

17TH ELECTRIC POWER SURVEY OF INDIA

The electricity demand forecast is an important input for planning of the power sector to meet the future power requirement of various sectors of electricity consumption. A planned load growth in industry, agriculture, domestic and other sectors is necessary to have unified growth in all sectors of economy and therefore it is necessary that infrastructure is planned in various sectors of electricity consumption so as to direct the overall growth of economy in rational manner.

The primary objective of the electrical energy forecast is to assess the electricity demand for States/UTs so that the States/UTs are able to plan and arrange the electrical infrastructure to meet demand in full and provide electricity to all. The electricity demand forecast also works as a tool for planning the Demand Side Management (DSM) strategy on long term basis for optimizing the peak demand and also plan long term tariff policy.

The 17th Electric Power Survey (EPS) Committee Report was brought out by Central Electricity Authority in March, 2007. The terms of reference of the Committee were as under:

- i) To forecast year-wise electricity demand for each State, Union Territory, Region and All India in detail up-to the end of 11th Plan i.e. year 2011-2012.
- ii) To project the perspective electricity demand for the terminal years of 12th and 13th Five Year Plans i.e. year 2016-2017 and 2021-2022.

The 17th Electric Power Survey of India encompasses various features for fulfilling aims and objectives of the National/State Policies framed by the Government(s) in their policy documents and guidelines.

The exercise of the electrical energy forecast has been done on the basis of electrical energy consumption by various categories/sections of energy consumers for the short term period upto year 2011-12. The electricity shortages have been assessed for the HT industry through data collection from over 1000 industrial units where it was observed that the reported power cuts causing production loss were less than 1% apart from the notified peak load restrictions to enable the industries to reschedule the production plan for optimal utilization.

The electricity demand forecast has been made on optimistic consideration so as to achieve and sustain GDP growth rates of 8-10% during the 11th Plan period. Infrastructure in transmission and distribution net work for various categories of electricity consumption would, accordingly, need to be developed at a rapid pace in close co-ordination with stake holders.

The All India State/UT wise forecast for electrical energy requirement and peak demand are given in tables 2.1 & 2.2. The terminal year long term forecast is given in table 2.3.

All India Electricity Statistics – General Review – 2009 (containing data for the year 2007-08)

- Installed capacity as on 31.3.2008 (Utilities) - 143061 MW
- Gross Electrical Energy Generation (Utilities) during the year 2007-08. - 722626 GWh

- The total number of villages electrified as on 31.3.2008 - 488435 (82.3%)
- Per capita electricity consumption during 2007-08 - 717 KWh (as per UN practice)
i.e. per capita consumption – (gross energy generation + net import)

Mid year population

- %age T&D losses - 27.20
- All India Peak Demand - 108866 MW
- Electrical Energy sold to Ultimate consumers (Utilities & Non-Utilities) - 577959.95 GWh

Note: Priced copies of 17th EPS Report and All India Electricity Statistics – General Review – 2009 are available at sale counter of :

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Table 2.1
All India and State/UT wise Forecast
Peak Load at Power Station Bus Bars (Utilities only) (in GW)

