

OPTCL



(Approved by OERC vide Letter No. OERC-Engg-5/98 (Vol.XV)/ 1364 dt. 08.10.2014)

PERFORMANCE OF THE TRANSMISSION SYSTEM OF OPTCL FOR 2013-2014

[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 2013-14.**1. Procurement of Power:**

Source	Commission's Approval (MU)	Actual Drawl for the State Consumption (MU)	Remarks
OHPC	5881.74	7014.53	State's Maximum and Minimum demand was 3705 MW and 1383 MW respectively
Thermal(TTPS+OPGC)	5878.18	5967.79	
CGP including Co-generation	1102	779.519	
Renewable Generation	485.76	433.913	
IPP	3073.51	3329.17	
EREB	7637.23	7537.979	
Total	24058.422	25062.89	
Net Banking + IEX+STOA		-1740.187	
	24058.42	23322.712	

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	254	229
2	Duburi	245	210
3	Joda	243	205
4	Tarkera	242	223
5	Budhipadar	249	218
6	Balasore	245	210
7	Narendrapur	254	187
8	Chandaka	239	196
9	Bhanjanagar	272	210
10	Theruvali	261	220
11	Meramundali	240	213
12	Bidanasi	238	204
13	Katapalli	258	216
14	Bhadrak	250	194
15	Paradeep	250	205
16	Bolangir	256	210
17	Mendhasal	240	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	142	104
2	Puri	133	95
3	Khurda	144	88
4	Berhampur	144	106

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	64:30:00	73	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 2013-14.
Insulator Failure	52:16:00	55	
Bursting of CT / PT	3:44:00	9	
Breaker Problem	5:49:00	11	
System Disturbance	6:19:00	14	
Failure of LA	9:19:00	35	
Others	854:33:00	98	

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.

COMMISSION'S OBSERVATION ON THE PERFORMANCE OF THE TRANSMISSION SYSTEM OF OPTCL FOR 2013-14

The salient features of the performance of transmission system of OPTCL for the year 2013-14 is given below and the detail information in support to that is available in SLDC website i.e., www.sldcorissa.org

A. Procurement of Power:

The Commission had approved the purchase of power by GRIDCO from various sources in the ARR & Tariff order for 2013-14 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	7014.53	State's Maximum and Minimum demand was 3705 MW and 1383 MW respectively
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	24058.42	23322.712	

There is an import of 128.759 MU through power banking, open access, trading & IEX) and export of 1868.946 MU (200.33 through trading, STOA, banking & IEX export and 1668.616 MU EREB export) during the FY 2013-14. Hence, in the said financial year GRIDCO has an export of 1740.187 MU on this account.

2. During FY 2013-14 the daily peak demand touched at 3705 MW maximum on dt.27.03.2014 and a minimum of 1383 MW on dt.12.10.2013. The peak demand of 3705 MW in 2013-14 is about 125 MW above the peak demand experienced during the previous year 2012-13 (of 3580 MW). But the total energy drawl is 23323 MU in FY 2013-14 against 22845 MU in 2012-13, which indicates a growth in electricity consumption of around 478 MU in the state.

B. Line Interruption:

3. OPTCL's system has faced aggregated Annual interruptions varying from 3 hour to 854 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. OPTCL claimed that there was no black out experienced in the State during the FY 2013-14.

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 49.7 to 50.2 Hz band. Orissa Grid Code also provides that restriction of drawl should start at 49.5HZ and generators should back down after 50.5 HZ. OPTCL, in 2013-14, has experienced frequency as low as 49.04 Hz and as high as 50.98 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 and for the interest of themselves as well as for state shall reduce their drawl during low frequency from the grid.

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 187 kV minimum and 272 kV maximum in its 220 KV system and 88 KV minimum and 144 KV maximum in its 132 KV system. OPTCL is advised to take suitable remedial measures to improve the voltage profile. 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. OPTCL should keep its on-line Tap Changer of the Power Transformers in healthy condition and all the field engineers should be 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 and transformation capacity as 'NIL' which in turn indicates that during FY 2013-14 and OPTCL system availability was 100%. OPTCL and DISCOM authorities should discuss and take action on augmentation of transformer and line capacity of the problematic area of the transmission system. DISCOMs should be intimated 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.

7. Due to non-availability of generation/failure of generating stations, OPTCL, however, has resorted of load restriction in 2013-14 totaling only 13.33 hours in the year. 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 Orissa share from Inter State Generating Station of Eastern Region.

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.

