



Chhattisgarh State Electricity Regulatory Commission

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Petition No. 17 of 2005(M)

In the matter of power purchase and related dispensation in respect of Captive Generating Plant

1. J.P. Saboo, President, Urla Industries Association, Raipur
2. M/s Jayaswals Neco Ltd., Raipur
3. M/s Bajrang Power & Ispat Pvt. Ltd., RaipurPetitioners
4. M/s Bharat Aluminium Company Ltd., KorbaIntervener

V/s

Chhattisgarh State Electricity Board

.....Respondent

ORDER

(Passed on 06/02/2006)

President, Urla Industries Association, Urla Industrial Complex, Raipur has filed a petition on behalf of the members who have captive power plants (CPP), for orders of the Commission on purchase of power by the licensee from CPPs and other matters, mostly relating to tariff. While this petition was under consideration, some of the issues raised in this petition, were also raised in petitions filed by M/s Jayaswals Nico Ltd. (petition no. 29 of 2005), M/s Bajrang Power & Ispat Ltd (petition no. 11 of 2005) and M/s BALCO, (petition No. 16 of 2005). implicated as intervener, The Commission while disposing of these petitions, and with the consent of the petitioners, decided to club those issues with this petition. The petitioners in those cases have hence been added as parties to this petition. Since the issues raised in the petition relate to the Chhattisgarh State Electricity Board (CSEB or Board, for short), the CSEB has been implicated as respondent in this case. The Commission is passing this order after hearing them in detail, over several sessions, and on consideration of the written submissions made by Shri R.B. Goenka, Consultant on behalf of M/s Jayaswals Nico Ltd., by BALCO and by the CSEB. The Commission has also gone through the orders passed by other SERCs, notably of Maharashtra and Andhra Pradesh SERCs, on issues relating to Captive Power Plants. The Commission has been guided in its conclusions by the National Electricity Policy (NEP) and the recently issued National Tariff Policy (NTP).

2. **Introduction**

2.1 A **captive power plant** (CPP) is a power plant generally set up by an industry / cluster of industries (it can also be by any other power consuming establishment, such as a large commercial complex) for generating power for its (their) own use. A captive generating plant has been defined in Section 2 (8) of the Electricity Act, 2003 (Act, for short) as follows: -

(8) **“Captive generating plant”** means a power plant set up by any person to generate electricity primarily for his own use and includes a power plant set up by any co-operative society or association of persons for generating electricity primarily for use of members of such co-operative society or association.

2.2 The Electricity Act contains liberal provisions with regard to CPPs. The National Electricity Policy (NEP) has articulated the reasons therefor. Para 5.2.24 of the NEP states: *“The liberal provision in the Electricity Act, 2003 with respect to setting up of captive power plant has been made with a view to not only securing reliable, quality and cost effective power but also to facilitate creation of employment opportunities through speedy and efficient growth of industry”*. Para 5.2.25 of the policy states that *“the provision relating to CPPs to be set up by group of consumers is primarily aimed at enabling small and medium industries or other consumers that may not individually be in a position to set up plant of optimal size in a cost effective manner”*. The two major objectives of the liberal provision with regard to CPPs in the Act thus are (i) to promote decentralized generation so as to secure reliable, quality and effective power, and (ii) as a viable cost effective power source for small and medium industries. (iii) The third objective is harnessing the surplus capacity of CPPs and putting it in the grid. The NEP in para 5.2.26 states: *“A large number of captive and standby generating stations in India have surplus capacity that could be supplied to the grid continuously or during certain time periods. These plants offer a sizeable and potentially competitive capacity that could be harnessed for meeting demand for the power”*. The NTP requires SERCs to *“create an enabling environment that encourages captive power plants to be connected to the grid”*.

3. **Position of captive generation in the State**

3.1 Chhattisgarh has considerable potential for captive generation. There are presently 32 captive power plants in the State, with more than 1 MW capacity, with a total installed capacity of 1774 MW. The total CPP capacity in the State is thus more than that of the CSEB which has a total installed capacity of 1410.855 MW (1280 MW thermal and 130.855 hydel). The size of CPPs in the State vary from the largest with installed capacity of 810 MW (BALCO) to large, 272 MW (Jindal Steel & Power Ltd.) to small power plants of less than 1 MW. The largest number is of small plants of less than 25 MW capacity. Presently most of the CPPs use coal, oil or other fossil fuel. However, the Commission has been informed that a number of CPPs based on co-generation and using industrial waste are being set up in the State by sponge iron plants and other steel industries. There are presently two CPPs based on biomass. Some more units based on renewable sources are coming up in the State. The Commission may consider special dispensation for co-generation plants and those based on industrial waste separately when the matter is brought up. The present order covers all CPPs.

3.2 Another important factor relevant in the context of CPPs is the power supply position in the State. The State has a constant peak deficiency of about 10% (about 200 MW) which may go up to about 15% to 20% in the summer months, from March onwards till the monsoons. The Board resorts to load shedding almost throughout the year except for the monsoon months. The surplus power generated by the CPPs can be, and of late has been, a good source of supply to the Board, to meet its peak deficits. With the demand for electricity growing at a rapid pace (at an

average rate of 7% per year, as per information furnished by CSEB), the deficit is likely to go up till the Board creates additional generation capacity and receives additional supply from the central pool, expected in March, 2007 and beyond. The CPPs can be an important source of power in this scenario.

3.3 The State Government has had a positive approach to CPPs in the new State. A set of policy directives were issued by the Chhattisgarh Government on 12.7.02 (Notification No. 2714/Sec/Energy Deptt/ dated 12.7.02) with a view to encourage establishment of CPPs. Under these policy directives, CPPs could be set up by any new industry or existing industries undertaking expansion of capacity for generation of electricity to meet their own requirements. The Board was given the authority to permit setting up of CPP up to 25 MW capacity and in consultation with Central Electricity Authority, for any capacity above that. The CPPs under this policy were not permitted to sell electricity to any consumer (third party); they were, however, allowed to sell excess power outside the State. Recently a cess of 10 paise per unit has been levied on the CPPs which is not in keeping with this policy. These policy guidelines have to an extent become infructuous after the Act has come into force. Under the provisions of the Act no permission is required to set up a CPP and, as already mentioned, the Act has ushered in a liberal regime for them.

