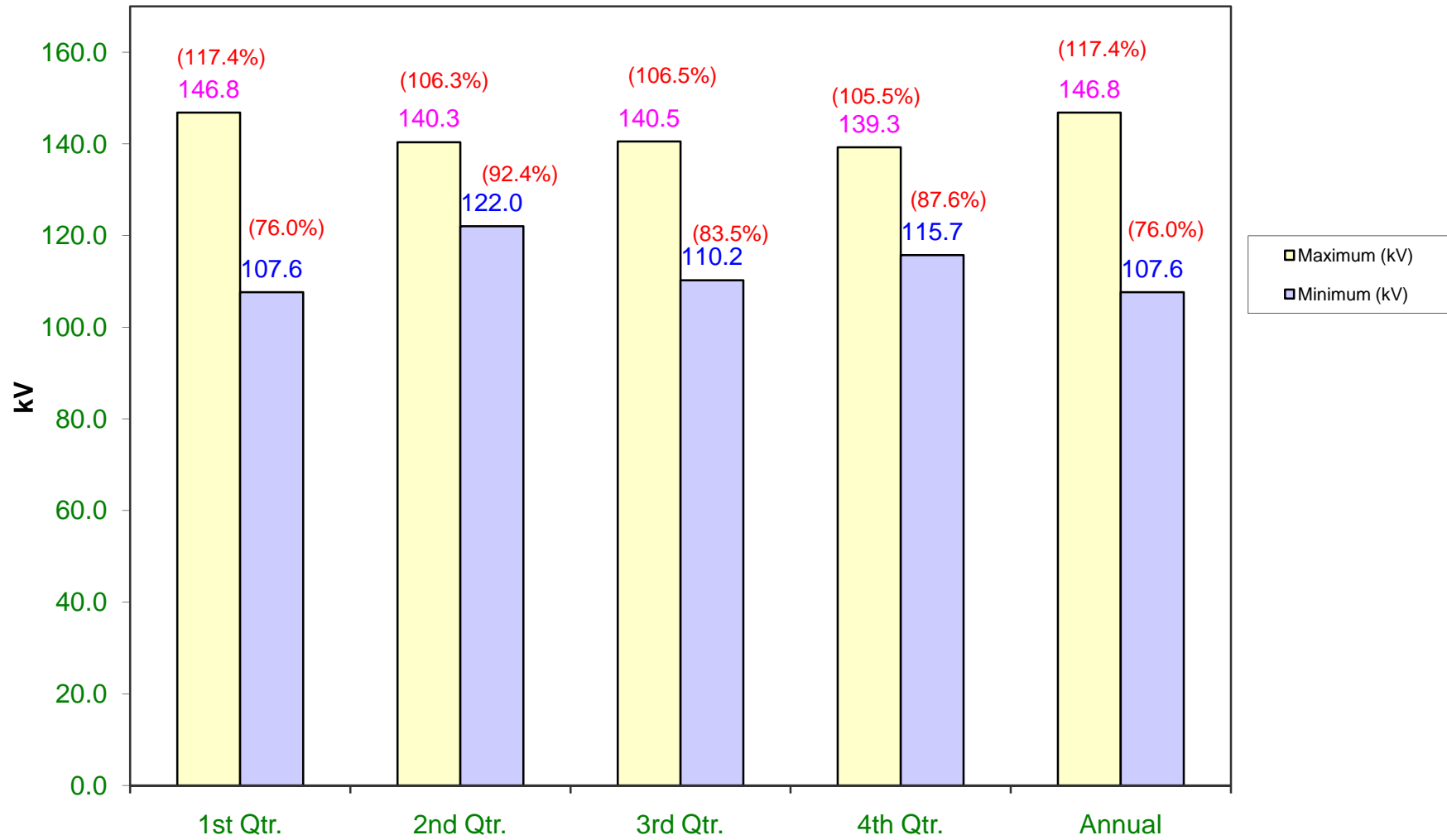
The bus voltages are recorded from 15min block voltage from meter data .

Further, low voltages during contingency conditions are also recorded as minimum voltages excluding disturbance period and any PT failure period.