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

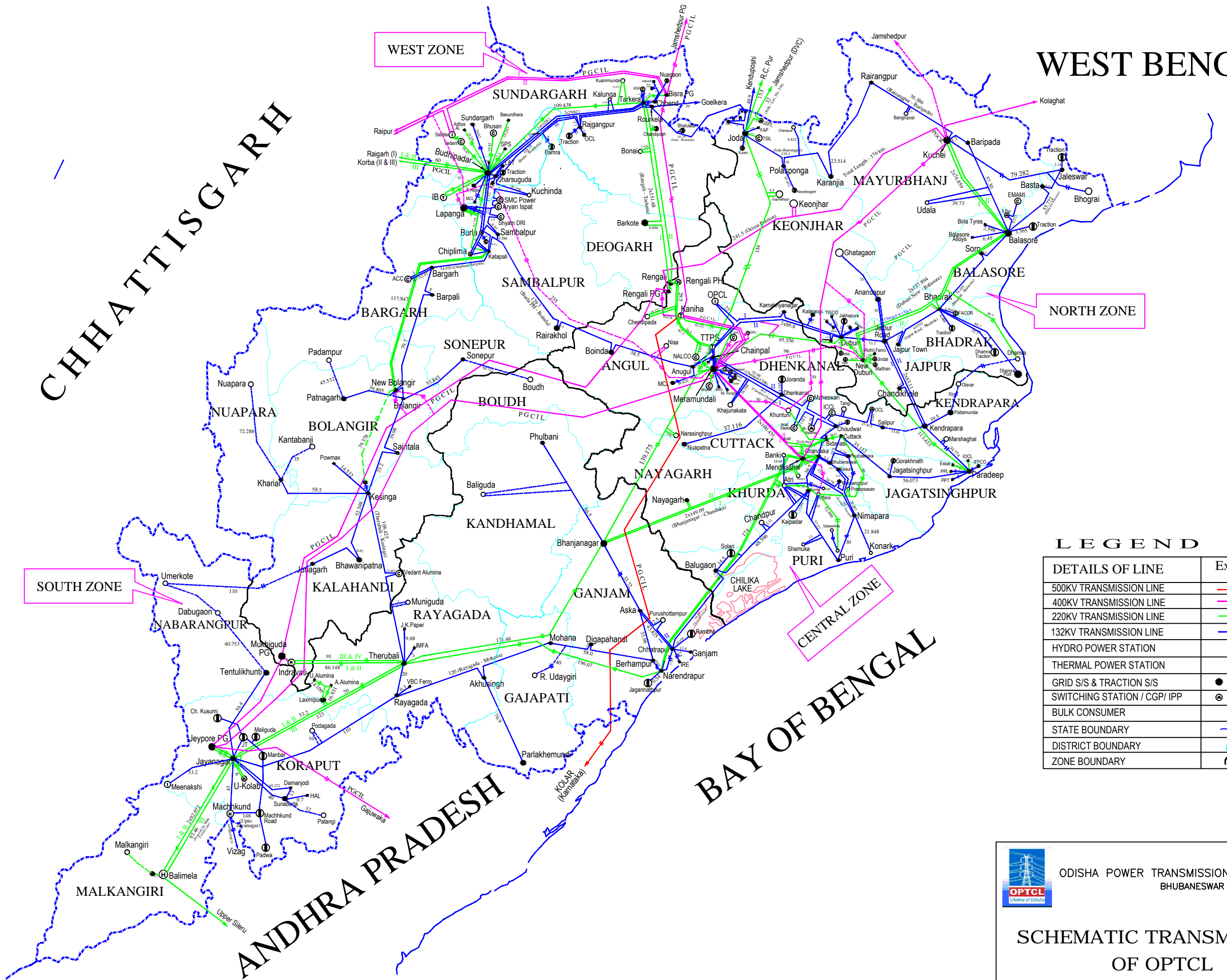
JHARKHAND

WEST BENGAL

CHHATTISGARH

ANDHRA PRADESH

BAY OF BENGAL



LEGEND

DETAILS OF LINE	Existing	Proposed / U/C
500KV TRANSMISSION LINE	—	- - -
400KV TRANSMISSION LINE	—	- - -
220KV TRANSMISSION LINE	—	- - -
132KV TRANSMISSION LINE	—	- - -
HYDRO POWER STATION	(H)	(H)
THERMAL POWER STATION	(T)	(T)
GRID S/S & TRACTION S/S	(O)	(O)
SWITCHING STATION / CGP/ IPP	(X)	(X)
BULK CONSUMER	(■)	(■)
STATE BOUNDARY	—	—
DISTRICT BOUNDARY	—	—
ZONE BOUNDARY	—	—



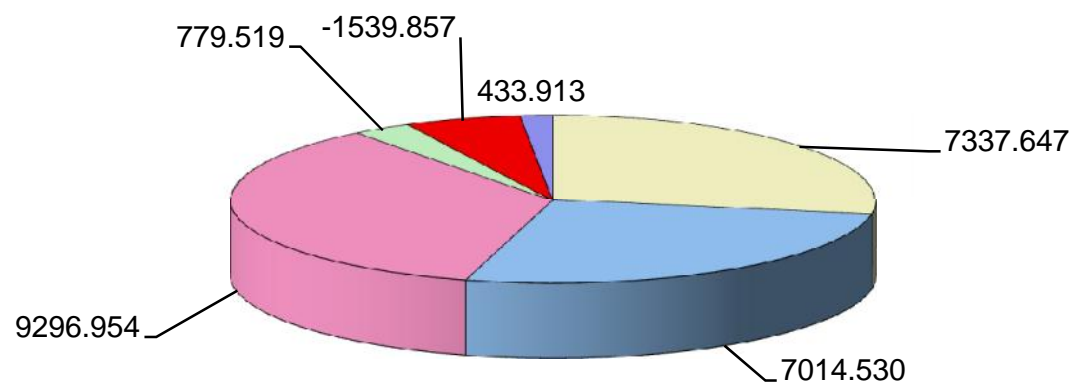
ODISHA POWER TRANSMISSION CORPORATION LIMITED
BHUBANESWAR

SCHEMATIC TRANSMISSION MAP OF OPTCL

Length in kms. NOT TO SCALE

GRID DEMAND FOR THE YEAR 2013-14

[Total Drawal 23322.707 MU]

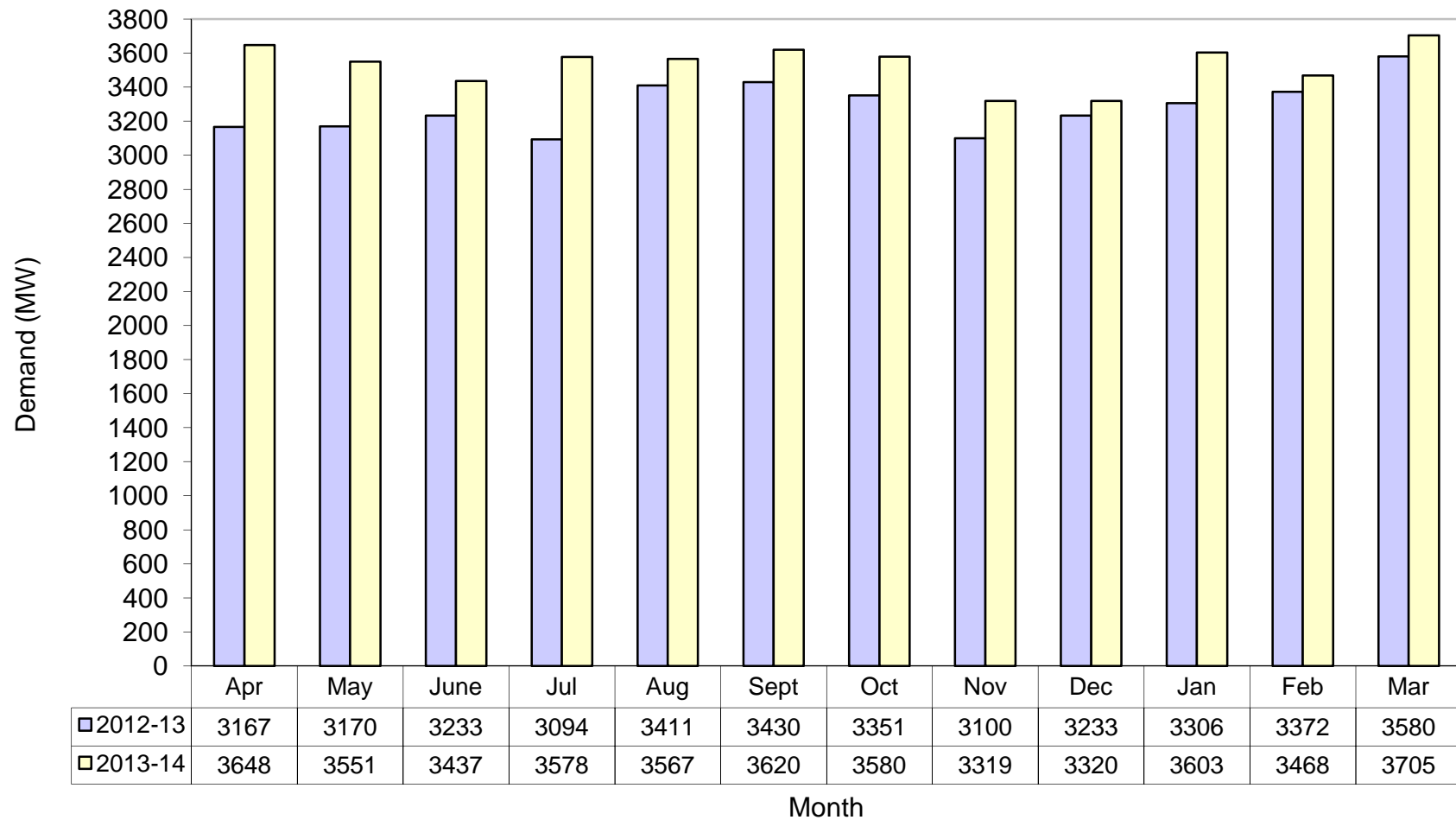


Net EREB Total Hydro Total Thermal (OPGC + TTPS+IPP) CPP Net BankingPower+IEX+STOA Renewable Energy