4 Issues considered in the petition

4.1 In the petition under consideration, the following issues have been raised for consideration of the Commission:

- (i) Set off on contract demand (CD) of the CPP-holder, captive consumer and non-captive consumers availing power from the CPP through open access.
- (ii) Parallel operation charges.
- (iii) Separate tariff for start up power.
- (iv) Tariff for supply to CSEB/licensee and definition for firm and infirm power.
- (v) Issue of sale of electricity to third parties.
- (vi) Wheeling charges.
- (vii) Introduction of ABT for CPP-holders.

As may be seen, most of these are tariff related issues. Apart from these, some other issues have been raised by Shri R.B. Goenka, Consultant to one of the petitioners. These include definition of co-generation, treatment of auxiliary consumption of CPP as 'own use'; reduction in contract demand and demand charges of a CPP holder; banking of surplus power with distribution licensee; and tenure of energy purchase agreement, energy banking agreement and wheeling agreement.

4.2 While considering these issues it would be relevant to classify the CPPs into two broad categories and these are: (i) CPPs which are co-located with their user, and (ii) those which are away from the user industries and hence use the CSEB's grid for wheeling power. Some of the issues, such as wheeling and banking of power are relevant to the second category only.

5.1 In order to do justice to the issues raised in the petition, it would be necessary to take note of the relevant provisions in the Act and the Rules.

Sec. 9 of the Act provides as under:-

“9. Captive generation – (1) *Notwithstanding anything contained in this Act, a person may construct, maintain or operate a captive generating plant and dedicated transmission lines:*

Provided that the supply of electricity from the captive generating plant through the grid shall be regulated in the same manner as the generating station of a generating company.

(2) *Every person, who has constructed a captive generating plant and maintains and operates such plant, shall have the right to open access for the purposes of carrying electricity from his captive generating plant to the destination of his use:*

Provided that such open access shall be subject to availability of adequate transmission facility and such availability of transmission facility shall be determined by the Central Transmission Utility or the State Transmission Utility, as the case may be:

Provided further that any dispute regarding the availability of transmission facility shall be adjudicated upon by the Appropriate Commission.

Sec.10 lays down the duties of generating companies as under:

“10. Duties of generating companies – (1) *Subject to the provisions of this Act, the duties of a generating company shall be to establish, operate and maintain generating stations, tie-lines, sub-stations and dedicated transmission lines connected therewith in accordance with the provisions of this Act or the rules or regulations made there under.*

(2) *A generating company may supply electricity to any licensee in accordance with this Act and the rules and regulations made there under and may, subject to the regulations made under sub-sec. (2) of Sec. 42, supply electricity to any consumer.*

Sec.30 of the Act mandates the State Commission to facilitate grid inter connectivity and provides as under:-

“30. Transmission within a State - *The State Commission shall facilitate and promote transmission, wheeling the inter-connection arrangements within its territorial jurisdiction for the transmission and supply of electricity by economical and efficient utilization of the electricity.”*

Thus a CPP does not require a licence for generating electricity, it can lay a dedicated transmission line to its own load center; its users have the right to open access, subject to availability.

5.2 The provisions of the Act regarding open access under Sec.42, are also relevant to the CPPs. Sub-sec. 2 of **Sec.42** provides as under:-

"(2) The State Commission shall introduce open access in such phases and subject to such conditions, (including the cross subsidies, and other operational constraints) as may be specified within one year of the appointed date by it and in specifying the extent of open access in successive phases and in determining the charges for wheeling, it shall have due regard to all relevant factors including such cross subsidies, and other operational constraints.

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Provided also that such surcharge shall not be leviable in case open access is provided to a person who has established a captive generating plant for carrying the electricity to the destination of his own use:

Thus, a CPP holder does not have to bear the burden of cross subsidy for taking power through the grid for his own use.

Sec. 49 of the Act provides for a liberal purchase regime for open access consumer and says that *"such consumers, notwithstanding the provisions contained in clause (d) of rules (1) of Sec. 62 may enter into an agreement with any person for supply of electricity on such terms and conditions (including tariff) as may be agreed upon by them"*.

5.3 The **Electricity Rules, 2005** (Rules, for short) lay down the requirement of a CPP by way of clarification of *'primarily for his own use'* and *'primarily for use of members of such cooperative society or association'* occurring in the definition of captive power plant given in Sec.2 (8) of the Act. Rule 3 provides that a power plant shall qualify as a captive generating plant provided (i) not less than 26% of ownership is held by the captive user(s), and (ii) not less than 51% of the aggregate electricity generated in such plant determined on an annual basis, is consumed for the captive use. The rule defines ownership to mean in relation to a company/corporate body *'equity share capital with voting rights; and in other cases proprietary interest and control over'* the power plant. This requires monitoring of generation and use of power which has been discussed later in this order.

6. **Set off on Contract Demand (CD)**

6.1 This is an important issue which deals with relationship between a CPP, its consumers and the concerned distribution licensee, and has commercial implications for the CPP. There are three kinds of consumers who may require set off on CD. The first is the CPP holder industry, where the CPP is co- located with the industry. In case it is not co-located it may use the wires of the licensee through open access and will be in the second category. The CPP holder industry may get supply of its entire requirement of power from the CPP or only a part thereof while the other part is met from the supply by CSEB/licensee. In the second category are the other captive consumers who may avail supply from the CPP through open access; and the third are the non-captive consumers of the CPP.

6.2. The petitioner states that Section 9, read with Section 42 (2) of the Act provides that any generating company/CPP holder could sell the power to any licensee/HT consumer seeking open access from the concerned transmission utility. If any consumer avails power fully or partly from any CPP availing open access through wheeling of power, he should be given set off on CD by CSEB to the extent power is availed from the CPP, on proportionate basis. Further, in case the consumer avails 100% power (in terms of units) from a CPP through CSEB grid, he should either not be billed any MD/CD charge by CSEB or be billed to the extent of a maximum of 10% considering that power from CSEB would only be backup power. It has also been pleaded by the petitioner that unless such set off on CD is considered, the consumer would not be able to avail the benefit of the provision of open access, thus defeating the basic purpose of the Act of supply of electricity on competitive prices to the consumer.

