



केन्द्रीय विद्युत विनियामक आयोग
CENTRAL ELECTRICITY REGULATORY COMMISSION



Dr. Pramod Deo
Chairperson

D.O. No. 2/8/Policy(Statutory Advice)/2009-CERC
1st June, 2010

Subject : Statutory advice of CERC regarding timeframe for tariff based competitive bidding.

Dear *Shri Uma Shankar,*

Please refer to Ministry's Ref. No. 23/2/2005-R&R (Vol.V) dated April 2010 seeking advice of Commission on the proposal of NTPC Limited for amendment in Tariff Policy to permit cost plus tariff structure for public sector undertakings beyond the present deadline of January 2011. Similar requests for extension of this deadline in respect of hydro projects from NHPC and SJVNL have also been received in Commission.

2. This matter has been carefully considered by the Commission.

3. Clause 5.1 of the Tariff Policy provides that from January 2011 onwards all future procurement of power by distribution licensees should be done through tariff based competitive bidding even from Government/State owned entities. A similar provision exists for procuring transmission services also.

4. The Commission has also noted the recent judgement of Appellate Tribunal for Electricity in Appeal No. 106 & 107 delivered on 31st March 2010 (copy enclosed) in which the Tribunal while holding that the State Commissions have discretionary powers to give approval for the PPA or to direct the distribution licensee to resort to the competitive bidding process in accordance with the Tariff Policy, has also laid down the relevant criteria for such a decision. The Tribunal has held that the State Commission should direct the distribution licensee to carry out power procurement through competitive bidding process in cases where the rates under negotiated agreements are high. In other words, the tariff based competitive bidding route is a preferred one if it is leading to lower tariffs which obviously is in the interest of the consumers.

5. The Commission has carried out an internal preliminary exercise for comparing the tariffs obtained through competitive route with those being allowed under cost plus tariff structure (copy of analysis enclosed). This preliminary analysis indicates that the tariffs being obtained through competitive bidding are lower than the levelised tariff under cost plus structure. This tentative conclusion holds true largely even in case of Case-1 bids if one takes into account the fuel transportation or transmission costs and the risks to developers associated with seeking open access and other statutory clearances. To establish this finding further, the Commission has undertaken a more detailed exercise also. The Commission has also started an exercise to devise a benchmark tariff which would be periodically updated. Such a benchmark tariff would be

arrived at based on the tariffs obtained through competitive procurement and would serve useful purpose for decision taking by the State Electricity Regulatory Commissions.

6. Based on the results of preliminary analysis as referred to above, Commission in exercise of its statutory powers under section 79(2) of the Act, hereby advises the Central Government that the deadline of January 2011 for completing the transition to procurement of power through tariff based competitive bidding even from State/ Government owned entities should not be extended any further except in the following cases:

- a) Cost plus tariff could continue for large sized multipurpose storage hydro projects in view of the complexities and larger construction risks involved.
- b) In view of the likely peaking shortages in India for a number of years from now, there is a need to give a special policy support for setting up of peaking supply stations which could be based on open cycle based stations, IC engine based technology or pumped storage plants. CERC is in the process of modifying its tariff regulations for the period 2009-14 to incorporate special tariff structure for such peaking plants. In view of the fact that such peaking plants would be a new phenomenon in India and would require assurance of cost plus tariff to assure them recovery of their fixed cost fully, such peaking stations could be permitted on cost plus tariff structure for State/Government owned entities till the end of current tariff control period of CERC i.e. 31st March, 2014.

7. The Commission would also suggest the Central Government to review the various guidelines and other frameworks applicable to public sector undertakings with a view to give them adequate autonomy and decision taking authority so as to enable these entities to effectively participate in tariff based competitive bidding.

Best regards.

Yours sincerely,

Pramod Deo
(Dr. Pramod Deo)

Encl: As above

Shri P. Uma Shankar
Secretary (Power)
Ministry of Power
Shram Shakti Bhawan
Rafi Marg
New Delhi – 110 001

**Appellate Tribunal for Electricity
(Appellate Jurisdiction)**

Appeal No. 106 & 107 of 2009.