DAILY PEAK DEMAND (MW) EXCLUDING TRADING FOR THE YEAR 2013-14

Day	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Max	Min
1	3648	3235	3343	3161	3187	3313	3389	3166	3174	3129	3366	3487	3648	3129
2	3475	3272	3437	3195	3126	3348	3397	3217	3163	3228	3328	3274	3475	3126
3	3140	3185	3252	3295	3456	3120	3580	3117	3301	3286	3397	3344	3580	3117
4	3363	3171	3332	3173	3353	3421	3555	3135	3179	3173	3392	2881	3555	2881
5	3420	3272	3213	3265	3474	3480	3271	3178	3178	3273	3439	3402	3480	3178
6	3513	3123	3382	3342	3546	3485	3518	3275	3262	3410	3296	3305	3546	3123
7	3507	3400	3098	3340	3500	3556	3450	3193	3176	3272	3437	3444	3556	3098
8	3510	3539	3282	3427	3351	3378	3472	3220	3081	3336	3414	3462	3539	3081
9	3431	3480	3054	3486	3373	3381	3463	3306	3247	3271	3399	3356	3486	3054
10	3319	3372	3399	3206	3406	3339	3482	3138	3197	3482	3312	3379	3482	3138
11	3301	3442	3197	3283	3381	3429	3008	3237	3253	3599	3314	3312	3599	3008
12	3396	3124	3076	3369	3357	3479	2491	3196	3200	3547	3462	3478	3547	2491
13	3373	3323	3047	3487	3567	3502	1383	3260	3184	3524	3431	3563	3567	1383
14	3603	3260	3013	3428	3476	3547	2011	3283	3210	3513	3392	3597	3603	2011
15	3423	3407	3163	3419	3363	3392	2504	3243	3184	3603	3158	3599	3603	2504
16	3259	3389	3326	3315	3358	3451	2864	3214	3294	3536	2964	3428	3536	2864
17	3196	3461	3315	3455	3200	3327	2951	3173	3211	3317	3363	3333	3461	2951
18	3053	3433	3246	3308	3261	3295	3071	3289	3238	3583	3372	3597	3597	3053
19	2703	3232	3196	3380	3454	3439	3170	3313	3250	3494	3433	3595	3595	2703
20	2975	3352	3109	3578	3044	3530	2837	3319	3225	3419	3410	3577	3578	2837
21	2809	3170	3203	3327	3367	3402	2951	3231	3265	3356	3386	3574	3574	2809
22	3086	3396	3112	3461	3391	3462	2987	3270	3193	3484	3240	3372	3484	2987
23	3321	3475	3101	3422	3369	3543	2916	3237	3246	3380	3466	3389	3543	2916
24	3296	3134	3134	3375	3490	3586	2908	3107	3263	3028	3397	3575	3586	2908
25	3098	3313	3137	3504	3485	3452	3015	3300	3166	3345	3380	3595	3595	3015
26	3282	3141	3344	3485	3470	3620	2972	3315	3176	3360	3441	3606	3620	2972
27	3476	3130	3382	3392	3370	3195	3042	3302	3158	3441	3345	3705	3705	3042
28	3378	2992	3261	3356	3277	3186	3239	3282	3281	3377	3468	3681	3681	2992
29	3464	3179	3205	3341	3319	3299	3311	3303	3169	3414		3663	3663	3169
30	3168	2861	3098	3234	3423	3296	3269	3319	3320	3417		3569	3569	2861
31		3551		3307	3446		3189		3304	3428		3631	3631	3189
MAX	3648	3551	3437	3578	3567	3620	3580	3319	3320	3603	3468	3705	3705	3189
MIN	2703	2861	3013	3161	3044	3120	1383	3107	3081	3028	2964	2881	3461	1383

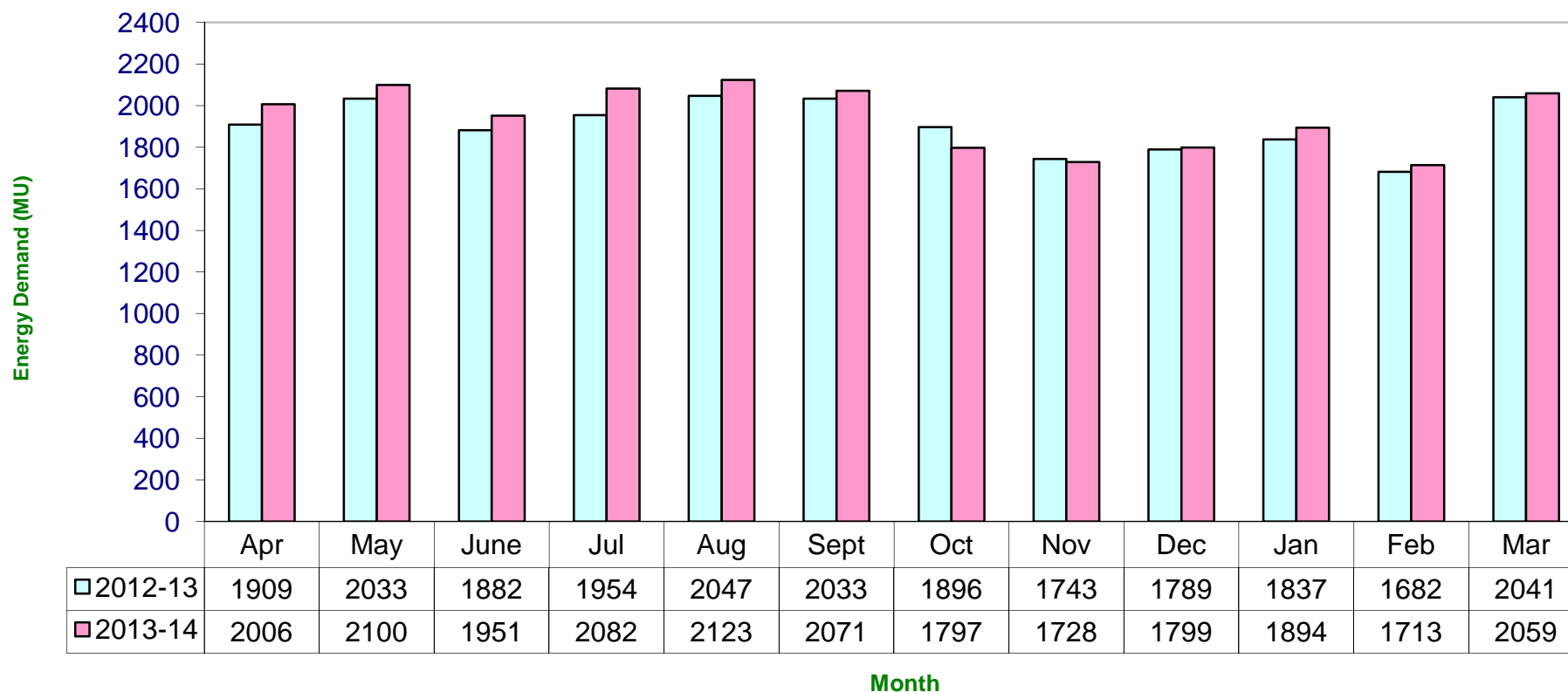
COMPARISON OF MONTHLY PEAK DEMAND (MW) EXCLUDING TRADING FOR THE YEAR ENDING 2012-13 & 2013-14



