OPTCL

(Approved by OERC vide Letter No. OERC-Engg-5/98 (Vol.XVII)/ 1248 dt. 17.09.2016)

PERFORMANCE OF THE TRANSMISSION SYSTEM OF OPTCL FOR 2015-2016

[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]

PERFORMANCE OF TRANSMISSION SYSTEM OF OPTCL (AS REPORTED) DURING THE YEAR 2015-16.

1. Procurement of Power:

Source	Commission's Approval (MU)	Actual Drawl for the State Consumption (MU)	Remarks
OHPC	5881.74	4378.892	State's Maximum and Minimum demand was 4175 MW and 2976 MW respectively during the FY 2015-16.
Thermal(TTPS+OPGC)	6015.59	6137.831	
CGP including Co-generation Plants	1224.62	644.25	
Renewable Generation	572	562.09	
IPP	6636.35	5264.97	
EREB	5445.93	7543.83	
Total	25776.23	24531.86	
Net Banking +IEX+STOA		83.40	
	25776.23	**24615.259**	

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	251	214
2	Theruvali	241	200
3	Bhanjanagar	251	205
4	Chandaka	237	181
5	Narendrapur	233	170
6	Joda	245	209
7	Tarkera	238	214
8	Budhipadar	239	216
9	Duburi	241	197
10	Balasore	242	197
11	Meramundali	233	203
12	Bidanasi	238	206
13	Katapalli	259	204
14	Bhadrak	241	183
15	Paradeep	239	182
16	Bolangir	248	194
17	Mendhasal	239	200

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	142	97
2	Berhampur	146	100
3	Puri	141	96
4	Khurda	148	87

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	42:46:00	48	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 during the year 2015-16.
Insulator Failure	13:15:00	29	
Bursting of CT / PT	11:27:00	7	
Breaker Problem	0:00:00	4	
Major System Disturbance	6:33:00	6	
Failure of LA	15:28:00	21	
Others	64:06:00	141	

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 2015-16

The salient features of the performance of transmission system of OPTCL for the year 2015-16 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 2015-16, 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	4378.89	State's Maximum and Minimum demand was 4175 MW and 2976 MW respectively
Thermal(TTPS+OPGC)	6015.59	6137.83	
CPP & Co-generation Plants	1224.62	644.25	
Renewable Generation	572.00	562.09	
IPP	6636.35	5264.97	
EREB	5445.93	7543.83	
	25776.23	24531.86	
Net Banking +IEX+STOA		83.40	
Total	**25776.23**	**24615.26**	

There is an import of 744.794 MU through power banking, open access, trading & IEX) and export of 661.399 MU (62.511 as sales to other utilities, 58.735 on account of UI deviation and 540.153 through trading, OA, banking & IEX export) during the FY 2015-16. Hence, in the said financial year GRIDCO has an import of 83.395 MU on this account.

2. During FY 2015-16 the daily peak demand touched at 4175 MW maximum on dt.12.03.2016 and a minimum of 2976 MW on dt.28.04.2015. The peak demand of 4175 MW in 2015-16 is about 194 MW above the peak demand experienced during the previous year 2014-15 (3981 MW). But the total energy drawl is 24615 MU in FY 2015-16 against 24436 MU in 2014-15, which indicates a growth in electricity consumption of around 179 MU in the State.

B. Line Interruption:

3. OPTCL's system has faced aggregated Annual interruptions varying from 6 hour to 64 hours at different locations on account of conductor/jumper snapping, insulator failure, bursting of Current Transformer/Potential Transformer, breaker problem, system disturbance, Lightening Arrester failures and others. However, OPTCL has claimed that it has arranged to maintain power supply (without resorting to total power failure due to non-availability of transmission capacity) from other nearby transmission facilities. 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 27 hours of load restriction in the second quarter of the FY 2015-16 on rotation basis has been imposed to curtail demand due to non-availability of Generation/Failure of generating stations. OPTCL claimed that there was no black out experienced in the State during the FY 2015-16.

C. Frequency Profile:

4. As per Regulations 3(1)(a) of Central Electricity Authority(Grid Standards) Regulations, 2010, the frequency should not be allowed to go beyond the range 49.2 to 50.3 Hz, except during the transient period following tripping. 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 49.9 to 50.05 Hz band. OPTCL, in 2015-16, has experienced frequency as low as 49.52 Hz and as high as 50.56 Hz during 1st quarter. However, OPTCL does not have much control over the frequency parameter since it is dependant upon the National Grid. OPTCL hopes that DISCOMs should adhere to their schedule drawl 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 190 kV minimum and 255 kV maximum in its 220 KV system and 84 KV minimum and 149 KV maximum in its 132 KV system. OPTCL is advised to take suitable measures in order 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 in grid S/S, it shall take up with them for remedial measure.

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 2015-16 that OPTCL system availability was 100%. OPTCL should also identify the low voltage pockets in the state particularly in border areas and should take steps for the strengthening transmission system to improve quality of supply in those areas. OPTCL need to adopt social interface approach to convince the local people about the benefits of projects. OPTCL should discuss with DISCOM authorities and take action on system strengthening. DISCOMs should be intimated beforehand as regards to commissioning of new s/s and up-gradation etc. so that no investment of OPTCL shall remain idle due to non-availability of downward evacuation arrangement. Further, the projects in the pipe-line already approved by the Commission should be completed within thr time schedule to avoid cost & time over-run.

7. Due to non-availability of generation/failure of generating stations, OPTCL, however, has resorted of load restriction totaling to 27 hours in FY 2015-16. Further, during the said period load restriction was imposed on rotational basis in the state to curtail demand due to non-availability of generation/failure of generating stations. OPTCL is required to develop appropriate ring system so that power supply to the affected areas can be easily made available from the neighboring areas fed from other generating stations of the state and Odisha share from Inter State Generating Station of Eastern Region. Further, the preventive maintenance of the transmission system should be a routine feature and is required to be monitored by Zonal heads to minimize the restoration time.

F. Efficient Operation of Transmission System:

OPTCL should complete the SCADA provision work in all 220 kV and above S/S for proper monitoring and efficient functioning of the power system. Energy Accounting and Settlement Service Centre (EASSC) should be fully functional under the control of SLDC. 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.

OPTCL is advised to take action to comply the above directions.

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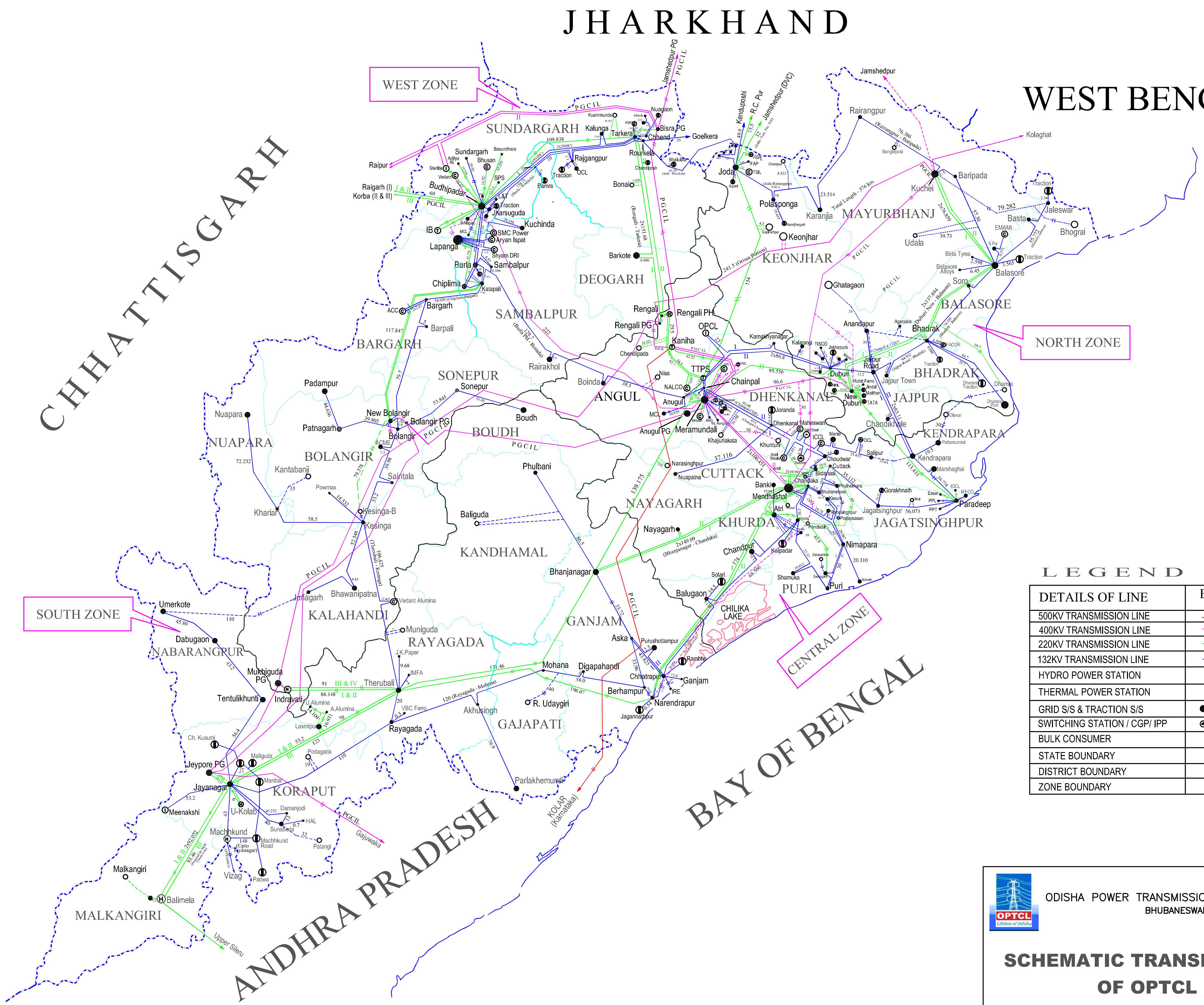