State/UT	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Delhi	3.626	3.905	4.205	4.529	4.877	5.253	5.657	6.092
Haryana	4.037	4.353	4.693	5.060	5.456	5.883	6.343	6.839
Himachal Pradesh	0.772	0.858	0.953	1.059	1.176	1.306	1.451	1.611
Jammu & Kashmir	1.316	1.600	1.669	1.741	1.817	1.895	1.977	2.063
Punjab	7.605	8.016	8.451	8.908	9.390	9.899	10.435	11.000
Rajasthan	4.967	5.650	6.046	6.469	6.923	7.408	7.927	8.482
Uttar Pradesh	8.057	8.714	9.425	10.193	11.024	11.923	12.896	13.947
Uttaranchal	0.914	1.000	1.074	1.153	1.238	1.330	1.428	1.533
Chandigarh	0.248	0.267	0.288	0.311	0.335	0.361	0.389	0.420
Sub Total (NR)	27.759	30.030	32.487	35.145	38.021	41.131	44.496	48.137
Goa	0.385	0.422	0.461	0.504	0.551	0.603	0.660	0.721
Gujarat	10.226	10.736	11.271	11.833	12.422	13.042	13.692	14.374
Chhattisgarh	1.893	2.150	2.339	2.545	2.769	3.012	3.277	3.565
Madhya Pradesh	5.944	6.650	6.923	7.206	7.501	7.809	8.129	8.462
Maharashtra	14.986	16.200	17.042	17.927	18.859	19.839	20.870	21.954
D. & N. Haveli	0.391	0.431	0.476	0.525	0.579	0.639	0.705	0.778
Daman & Diu	0.223	0.254	0.289	0.329	0.374	0.426	0.485	0.552
Sub Total (WR)	31.256	33.142	35.143	37.264	39.513	41.898	44.427	47.108
Andhra Pradesh	8.168	8.810	9.597	10.454	11.388	12.406	13.514	14.721
Karnataka	5.928	6.275	6.642	7.031	7.442	7.877	8.338	8.826
Kerala	2.452	2.650	2.779	2.915	3.058	3.207	3.364	3.528
Tamil Nadu	8.215	9.420	10.090	10.807	11.575	12.398	13.280	14.224
Pondicherry	0.347	0.383	0.421	0.464	0.511	0.563	0.620	0.683
Sub Total (SR)	23.516	25.673	27.441	29.854	32.192	34.715	37.434	40.367
Bihar	1.154	1.339	1.570	1.842	2.177	2.575	3.046	3.607
Jharkhand	1.991	2.222	2.480	2.768	3.089	3.448	3.848	4.296
Orissa	2.237	2.454	2.717	3.009	3.327	3.674	4.051	4.459
West Bengal	4.723	5.035	5.367	5.721	6.099	6.502	6.931	7.407
Sikkim	0.058	0.061	0.064	0.067	0.071	0.076	0.080	0.083
Sub Total (ER)	9.317	10.322	11.436	12.670	14.037	15.552	17.230	19.088
Assam	0.663	0.741	0.828	0.925	1.034	1.155	1.291	1.443
Manipur	0.103	0.125	0.144	0.154	0.165	0.177	0.189	0.203
Meghalaya	0.264	0.283	0.303	0.325	0.348	0.373	0.400	0.428
Nagaland	0.074	0.082	0.091	0.101	0.112	0.124	0.137	0.152
Tripura	0.188	0.200	0.213	0.226	0.240	0.255	0.271	0.282
Arunachal Pradesh	0.063	0.075	0.081	0.087	0.094	0.101	0.109	0.116
Mizoram	0.071	0.076	0.081	0.087	0.093	0.100	0.107	0.115
Sub Total (NER)	1.272	1.404	1.549	1.710	1.888	2.083	2.299	2.537
ISLANDS								
Andman & Nicobar	0.028	0.033	0.043	0.049	0.056	0.063	0.071	0.077
Lakshadweep	0.007	0.007	0.008	0.008	0.009	0.010	0.011	0.011
Total (All India)	90.221	97.269	104.867	113.059	121.891	131.413	141.678	152.746

Table 2.2
All India and State/UT wise Forecast
Electrical Energy Requirement at Power Station Bus Bars (Utilities only)(in TWh)