6.3 The respondent CSEB in its reply has argued that Section 9 of the Act provides right to open access for 'self use' only, subject again to availability of adequate transmission facility for self use or through a dedicated transmission line, constructed, maintained and operated by the captive power producer. No other facility has been granted to a CPP under this Section. There is no provision under the Act which enables a CPP to sell power without a valid distribution licence. Further, there is no such provision in the Act enabling anybody to avail simultaneous supply from two or more sources through the same wire. Technically also it is not possible to segregate the demand met out from CSEB and CPP in this arrangement. It has been pleaded the request for set off on CD may not be accepted, both on legal and technical grounds, as described above.

6.4 Before we consider this issue, it would be necessary to briefly deal with the concept of contract demand charge. Historically a contract demand charge is levied on the consumer because his demand for electricity up to the contracted quantum is reserved for him and this entails creation of necessary infrastructure to meet the demand and a fixed cost for its upkeep etc. The rationale is that the utility has to incur a fixed cost on this reserve capacity in its distribution network irrespective of whether or not the consumer avails supply of energy to the extent contracted. That there is a fixed cost arising out of a distributing licensee's obligation to supply power is recognized in Sec.42(4) of the Act. As per the tariff philosophy adopted by this Commission, which has been publicized when the last tariff petition (no.5 of 2005) was considered, and is in the public domain, the utility may recover its fixed cost as part of tariff, apart from the cost of energy. However, full fixed costs have to be recovered gradually over a period of time. From the present tariff, CSEB has been able to recover hardly 20% of the total revenue of the HT consumers through fixed/demand charges.

6.5 In case a consumer avails simultaneous supply from the Board and also from a CPP, even for his 'own use', technically it is not possible to segregate these two sources of supply as has been pointed out by the CSEB. Therefore, in such cases set off on CD may not be justified. As regards captive consumer, non-captive consumer and CPP holder firstly, power to the extent of contracted quantity is to be kept reserved by the distribution licensee for the consumer irrespective of whether he avails supply continuously or intermittently or occasionally. It is incumbent on the licensee to have standby arrangement to supply electricity to a consumer who through open access receives supply from a generator, in case of outages of the generator (para 8.5.6 of NTP). The licensee is, therefore, required to maintain his supply lines to the consumer

all the time. On these considerations the Commission is of the view that it may not be logical at this stage to give set off on CD.

6.6 In view of the above **the Commission decides that for the present no set off on CD may be permitted. The Commission will review the position when the intra-State ABT regime is fully operational and the Balancing and Settlement Code is fully implemented. The Commission, however, decides that both the captive as also the non-captive consumers of the CPPs, while paying demand charges including tariff minimum charge, will not be required to pay monthly minimum charges on consumption considering the fact that their requirement of power is to be met from the CPP only and they may take very little power from the licensee/CSEB. Thus such consumers, whether EHV or HT, shall be required to pay tariff minimum charges on the contract demand or the recorded maximum demand, whichever is higher only. This dispensation will, however, be available to these captive/non-captive consumers who avail power both from a CPP and the licensee, on the condition that the supply from the CPP is more than 50% of their requirement in terms of unit consumption. Every captive and non-captive consumer will have to declare that they will be drawing more than 50% of their monthly consumption from the CPP failing which it will be presumed that their power requirement from the CSEB/licensee is more than 50% and they will not get the benefit of waiver of monthly minimum charge on consumption.**

6.7 The Commission feels that its decision not to allow set off on CD may not pose as serious a problem as has been made out by the petitioner for the following reasons. The relevance of CD is only in relation to the maximum demand (MD) charges and/or to a minimum guaranteed consumption where there is a nexus in the tariff between CD and minimum consumption. Of the three kinds of consumers mentioned in para 6.1 above, who are concerned with CD, the last two will have the benefit of the liberal regime for reduction of CD in the Supply Code. The Supply Code (clause 7.9) permits reduction in CD to the extent of 50% by a consumer only once within the period of agreement which is two years. **Further liberalizing this provision, the Commission directs that the captive and non-captive consumers of a CPP may reduce their CD to the extent desired, on availing power supply from the CPP, any time during the period of the agreement and to any extent. However, such reduction shall be permitted only once in a year. In case, CD is reduced to zero level to avail only standby power from the Board/ licensee, the charges will be tariff for temporary connection to that consumer for the period during which power is availed from the licensee, following the provisions of para 8.5.6 of the NTP. So far as the CPP itself is concerned, it can avail of start-up power as per para 8 of this order.**

7. Parallel Operation Charges (Grid Support Charges)

Parallel operation charges at the rate of Rs. 16 per KW, is payable by the CPPs as per the tariff order for 2005-06. These charges are in the nature of grid support charges.

7.1 The petitioners' main contention on this issue, while not denying the fact that on parallel connectivity with the system, the total installed capacity of the CPP is connected with the grid, is that the CPP holder restricts his import of power to his CD. In case he exceeds the CD in import

of power he is heavily penalized. Therefore, parallel operation charges should be billed on the basis of CD and not on the basis of the total installed capacity of the CPP, as at present. The three other petitioners, namely M/s BALCO, M/s Bajrang Power & Ispat and M/s Jayaswals Neco Ltd. have also raised the issue of parallel charges in their petitions.

7.2 M/s BALCO's CPP has a gross generation capacity of 810 MW (comprising of 4 x 67.5 MW & 4 x 135 MW sets) and is operated in parallel/synchronization with the grid. While all units operate on a continuous basis, the switching on and switching off in case of fault/emergency shut down situation is designed to be sequential so that at no point of time is the usage of the grid more than the capacity of largest single unit which is 135 MW. In any case, the connectivity of BALCO to the grid is neither designed nor built to handle the full load of 810 MW and thereby precludes any possibility of usage of the grid for full 810 MW. Moreover, the total power requirement of BALCO, which is nearly 60% of the CSEB's generation capacity cannot be met by the latter. BALCO has contended that the parallel operation charge as determined in the Tariff Order for 2005-06 does not appear to have taken the above context into account and thus needs to be reviewed.