Annual Peak Demand : 2012-13 - 3580 MW 2013-14 - 3705 MW

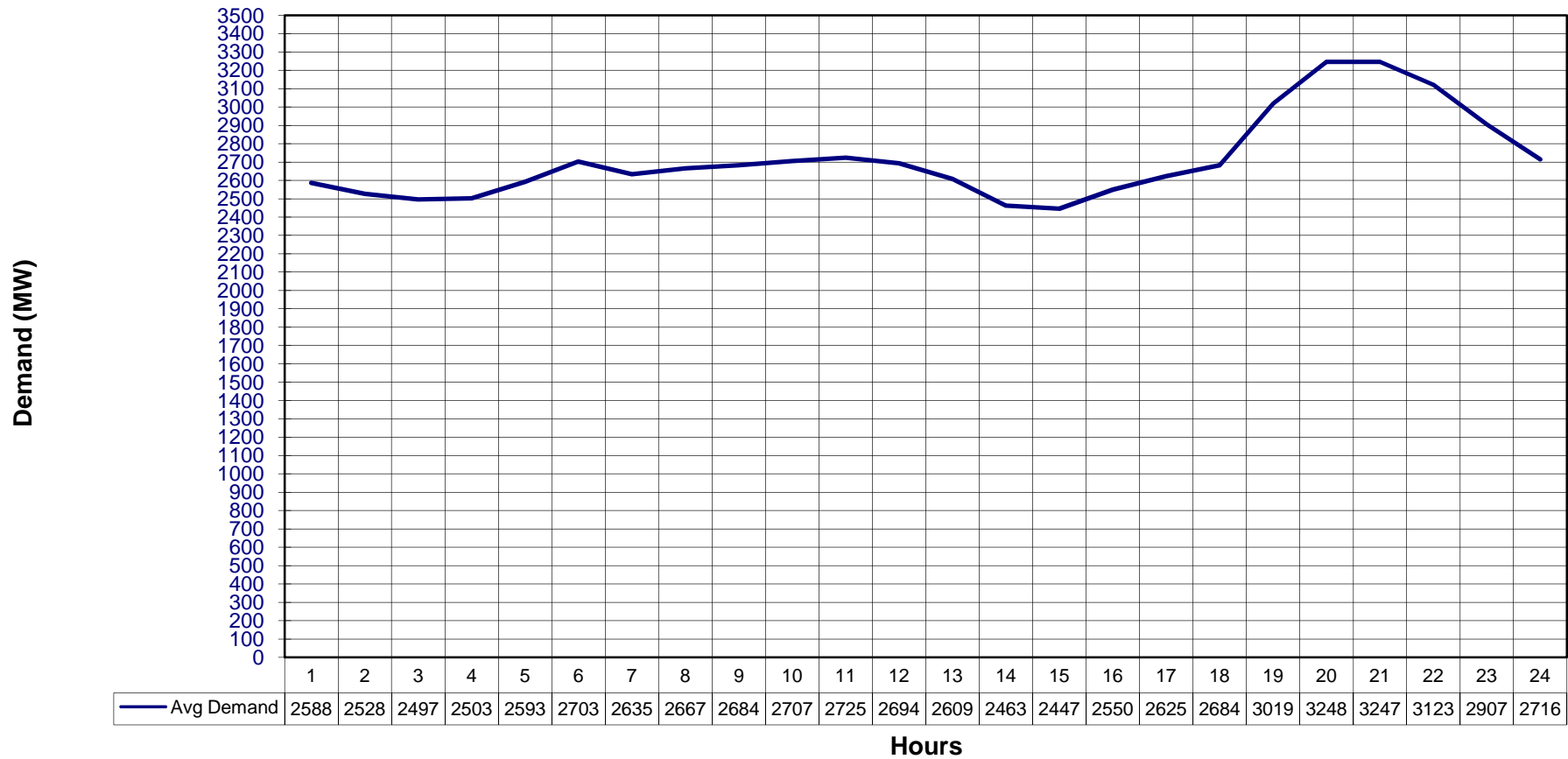
■ 2012-13 ■ 2013-14

COMPARISON OF MONTHLY ENERGY DEMAND (MU) EXCLUDING TRADING & RETURN BANKING POWER FOR THE YEAR ENDING 2012-13 & 2013-14



Annual Energy Demand : **2012-13 - 22845 MU** **2013-14 - 23323 MU**

DEMAND CURVE FOR HOURLY AVERAGE DEMAND EXCLUDING TRADING FOR YEAR ENDING MARCH 2014

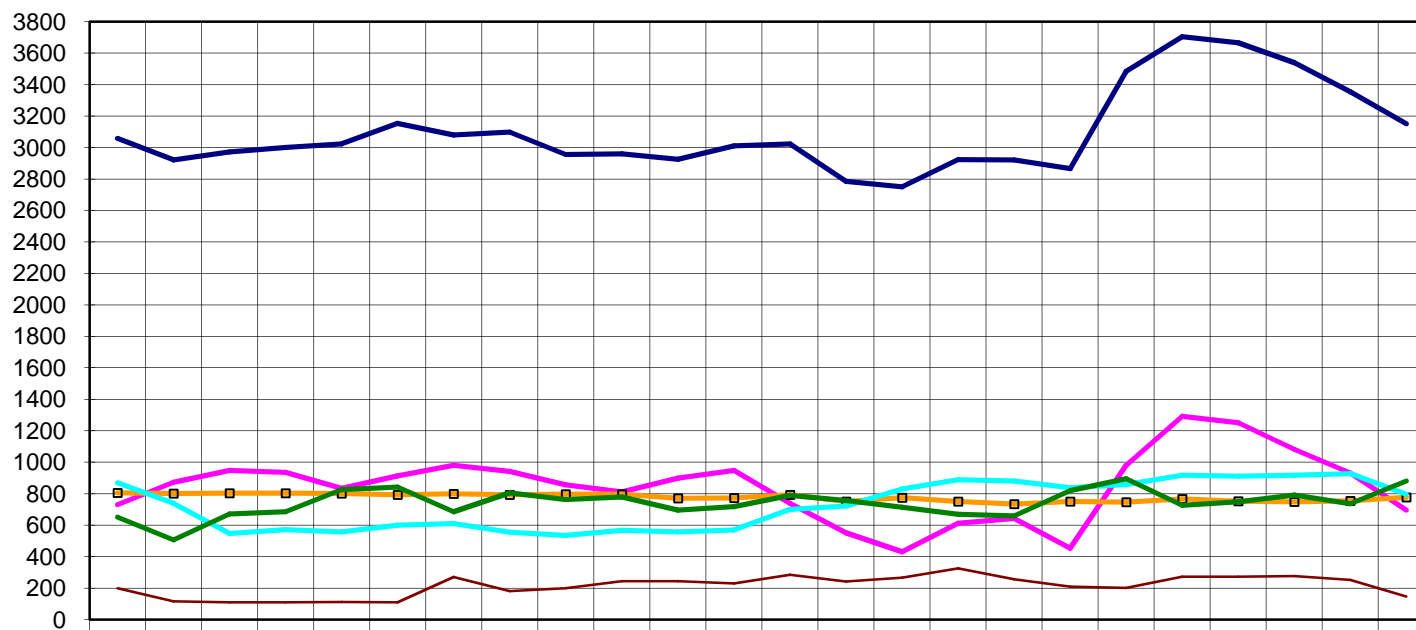


Hourly Average Demand (Month wise) in support of Page-6

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-13	2739	2672	2609	2614	2685	2781	2469	2442	2529	2641	2689	2782	2755	2628	2638	2714	2661	2494	2866	3187	3239	3174	3079	2913
May-13	2917	2860	2807	2822	2885	2778	2471	2394	2502	2642	2821	2908	2904	2832	2840	2888	2820	2492	2695	3091	3191	3149	3069	2976
Jun-13	2747	2681	2643	2630	2692	2678	2493	2432	2500	2632	2720	2706	2649	2566	2584	2653	2667	2505	2674	3121	3174	3159	3015	2867
Jul-13	2770	2710	2679	2685	2728	2705	2578	2612	2664	2761	2783	2719	2672	2561	2590	2693	2729	2654	2877	3270	3322	3280	3110	2903
Aug-13	2817	2720	2701	2689	2769	2824	2640	2681	2744	2760	2768	2758	2704	2595	2585	2709	2752	2677	2957	3315	3353	3266	3111	2953
Sep-13	2865	2807	2775	2770	2849	2883	2730	2770	2801	2859	2897	2872	2796	2677	2660	2741	2774	2821	3235	3374	3367	3298	3148	2985
Oct-13	2339	2270	2239	2229	2294	2378	2375	2432	2405	2448	2452	2402	2340	2234	2227	2326	2404	2561	2900	2996	2942	2819	2623	2463
Nov-13	2285	2240	2226	2259	2399	2631	2690	2696	2643	2623	2624	2553	2398	2205	2160	2308	2498	2912	3187	3227	3175	2939	2618	2386
Dec-13	2139	2106	2086	2116	2268	2536	2647	2714	2651	2601	2590	2508	2365	2136	2071	2225	2415	2803	3124	3211	3125	2884	2515	2272
Jan-14	2355	2297	2269	2281	2409	2680	2836	2949	2934	2867	2806	2700	2555	2329	2285	2428	2609	2893	3285	3363	3337	3103	2747	2489
Feb-14	2385	2347	2325	2334	2455	2681	2802	2936	2920	2794	2726	2633	2482	2280	2244	2342	2489	2659	3192	3361	3307	3116	2794	2531