State/UT	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Delhi	21.157	22.853	24.684	26.662	28.799	31.107	33.600	36.293
Haryana	21.801	23.890	25.858	27.989	30.295	32.791	35.493	38.417
Himachal Pradesh	4.516	5.022	5.585	6.212	6.909	7.684	8.545	9.504
Jammu & Kashmir	8.138	9.450	9.722	10.001	10.289	10.585	10.889	11.202
Punjab	35.861	38.642	41.639	44.868	48.347	52.096	56.136	60.489
Rajasthan	30.392	32.530	34.819	37.268	39.890	42.697	45.701	48.916
Uttar Pradesh	53.033	56.167	59.486	63.002	66.725	70.668	74.845	79.268
Uttaranchal	5.010	5.398	5.816	6.267	6.752	7.275	7.838	8.445
Chandigarh	1.295	1.407	1.528	1.659	1.802	1.957	2.125	2.308
Sub Total (NR)	181.203	195.359	209.137	223.928	239.807	256.859	275.171	294.841
Goa	2.323	2.560	2.821	3.108	3.425	3.774	4.159	4.583
Gujarat	60.124	63.220	66.475	69.898	73.497	77.282	81.261	85.445
Chhattisgarh	11.750	13.230	14.377	15.623	16.977	18.448	20.047	21.785
Madhya Pradesh	34.114	36.920	38.748	40.666	42.680	44.793	47.011	49.338
Maharashtra	93.217	103.200	106.643	110.201	113.878	117.678	121.604	125.661
D. & N. Haveli	2.105	2.542	2.849	3.194	3.580	4.013	4.498	5.042
Daman & Diu	1.186	1.382	1.573	1.790	2.038	2.319	2.640	3.005
Sub Total (WR)	204.819	223.054	233.486	244.481	256.075	268.307	281.220	294.860
Andhra Pradesh	48.928	54.683	59.311	64.331	69.775	75.680	82.085	89.032
Karnataka	35.157	37.334	39.646	42.101	44.709	47.477	50.417	53.540
Kerala	12.698	13.760	14.549	15.384	16.266	17.200	18.186	19.230
Tamil Nadu	51.449	55.479	59.824	64.510	69.563	75.011	80.886	87.222
Pondicherry	2.225	2.454	2.707	2.986	3.293	3.633	4.007	4.419
Sub Total (SR)	150.457	163.710	176.037	189.312	203.606	219.001	235.582	253.443
Bihar	7.201	8.327	9.629	11.134	12.874	14.886	17.213	19.905
Jharkhand	11.057	12.308	13.700	15.249	16.974	18.894	21.031	23.408
Orissa	13.980	15.371	16.900	18.582	20.431	22.464	24.699	27.149
West Bengal	26.573	28.274	30.084	32.009	34.058	36.238	38.557	41.020
Sikkim	0.204	0.218	0.234	0.247	0.264	0.285	0.305	0.320
Sub Total (ER)	59.015	64.498	70.547	77.221	84.601	92.767	101.805	111.802
Assam	3.810	4.182	4.618	5.100	5.632	6.219	6.868	7.585
Manipur	0.537	0.581	0.629	0.681	0.737	0.797	0.862	0.932
Meghalaya	1.374	1.460	1.551	1.648	1.751	1.860	1.976	2.101
Nagaland	0.330	0.367	0.408	0.454	0.505	0.562	0.626	0.698
Tripura	0.700	0.759	0.822	0.891	0.966	1.046	1.134	1.229
Arunachal Pradesh	0.158	0.210	0.232	0.257	0.284	0.314	0.348	0.386
Mizoram	0.236	0.254	0.274	0.295	0.318	0.343	0.370	0.398
Sub Total (NER)	7.145	7.812	8.534	9.326	10.193	11.141	12.184	13.329
ISLANDS								
Andman & Nicobar	0.126	0.146	0.193	0.219	0.248	0.281	0.316	0.344
Lakshadweep	0.022	0.024	0.026	0.028	0.031	0.034	0.037	0.040
Total (All India)	602.787	654.603	697.961	744.515	794.561	848.390	906.316	968.659

Table 2.3
LONG TERM FORECAST AT POWER STATION BUS BARS (UTILITIES)