Dated: 31st March 2010

**Present: Hon'ble Mr. Justice M. Karpaga Vinayagam, Chairperson
Hon'ble Mr. H.L. Bajaj, Technical Member**

Appeal No. 106 of 2009

In the matter of:

- (1) BSES Rajdhani Power Ltd.
BSES Bhawan, Nehru Place
New Delhi-110 019**

....Appellant

Versus

- 1. Delhi Electricity Regulatory Commission
Vinimak Bhawan, C-Block
Shivalik, Malviya Nagar,
New Delhi-110 017**

.... Respondent-1

- 2. New Delhi Power Limited
Sub-Station Building
Hudson Lines, Kingsway Camp
Delhi-110 009**

.... Respondent-2

- 3. Maithon Power Limited
NBCC Tower,
IIIrd Floor, Bhikaji Cama Place
New Delhi-110 066**

.... Respondent-3

- 4. BSES Yamuna Power Limited
Shakti Kiran Building
Karkardooma
New Delhi-110 065**

.... Respondent-4

Counsel for the Appellant(s)	Mr. V.P. Singh & Mr. Anuj Berry
Counsel for the Respondent(s)	Mr. Amit Kapur & Mr. Apporva Misra for R-2
	Mr. Meet Malhotra & Mr. Ravi S. Singh for R-1
	Mr. Sitesh Mukherjee & Mr. Sakya Singha Chaudhuri for R-3

Appeal No. 107 of 2009

In the matter of:

- | | |
|--|--------------------------|
| (2) BSES Yamuna Power Ltd.
BSES Bhawan, Nehru Place
New Delhi-110 019 | Appellant |
| Versus | |
| 1. Delhi Electricity Regulatory Commission
Vinimak Bhawan, C-Block
Shivalik, Malviya Nagar,
New Delhi-110 017 | Respondent-1 |
| 2. New Delhi Power Limited
Sub-Station Building
Hudson Lines, Kingsway Camp
Delhi-110 009 | Respondent-2 |
| 3. Maithon Power Limited
NBCC Tower,
IIIrd Floor, Bhikaji Cama Place
New Delhi-110 066 | Respondent-3 |
| 4. BSES Rajdhani Power Limited
Shakti Kiran Building
Karkardooma
New Delhi-110 065 | Respondent-4 |

Counsel for the Appellant(s)	Mr. V.P. Singh & Mr. Anuj Berry
Counsel for the Respondent(s)	Mr. Amit Kapur & Mr. Apporva Misra for R-2
	Mr. Meet Malhotra & Mr. Ravi S. Singh for R-1
	Mr. Sitesh Mukherjee & Mr. Sakya Singha Chaudhuri for R-3

JUDGMENT

AS PER HON'BLE MR. JUSTICE M. KARPAGA VINAYAGAM, CHAIRPERSON

1. BSES Rajdhani Power Limited and BSES Yamuna Power Limited have filed these two separate appeals in Appeal No. 106 of 2009 and Appeal No. 107 of 2009 challenging the order passed by the Delhi State Electricity Regulatory Commission on 30.04.2009 allowing the petition filed by North Delhi Power Ltd. praying for the grant of approval to the Power Purchase Agreement entered into between North Delhi Power Limited (NDPL(R-2) and Maithon Power Limited (MPL/R-3).

2. Since the order impugned dated 30.04.2009 challenged by the two different parties in two different Appeals is a common order, we are rendering this common judgment disposing of both these Appeals.

3. The short facts leading to the filing of these appeals are as follows:

- (i) Both the Appellants are engaged in the business of distribution of electricity and retail supply of electricity in the specified areas in Delhi. NDPL (R-2) and MPL (R-3) are group companies. Earlier MPL(R-3) filed a petition on 29.01.2006 before the Central Commission seeking for exemption from applicable requirement of competitive procurement process of power under clause 5.1 of the National Tariff Policy (NTP). The Central Commission, however, by the order dated 17.01.2007 directed the MPL (R-3) to approach the Central Government to seek for clarification whether the MPL (R-3), the utility falls outside the scope of clause 5.1 of

NTP. However, MPL (R-3) did not approach the Central Government seeking for the said clarification.

- (ii) There upon, North Delhi Power Ltd. entered into a Power Purchase Agreement with Mython Power Ltd. for the supply of power on that basis. NDPL (R-2) filed a petition in No. 60 of 2008 before the Delhi Electricity Regulatory Commission (R-1) seeking approval of the said Power Purchase Agreement (PPA) entered into between NDPL (R-2) and MPL (R-3) for supply 300 MW power by MPL (R-3) to NDPL (R-2) on a long-term basis.
- (iii) During the pendency of the said petition, the Appellants being the distribution companies and stake holders filed the Objection Petition before the State Commission mainly contending that the approval sought by the NDPL (R-2) is in violation of the mandatory nature of clause 5.1 of National Tariff Policy (NTP) which prescribes for bidding process for procurement of power by the distribution licensee.