Mar-14	2698	2631	2608	2606	2687	2886	2883	2951	2918	2853	2824	2792	2684	2517	2479	2578	2679	2736	3240	3454	3438	3288	3048	2849
Avg. Annual	2588	2528	2497	2503	2593	2703	2635	2667	2684	2707	2725	2694	2609	2463	2447	2550	2625	2684	3019	3248	3247	3123	2907	2716

HOURLY DEMAND CURVE FOR 27.03.2014 (MAX PEAK DEMAND OF THE YEAR (2013-14))

Demand (MW)

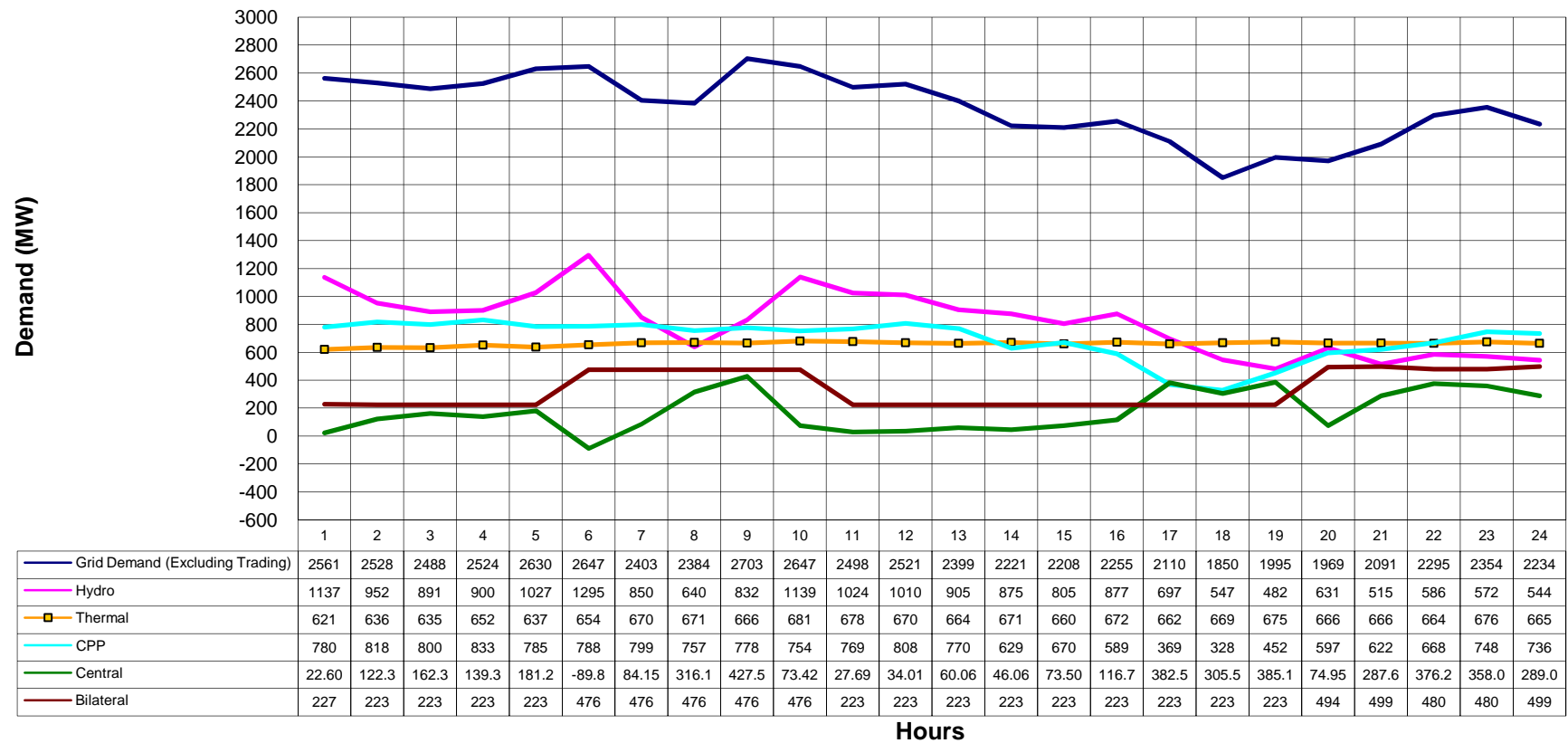


	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Grid Demand (Excluding Trading)	3058	2921	2974	3001	3024	3154	3080	3098	2956	2960	2927	3011	3024	2785	2752	2924	2921	2867	3485	3705	3667	3540	3354	3153
Hydro	732	873	949	937	834	915	982	942	858	813	899	948	739	553	432	612	644	455	982	1292	1252	1082	932	697
Thermal	806	802	804	805	803	795	800	794	798	798	772	774	794	751	776	752	735	752	748	767	753	749	755	778
CPP	869	739	548	572	559	601	611	556	536	569	559	570	701	724	830	891	882	840	860	919	912	917	929	797
Central Sector	651	508	673	687	828	843	687	806	764	779	696	719	790	758	714	670	660	820	896	728	750	791	738	882
Bilateral	199	117	111	110	112	111	270	182	200	245	244	231	286	244	268	326	258	210	202	273	274	278	253	147

Hours

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

HOURLY DEMAND CURVE FOR 19.04.2013 (MIN PEAK DEMAND OF THE YEAR 2013-14)



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

1 INSTALLED CAPACITY (AS ON 31.3.2014) 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	7209.791	7014.530
OPGC (Thermal)	420	2855.902	2544.841
TTPS (Thermal)	460	3828.813	3406.497
TTPS (UI-OD)			16.448
IPPs			3329.167
CPP (Synchronised to OPTCL System)			779.519
Renewable Energy Including Co-gen	-		433.913
B. CENTRAL SECTOR			
Orissa Share			
Hydro	199.00		
Thermal	884.60	-	7537.977
C. Banking Power+OA+Trading+IEX (Import)			128.759
TOTAL DRAWAL			25191.653
D. Banking Power+OA+Trading+IEX (Export)			1668.616
E. Export to EREB			200.330
Net GRIDCO demand			23322.707

Export to ICCL 0.000
Export to NALCO 3.297

* Includes Orissa share from Machhkund.

