

Power Sector Rajasthan

The power sector in Rajasthan is dominated by the Rajasthan State Electricity Board (RSEB), a vertically integrated state-owned utility. Formed in July 1957 under the provisions of the Electricity (Supply) Act 1948, the RSEB is the sole agency responsible for power generation, transmission and distribution in the state. As of March 31, 1999, the state grid had access to 4056 MW of generating capacity from own, shared and central generating stations. RSEB presently serves over 5.0 million customers.

The major problem in the power sector in Rajasthan is the widening gap between the demand for and supply of electricity. Energy sales have been growing at around 9% per annum over the period FY 89 to FY 99, but capacity additions have not kept pace. As a result, energy shortages have increased from about 7.8% in 1991 to about 15% in 1998; and peak shortages have shot up to 23% in 1998 from 14% in 1991. The reduction in peaking shortage in 98/99 is due to the commissioning of the first unit of Suratgarh-I (250 MW) and the abnormal reduction in peak demand.

FINANCIAL YEAR	92-93	93-94	94-95	95-96	96-97	97-98	98-99 Prov.
CEA Annual Electricity Demand Estimate (MU)	14,917	16,310	17,927	19,743	21,577	23,473	22,147
Actual Annual Electricity Availability (MU)	14,666	15,400	16,423	19,171	19,156	19,919	22,247
Surplus (+) Or Deficit (-) (Percent)	-1.7	-5.6	-8.4	-2.9	-14.0	-15.14	0.45
CEA Peak Electricity Demand Estimate (MW)	2,594	2,872	3,156	3,475	3,795	4,128	3,718
Actual Registered Peak Capability (MW)	2,214	2,367	2,505	2,728	2,925	3,169	3,482
Surplus (+) Or Deficit (-) (Percent)	-14.6	-17.6	-20.6	-21.5	-22.9	-23.2	-6.35

MU = million units

Note: CEA data for FY 1990-91 to 1992-93 are taken from the XIV CEA Power Survey, CEA data for FY 1993-94 to 1997-98 are taken from the XV CEA Power Survey and CEA estimates for 1998-99 are taken from the XVI Power Survey.

The bulk of the growth in sales is accounted for by consumer categories that pay subsidised tariffs i.e. the Domestic and Agriculture sectors. The combined share of these two sectors in the total sale of power has risen from 39.1% in FY 92 to 51.5% in FY 98. During the same period, the share of industry- the sector from which the maximum revenue is earned- has dropped from 42.8% to 39.8%

Consumer Category	Share of Electricity Consumed		Share of Revenue Billed	
	1989-90	1998-99 (Prov.)	1989-90	1998-99(Prov.)
Domestic	10.5%	16.2%	7.6%	12.8%
Non-Domestic	4.9%	5.2%	6.8%	9.3%
Industrial	42.7%	29.7%	60.6%	52.9%
Agriculture	26.6%	36.9%	9.3%	7.1%
Others	15.3%	12.0%	15.7%	17.9%
Total	100.0%	100.0%	100.0%	100.0%

The growth in generating capacity has not kept pace with this growing demand for electricity, forcing the state to rely more on outside purchases. The share of purchases in total power availability has risen steadily from 44.62% in 1990-91 to 50.06% in 1998-99. The transmission and distribution system is overloaded and is beset with problems of high line losses, poor voltage levels and low reliability. Customer service also leaves much to be desired.

With agricultural and domestic consumption accounting for a growing proportion of sales, cost recovery by way of revenues has declined from 91% to 76% over the past 10 years. The Revenue deficit, which has increased by more than 18 times over the past decade, hit 24% in FY 98-99. As a result, the GoR subsidy required to cover costs and to earn a 3% return on net fixed assets (as per Electricity Supply Act 1948) has increased from Rs 1,630 million (FY 92) to Rs 11,965 million (FY 99). However, as subsidy payments are usually made in the form of adjustment against long term GoR loans to the utility, the RSEB remains plagued with cash deficits.

Collection ratios at RSEB are relatively high. On average, the RSEB achieves a collection ratio of 95%. The billing has been computerised and is performed by private firms on a contract basis.

Financial Year	FY92-93 Actual	FY93-94 Actual	FY94-95 Actual	FY95-96 Actual	FY96-97 Actual	FY97-98 Actual	FY98-99 Prov.
Operating Income (Rs million)	2,952	3,542	4,418	5,120	5,585	6,024	6,736
Net Income (Rs million)	650	701	771	808	632	654	658
Annual Subsidy (Rs million)	2,865	4,249	4,898	5,131	5,631	7,049	11,965
Subsidy as % of Revenue From Power Sales	23%	30%	28%	25%	22%	23%	39%
Return on Assets With Subsidy	3.1%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Return on Assets Without Subsidy	-10.7%	-15.3%	-16.1%	-16.0%	-23.7%	-29.4%	-51.5%
Return on Assets Without Subsidy & Interest	0.4%	-3.1%	-1.9%	0.0%	-0.2%	-4.7%	-23.8%
Debt Service Coverage Ratio With Subvention	1.5	1.4	1.4	1.1	1.1	1.2	1.1
Debt Service Coverage Ratio Without Subvention	0.5	0.2	0.4	0.3	0.3	0.2	-0.3

The GoR Subsidy requirement is forecast to be over Rs 16,000 million during this financial year FY 2000, and is expected to grow further in future years if present conditions continue. Even if tariff increases of 25-30% p.a. for agriculture and 10% p.a. for other categories as forecasted in connection with the reform programme are factored in, the GoR subsidy requirement till the end of the Xth plan (FY 01-07) will be Rs 115,000 million (an average of Rs 16,430 million per year). The financial crisis is hampering the revamping and augmentation of the existing power system as well as impeding the flow of fresh investment needed to meet the developmental needs of the power sector. Development expenditure on other sectors also suffers, as the increasing subvention needs of RSEB puts further pressure on the state exchequer.