LEGEND

DETAILS OF LINE	Existing	Proposed / U/C
500KV TRANSMISSION LINE	red solid line	red dashed line
400KV TRANSMISSION LINE	magenta solid line	magenta dashed line
220KV TRANSMISSION LINE	green solid line	green dashed line
132KV TRANSMISSION LINE	blue solid line	blue dashed line
HYDRO POWER STATION	Ⓗ	Ⓗ (dashed)
THERMAL POWER STATION	Ⓣ	Ⓣ (dashed)
GRID S/S & TRACTION S/S	● ◐	○ ◐ (dashed)
SWITCHING STATION / CGP/ IPP	◬ Ⓒ Ⓘ	◬ Ⓒ Ⓘ (dashed)
BULK CONSUMER	■	□
STATE BOUNDARY	blue line	
DISTRICT BOUNDARY	cyan dashed line	
ZONE BOUNDARY	wavy line	

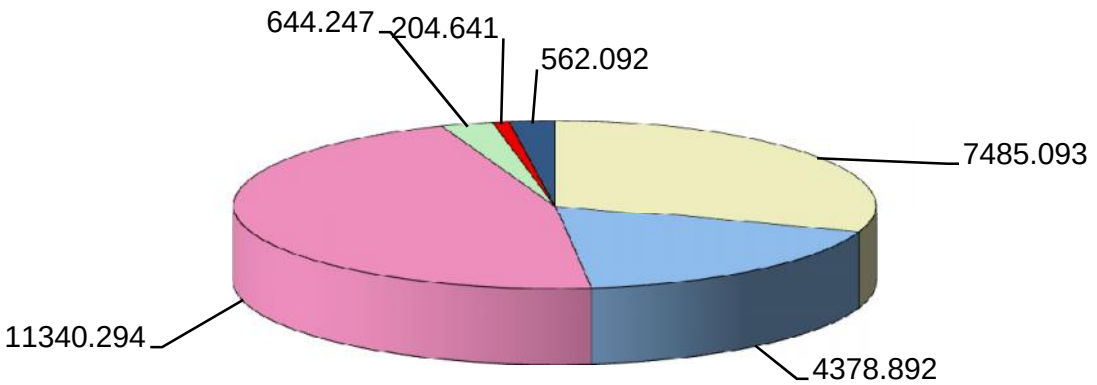
ODISHA POWER TRANSMISSION CORPORATION LIMITED
BHUBANESWAR

SCHEMATIC TRANSMISSION MAP OF OPTCL

Length in kms. **NOT TO SCALE**

O/O–CGM(O&M),OPTCL
11.08.16

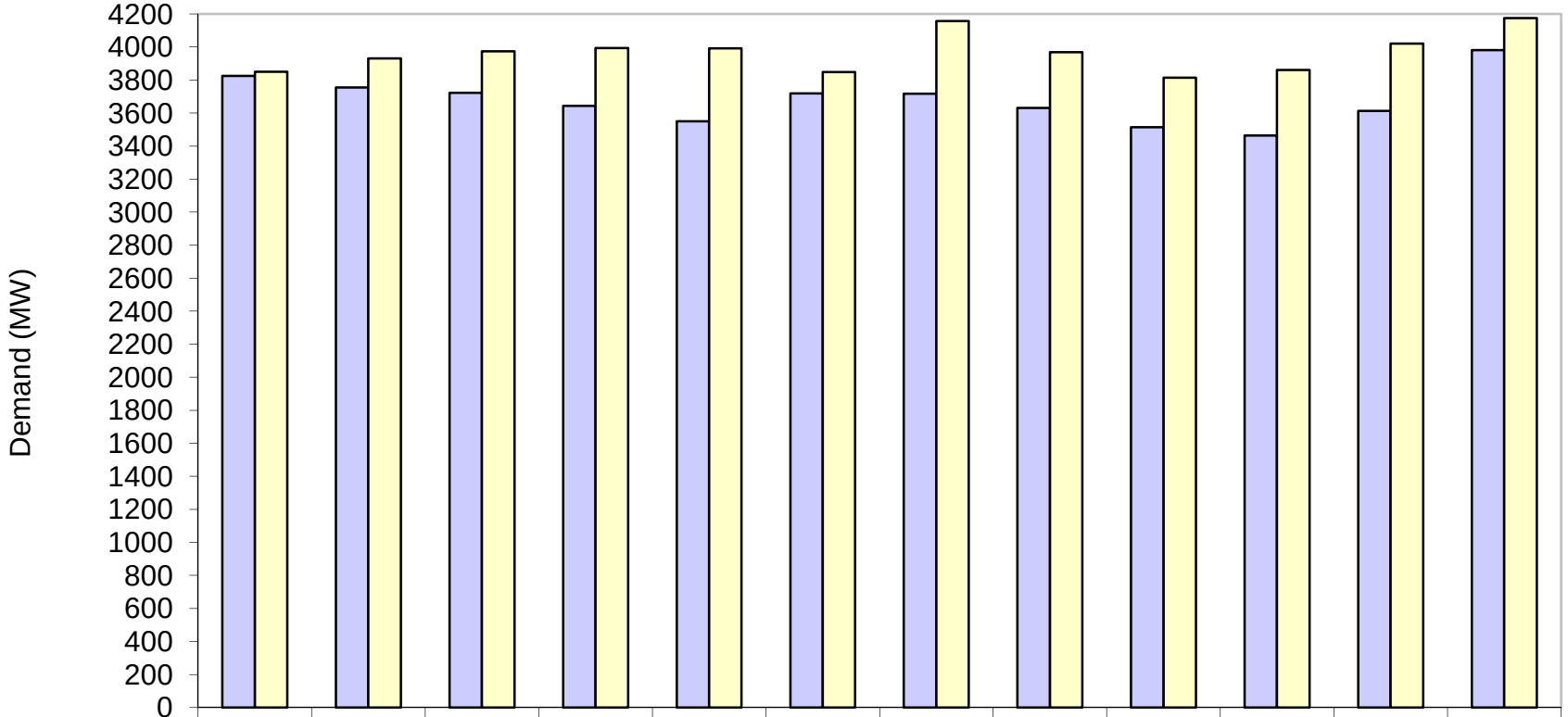
GRID DEMAND FOR THE YEAR 2015-16
[Total Drawal 24615.259 MU]