2 TRANSMISSION LINES AND SUBSTATIONS

	As on 31.03.2013	Capacity Addition in 2013-2014	As on 1.4.2014
A. 400 kV line (ckt.km)	518.234	0.000	518.234
B. 220kV line (ckt.km)	5585.988	144.346	5730.334
C. 132kV line (ckt.km)	5281.856	174.055	5455.911
D. Substations			
400 / 220 /132kV (nos.)	2	0	2
220/132/33kV (nos.)	16	1	17
220/33kV (nos.)	4	1	5
132/33/11kV (nos.)	63	4	67
132kV Switching Stations (OPTCL)	3	0	3
132kV LILO Switching Stations of Industries	13	1	14
Total	101	7	108

Note: 1. 220/132kV Lapanga Grid S/s has been newly added.

2. 220/33kV Laxmipur Grid S/s has been newly added.

3. 132/33kV Kuchinda, Purusottampur, Chandpur, Barbil Grid S/ss have been newly added.

4. 132kV LILO Switching station "Maheswari Ispat" has been disconnected and "B.C.Mohanty & Sons" newly added.

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

3 **PERFORMANCE OF OPTCL DURING 2013 - 14**

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)	3.00	0.00	10.33	0.00	13.33
Percentage(%)	0.14	0.00	0.47	0.00	0.15

* —→ 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 50.2 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	280.42	435.70	209.42	198.48	1124.02
Percentage(%)	12.84	19.73	9.48	9.19	12.83

(ii) **Maximum continous period beyond 50.2 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	4.25	5.55	4.47	4.85	5.55
Percentage(%)	0.19	0.25	0.20	0.22	0.06

(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	50.98	50.74	50.61	50.72	50.98
Date/Time	<u>12.05.13</u> 17:39hr	<u>15.08.13</u> 08:02hr	<u>11.10.13</u> 8:03hr	<u>18.01.14</u> 03:03hr	<u>12.05.13</u> 17:39hr

(iv) **Below 49.7 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	37.48	18.17	28.75	2.57	86.97
Percentage(%)	1.72	0.82	1.30	0.12	0.99

(v) **Maxm. Continous period below 49.7 Hz**

Duration	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>	<u>Annual</u>
(In Hrs)	0.78	0.47	0.45	0.35	0.78
Percentage(%)	0.04	0.02	0.02	0.02	0.01

(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	49.04	49.04	49.28	49.32	49.04
Date/Time	<u>18.06.13</u> 21:19 hr	<u>05.07.13</u> 19:46 hr	<u>14.10.13</u> 18:11hr	<u>12.03.14</u> 19:26hr	<u>18.06.13</u> 21:19 hr

3. C - 2 VOLTAGE PROFILE (2013-2014)

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	250	13.06.13	06:00	252	21.08.13	04:00	254	12.10.13	07:00	250	27.01.14	24:00	254	12.10.13	07:00
2	Duburi	242	07.05.13	06:00	240	19.09.13	01:00	245	13.10.13	12:00	240	01.01.14	01:00	245	13.10.13	12:00
3	Joda	237	31.05.13	08:00	240	21.09.13	14:00	243	13.10.13	11:00	236	14.01.14	05:00	243	13.10.13	11:00
4	Tarkera	242	14.04.13	02:00	237	01.07.13	07:00	240	13.10.13	06:00	237	12.01.14	24:00	242	14.04.13	02:00
5	Budhipadar	248	14.04.13	02:00	241	18.07.13	08:00	249	13.10.13	07:00	239	23.02.14	24:00	249	13.10.13	07:00
6	Balasore	245	03.05.13	18:00	240	21.08.13	06:00	245	13.10.13	09:00	240	24.01.14	11:00	245	03.05.13	18:00
7	Narendrapur	242	22.04.13	07:00	244	29.09.13	06:00	254	05.11.13	14:00	246	03.01.14	11:00	254	05.11.13	14:00
8	Chandaka	239	08.05.13	07:00	233	20.09.13	06:00	237	11.10.13	17:00	234	01.01.14	24:00	239	08.05.13	07:00
9	Bhanjanagar	237	21.04.13	15:00	240	21.09.13	06:00	272	12.10.13	06:00	236	06.01.14	16:00	272	12.10.13	06:00
10	Theruvalli	248	20.04.13	01:00	248	21.09.13	07:00	261	12.10.13	07:00	247	05.01.14	14:00	261	12.10.13	07:00
11	Meramundali	234	21.04.13	15:00	234	30.07.13	17:00	240	12.10.13	16:00	233	06.01.14	23:00	240	12.10.13	16:00
12	Bidanasi	238	07.05.13	06:00	236	16.09.13	14:00	238	01.12.13	14:00	237	08.01.14	03:00	238	07.05.13	06:00
13	Katapalli	258	14.04.13	01:00	241	17.09.13	07:00	253	13.10.13	08:00	239	16.02.14	07:00	258	14.04.13	01:00
14	Bhadrak	244	07.05.13	06:00	245	27.09.13	15:00	250	13.10.13	24:00	243	09.01.14	14:00	250	13.10.13	24:00
15	Paradeep	250	21.04.13	16:00	244	11.08.13	08:00	244	25.11.13	03:00	239	10.01.14	24:00	250	21.04.13	16:00
16	Bolangir	256	14.04.13	15:00	244	30.09.13	19:00	251	13.10.13	14:00	244	23.02.14	22:00	256	14.04.13	15:00
17	Mendhasal	240	21.04.13	16:00	238	21.09.13	01:00	240	21.10.13	16:00	238	12.01.14	01:00	240	21.04.13	16:00

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	231	06.05.13	20:00	229	09.07.13	09:00	232	11.12.13	19:00	232	19.01.14	18:00	229	09.07.13	09:00
2	Duburi	216	24.05.13	19:00	213	10.09.13	21:00	220	01.10.13	19:00	210	20.03.14	21:00	210	20.03.14	21:00
3	Joda	215	29.04.13	21:00	216	26.09.13	19:00	220	04.10.13	21:00	205	29.03.14	20:00	205	29.03.14	20:00
4	Tarkera	223	25.05.13	20:00	227	03.08.13	22:00	227	06.10.13	20:00	225	14.02.14	20:00	223	25.05.13	20:00
5	Budhipadar	227	08.05.13	16:00	225	27.09.13	11:00	218	12.11.13	20:00	219	07.03.14	02:00	218	12.11.13	20:00
6	Balasore	212	10.06.13	20:00	210	02.08.13	19:00	217	04.10.13	20:00	212	20.03.14	20:00	210	02.08.13	19:00
7	Narendrapur	187	24.05.13	20:00	207	03.09.13	11:00	200	25.12.13	19:00	200	02.01.14	18:00	187	24.05.13	20:00
8	Chandaka	196	07.05.13	04:00	207	14.09.13	21:00	209	24.11.13	10:00	208	28.03.14	19:00	196	07.05.13	04:00
9	Bhanjanagar	210	07.05.13	21:00	210	14.09.13	19:00	211	24.11.13	19:00	212	06.01.14	19:00	210	07.05.13	21:00
10	Theruvalli	220	08.05.13	20:00	221	02.08.13	19:00	228	05.10.13	20:00	227	26.02.14	20:00	220	08.05.13	20:00
11	Meramundali	220	29.04.13	21:00	216	26.09.13	21:00	213	09.10.13	18:00	214	28.03.14	20:00	213	09.10.13	18:00
12	Bidanasi	209	11.05.13	20:00	208	05.09.13	19:00	211	29.10.13	21:00	204	29.03.14	20:00	204	29.03.14	20:00
13	Katapalli	221	13.04.13	16:00	224	25.08.13	20:00	220	19.10.13	20:00	216	24.03.14	21:00	216	24.03.14	21:00
14	Bhadrak	205	10.06.13	20:00	210	04.07.13	17:00	217	04.10.13	20:00	194	31.03.14	19:00	194	31.03.14	19:00
15	Paradeep	205	01.06.13	19:00	206	26.08.13	21:00	209	04.10.13	18:00	209	19.01.14	18:00	205	01.06.13	19:00
16	Bolangir	210	12.04.13	19:00	214	20.08.13	20:00	210	21.12.13	20:00	211	06.02.14	19:00	210	12.04.13	19:00
17	Mendhasal	211	02.05.13	22:00	207	24.09.13	19:00	215	13.10.13	21:00	213	28.03.14	20:00	207	24.09.13	19:00