State	Electrical Energy Requirement (GWh)			Peak Electric Load (MW)		
	2011 -2012	2016 - 2017	2021-2022	2011 -2012	2016 - 2017	2021-2022
Delhi	36292.545	52762.386	73481.328	6092.409	8728.832	12069.050
Haryana	38417.069	54304.879	73838.162	6839.158	9375.160	12557.464
Himachal Pradesh	9503.908	13135.520	17657.400	1611.109	2194.159	2906.958
Jammu & Kashmir	11202.446	15271.949	21282.743	2062.737	2789.568	3856.642
Punjab	60488.861	82571.657	107342.309	11000.469	14441.277	18351.770
Rajasthan	48915.759	67767.236	92376.811	8482.079	11404.490	15100.779
Uttar Pradesh	79267.680	110664.947	150157.415	13947.013	19622.530	26833.528
Uttarnanchal	8444.717	11667.894	16191.306	1533.337	2085.410	2849.272
Chandigarh	2308.347	3366.693	4440.158	419.542	602.307	782.095
Sub Total (NR)	294841.333	411513.161	556767.632	48136.901	66582.928	89912.790
Goa	4582.911	6879.880	9082.496	721.306	1082.827	1429.498
Gujarat	85445.226	119083.096	156841.512	14373.742	19670.034	25446.677
Chhattisgarh	21784.878	33076.392	45115.620	3565.388	5374.867	7279.413
Madhya Pradesh	49338.498	70444.570	98986.680	8461.912	11772.241	16128.817
Maharashtra	125661.409	167226.739	219910.417	21953.740	28347.752	35944.127
D. & N. Haveli	5041.957	8204.128	12242.813	777.792	1265.600	1888.623
Daman & Diu	3004.817	4890.242	7842.185	552.088	857.119	1323.701
Sub Total (WR)	294859.697	409805.046	550021.724	47108.381	64348.650	84778.064
Andhra Pradesh	89032.490	132118.210	175590.124	14721.210	21845.290	28215.843
Karnataka	53539.620	79995.770	107470.552	8826.000	13092.380	17463.812
Kerala	19229.540	26331.640	36134.030	3528.050	4573.790	5916.364
Tamil Nadu	87221.910	134754.730	182825.156	14224.060	21975.660	29814.931
Pondicherry	4419.430	6867.800	9639.046	682.500	1060.600	1488.566
Sub Total (SR)	253442.990	380068.150	511658.908	40367.135	60432.580	80484.967
Bihar	19904.770	32857.080	58248.405	3607.000	5598.220	9567.426
Jharkhand	23408.480	36274.000	51741.061	4296.130	6604.000	9129.079
Orissa	27149.150	39095.650	63098.108	4459.000	6330.460	10074.098
West Bengal	41019.893	60228.010	84498.993	7406.850	10742.720	15071.881
Sikkim	320.000	486.930	629.382	83.000	119.540	150.465
Sub Total (ER)	111802.293	168941.670	258215.949	19088.442	28400.908	42711.602
Assam	7584.620	13052.660	24433.491	1443.000	2292.350	3984.588
Manipur	931.890	1359.680	2336.809	203.000	269.940	444.598
Meghalaya	2101.000	2777.700	4015.131	428.290	542.030	751.391
Nagaland	698.000	1040.070	1505.358	152.000	222.340	318.821
Tripura	1229.000	1761.080	3180.264	282.000	386.610	666.135
Arunachal Pradesh	385.520	557.380	762.307	116.000	147.970	189.177
Mizoram	398.481	594.690	763.662	115.249	161.750	196.033
Sub Total (NER)	13328.511	21143.260	36997.022	2536.610	3759.804	6179.947
Andman & Nicobar	343.590	536.570	779.450	76.910	118.940	131.660
Lakshadweep	40.130	58.190	67.548	11.450	16.610	19.277
Total (All India)	968658.543	1392066.048	1914508.233	152746.097	218208.593	298253.241