

Captive Power refers to generation from a unit set up by industry for its exclusive consumption. The estimates on captive power capacity in the country vary with the Central Electricity Authority putting the figure at about 11600 MW while industry experts feel that it is much higher, close to 20000 MW

Industrial sector is one of the largest consumers of electrical energy in India. However, a number of industries are now increasingly relying on their own generation (captive and cogeneration) rather than on grid supply, primarily for the following reasons:

- Non-availability of adequate grid supply
- Poor quality and reliability of grid supply
- High tariff as a result of heavy cross-subsidisation

The State Governments and SEBs have been concerned about the growing importance of Captive Power Plants on account of the following reasons:

- Captive plants may have adverse impacts on the finances of the utility, such as:
- Industrial load is the main source for cross-subsidising revenue flows
- Billing and collection is much more efficient for HT consumers
- SEBs ability to service escrow accounts for security packages is also reduced
- Non-optimal growth of the sector.
- Problems in grid management especially in case of states with surplus power
- Adverse environmental impacts arising from types of fuels used and from higher emissions per unit of

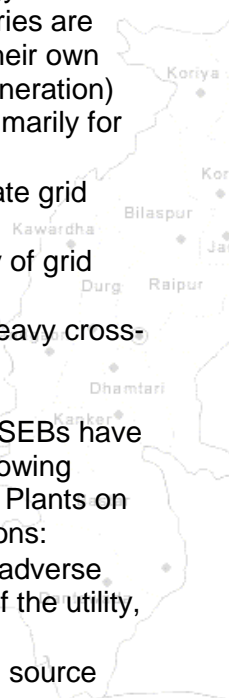
production, as compared to large power plants

- Reliability of power supply from captive and cogen plants as a source of firm power

While on the other hand the concern of the owners of captive and cogen plants stems from:

- Non-remunerative tariff structure for surplus power produced by them
- No risk sharing in case of non-availability of fuel, change in variable cost due to switching of fuel after entering into power purchase agreement (PPA), etc
- Inadequacies in wheeling and banking facilities
- High contract demand charges.
- High level of duties and taxes on sale of power
- High wheeling losses assumed for power to be sold to grid by captive or cogen plant
- Need to devote time and energy to an activity, which is not their core business
- Restrictions on the minimum amount of power to be wheeled
- If the captive power plant (CPP) fails, charges for back-up or stand-by power from the grid are twice the normal rate for captive plants
- No formal policy for purchase of cogenerated power (in most of the states)

It is estimated that about 30% of the total energy requirement of the Indian industry is currently met through in house power plants. The state-wise captive capacity in 1998 is given in the table overleaf:



State	Installed Capacity (MW)	Captive Capacity (MW)
Andhra Pradesh	8204	1220
Assam	1078	
Bihar	4656	614
Delhi	1436	
Gujarat	8376	1505
Haryana	882	335
Himachal Pradesh	3570	32
Jammu & Kashmir	1536	3
Karnataka	3462	1045
Kerala	1766	151
Madhya Pradesh	7173	1333
Maharashtra	11072	570
Meghalaya	239	
Orissa	3243	1544
Punjab	2620	311
Rajasthan	2176	528
Tamil Nadu	8271	1107
Uttar Pradesh	12473	1240
West Bengal	6515	786
Total	89167	12322

Source: Power Line Research

Based on the fuel type used for captive power generation about 45% of power generated is from steam, 40% from Diesel and 15% from Gas/Naphtha. Captive contribution by various industry types is as follows:

The feature of the policy of the states with respect to promotion of captive power plants and cogeneration is as follows:

Orissa

- The permission for setting up Cogeneration/captive power plant will have to be obtained from the Orissa Electricity Regulatory Commission (OERC)

Industry	Capacity (MW)	% Share
Cement	1223	9.9
Chemicals	2076	16.8
Electronics	59	0.5
Engineering	2479	20.1
Jute	207	1.7
Metals & Minerals	2404	19.5
Miscellaneous	784	6.4
Paper	473	3.8
Services	80	0.6
Sugar	706	5.7
Textile	1303	10.6
Unclassified	530	4.3
Total	12322	100

Source: Power Line Research

- The capacity of the cogeneration/captive power plant will be limited to the extent required to meet 100% of the heat and power requirement of the industries concerned on a sustained basis or to a larger extent necessary for the economic viability of the project
- Surplus power from such plants would be purchased by the GRIDCO after negotiation on a project to project basis
- GRIDCO will permit wheeling of power over its transmission system subject to carrying capacity of the transmission system. It will also allow sale of surplus power by the industry to other industries within and outside the state to the extent permitted by State government. Bi-lateral sale to the other state will be permitted on a specific approval of the state government
- Interconnection of the Cogeneration/captive power plant with the State Grid would be at the cost of industry satisfying the technical requirement
- The Cogeneration/captive power plant may be set up either by the promoters themselves or by a separate company and shall abide by all relevant Acts and Rules in force primarily the Indian Electricity Act, 1910, the Electricity Supply Act, 1948 and