DAILY PEAK DEMAND (MW) EXCLUDING TRADING FOR THE YEAR 2015-16

Day	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Max	Min
1	3784	3546	3908	3807	3952	3737	3578	3727	3813	3458	3938	3939	3952	3458
2	3774	3652	3732	3740	3772	3634	3686	3621	3659	3575	3767	4006	4006	3575
3	3747	3556	3761	3697	3952	3784	3571	3810	3495	3611	3823	3931	3952	3495
4	3826	3528	3888	3994	3814	3768	3576	3868	3609	3752	3612	3995	3995	3528
5	3660	3582	3578	3932	3820	3741	3847	3968	3616	3692	3640	3844	3968	3578
6	3716	3510	3716	3727	3992	3780	3574	3815	3502	3649	3713	3790	3992	3502
7	3389	3768	3708	3898	3831	3700	3617	3796	3669	3698	3581	4017	4017	3389
8	3414	3771	3769	3573	3880	3774	3492	3701	3586	3668	3798	3776	3880	3414
9	3805	3743	3974	3894	3882	3849	3603	3728	3473	3540	3631	4152	4152	3473
10	3851	3758	3948	3609	3730	3741	3733	3624	3408	3682	3737	4107	4107	3408
11	3317	3436	3686	3706	3776	3526	4027	3543	3508	3763	3507	4056	4056	3317
12	3556	3751	3486	3690	3613	3396	3864	3898	3595	3778	3745	4175	4175	3396
13	3744	3507	3413	3638	3920	3361	3989	3826	3380	3686	3721	3937	3989	3361
14	3579	3748	3660	3578	3685	3591	3888	3618	3402	3640	3726	3571	3888	3402
15	3463	3457	3525	3501	3970	3328	3923	3793	3545	3642	3755	3958	3970	3328
16	3775	3187	3657	3743	3883	3282	4157	3804	3527	3696	3846	3923	4157	3187
17	3804	3743	3754	3441	3925	3451	4113	3628	3487	3508	3813	3788	4113	3441
18	3748	3806	3828	3699	3672	3434	3960	3712	3545	3567	3695	3892	3960	3434
19	3810	3905	3858	3793	3924	3535	3970	3615	3526	3523	3731	3991	3991	3523
20	3814	3899	3615	3896	3811	3470	3962	3678	3499	3591	3900	3892	3962	3470
21	3809	3567	3383	3888	3828	3617	3953	3659	3482	3579	3884	3962	3962	3383
22	3290	3593	3557	3795	3817	3533	3895	3771	3498	3573	3862	4152	4152	3290
23	3277	3682	3560	3880	3758	3582	3899	3775	3585	3536	4021	3968	4021	3277
24	3603	3738	3840	3785	3607	3627	3887	3603	3505	3655	3769	3998	3998	3505
25	3196	3781	3853	3572	3799	3565	3792	3617	3449	3466	3865	3919	3919	3196
26	3579	3660	3920	3578	3685	3591	3888	3618	3582	3541	3309	4046	4046	3309
27	3513	3738	3906	3642	3821	3579	3820	3730	3395	3793	3371	3815	3906	3371
28	2976	3855	3774	3736	3794	3712	3923	3717	3481	3861	3742	3833	3923	2976
29	3645	3932	3595	3923	3686	3704	3821	3581	3581	3759	3969	3915	3969	3581
30	3567	3796	3670	3687	3608	3644	3812	3630	3505	3814		3860	3860	3505
31		3431		3736	3846		3708		3480	3798		3833	3846	3431
MAX	**3851**	**3932**	**3974**	**3994**	**3992**	**3849**	**4157**	**3968**	**3813**	**3861**	**4021**	**4175**	**4175**	**3581**
MIN	**2976**	**3187**	**3383**	**3441**	**3607**	**3282**	**3492**	**3543**	**3380**	**3458**	**3309**	**3571**	**3846**	**2976**

COMPARISON OF MONTHLY PEAK DEMAND (MW) EXCLUDING TRADING FOR THE YEAR ENDING 2015-16 & 2014-15

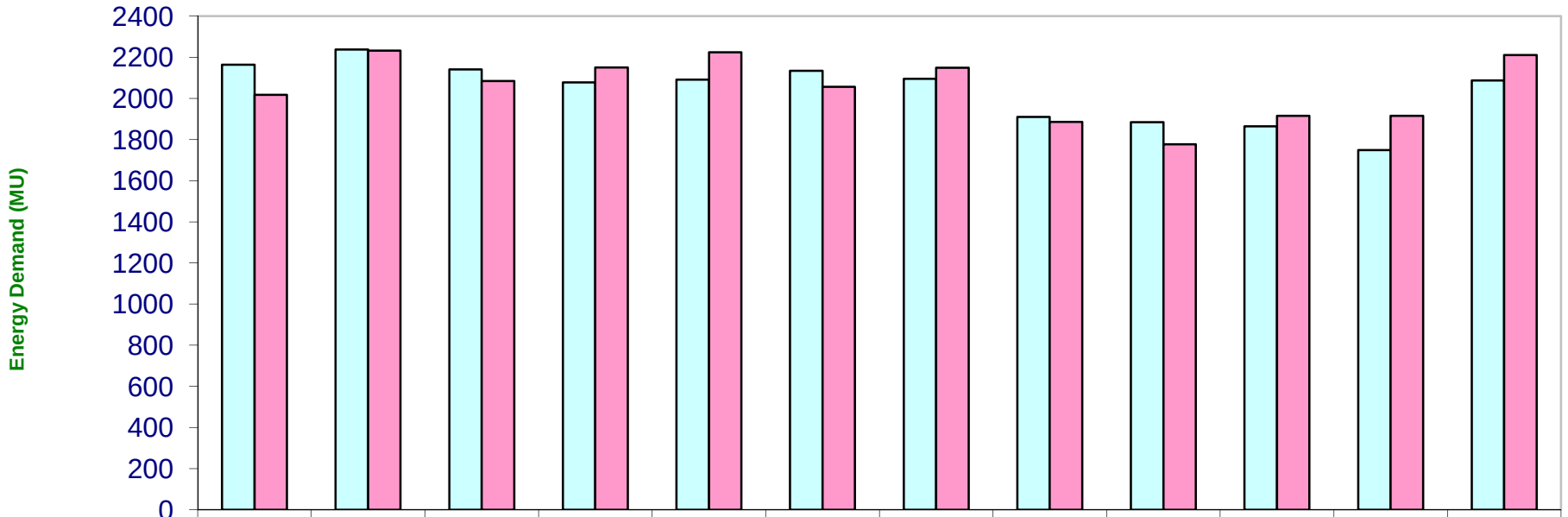


	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
2014-15	3825	3755	3723	3644	3551	3720	3717	3630	3515	3464	3613	3981
2015-16	3851	3932	3974	3994	3992	3849	4157	3968	3813	3861	4021	4175