M/s BALCO has further pleaded that when excess power is exported to the grid it will not only benefit the State but country as a whole and the CSEB gets cheaper power as compared to other sources. Further, in case of CPPs which supply power to the Board, during periods of export of power no import of power is possible. For having a contract demand with the Board, the CPP has to pay minimum charges whether it draws power or not, where as the Board is saved of sourcing expensive power for such consumers. Besides on the power drawn it has to pay, apart from the energy charge, a demand charge also. However, when a Captive Power Plant is exporting power to the grid it receives only a nominal amount per unit of power exported. Captive power plants which export power to grid should, therefore, be placed on a level playing field with the Board and some amount of fairness can be brought in by having a correlation between the hours during which power is exported to total number of hours during which CPPs stand connected to the grid, and to this extent exemption / rebate from the payments of minimum charges (Demand Charges + Minimum Energy drawal charge) for hours when the consumer is actually exporting and not importing, should be considered. This policy, if adopted, would not only give incentive to CPPs to operate efficiently but also act as an incentive to the Board to operate more efficiently.

7.3 M/s Jayaswals Neco Ltd. has contended that parallel operation charges on the generation capacity of a CPP synchronized with the grid is unjustified and should be withdrawn. M/s Bajrang Power & Ispat has also suggested that the parallel operation charges should be billed on the basis of CD in place of on the total installed capacity of the CPP.

7.4 The CSEB, on the other hand, has argued that the parallel operation charges are levied for the grid support provided to the generator for it's smooth and efficient operation and it has no relationship with drawal of power from the grid. BALCO's arguments are based on usage of the wires which have no direct bearing on these charges. It has no relationship with the contract demand of power import. If a captive generator operates in isolation and without connectivity with the grid, it cannot achieve the desired stability and PLF. Besides, all captive power producers meet out their uniform base load requirements through their captive power plant and

throw all the fluctuating load burden on the grid to bear all the resultant adversities by the grid supply system. For bearing all the harmful effects of their load fluctuations and for enhancing and stabilizing their captive generator's PLF, CSEB has a logical claim to be suitably compensated. The Board has given the following reasoning in justification of parallel operation charges:

- (1) Synchronization with the grid maintains the continuity of supply, even in cases one of the systems *fails in a two/multiple supply system*. In a continuous process industry uninterrupted power supply is a critical requirement.
- (2) By parallel operation a CPP is benefited by *way of improvement in plant load factor*. A consumer will generally install a CPP which would generate the required base power while he meets the fluctuating demand of the load through the supply system of the *licensee*. *This is generally the case with electric arc furnace, rolling mills and similar industries*. Thus by paralleling captive power plant with supply system the consumer is not required to make investment for his maximum load.

Secondly, PLF is higher if a CPP is synchronized with grid as compared to the CPP running in an isolated mode. *By paralleling the captive generation with the supply system the CPP-holder is able to make optimum use of his generator.*

- (3) By paralleling the supply system the CPP-holder is able to divert the *reactive power requirement on the supply system and use the captive power generators for generation of active power*. Hence the generator efficiency in such cases is generally very high; i.e. of the order of 100% or even more.
- (4) By paralleling with the supply system, the capacity to sustain the fault level of the CPP *is enhanced which helps in controlling the voltage dips due to arcing and drawal of heavy instantaneous load which is generally encountered in electric arc furnace operation*. While the *support* which the consumer gets from the supply system is very vital for its load, the supply system hardly gets anything because the duration of such instantaneous load is very short and is *not reflected in the energy consumption or in the load recorded by the meter*.
- (5) Electric arc furnace, rolling mills, mini steel plants, induction *furnace etc. generate lot of harmonics which are diverted/absorbed by the grid*. This amounts to pollution by such industries in the supply system. Such pollution results in higher losses and may result in failure of certain equipments. If the captive generators run in isolation, it will be virtually impossible to run their system because of such heavy *pollution due to harmonics, voltage dips and due to negative phase sequence current and voltage*. Generally consumers do not install the required equipment for controlling such *pollution in the supply system such as harmonic filters, static var compensator*.
- (6) The direction of harmonic power flow is from load to supply system while fundamental power flows from the supply system to load. This effects the metering and meter may record less.

The Board has argued that parallel operation of captive power plant with the supply system is necessary and not a choice of consumer having a certain type of load.

7.5 In their tariff petition for the year 2005-06, the CSEB had proposed levy of parallel operation charge @ 16 per KVA on the total installed capacity of a generating plant. The Commission did not receive any representation on the proposed charge and accordingly it was included in its tariff order passed on 15/06/05. In view of the discussion above, there appear to be some justification for payment of grid support charges to the licensee. However, the general principle for charges payable to a licensee should be that the charges only compensate the losses to the licensee, if any. Even in the elaborate justification provided by the CSEB no case has been made out about the Board incurring any losses due to grid support to the CPPs. Secondly, the fault level and injection of pollution in the system being attributed to the CPPs have not been measured. There is no method at present of finding out accurately the impact of this on the grid. Moreover, it has to be kept in the mind that one of the functions of the grid is to sustain such disturbances, pollutions and grid imbalances referred to by the CSEB and provide support to all the players in the field.

7.6 However, as already mentioned there is some justification for parallel operation or grid support charges and this has also been accepted by the petitioners during hearing. The only contentious issue is what should be the quantum of this charge. After considering the various issues put forth by the petitioners as also the CSEB, the Commission feels that grid support charge should be levied on the total installed capacity of the generating unit. The rate of this charge as approved by the Commission in its tariff order dated 15/06/2005 at Rs. 16 per KVA per month was given due publicity when the proposal of the CSEB for tariff determination was published. The CSEB then did not provide adequate data to show how this charge has been arrived at. It was approved since the charge was levied at that rate in the erstwhile MPEB, even before CSEB came into being and there was no objection from any generating company. But now that it has been called in question, the Commission feels that a study should be conducted to work out this charge on realistic basis when the next tariff petition is filed by the CSEB.

Keeping in view the objections of the CPPs, the Commission decides that for the present 60% of the approved charge i.e. Rs. 10 per KVA per month be made applicable till the present rate is reviewed and revised, if necessary, in the next tariff order.

8. Tariff for Start up power

8.1 The issue of start up power concerns CPPs not co-located with their captive consumer(s). The petitioners have pleaded that there should be a separate tariff for startup power for CPPs. According to the petitioners, the startup power is availed only in emergencies to start the generation, which may be required during maintenance, breakdown and unscheduled outage etc. Consumption of power for such purpose is not likely to be more than 10% of the total installed capacity of one of generating units of CPP. Therefore, separate tariff for such purpose is required as the incidence of MD charges being high, the overall tariff is high where as consumption is negligible. They have further submitted that since a provision of parallel operation charge @Rs.16 per KVA per month on the total installed capacity of a CPP has already been levied, it

would be more appropriate to fix the tariff of start up power on the basis of actual consumption by removing the condition of minimum charges.