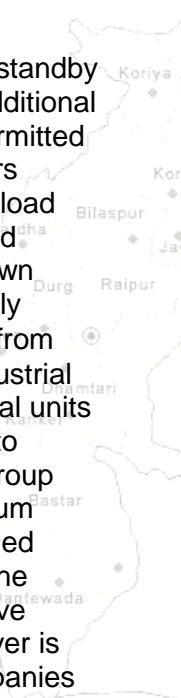
Orissa Electricity Reform Act, 1995

Gujarat

- Any industrial undertaking to set up captive power plant requires the consent of the Gujarat Electricity Board (GEB) under section 44(1) of the Electricity (Supply) Act, 1948
- Banking of electrical power with GEB/Licensee would not be permitted
- Permission for installation of standby generating sets to work as additional source of power would be permitted up to two times the consumers contract demand/ contracted load with GEB/Licensee or demand equivalent to capacity of its own regular source of power supply
- Wheeling of electrical power from captive power plant of an industrial company to the other industrial units within the same company or to any/all industrial units of its group companies is allowed. Minimum quantity of power to be wheeled shall not be less than 5% of the installed capacity of the captive power plant or 5MW, whichever is more, among the group companies taken together subject to the condition that supplying company consumes at least 50% of the generated power
- Wheeling charges are 13.5 paisa per kWh and 21 paisa per kWh for power delivered at EHV and HV level respectively subject to revision from time to time
- Wheeling of power is also not allowed when system frequency is 51 Hz and above
- No night hour tariff concession shall be admissible for power consumed/

drawn from the grid during night period

- System losses shall be considered as 10% for power delivered at EHV and 15% in case of power delivered at HV and the same would be deducted from the account of recipient unit
- The rate for purchase of surplus power would be decided by GEB and will depend on the fuel being used and would be on cost plus basis, where the fuel cost will be decided by GEB on normative basis for each quarter for each type of fuel and gross calorific value
- The State government is empowered to prescribe terms and conditions relating to electricity supply and tariff for such supply
- The electrical energy supplied/wheeled to different recipient units of group companies from captive power plant of a supplying company would be subjected to payment of Electricity Duty as per schedule I of the Bombay Electricity Duty Act, 1958 and Tax on sale of electricity as per the provisions of Gujarat Tax on sale of electricity Act, 1985, as amended from time to time
- Note: In an recent policy announcement, Gujarat government has reduced the period of exemption from payment of electricity duty to five years for new captive power plants (CPP) commencing power generation after March 31, 1999



Maharashtra

- The permission for installation and running the captive power plant will be granted by the government and the capacity of the CPP will be limited to cover the existing demand (MW) plus 1/3 of existing demand in MW or demand in MW for future expansion
- Third party sale is allowed and in this case a tripartite agreement will have to be signed between the Board, CPP owner and the third party receiving power from CPP
- CPP can sell surplus power to maximum two industrial units and is also restricted up to 25 percent of the generated units (kWh)
- Captive generating company or any other company intending to sell surplus electricity to third parties would require a prior permission from the Energy Department of the State Government under section 28 of the Indian Electricity Act 1910
- The wheeling charges and transmission losses are determined in terms of distance transmitted. The wheeling charges and transmission losses are determined as 2% and 5% respectively for a distance of 050 km; 4% and 8% respectively for a distance of 50200 km; and 6% and 10% respectively for a distance above 200 km
- Rate at which surplus power would be purchased would be decided by MSEB and it will not purchase any power during night hours, that is 2200 hrs to 0600 hrs
- In case of planned shut down of the CPP, the excess demand recorded over and above the revised contract demand will be charged at double

the normal demand charge rate of the respective tariff in force from time to time

Uttar Pradesh

- Presently, the transmission and distribution system of the Uttar Pradesh State Electricity Board (UPSEB) is not in a position to handle any further load. However, the wheeling of electricity is allowed on a selective basis provided the captive developers pay 15% wheeling charges of the energy received
- While fixing the tariff for captive power plant UPSEB will not share the fixed charges (interest on loans, depreciation, O&M, income tax, etc.) for the captive power plant. However the UP Government may share this fixed charges by way of soft loan, subsidy etc. as the consumer is installing the captive power plant primarily for meeting his load due to sophistication of the plant which may affect its functioning due to quality variation in UPSEB supply system
- The board control room may direct captive power plant control room to regulate the export during the night hours from 2200 hrs to 0600 hrs

West Bengal

- Transmission and wheeling of power generated: The Wheeling facility will be provided by the WBSEB/CESC at a uniform wheeling charge of 2% of cost of power wheeled, irrespective of the distance from the generating station

- Banking facilities: The board permits the electricity generated to be banked for a period of six months.
- An industrial undertaking not carrying on continuous process of production may draw power from the bank at any time of the day except during evening hours
- Sale of power to WBSEB/CESC: The generated power not used by the industrial undertaking within a period of six months will be deemed to have been sold to the WBSEB/CESC
- Tariff for sale of power will be determined for each generating station separately upon consideration of various factors such as generating cost based on total investment (less central govt. grant), debt equity ratio, depreciation, O&M, return on equity, debt service conditions, etc., as is done for large thermal/hydro power generating stations