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	142	07.05.13	06:00	138	16.09.13	14:00	140	12.10.13	21:00	142	18.02.14	14:00	142	07.05.13	06:00
2	Puri	132	21.05.13	15:00	126	23.07.13	11:00	133	11.10.13	17:00	130	03.01.14	03:00	133	11.10.13	17:00
3	Khurda	140	26.05.13	16:00	144	16.09.13	15:00	138	12.10.13	01:00	136	02.03.14	16:00	144	16.09.13	15:00
4	Berhampur	144	26.05.13	19:00	142	04.07.13	07:00	144	21.10.13	15:00	143	02.03.14	17:00	144	26.05.13	19:00

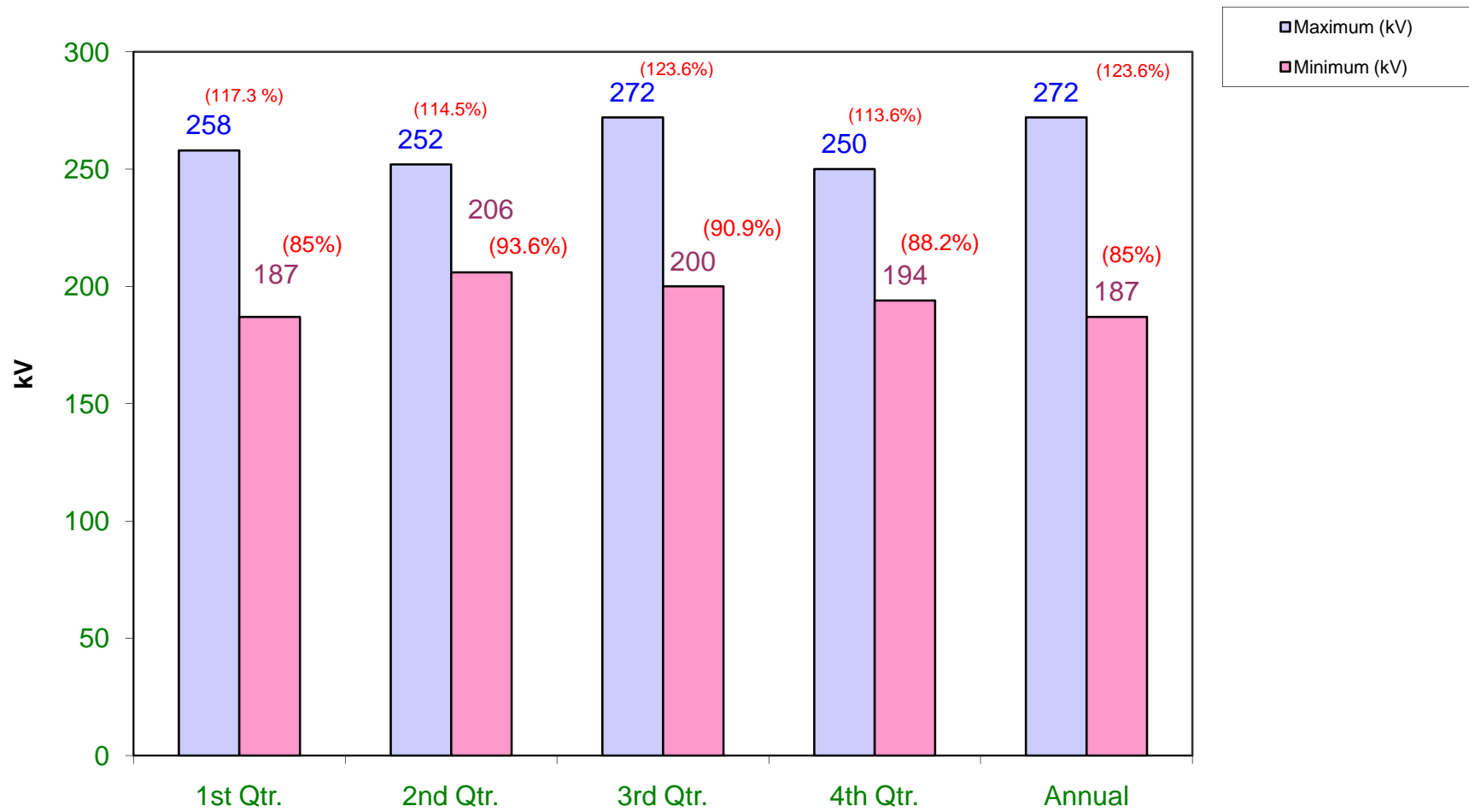
MINIMUM VOLTAGES OF MAJOR GRID SUB-STATIONS. (132kV)

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	104	10.05.13	21:00	104	16.08.13	22:00	108	01.10.13	19:00	104	30.03.14	21:00	104	10.05.13	21:00
2	Puri	95	10.05.13	19:00	102	17.09.13	11:00	105	06.10.13	20:00	102	24.02.14	20:00	95	10.05.13	19:00
3	Khurda	88	24.05.13	21:00	92	24.09.13	19:00	96	02.10.13	19:00	93	26.02.14	19:00	88	24.05.13	21:00
4	Berhampur	106	24.05.13	20:00	118	14.09.13	20:00	112	24.11.13	18:00	112	05.01.14	08:00	106	24.05.13	20:00