Annual Peak Demand : 2015-16 - 4175 MW 2014-15 - 3981 MW

2014-15 2015-16

COMPARISON OF MONTHLY ENERGY DEMAND (MU) EXCLUDING TRADING & RETURN BANKING POWER FOR THE YEAR ENDING 2015-16 & 2014-15

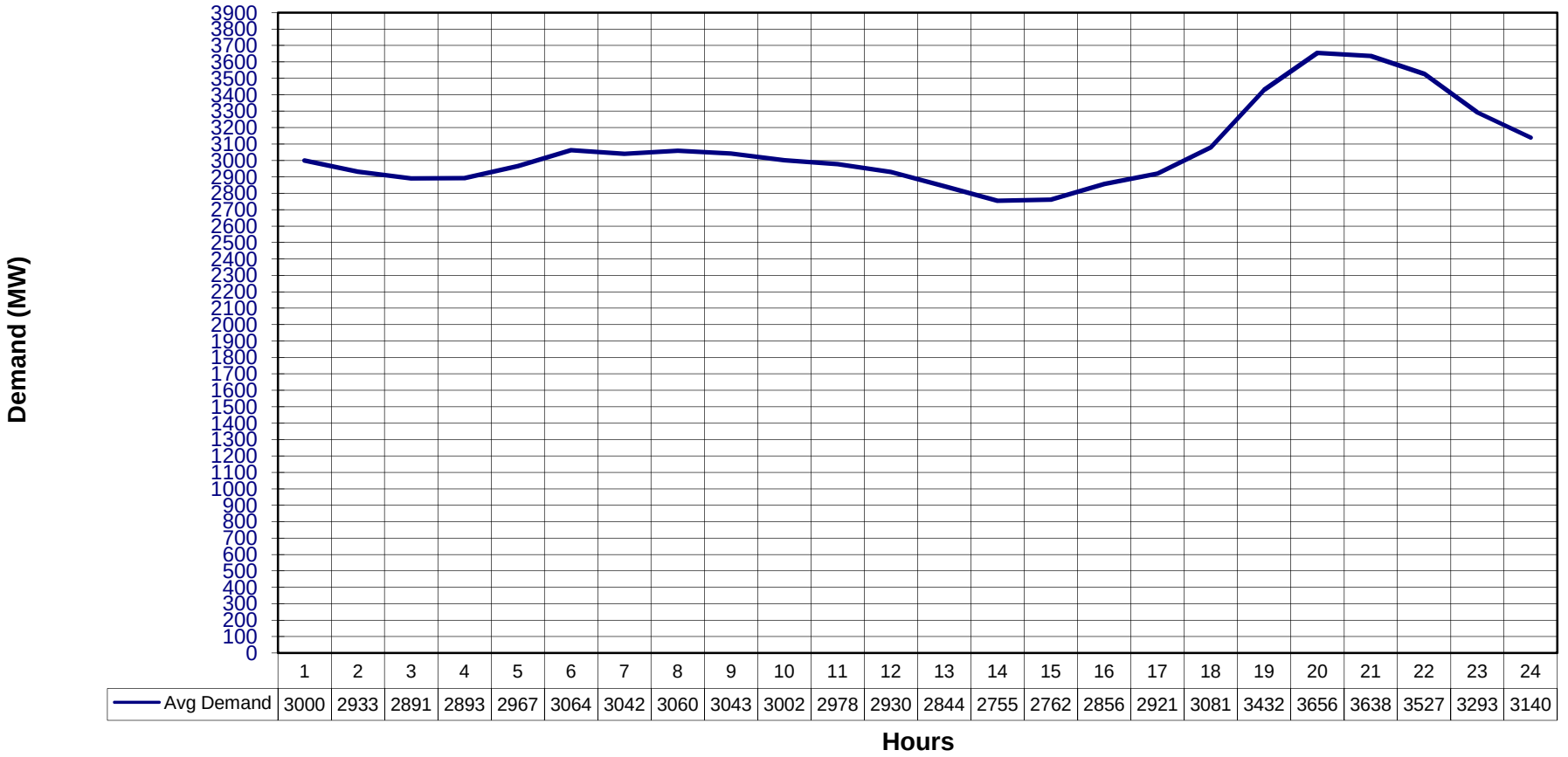


	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
2014-15	2164	2237	2141	2078	2091	2134	2096	1910	1884	1864	1748	2088
2015-16	2018	2232	2085	2150	2224	2056	2148	1885	1777	1916	1915	2211

Month

Annual Energy Demand : 2015-16 - 24615 MU 2014-15 - 24436 MU

DEMAND CURVE FOR HOURLY AVERAGE DEMAND EXCLUDING TRADING FOR YEAR ENDING MARCH 2016

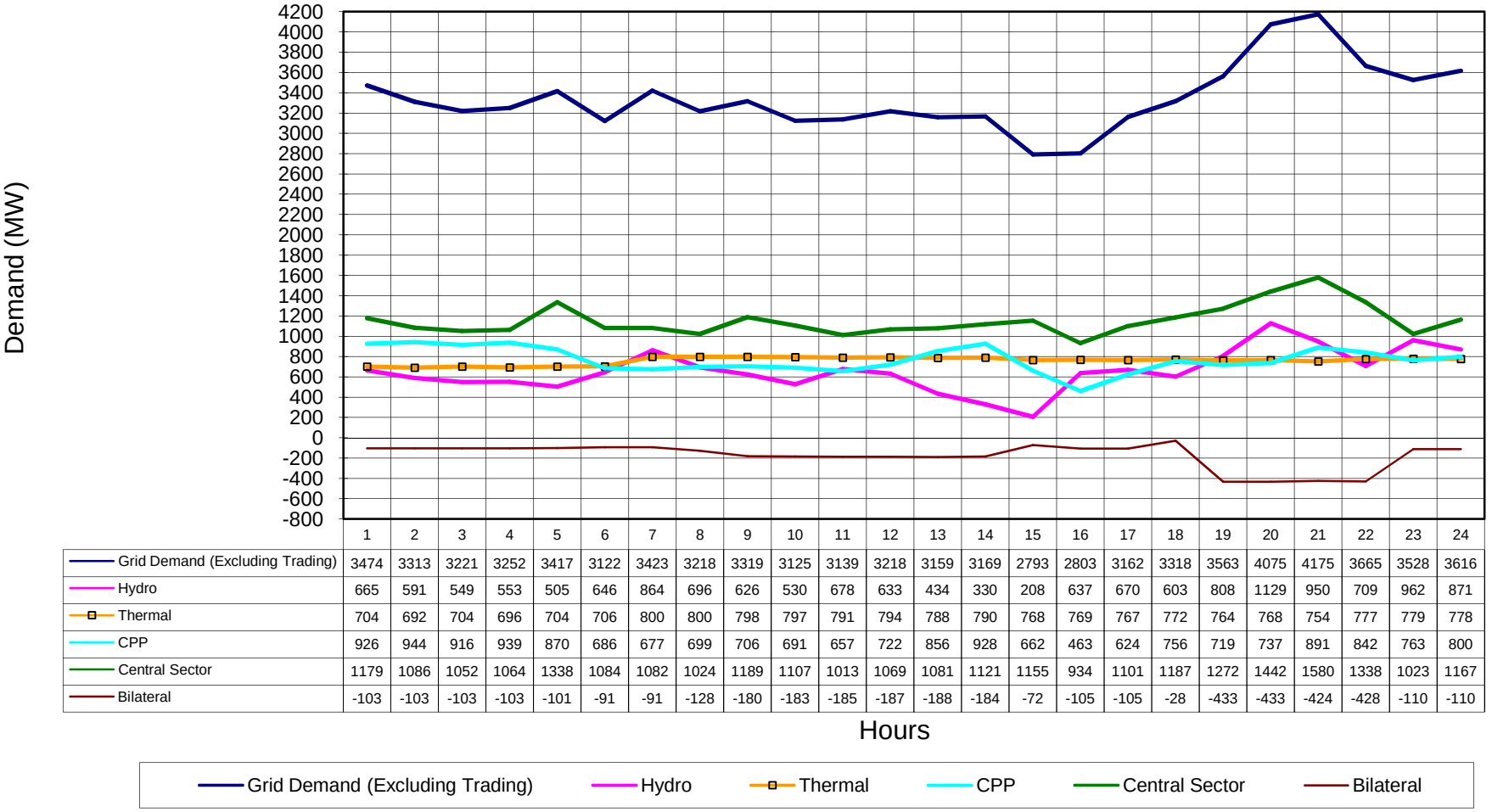


	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Avg Demand	3000	2933	2891	2893	2967	3064	3042	3060	3043	3002	2978	2930	2844	2755	2762	2856	2921	3081	3432	3656	3638	3527	3293	3140