OVERALL PERFORMANCE VOLTAGE AT 220kV

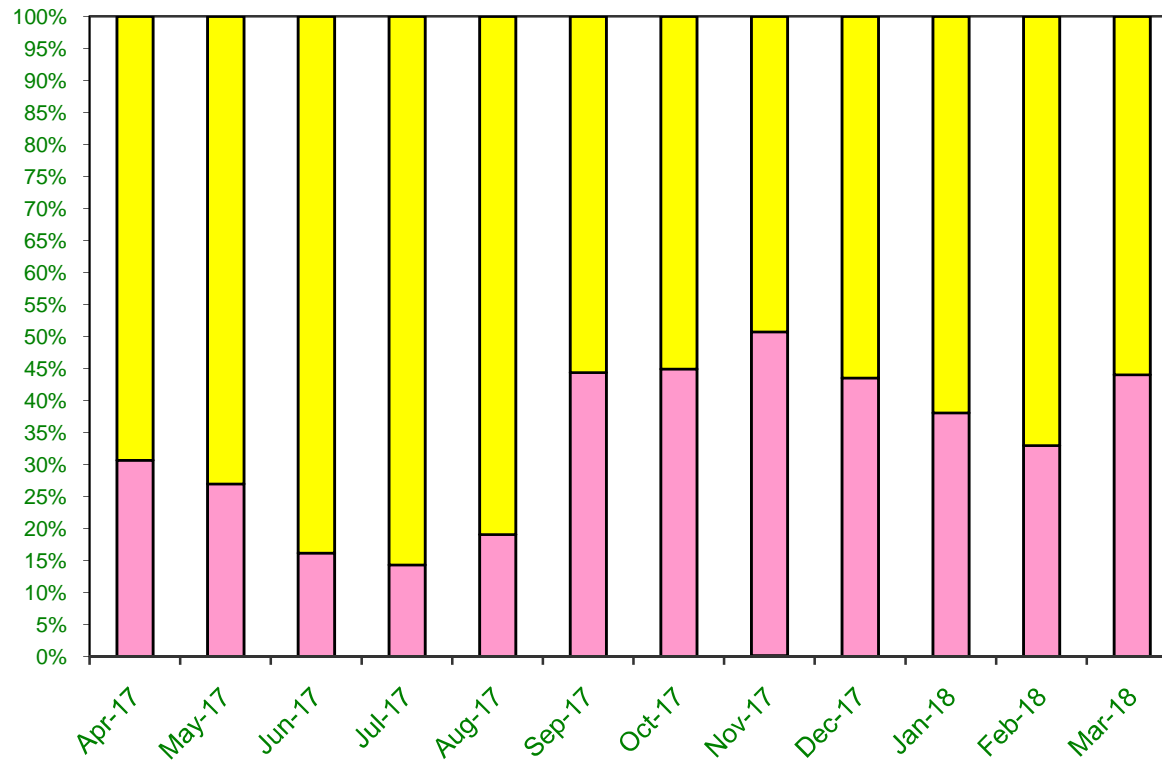


OVERALL PERFORMANCE VOLTAGE AT 132 kV



Frequency Performance

Percentage time occurrence



- >51.0Hz
- >=50.05Hz
- 49.70 - 49.90Hz
- 49.0 - 49.70Hz
- 48.50 - 49.0Hz
- <48.5Hz

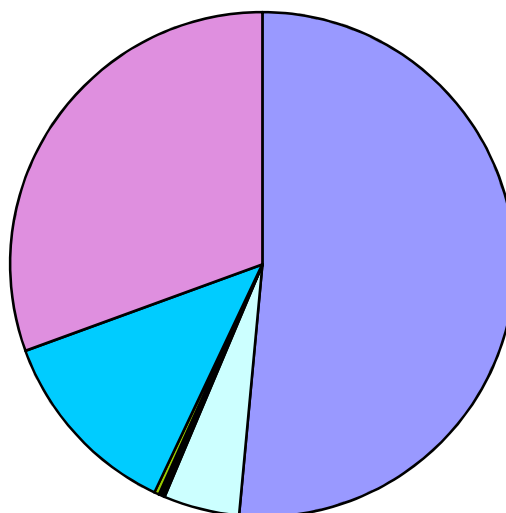
	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18
■ >51.0Hz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
■ >=50.05Hz	18.61	22.47	24.42	27.13	23.73	12.56	13.10	13.38	15.37	14.55	14.41	11.92
■ 49.70 - 49.90Hz	8.23	8.29	4.72	4.53	5.58	10.01	10.69	13.74	11.84	8.94	7.09	9.39
■ 49.0 - 49.70Hz	0.01	0.02	0.00	0.00	0.01	0.03	0.02	0.05	0.00	0.01	0.00	0.00
■ 48.50 - 49.0Hz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
■ <48.5Hz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Months

INTERRUPTION DUE TO MAJOR INCIDENT

Incident	Duration of Interruption	No. of Interruption
Snapping of Jumper / Conductor / Earth wire	75:38:00	56
Insulator Failure	7:10:00	29
Bursting of CT / PT	0:34:00	8
Breaker Problem	0:00:00	0
Major System Disturbance	0:27:00	4
Failure of LA	18:13:00	21
Others	44:55:00	70
The duration of interruption indicated above is the sum total of interruptions occurred at different areas(S/s) during the year. However there was no total blackout experienced for the State during the year 2017-18.		

INTERRUPTION (HRS) DUE TO MAJOR INCIDENT DURING 2017-18



- Snapping of Jumper / Conductor / Earth wire
- Insulator Failure
- Bursting of CT / PT
- Breaker Problem
- Major System Disturbance
- Failure of LA
- Others

POWER MAP OF EASTERN REGION

(220kV AND ABOVE, EXISTING AND APPROVED)
(UPDATED UPTO MAY 2017)