8.2 CSEB has stated that start up power was never the specific requirement of a CPP. The Board had a separate tariff for start up power and this was applicable to IPPs only, and it has been availed only by one consumer. It has been further pleaded that it is not at all feasible to provide a separate connection besides one available, for such occasional use.

8.3 There is no doubt that every CPP definitely needs drawal of power from the grid for start up purposes. Once power is taken by a CPP from the grid and the generating unit(s) has started, further drawal of power from the grid may not be required. Hence the quantum of energy used by a CPP over a period may not be substantial. The tariff approved by the Commission provides for levy of two types of charges, i.e. a demand charge on contracted KVA and the other on units consumed. In case of EHV connections, certain minimum charges on both, depending upon the load factor, is levied. In case of 33 KV / 11 KV connections, the minimum charge levied is limited to contracted demand and this charge is for a whole month. Since the requirement of power for start up purpose may not be for the whole month, the levy of this charge on CPP for that purpose may not be justified. The Commission did not approve any tariff for start up power in its order dated 15/06/2005. But subsequently in a petition for determination of tariff and related dispensation for procurement of power from biomass based generation projects (petition No.7 of 2005) the Commission passed order on 11/11/05 and decided to apply HV-6 tariff (Other Industries) for the purpose of start up power.

8.4 **Taking into consideration all the factors and the petitioner's statement that the consumption of start-up power is not likely to be more than 10% in terms of load factor, the Commission decides to apply the same HV-6 tariff with 50% of the existing demand charge for start-up power for CPP. However to avail this benefit the CPP has to have a contract demand which does not exceed 10% as its highest capacity generating unit and restricts the drawal of power within 10% load factor every month. In case the load factor in a month goes beyond 10%, the CPP will be required to pay the full demand charges. Since the requirement of power will be for short duration, the Commission also decides not to levy any minimum charges on consumption. Billing will be done on actual consumption as per HV-6 tariff or the tariff for this category as may be determined by the Commission from time to time. In order that existing CPPs may avail this facility, they are permitted to reduce their CD to the extent desired, subject to technical feasibility in terms of accurate metering of import and export of power. Such reduction is permitted only once in a year. If in future the Commission introduces a separate tariff for start up in its tariff order, this will automatically stand withdrawn from the date the tariff order is made effective.**

9. **Tariff for supply to CSEB/licensee and tariff for firm and infirm power**

9.1 CSEB has been purchasing firm power from the State CPPs at different rates. Rates of infirm power was low at Rs. 1 per KWh. Although subsequently, these rates have been revised on the basis of negotiation held with the CPPs by the CSEB for firm power, the petitioners have requested the Commission that the rates for infirm power are not adequate and need to be revised. The petitioners have further pleaded that separate tariff should be fixed by the

Commission for supply during peak load hours of infirm power as well as firm power so as to encourage CPPs to wheel surplus power to the maximum extent during peak load hours. This, they have pleaded would help in reducing load shedding during peak load hours and the burden of UI charges on the CSEB.

9.2 M/s Jayaswals Nico has pleaded that to promote co-generation power rate of the average cost of supply i.e. Rs. 3.10 per KWH may be decided for the firm power for a CPP based on co-generation. The proposed rates may be escalated at 5% per annum .The rate of infirm power may be 90% of firm power. Further to promote CPP power, the Commission should decide a floor rate of 10% less than the average cost of supply i.e. Rs. 3.10 per KWH for the excess firm power of CPP to be sold to the grid. To promote co-generation projects the rate of sale of firm power to the grid should be 10% more compared to the non co-generation based CPP. These rates should be minimum floor rates for the grid frequency less than 50.5 Hz and in case the frequency drops, the rates should be enhanced based on availability based tariff as notified by the CERC (notification No. L7/25(5)/2003-CERC dated 3rd September 2004).

9.3 The CSEB, on the other hand, has pleaded that purchase of power by a licensee from the CPP has to be based on commercial considerations. CSEB may procure power from the CPPs through competitive bidding within the maximum purchase price fixed by the Commission in tariff order. There is no provision in the Act under which a licensee is required to purchase power from CPPs. Therefore, there is no question of fixation of a tariff for CPPs for purchase of power by the CSEB/licensee.

9.4 Sec. 62(1) of the Act provides that the Commission shall determine the tariff in accordance with the provisions of the Act for supply of electricity by a generating company to a distribution licensee. Sec. 86(1)(b) of the Act mandates that the Commission “*regulate electricity purchase and procurement process of distribution licensees, including the price at which electricity shall be procured from the generating companies*”. Determination of tariff is a detailed process, the procedure for which has already been laid down by the Commission in CSERC (Details to be furnished by the licensee or generating company for determination of tariff and manner of making application) Regulation, 2004. Determination of tariff specially for CPPs in the manner sought would involve short-circuiting this procedure. The petitioners have not furnished enough data on the basis of which the Commission can even attempt to fix a single generation tariff applicable to all CPPs. In fact, the position in the State is such that determination of a single tariff for all the CPPs may not be practicable. As already mentioned elsewhere in this order, the capacities of the CPPs vary widely from 810 MW to less than 1 MW. Secondly, there is variation in the cost of fuel used, making variable cost comparison difficult. It may not, therefore, be practicable to fix any common tariff for procurement of power from CPPs by the CSEB.

9.5 The NTP in para 6.3 has laid down the manner of procurement of power from CPPs by distribution licensees as under:

“Such captive plants could inject surplus power into the grid subject to the same regulation as applicable to generating companies. Firm supplies maybe bought from captive

plants by distribution licensees using the guidelines issued by the Central Govt. under section 63 of the Act.

The prices should be differentiated for peak and off-peak supply and the tariff should include variable cost of generation at actual levels and reasonable compensation for capacity charges.

Alternatively, a frequency based real time mechanism can be used and the captive generators can be allowed to inject into the grid under the ABT mechanism”.