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

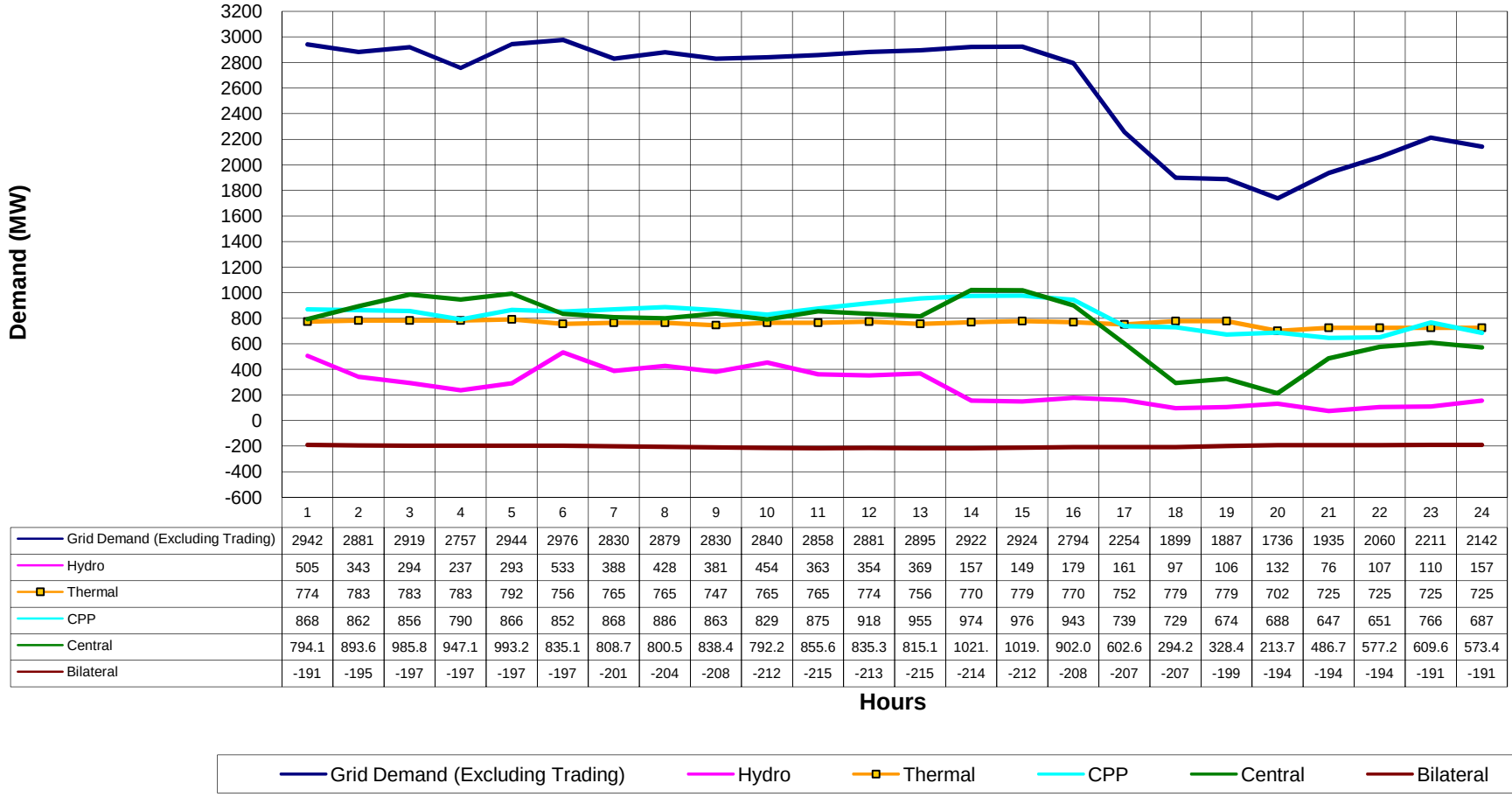
Hours--->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Apr-15	3022	2945	2907	2877	2942	2979	2864	2833	2853	2882	2912	2914	2869	2825	2838	2881	2828	2747	3136	3495	3489	3450	3283	3149
May-15	3289	3218	3187	3170	3201	3170	3001	3003	3002	3060	3137	3179	3186	3133	3164	3215	3138	2945	3141	3549	3608	3587	3501	3395
Jun-15	3258	3161	3107	3075	3110	3082	2989	3023	3012	3043	3052	3053	2991	2937	2984	3076	3087	2969	3164	3628	3678	3630	3475	3375
Jul-15	3167	3089	3037	3025	3060	3114	3090	3148	3122	3068	3017	2968	2928	2859	2852	2939	2973	2955	3231	3651	3687	3663	3451	3288
Aug-15	3295	3224	3168	3156	3183	3260	3214	3250	3217	3179	3141	3082	3040	2915	2942	3059	3101	3105	3449	3755	3754	3709	3535	3404
Sep-15	3235	3166	3155	3142	3187	3271	3006	3031	3042	2968	2925	2925	2859	2842	2824	2934	2959	3077	3386	3564	3514	3497	3367	3411
Oct-15	3233	3156	3093	3089	3149	3219	2991	2988	3008	2973	2904	2909	2859	2838	2849	2948	3027	3341	3700	3790	3721	3644	3445	3362
Nov-15	2657	2618	2588	2590	2739	2960	3018	3001	2963	2862	2749	2666	2573	2425	2418	2582	2772	3360	3702	3673	3526	3323	2959	2756
Dec-15	2363	2310	2279	2295	2448	2732	2950	2987	2954	2822	2729	2584	2455	2291	2220	2407	2637	3192	3512	3492	3371	3115	2724	2483
Jan-16	2429	2378	2339	2364	2513	2803	3071	3166	3139	2988	2862	2694	2540	2358	2332	2504	2724	3197	3586	3630	3485	3176	2789	2518
Feb-16	2795	2776	2758	2842	2942	3015	3126	3134	3127	3034	3180	3102	2787	2733	2788	2741	2793	2925	3639	3766	3969	3839	3487	3134
Mar-16	3253	3152	3079	3093	3126	3159	3181	3149	3082	3142	3123	3089	3041	2903	2935	2990	3011	3154	3531	3878	3854	3697	3503	3406
Avg. Annual	**3000**	**2933**	**2891**	**2893**	**2967**	**3064**	**3042**	**3060**	**3043**	**3002**	**2978**	**2930**	**2844**	**2755**	**2762**	**2856**	**2921**	**3081**	**3432**	**3656**	**3638**	**3527**	**3293**	**3140**

HOURLY DEMAND CURVE FOR 12.03.2016 (MAX PEAK DEMAND OF THE YEAR (2015-16)



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Grid Demand (Excluding Trading)	3474	3313	3221	3252	3417	3122	3423	3218	3319	3125	3139	3218	3159	3169	2793	2803	3162	3318	3563	4075	4175	3665	3528	3616
Hydro	665	591	549	553	505	646	864	696	626	530	678	633	434	330	208	637	670	603	808	1129	950	709	962	871
Thermal	704	692	704	696	704	706	800	800	798	797	791	794	788	790	768	769	767	772	764	768	754	777	779	778
CPP	926	944	916	939	870	686	677	699	706	691	657	722	856	928	662	463	624	756	719	737	891	842	763	800
Central Sector	1179	1086	1052	1064	1338	1084	1082	1024	1189	1107	1013	1069	1081	1121	1155	934	1101	1187	1272	1442	1580	1338	1023	1167
Bilateral	-103	-103	-103	-103	-101	-91	-91	-128	-180	-183	-185	-187	-188	-184	-72	-105	-105	-28	-433	-433	-424	-428	-110	-110

HOURLY DEMAND CURVE FOR 28.04.2015 (MIN PEAK DEMAND OF THE YEAR 2015-16)



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Grid Demand (Excluding Trading)	2942	2881	2919	2757	2944	2976	2830	2879	2830	2840	2858	2881	2895	2922	2924	2794	2254	1899	1887	1736	1935	2060	2211	2142
Hydro	505	343	294	237	293	533	388	428	381	454	363	354	369	157	149	179	161	97	106	132	76	107	110	157
Thermal	774	783	783	783	792	756	765	765	747	765	765	774	756	770	779	770	752	779	779	702	725	725	725	725
CPP	868	862	856	790	866	852	868	886	863	829	875	918	955	974	976	943	739	729	674	688	647	651	766	687
Central	794.1	893.6	985.8	947.1	993.2	835.1	808.7	800.5	838.4	792.2	855.6	835.3	815.1	1021.	1019.	902.0	602.6	294.2	328.4	213.7	486.7	577.2	609.6	573.4
Bilateral	-191	-195	-197	-197	-197	-197	-201	-204	-208	-212	-215	-213	-215	-214	-212	-208	-207	-207	-199	-194	-194	-194	-191	-191

1 INSTALLED CAPACITY (AS ON 31.3.2016) ENERGY GENERATION / ENERGY DRAWAL BY OPTCL

	Installed capacity (MW)	Energy Generation (incl. Aux) (MU)	Energy Drawal by GRIDCO (MU)
A. STATE SECTOR			
OHPC(Hydro)*	2084.875	4519.074	4378.892
OPGC (Thermal)	420	3117.317	2775.172
TTPS (Thermal)	460	3763.754	3350.305
TTPS (UI-OD)			12.354
IPPs			5264.974
CPP (Synchronised to OPTCL System)			644.247
Renewable Energy Including Co-gen	-		562.092
B. CENTRAL SECTOR			
Orissa Share			
Hydro	**189.40**		
Thermal	**1075.26**	-	7543.828
C. Banking Power+OA+Trading+IEX (Import)			744.794
TOTAL DRAWAL			**25276.658**
D. Banking Power+OA+Trading+IEX (Export)			540.153
E. Deviation(Export)			58.735
F. Sold to Other Utilities			62.511
Net GRIDCO demand			**24615.259**

Export to ICCL	9.043
Export to NALCO	0.020

***** Includes Orissa share from Machhkund.

2 TRANSMISSION LINES AND SUBSTATIONS

	As on 31.03.2015	Capacity Addition in 2015-2016	As on 1.4.2016
A. 400 kV line (ckt.km)	727.234	402.200	1129.434
B. 220kV line (ckt.km)	5730.334	147.400	5877.734
C. 132kV line (ckt.km)	5628.967	199.328	5828.295
D. Substations			
400 / 220 /132kV (nos.)	2	0	2
401 / 220 (nos.)	0	1	1
220/132/33kV (nos.)	17	1	18
220/33kV (nos.)	5	0	5
132/33 kV (nos.)	68	8	76
132/33/25 kV (nos.)	1	0	1
132/33/11 kV (nos.)	2	0	2
132/11 kV (nos.)	1	-1	0
132kV Switching Stations (OPTCL)	3	1	4
132kV LILO Switching Stations of Industries	14	2	16
Total	113	12	125

Note:1. As per report from O&M wing of OPTCL, capacity addtion during 2014-15 was 209KM instead of 210 k.m.(Meramundali-Lapanga Ckt.-I).So line length of 400kV Ckt. For FY 2014-15 was decreased from 728.234k.m. to 727.234 k. m.

2. 132kV Arugul 'T' from Khurda-Puri line (3.86 k.m.) was missing from the report of capacity addtion during 2014-15.So the line length for the yer 2014-15 was increased from 5625.107 k.m. to 5628.967 k.m.

3.New Duburi upgraded from 220kV to 400/220kV.

4. 220/132/33kV Samagara & Atri Grid S/ss have been newly added.

5. 132/33kV Dabugaon,Umerkote,Konark,Kalunga,Marshaghai,Padampur & Mania Grid S/ss have been newly added.

6. Somnathpur upgraded from Swithing stn. To 132/33kV Grid.

7. 132kV ACME switching Stn. Newly added.