The Government of Rajasthan (GoR) has, therefore, decided to restructure its power sector with the objective of creating conditions for the sustainable development of its power sector through the promotion of competition, efficiency, transparency, private finance and quality improvements in electricity service provision in the State. The Legislative Assembly of Rajasthan has approved the **Rajasthan Power Sector Reforms Bill** (Reform Bill) on September 25, 1999. The reform bill has received presidential assent and GoR has gazetted the Reform Act. The ultimate goal of the reform process is to ensure that:

- (i) power will be supplied under the most efficient conditions in terms of cost and quality to support the economic development of the State; and
- (ii) the Power sector ceases to be a burden on the State's budget and eventually becomes a net generator of financial resources.

Rajasthan's Power Sector Reforms Programme involves:

- i. Establishment of an independent Regulatory Commission to regulate the functioning of the power sector on sound commercial principles and to safeguard the interests of customers in respect of quality, reliability and a fair price for electricity. The commission will set cost and efficiency based tariffs to ensure the creditworthiness and viability of the power sector and to progressively eliminate tariff distortions and subsidies.
- ii. Segregation of the generation, transmission and distribution functions into separate services to be provided by separate autonomous companies.
- iii. Reconfiguration of the distribution system into distinct economically viable geographical zones, each served by an autonomous distribution company.
- iv. Corporatisation and Commercialisation of the emerging power sector entities to make the power sector attractive for prospective investors.
- v. Retention of the role of policy formulation with the State Government.
- vi. Promotion of competition among various power sector entities.
- vii. Management of demand to conserve and promote efficient use of energy and ensure environmental protection.

Following the effectiveness of the Reform Act, the restructuring of the power sector will be carried out in two phases:

First phase: In June 2000, GoR unbundled the vertically integrated monopoly power utility - RSEB - into new entities based on functional specialisation, namely

- (a) Rajasthan Rajya Vidyut Utpadan Nigam Limited, which will own and operate the existing power stations of RSEB,
- (b) Rajasthan Rajya Vidyut Prasaran Nigam Limited, which would be responsible for transmission and bulk supply of electricity in Rajasthan
- (c) The distribution function will be separated from RSEB and vested into three Distribution Companies (DISCOMs), registered under the Companies Act.

During this first phase, Rajasthan Rajya Vidyut Prasaran Nigam Limited will purchase power in bulk from Rajasthan Rajya Vidyut Utpadan Nigam Limited and other generating stations, both central and private power producers within and outside Rajasthan, and the neighbouring states based on legally binding power purchase agreements. Rajasthan Rajya Vidyut Prasaran Nigam Limited will in turn transmit electricity to the Distribution companies on the basis of Bulk Sales Agreements. The distribution companies then would supply electricity to the end-users in the state.

Second phase: The Distribution Companies will be converted into joint venture companies in a phased manner. GoR would divest majority stake in the distribution companies to the private bidders. In the long run, the power sector in Rajasthan may evolve towards multi-buyer model with competition in generation and distribution, which would encourage efficient and economic operation of the sector.

With the implementation of the reforms, the World Bank expects that the income per unit of supply will equal cost of supply in 2005, i.e. one year after commissioning of the Mathania power plant. Based on the tariff applications that will be filed by the new corporations, the World Bank expects the new regulator to increase power tariffs at the rate of about 10% p.a. in real terms. These applications will be based on the cost incurred and projected by the successor entities. While setting tariffs, the regulator will be guided by the need to reduce the degree of cross subsidisation. Reductions in transmission and distribution losses will also be factored in. The projected price path is as follows:

Parameters	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
T&D losses (%)	42.0%	40.5%	38.1%	35.7%	32.3%	28.3%	25.2%	22.0%
Cost of Supply (paise/unit) (Post loss revision)	392	401	412	424	424	425	426	432
Avg SoP tariff (paise/unit) (Post loss revision)	238	276	302	334	368	380	381	386
Income (excluding subsidy) (paise/unit) (Post loss revision)	285	318	345	379	413	426	428	433
Agriculture Tariff (paise/unit)	70	90	110	140	175	213	215	218
Industrial Tariff (paise/unit)	380	399	439	483	531	533	527	536
Tariff increase % (Other than Agriculture)		10%	10%	10%	10%	0%	-1%	2%

SoP: Sale of Power

Agriculture Tariff is supposed to increase by 25% -30% p.a. in real terms

After making due adjustments to the power sector expansion planning by RSEB (IPPs will not materialise, NTPC gas stations Anta and Auraya are delayed by two years), load projections show a continuously growing deficit in peak load over the next 8 years. The energy balance in Rajasthan will be in a surplus until 2002, turn negative in 2003 and will be back into surplus in 2004 due to the commissioning of Mathania, Anta II and Auraya II. Thereafter, the surplus decreases quickly again to plunge back into deficit by 2007. The energy projection includes the assumption that T&D losses will progressively fall from 42% in 2000 to 22% in 2007. See the following energy and load balance for Rajasthan.