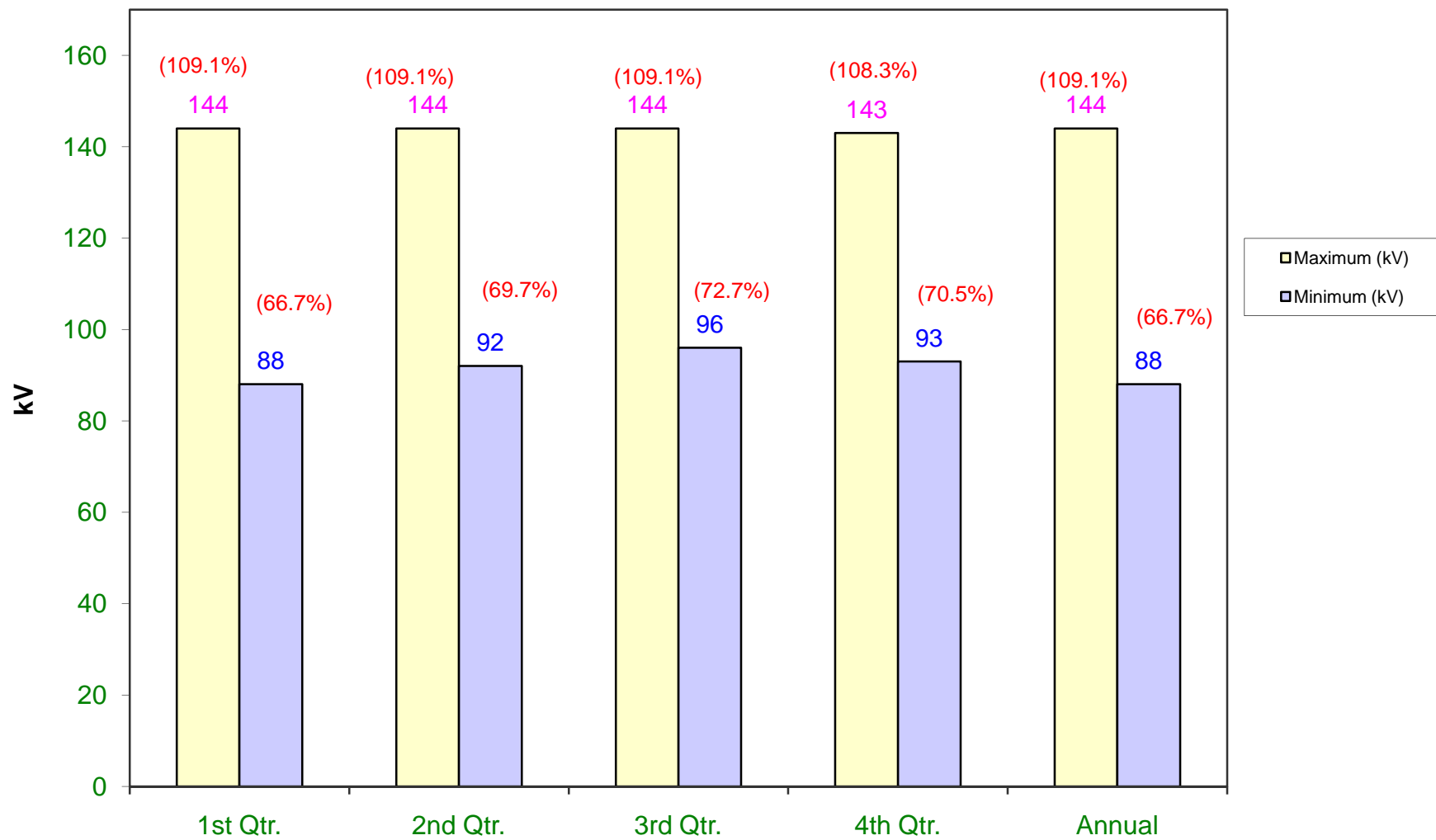
Note:

1. The minimum bus voltages are based on the instantaneous log book readings and hence do not reflect the voltage profile of the concerned Grid S/s. Further, low voltages during contingency conditions are also recorded as minimum voltages.

OVERALL PERFORMANCE VOLTAGE AT 220kV

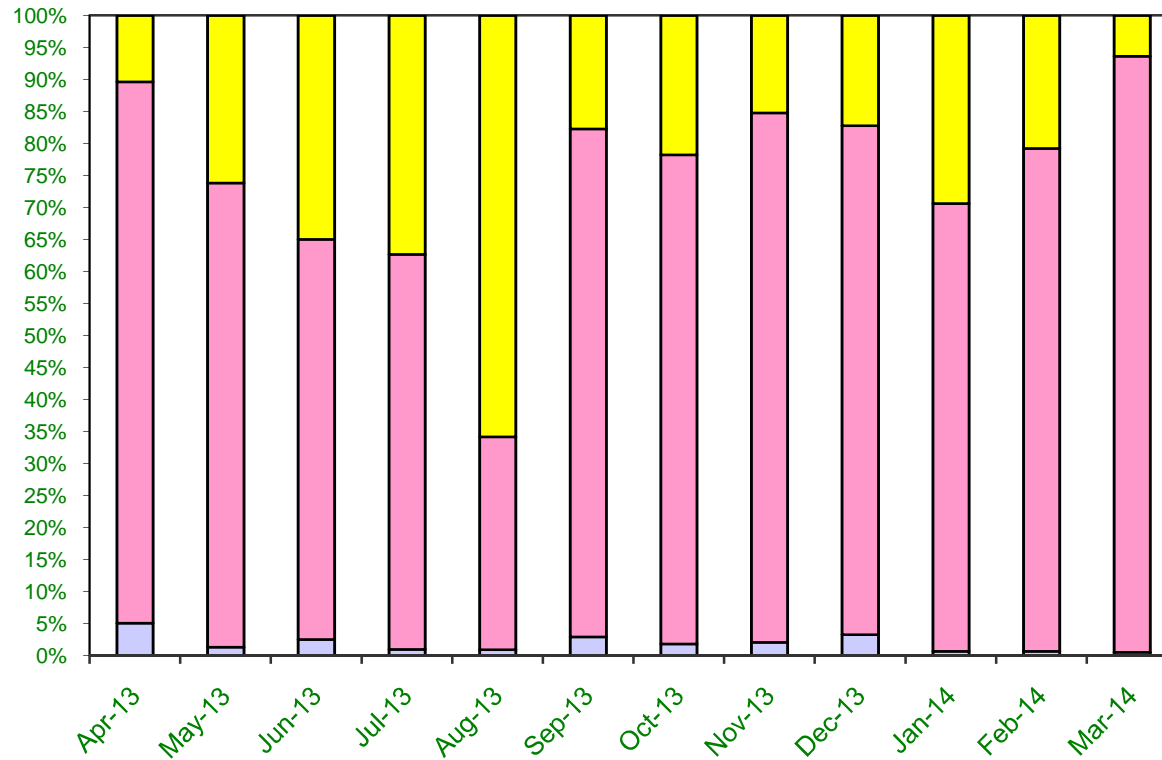


OVERALL PERFORMANCE VOLTAGE AT 132 kV



Frequency Performance

Percentage time occurrence



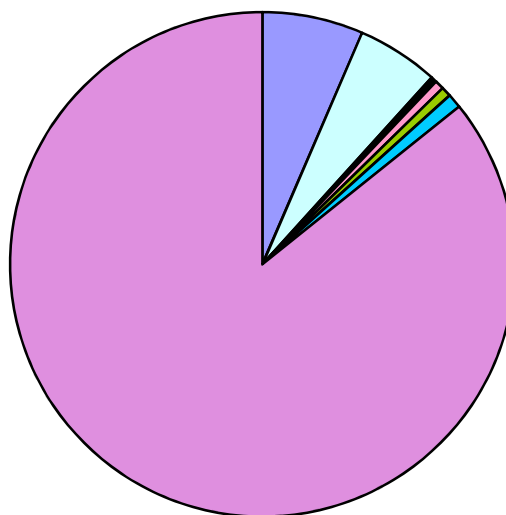
	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14
■ >=51.0Hz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
■ 50.20 - 51.00Hz	6.40	13.38	18.72	16.90	32.43	9.54	10.39	8.23	9.79	14.24	10.69	3.35
■ 49.70 - 50.00Hz	52.12	37.09	33.45	27.91	16.41	42.81	36.45	44.81	45.28	33.89	40.50	48.87
■ 49.00 - 49.70Hz	3.14	0.69	1.36	0.45	0.45	1.58	0.89	1.14	1.88	0.34	0.35	0.28
□ 48.5 - 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	64:30:00	73
Insulator Failure	52:16:00	55
Bursting of CT / PT	3:44:00	9
Breaker Problem	5:49:00	11
System Disturbance	6:19:00	14
Failure of LA	9:19:00	35
Others	854:33:00	98
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 2013-14.		

INTERRUPTION (HRS) DUE TO MAJOR INCIDENT DURING 2013-14



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



पावर मैप

POWER MAP OF EASTERN REGION