The NTP, thus, suggests the competitive bidding process under Section 63 of the Act for procurement of power from CPPs by distribution licensees. It also recommends ToD tariff for peak and non-peak supply. Frequency-based real time UI mechanism has also been suggested as an alternative mode. The Central Government's guidelines for competitive bidding process is for power purchase by the licensee on long-term (up to 7 year) and medium-term (more than one year) basis. These guidelines may be followed by the licensee for such procurement. However, the issue of an appropriate tariff mechanism for procurement of power in the short-term remains and in most cases the procurement of power by the CSEB is in the short-term, for a maximum period of one year. The following questions arise in respect of such short-term procurement:-

- (i) Should a generation tariff be determined by the Commission in case of each individual CPP?
- (ii) Should a benchmark tariff be fixed for smaller (say 15 MW and below) plants?
- (iii) Should the competitive bidding process be followed even for short-term procurement?

We have already explained the difficulties involved in determination of a common tariff for all CPPs. Determination of generation tariff in case of individual CPPs will be a time consuming process and may not ultimately encourage such plants to put their power into the grid since the exercise has to be repeated every year leading to tariff uncertainty. A common benchmark tariff for smaller plants (15 MW and below) can be attempted. Such a dispensation has been given by this Commission in the case of non-conventional energy generation plants based on bio-mass with a capacity up to 15 MW. However, it is difficult to repeat that exercise in case of CPPs for reasons given in para 9.4 above. The fuels used by the CPPs are different. Most such small plants are based on the co-generation principle where the fuel cost is much less than the conventional coal based plants. Therefore, the Commission feels that it would not be practicable to fix any common tariff even for CPPs with smaller capacity. A competitive bidding process for such procurement may not be in the interest of both the distribution licensee as also the CPPs. In the context of Chhattisgarh, where there is a shortage of 10% or more in supply at any time during the year, except during the rainy season, the Commission would consider that the proviso to clause (a) of sub-Section (1) of Section 62 of the Act may be most appropriate. The proviso is as follows:

"Provided that the appropriate Commission may, in case of shortage of supply of electricity, fix the minimum and maximum ceiling of tariff for sale or purchase of electricity in pursuance of an agreement entered into between a generating company and a licensee or

between licensees, for a period not exceeding one year to ensure reasonable prices of electricity."

The Commission decides that the procurement of power from CPPs by the CSEB for upto one year period may be on the basis of competitive bidding as per the guidelines fixed by the Central Government under Sec. 63 of the Act, within the maximum ceiling price for purchase of power fixed by the Commission in the tariff order. The Board will have the flexibility of negotiating rates on the basis of bidding. However, for purchase of 25 MW and above from one CPP, the tariff will be fixed by the Commission as per the provisions of Sec. 62 (1) of the Act.

Firm and infirm power

9.6 **Firm Power:** The distribution licensee may purchase firm as well as infirm power from CPP. It would be necessary to define firm and infirm power. '*Firm Power*' means the quantity of power which a supplier is obliged to deliver according to an agreed schedule as per the power purchase agreement with the distribution licensee. For the purpose of operational simplicity, the eligibility criteria applicable for purchase of firm power by the distribution licensee will be a minimum of 1 MW at 70% load factor, which works out to 700 units (1000 KWh X 70% LF) per hour. In case a CPP puts less than 1 MW power into the grid i.e. less than 700 units in one hour on an average, the same would not qualify as 'firm power' but would be considered as 'infirm power'. Till ABT regime is introduced, the quantum of power supplied as per the supply agreement on 70% load factor will be calculated on monthly basis treating it as 'firm power'. For supply of power the maximum permissible injection rate shall be 110% (+10%) of the agreed quantum in MW. However, this will be subject to maximum injection of units arrived at on agreed power with 100% load factor.

9.7 **Infirm Power:** There will be three types of infirm power:

- (i) The power supplied below 70% load factor;
- (ii) The power supplied over and above 110% injection rate of the agreed quantum in MW, and
- (iii) The power which is injected to the grid by any CPP as infirm power only, without any schedule.

As regards the cost of infirm power under categories (i) and (iii) above i.e. power supplied at less than 70% load factor and the infirm without any schedule for the present billing may be done and payment made in proportion to the load factor. For example:

$$\frac{\text{Cost of power X Load factor in \%}}{70\%}$$

If power is supplied over and above the injection rate i.e. 110% coming under category (ii), no payment need be made by the CSEB/licensee for the extra units. Every CPP supplying power to the CSEB/licensee, whether firm or infirm, has to enter into a power purchase

agreement (PPA) with the CSEB/licensee, which should be at least for a period of 3 months. The agreement for supply of infirm power will not be for less than 1 MW, which may be computed in terms of units also, and agreement executed accordingly. The agreement will include the purchase price. In case the power supplied is at 70% load factor or more, upto a maximum injection rate of 110%, it will automatically become firm power and payment will be made accordingly.

9.8 These guidelines are provisional and will change no sooner Special Energy Meters (SEMs) are installed by the CPPs and the CSEB/licensee. Installation of SEMs is mandatory for CPPs and all open access consumers, under the open access regulations. However, it will take some time before SEMs are installed. The CPPs which are supplying power to the CSEB at present shall install such meters within a period of 3 months from the date of this order; and CSEB shall install such meters within 6 months. Hereafter, no PPAs shall be entered into by the CSEB with any CPP which does not have SEM.

9.9 All power purchase presently being made or proposed to be made in the near future till the installation of such Special Energy Meters will be governed by the above guidelines. Once SEMs are installed, supply of surplus power of captive generation would be brought under UI mechanism and price of such power would be linked to frequency linked UI rates at the time of injection. Since the State Load Despatch Centre (SLDC) may not be equipped to handle this for all the CPPs immediately even after installation of SEMs, the accounting will be done on monthly basis and the price of power shall be paid linked to frequency at the UI rates declared by the Central Electricity Regulatory Commission (CERC). Once SLDC is equipped with all the required facility, full Intra-State ABT regime shall be implemented. Thereafter, supply of power shall be according to the schedules agreed to between the CSEB/licensee and the CPP which have to be furnished daily to the SLDC. The UI rates shall be payable as per the schedules.