8. 132kV LILO switching Stn.Bhubaneswar Power and Grid Steel Newly added.

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

3 PERFORMANCE OF OPTCL DURING 2015 - 16

3 A. POWER SUPPLY SECURITY

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

Duration	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
(In Hrs)	0.00	27.20	0.00	0.00	27.20
Percentage(%)	0.00	1.23	0.00	0.00	0.31

* ⟶ 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	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
(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	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
(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	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
(In Hrs)	651.88	457.52	476.10	396.15	1981.65
Percentage(%)	29.85	20.72	21.56	18.34	22.62

(ii) Maximum continous period beyond 50.05 Hz

Duration	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
(In Hrs)	4.48	3.55	1.65	1.12	4.48
Percentage(%)	0.21	0.16	0.07	0.05	0.05

(iii) Maximum Frequency occurrence

Duration	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
Hz	50.56	50.35	50.34	50.37	50.56
Date/Time	19.05.15	20.09.15	01.10.15	28.01.16	19.05.15
	18:03hr	16:03hr	18:03hr	18:04hr	18:03hr

(iv) Below 49.7 Hz

Duration	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
(In Hrs)	4.85	4.43	1.05	0.25	10.58
Percentage(%)	0.22	0.20	0.05	0.01	0.12

(v) Maxm. Continous period below 49.7 Hz

Duration	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
(In Hrs)	0.22	0.32	0.10	0.07	0.32
Percentage(%)	0.01	0.01	0.005	0.003	0.004

(vi) Lowest Frequency Occurrence

Duration	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual
Hz	49.52	49.54	49.6	49.66	49.52
Date/Time	07.04.15	03.09.15	30.12.15	18.03.16	07.04.15
	21:04 hr	19:12 hr	07:47hr	14:34hr	21:04 hr

3. C - 2 VOLTAGE PROFILE (2015-2016)

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	245.77	14.06.15	04:30	251.43	20.09.15	05:45	248.37	16.12.15	00:45	246.12	10.01.16	22:45	251.43	20.09.15	05:45
2	Theruvali	240.69	26.04.15	00:45	239.77	27.08.15	13:45	239.65	16.12.15	01:45	236.01	11.01.16	03:15	240.69	26.04.15	00:45
3	Bhanjanagar	250.74	12.04.15	12:00	237.34	15.09.15	11:30	238.84	20.11.15	02:45	238.21	11.01.16	02:45	250.74	12.04.15	12:00
4	Chandaka	237.23	2.04.15	14:45	230.76	17.07.15	23:30	236.30	27.12.15	02:45	235.21	3.01.16	03:00	237.23	2.04.15	14:45
5	Narendrapur	233.30	28.04.15	20:00	223.66	27.08.15	13:30	226.20	17.12.15	11:45	221.98	11.01.16	03:15	233.30	28.04.15	20:00
6	Joda	244.61	30.04.15	03:15	244.67	27.07.15	00:30	240.68	28.11.15	03:00	244.78	19.01.16	11:15	244.78	19.01.16	11:15
7	Tarkera	233.30	24.05.15	15:45	237.98	30.08.15	07:00	237.69	14.12.15	03:00	237.17	20.01.16	04:00	237.98	30.08.15	07:00
8	Budhipadar	235.38	23.06.15	11:15	232.90	17.09.15	14:00	237.92	14.12.15	02:30	238.61	20.01.16	03:45	238.61	20.01.16	03:45
9	Duburi	238.73	28.04.15	19:00	238.67	28.07.15	05:15	240.86	30.11.15	03:30	237.17	02.01.16	03:00	240.86	30.11.15	03:30
10	Balasore	241.96	28.04.15	18:00	237.46	27.07.15	03:45	237.63	20.11.15	03:00	238.44	07.01.16	03:00	241.96	28.04.15	18:00
11	Meramundali	230.53	01.06.15	13:30	229.26	22.09.15	11:45	233.13	01.12.15	03:45	232.49	11.01.16	03:00	233.13	01.12.15	03:45
12	Bidanasi	234.28	28.04.15	18:45	232.38	22.09.15	10:15	237.17	30.12.15	03:15	237.75	11.01.16	03:00	237.75	11.01.16	03:00
13	Katapalli	238.84	08.04.15	23:15	258.59	03.07.15	23:00	236.42	29.11.15	09:45	237.63	20.01.16	04:15	258.59	03.07.15	23:00
14	Bhadrak	241.09	28.04.15	17:45	234.22	18.08.15	07:45	239.48	30.11.15	03:45	241.21	07.01.16	03:45	241.21	07.01.16	03:45
15	Paradeep	239.19	28.04.15	19:00	237.40	28.07.15	05:15	236.42	16.11.15	04:45	232.38	10.01.16	03:15	239.19	28.04.15	19:00
16	Bolangir	246.58	28.04.15	17:45	247.62	03.07.15	22:45	244.44	10.11.15	16:45	240.86	28.03.16	02:45	247.62	03.07.15	22:45
17	Mendhasal	238.79	02.04.15	14:45	232.20	08.07.15	18:30	235.44	20.11.15	02:45	234.51	02.01.16	03:00	238.79	02.04.15	14:45

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	214.42	12.04.15	09:45	222.33	21.08.15	07:30	220.48	24.12.15	12:30	215.06	10.03.16	11:45	214.42	12.04.15	09:45
2	Theruvali	200.28	7.04.15	20:00	208.65	25.09.15	08:15	210.38	15.12.15	17:30	202.24	30.03.16	18:45	200.28	7.04.15	20:00
3	Bhanjanagar	207.44	28.04.15	18:45	213.96	25.09.15	18:30	216.04	30.10.15	15:30	204.95	30.03.16	16:45	204.95	30.03.16	16:45
4	Chandaka	201.66	19.05.15	12:30	207.84	14.07.15	12:00	210.21	19.10.15	18:30	181.17	10.03.16	12:15	181.17	10.03.16	12:15
5	Narendrapur	223.72	14.06.15	12:15	179.90	29.07.15	19:15	182.26	18.12.15	18:15	169.74	05.03.16	19:00	169.74	05.03.16	19:00
6	Joda	219.27	4.06.15	20:00	222.70	22.08.15	10:30	224.12	03.11.15	18:15	208.81	12.03.16	19:00	208.81	12.03.16	19:00
7	Tarkera	221.12	18.04.15	19:15	213.56	06.08.15	17:30	222.10	06.10.15	18:15	224.06	10.03.16	19:30	213.56	06.08.15	17:30
8	Budhipadar	217.14	22.05.15	00:45	215.81	04.07.15	01:45	219.73	05.11.15	08:30	221.41	31.03.16	19:15	215.81	04.07.15	01:45
9	Duburi	196.87	4.06.15	19:45	203.97	18.07.15	21:15	220.25	11.10.15	18:45	212.17	10.03.16	20:00	196.87	4.06.15	19:45
10	Balasore	201.03	4.06.15	19:15	197.04	15.07.15	21:45	202.53	01.10.15	00:00	210.26	26.03.16	20:15	197.04	15.07.15	21:45
11	Meramundali	202.82	9.04.15	20:45	215.92	14.08.15	21:00	219.62	11.10.15	18:45	216.50	10.03.16	20:15	202.82	9.04.15	20:45
12	Bidanasi	206.11	25.05.15	20:45	213.44	27.08.15	18:45	217.37	05.10.15	18:45	215.98	26.03.16	19:15	206.11	25.05.15	20:45
13	Katapalli	203.74	23.05.15	12:30	214.94	01.08.15	20:30	210.84	19.10.15	19:00	210.38	10.03.16	19:00	203.74	23.05.15	12:30
14	Bhadrak	187.34	24.06.15	22:00	183.48	12.07.15	21:15	196.00	01.10.15	00:00	208.71	26.03.16	20:15	183.48	12.07.15	21:15
15	Paradeep	182.09	4.06.15	19:45	188.21	04.09.15	18:45	200.91	11.10.15	18:30	199.58	10.03.16	20:00	182.09	4.06.15	19:45
16	Bolangir	194.33	23.05.15	12:15	201.95	01.08.15	20:15	195.95	19.10.15	19:15	193.81	24.02.16	18:30	193.81	24.02.16	18:30
17	Mendhasal	204.61	19.05.15	12:30	209.92	10.09.15	14:15	211.36	19.10.15	18:45	199.87	30.03.16	16:45	199.87	30.03.16	16:45