10. Sale of power to third parties

10.1 Although the Act (Sec. 30) requires the State Regulatory Commissions to facilitate grid inter-connections for generators, including captive generators, but there is no provision in the Act which provides for sale of surplus power of a CPP to third parties, except through open access. The consumer has the right to receive supply of electricity from any person other than the distribution licensee of his area under open access which may be introduced by the State Commission under the provisions of Sec. 42(2) of the Act. Sec. 49 of the Act provides that where the Commission has allowed open access to consumers under section 42 “*they may enter into an agreement with any person for supply / purchase of electricity on such terms and conditions (including tariff) as may be agreed upon by them*”. Para 6.3 of the National Tariff Policy provides that “*Grid-connected captive plants could also supply power to non-captive users connected to the grid through available transmission facilities based on negotiated tariffs. Such sale of electricity would be subject to relevant regulations for open access*”. The Commission has already issued Open Access Regulations. The CSERC (Intra-Open Access in Chhattisgarh) Regulations, 2005 has come into effect on 26th July, 2005. As per clause 5 of these Regulations, open access for users requiring 10 MW will be available with effect from 1.4.2006. CPPs may supply power to non-captive consumers as per these Regulations.

10.2 The Board has referred to the order of the Bombay High Court dated 4th April, 2005 in the case of Maharashtra SEB v/s State of Maharashtra, M/s Bhushan Steel & Strips and others (Writ Petition No.882 of 2005) and has pleaded that as per this judgement of the Hon'ble High Court, which has since been upheld by the Hon'ble Supreme Court vide their order dated 12th May, 2005, a CPP cannot sell power to third parties without a licence. We have carefully gone through the judgement and find that this was a case in which the CPP was supplying power to an industrial consumer (third party) directly through its own dedicated line. There is no provision in the Act enabling a generator to supply power to a consumer directly except through an appropriate licence (a distribution licence) or through open access. The judgement of the High Court does not deal with the provision of open access in the Act. In the present of clear provision in the Act referred to in the previous para, we are of the view that the judgement of the Bombay High Court does not come in the way of a consumer availing power through open access.

11. Wheeling charges

11.1 The petitioners have submitted that presently wheeling charges range between 10% and 17% depending upon the length of line for which power is considered to be wheeled irrespective of the voltage level. These charges are on a higher side. They have requested that more rationalized wheeling charges, as being implemented in the Regional Electricity Boards, in which huge power transaction takes place through the national grid, be decided by the Commission. The charges should be irrespective of the distance owing to the fact that electricity actually does not flow as per destination, but according to the overall generation and load in the grid system. Further, the charges should be based on the system voltage through which power is wheeled, as the losses on higher voltage are comparatively low. The petitioners have suggested that overall wheeling charge should be affordable and should be about 10 to 15 paise per unit.

11.2 The respondent CSEB agrees that the prevailing rates of power wheeling charges are based on earlier provisions and practices and need to be decided by the Commission in accordance with the various provisions of the Act.

11.3 Transmission and wheeling charges are required to be paid by those customers who seek open access to the wires of the licensee. The Commission has already floated a concept paper for deciding various charges which are payable by open access customers which also deals with transmission and wheeling charges. Views/comments have been sought by the Commission on this concept paper and rates of such charges will be decided by the Commission only after getting the views/comments from all concerned. This matter is hence not decided in this petition.

12. Levy of surcharge on wheeling of power to third party

This is also an issue which relates to open access consumers. As stated above these charges will be decided by the Commission as part of the open access charges.

13. Reactive Energy Charges: The CPPs should pay a reactive energy charge to the CSEB/licensee for drawal /injection of reactive energy. The Central Grid Code also provides for payment of reactive energy charges. The Commission feels that a reactive energy charge is leviable but the rate at which this charge should be levied has to have some basis. In the PPAs

entered between the CPPs and the CSEB a charge of 27 paise per KVARH has been levied. The CSEB should conduct a study to establish the reasonableness of a reactive charge and come up with a proposal in the next tariff application. Till then a reactive energy charge may be imposed as follows:

If the voltage at the point of drawal is below 97% of the normal voltage, the CPP shall pay @ Rs. 27 paise per KVARH to the CSEB/licensee for the drawal of reactive energy at the drawal point. If at the injection point the voltage is higher than 103% of normal voltage, the CPPs shall pay at the rate of 27 paise per KVARH to the CSEB/licensee for injection of reactive energy at the point of injection. Both drawal and injection of reactive energy shall be measured at 15 minutes time block along with voltage after SEMs are installed. Till then the present system of metering of KVARH on monthly basis shall continue.

14. Introduction of ABT for CPP holders

14.1 The petitioners have pleaded that to have effective and efficient control over wide fluctuation in frequency of the system and in line with the inter-state power transaction being made by the utilities/SEBs, CPP holders should also be allowed to opt for ABT system. With the introduction of this system the CPP-holders, who efficiently manage their loads with the minimum power requirement during low frequency period, would be very much benefited. The CSEB has also favoured introduction of ABT to all open access consumers including CPPs.

14.2 The Commission has already issued regulations on Intra-state open access in Chhattisgarh which have been published in the Rajpatra on 26 July 2005. According to clause 18 of these Regulations, all open access customers shall have to provide ABT compatible special energy meters both at the point of the injection and drawal as the main meter. We have already directed in para 9.8 above that SEMs shall be installed by all existing CPPs within a period of 3 months and by the CSEB within 6 months.

However, introduction of full ABT regime in the State may take some time. Notwithstanding the mandate of the NEP that intra-State ABT regime should be introduced from April 2006, considering the present preparedness of the CSEB and the SLDC, the Commission feels that it may not be possible to introduce full ABT regime early. Such a regime requires provision of ABT-compatible, special energy meters as well as the required software for billing. The SLDC may not be equipped with SCADA system to do billing as required under the ABT regime, in the next six months. Intra-State ABT must cover not only the captive and non-captive consumers of the CPPs and all open access customers, but also procurement of power by the CSEB from CPPs and IPPs. It is because of this lack of preparedness that the Commission has not favoured UI mechanism for procurement of power by the licensee/CSEB from CPP. Hence, for the present the existing arrangement for billing will continue till SEMs are installed. Thereafter, billing shall be as per para 9.9 of this order. **The Commission directs that both the CPPs as also the CSEB and the SLDC shall gear up and take all necessary steps to facilitate introduction of ABT regime in the State for which necessary orders are being passed by the Commission separately.**

15. Other issues

As regards the matters raised by Shri R.B.Goenka, Consultant, some of these have already been dealt in detail in the preceding paras. Others are discussed in the following paras.