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	141.85	28.04.15	18:45	138.85	17.07.15	23:45	137.92	27.12.15	03:45	137.17	03.01.16	03:45	141.85	28.04.15	18:45
2	Berhampur	143.81	26.04.15	00:45	145.78	26.09.15	17:45	143.81	08.12.15	06:00	145.95	17.03.16	15:15	145.95	17.03.16	15:15
3	Puri	141.16	02.04.15	14:45	133.48	26.07.15	15:00	136.89	27.12.15	02:45	136.37	05.01.16	02:45	141.16	02.04.15	14:45
4	Khurda	147.05	28.04.15	20:30	147.62	27.08.15	13:45	143.70	06.12.15	15:00	145.55	17.03.16	15:00	147.62	27.08.15	13:45

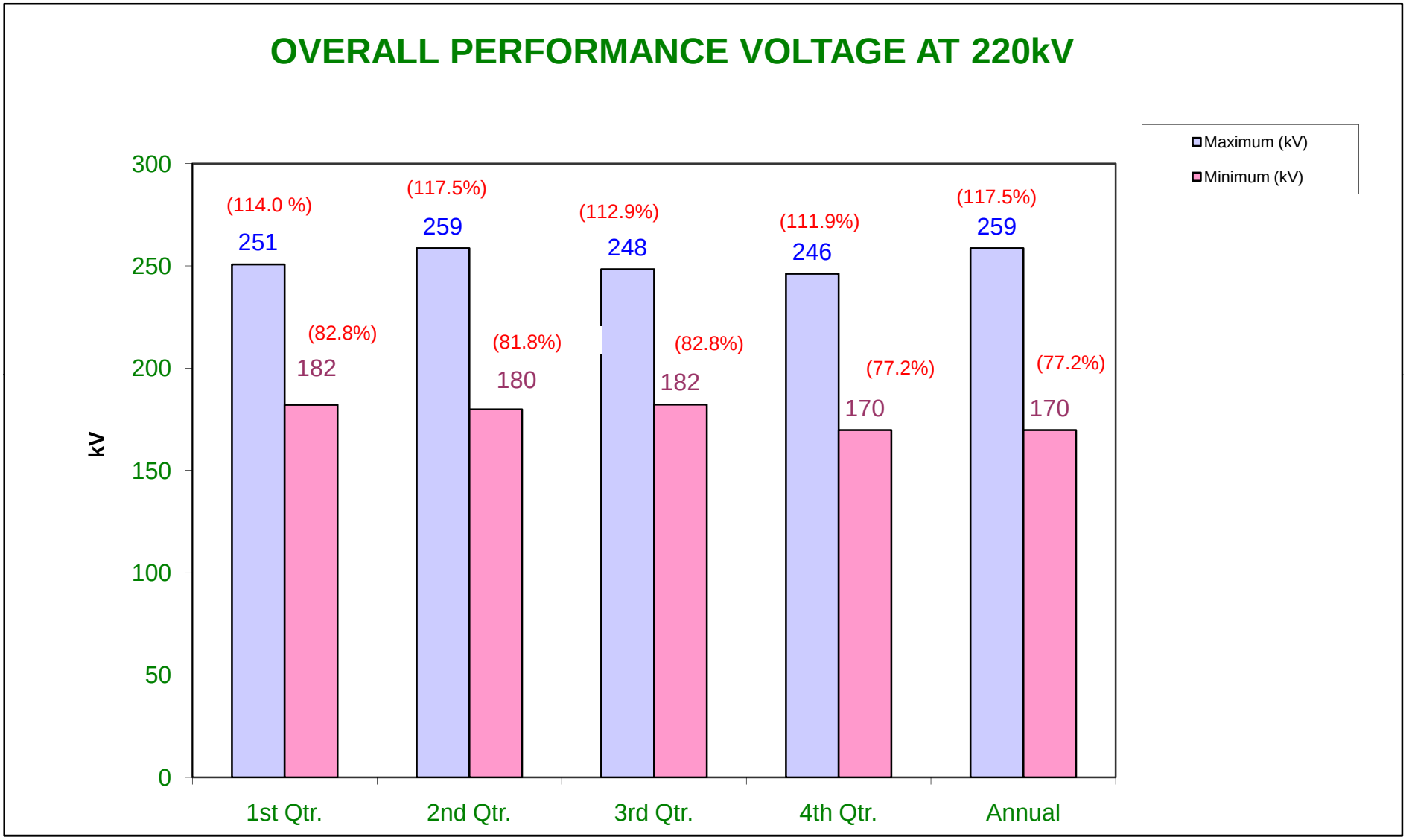
MINIMUM VOLTAGES OF MAJOR GRID SUB-STATIONS. (132kV)

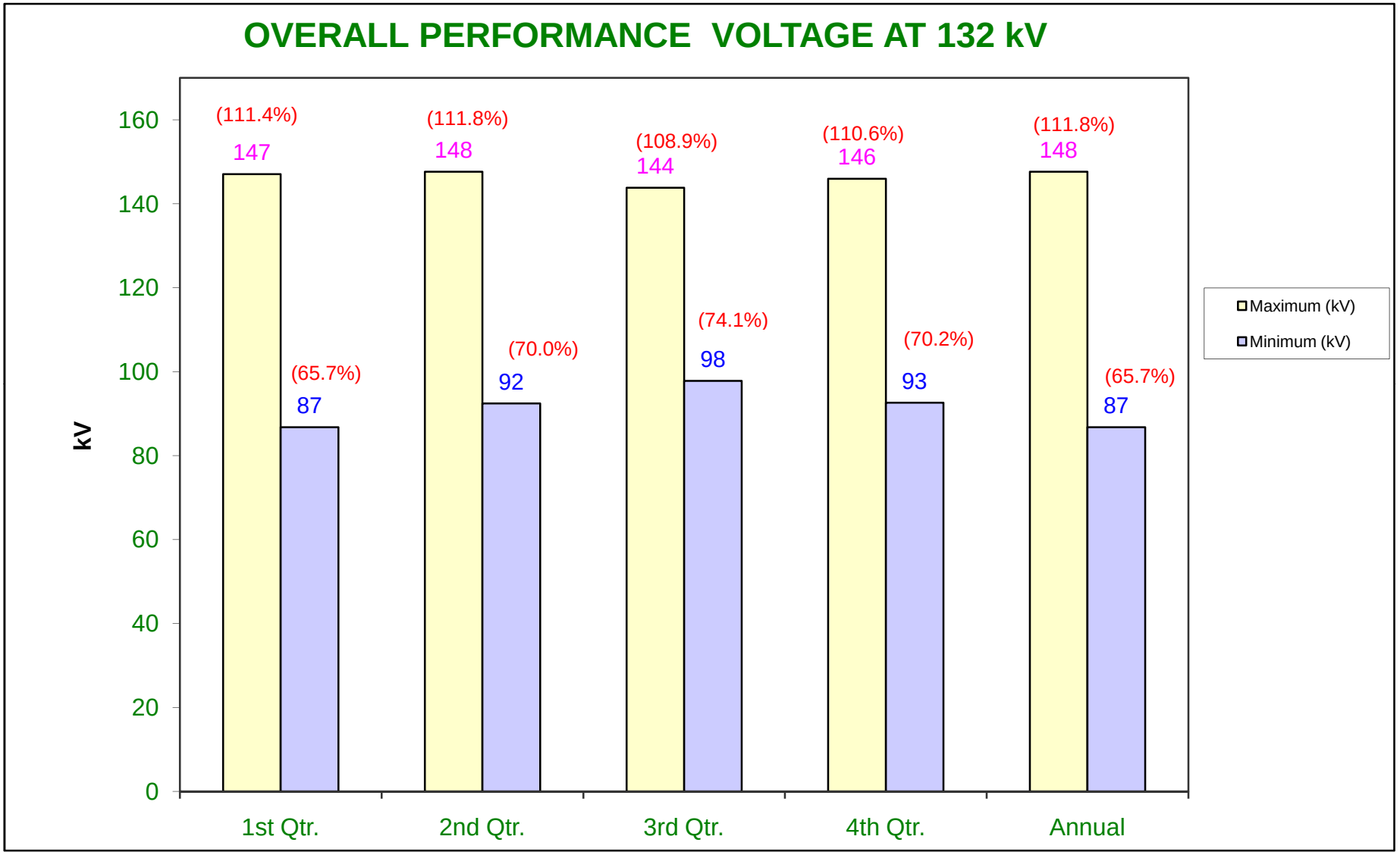
Sl. No.	Name of the Sub-station	Quarter - 1			Quarter - 2			Quarter - 3			Quarter - 4			**ANNUAL**		
		Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.	Voltage in kV	Date	Time in Hrs.
1	Cuttack	97.40	04.06.15	19:45	115.24	13.08.15	21:15	107.15	11.10.15	18:45	109.35	30.03.16	17:00	97.40	04.06.15	19:45
2	Berhampur	100.40	04.04.15	20:00	113.62	29.07.15	19:15	115.47	17.10.15	18:15	106.92	22.02.16	18:30	100.40	04.04.15	20:00
3	Puri	96.24	07.04.15	20:00	105.02	12.08.15	21:00	107.27	19.10.15	18:30	103.28	21.03.16	21:30	96.24	07.04.15	20:00
4	Khurda	86.77	08.05.15	19:15	92.43	21.07.15	20:45	97.80	05.10.15	06:00	92.60	30.03.16	18:45	86.77	08.05.15	19:15

Note:

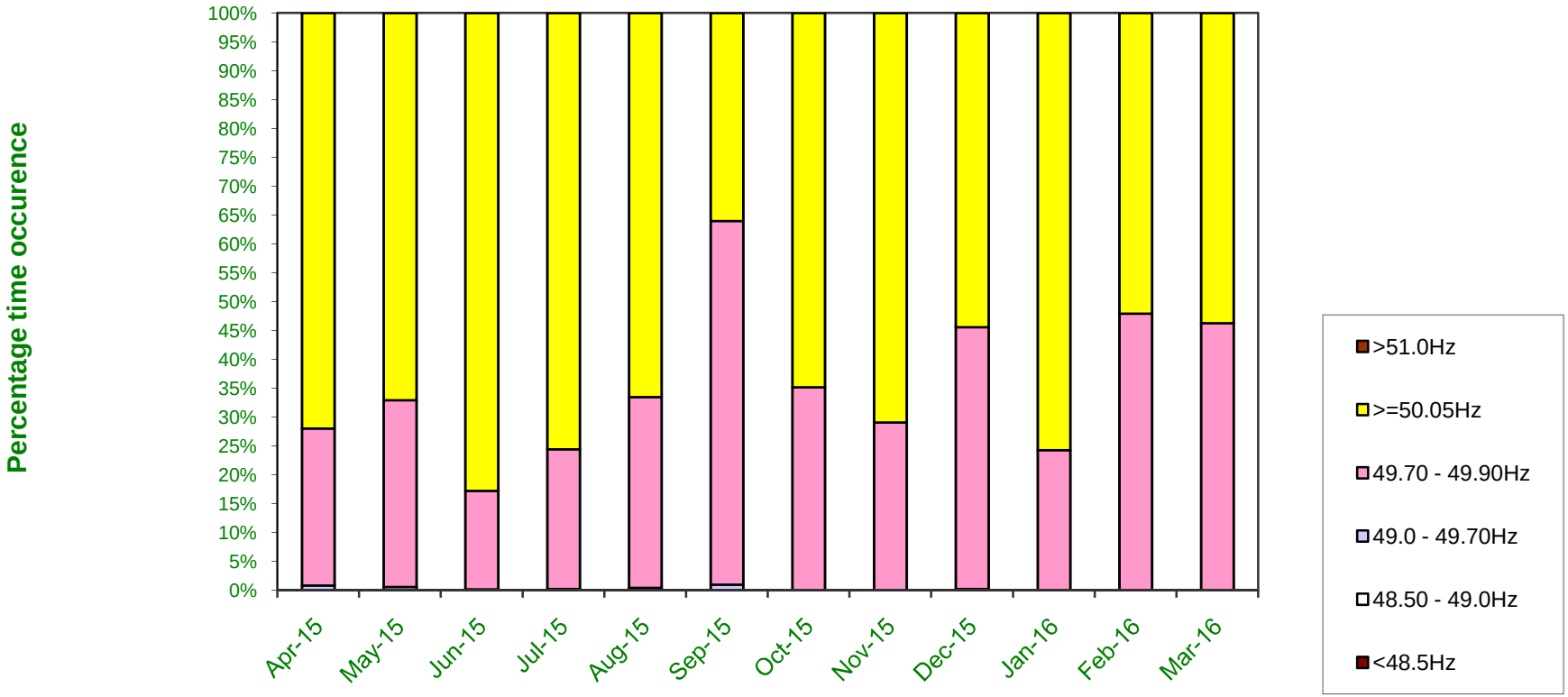
The bus voltages are recorded from 15min block voltage from meter data .

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


OVERALL PERFORMANCE VOLTAGE AT 220kV
Maximum (kV)
Minimum (kV)
kV
300
250
200
150
100
50
0
(114.0 %)
251
(82.8%)
182
(117.5%)
259
(81.8%)
180
(112.9%)
248
(82.8%)
182
(111.9%)
246
(77.2%)
170
(117.5%)
259
(77.2%)
170
1st Qtr.
2nd Qtr.
3rd Qtr.
4th Qtr.
Annual


OVERALL PERFORMANCE VOLTAGE AT 132 kV
kV
160
140
120
100
80
60
40
20
0
(111.4%)
147
(65.7%)
87
(111.8%)
148
(70.0%)
92
(108.9%)
144
(74.1%)
98
(110.6%)
146
(70.2%)
93
(111.8%)
148
(65.7%)
87
1st Qtr.
2nd Qtr.
3rd Qtr.
4th Qtr.
Annual
Maximum (kV)
Minimum (kV)

Frequency Performance

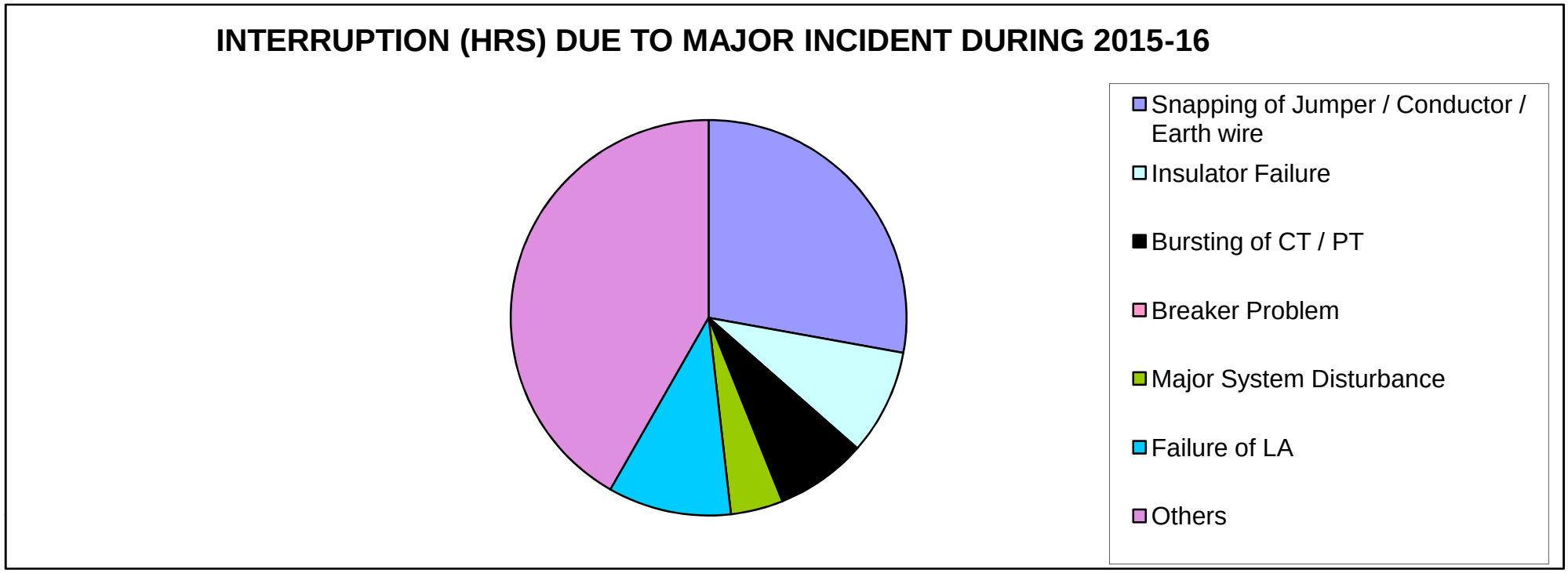


	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16
>51.0Hz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
>=50.05Hz	31.02	25.34	34.04	25.69	22.23	14.03	21.51	24.94	18.35	25.05	12.97	14.25
49.70 - 49.90Hz	11.74	12.23	7.00	8.22	11.04	24.55	11.64	10.21	15.30	8.04	11.92	12.27
49.0 - 49.70Hz	0.36	0.22	0.09	0.09	0.14	0.38	0.03	0.03	0.08	0.00	0.02	0.02
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

INTERRUPTION DUE TO MAJOR INCIDENT

Incident	Duration of Interruption	No. of Interruption
Snapping of Jumper / Conductor / Earth wire	42:46:00	48
Insulator Failure	13:15:00	29
Bursting of CT / PT	11:27:00	7
Breaker Problem	0:00:00	4
Major System Disturbance	6:33:00	6
Failure of LA	15:28:00	21
Others	64:06:00	141

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 2015-16.



पावर मैप

POWER MAP OF EASTERN REGION