15.1 Definition of co-generation: The Commission feels that defining co-generation in this petition may not be necessary as the petition deals with CPPs irrespective of the type of fuel being used. As we have mentioned in para 3 above, any special dispensation with regard to co-generation based CPPs would be considered separately when the matter is brought up before the Commission. Otherwise this order is applicable to co-generation based CPPs also.

15.2 Another issue raised by Shri Goenka is that **auxiliary consumption of a CPP may be treated as ‘own use’**. Auxiliary consumption is consumption by the CPP itself; this power is not available for use by a consumer. In the relevant provisions of the Act as also the rules emphasis is on ‘captive use’. As per the provisions of rule 3 of the Rules, it is the extent of ‘captive use’ which determines whether or not a power plant is to be classified as a captive generating plant. Captive user and use have been defined in the Rules.

Explanation (1)(b) of Rule 3 defines ‘captive use’ as follows:-

“(b) ‘Captive user’ shall mean the end user of the electricity generated in a Captive Generating Plant and the term “captive use” shall be considered accordingly”.

‘**End use**’ can only be of the power generated by a CPP and also available for use by a consumer. We, therefore, do not agree with the proposition that auxiliary consumption should be treated as own use within the meaning of the provisions of Sec.2(8) and Sec. 9 of the Act.

15.3 Reduction in contract demand and demand charges of a CPP-holder: This has already been discussed in para 6. The petitioner has suggested that a CPP-holder and captive consumer as also a non-captive consumer of CPP power should be allowed to reduce his contract demand with the CSEB/licensee to the extent desired after commissioning of the CPP irrespective of the agreement with the CSEB/licensee and the demand charges of the CPP-holder who is synchronized with the grid and has import and export arrangement at generation point should be reduced in proportion to his load factor of the import power. This matter has already been discussed in para 6.7 and 8.4 above.

15.4 ***Banking of surplus power with distribution licensee***

The petitioner’s submission is that wheeling of power can not be done without banking arrangement since the accounting of the units is being done on monthly basis. As the banked units are utilized by the captive users through wheeling arrangement; the same should be allowed to be used for consumption at the same place as power generation. Further, banking should be on 24 hour basis for firm as well as infirm power supplied to the grid.

In the open access regulations framed by the Commission, there is provision for scheduling of power. Once the seller or buyer agrees upon a dispatch schedule, no changes shall be made thereafter. Deviations from dispatch schedule or drawal from the CSEB grid shall be on prevailing ABT. Thus once ABT regime is introduced there will be no scope for banking.

In view of this, the Commission is not in favour of allowing any banking of power.

15.5 Tenure of energy purchase agreement energy banking agreement and energy wheeling agreement.

The petitioner has pleaded that the period of agreement for energy purchase, energy banking and energy wheeling with the distribution licensee should be for at least three years and thereafter it may be extended with mutual consent of the parties. This has been considered by the Commission. In view of the expected up-turn in the position of power availability in the State next year, the Commission feels that it is not in the interest of either the seller or purchaser to go for long-term power purchase agreement. That is perhaps the reason why no generator has offered power to the Board for a period exceeding one year.

As for wheeling agreement, wheeling relates to open access and hence the tenure of wheeling agreement will depend on the tenure of the open access agreement. There is, therefore, no need to prescribe any tenure for the wheeling agreement.

16. **Monitoring the status of CPP:** Rule 3 of the Electricity Rules provides that no power plant shall qualify as a CPP unless not less than 51% of the aggregate electricity generated in such plant, *determined on an annual basis*, is consumed for the captive use. This would necessitate monitoring of generation and consumption pattern of CPPs. The Rules do not specify the authority which may undertake this task. The matter has been discussed in a group appointed by forum of Regulators and it has been recommended that the Chief Electrical Inspector should ensure compliance with the Rules and report to the SERC. It has been further recommended that the accounting of power should be monitored on quarterly basis so that corrective measures, if required, are taken in time. The State Government may issue necessary instructions to the Chief Electrical Inspector in this regard. He should bring any case of infringement of the rules, and the consumption pattern which might lead to such infringement at the end of the year, to notice of this Commission. At the end of each financial year every CPP will submit details of monthly generation, auxiliary consumption and consumption made by captive and non-captive users separately to the Chief Electrical Inspector so that the latter could determine if the generating unit qualifies as CPP under the definition of the above rule. In case the Chief Electrical Inspector finds that the generating unit does not qualify as CPP, the financial gain already availed of by the generating unit, captive users and non-captive users shall be made good by the generating unit to the licensee within a reasonable period of time as may be fixed by the CSEB.

Every new CPP shall declare and submit to the Chief Electrical Inspector, the CSEB/licensee to whose grid it is connected and to this Commission, the date of its commercial operation. This is required so that monitoring as above is facilitated.

17. **Effective date and applicability to subsisting PPAs:** This order shall come into operation on the 1st Mach, 2006, for facility of operation. This, however, in so far as it relates to purchase of power by the CSEB, will not apply to the subsisting power purchase agreements under which the Board is already procuring power, in other words, the agreement is already operational till its validity. All new power purchase agreements including such of the existing agreements which are not yet operational and supply of power to the Board has not commenced under such agreement, shall now be in compliance with this order. This order will be reviewed after a period of three years, in February 2009.

The Commission has granted certain special dispensation in favour of two EHT consumers, namely M/s Balco and M/s Jayaswals Nicco on the ground of their being captive power plants. With this order, the need of such dispensation in favour of these consumers will lose justification. Hence the Commission directs that with this order all such special dispensation whether in the above two cases or others shall be treated as withdrawn. With effect from 01/03/06 all CPPs shall be governed by this order only.

18. **Recommendation to the State Government:** Before we conclude, we would like to comment on a specific issue concerning the State Government which has been brought to our notice. The State Government has imposed a cess of 10 paise per unit on the total power generated by the CPPs, the purpose of which is not very clear. Apparently there was some justification for the cess when the State was surplus in power and the CSEB did not want to encourage Captive Plants. The provisions of the Act, the NEP and NTP have introduced a liberal regime for CPPs, the objective being to promote captive generation and encourage CPPs to put their surplus in the grid. The Board, in fact, is already availing more than 200 MW from CPPs at present, and even that does not fully meet the power deficit in the State. That being the position and also in view of the national policy, the State Government should reconsider the cess on generation by the CPPs.

Sd/-
Member

Sd/-
Chairman

True Copy

(N.K. Rupwani)
Secretary