- (iv) However, the Delhi State Commission passed the impugned order dated 30.04.2009 approving the petition filed by the NDPL (R-2) and granted the approval for the PPA entered into between NDPC (R-2) and MPL (R-3). Aggrieved over this order, both the Appellants have filed these 2 separate Appeals, Appeal No. 106 of 2009 and Appeal No. 107 of 2009.

4. The Ld. Counsel for the Appellants would make the following contentions challenging the order impugned.

- (i) The State Commission has incorrectly accorded approval to the PPA by holding that it was not mandatory for the NDPL (R-2) to resort to the competitive Bidding Process envisaged under clause 5.1 of NTP. This conclusion is contrary to the provisions of the Indian Electricity Act, 2003 which provides that the Commission is to be guided by the provisions of the NTP.

- (ii) The State Commission while approving the PPA has committed error in fixing the tariff between the generating company namely MPL (R-3) and a distribution company namely NDPL (R-2) as the tariff fixed by the Delhi State Commission was in violation of the Competitive Bidding Process under Section 66 of the Electricity Act.
- (iii) Originally MPL (R-3), generating company first approached the Central Commission by way of a petition 112 of 2006 seeking for exemption from applicability of clause 5.1 of the NTP but the Central Commission by its order dated 17.01.2007 did not incline to give such an exemption. However, the Central Commission directed the MPL (R-3) to get a clarification from the Central Government. Admittedly, such a clarification was not sought by the MPL (R-3) from the Central Government. On the other hand, the NDPL (R-2) being the distribution company, had filed a petition before the State Commission to seek for

approval of the PPA entered into between the distribution Licensee (R-2) and Generating Company (R-3). Thus, the order passed by the Central Commission dated 17.01.2007 has been circumvented by the distribution company (R-2) to obtain the approval from the State Commission thereby the NDPL (R-2) managed to get the orders indirectly from the State Commission which he could not have obtained from the Central Commission directly.

(iv) The State Commission does not have the jurisdiction to approve the PPA between the NDPL (R-2) and MPL (R-3) prior to the tariff determination for the PPA by the Central Commission.

(v) The interpretation adopted by the State Commission that Section 62 and 63 of the Act provide that alternative route to a licensee for procurement of power, is wrong since such an interpretation will encourage all distribution licensees to enter into a negotiated PPA

only to the exclusion of the Competitive Bidding Process.

5. The Ld. Counsel appearing for the Respondents have made a common reply to these contentions made by the Ld. Counsel for the Appellants, as follows:

- (i) The order passed by the Central Commission on 17.01.2007 in the application filed by the MPL (R-3) will not in any way affect the powers of the State Commission to pass the order in exercise of the power under Section 86(1)(b) of the Act. The only prayer made by the MPL (R-3) before the Central Commission was to seek for clarification from the Central Commission with reference to the applicability of the clause 5.1 of the NTP. The MPL (R-3) had merely sought for clarification as to whether it will fall under the exempted category by virtue of the nature of the control exercised by the Damodar Valley Corporation, a Central Company, in the ownership, operation and

management of MPL (R-3). In that context, the Central Commission, without giving any finding with regard to the said clarification, merely directed the MPL (R-3) to approach the Central Government to seek for such a clarification. As such, the order of the Central Commission did not give any finding with regard to the issues concerning the determination of tariff of MPL (R-3). Therefore, the order of the Central Commission cannot be treated as one relating to the tariff determination.

- (ii) The contention of the Appellants that by approaching the State Commission, the MPL (R-3) and the NDPL (R-2) have achieved indirectly what they could not achieve directly is baseless. Clause 5.1 of the NTP cannot restrict the liberty of the generating company under Section 10(2) of the Electricity Act to sell power to any person or licensee. In other words, the distribution licensee may be permitted by the State Commission to procure power from a generating

company on a negotiated tariff irrespective of the fact that the generating company is not a State owned Control company. The fact that MPL (R-3) did not approach the Central Government for a clarification does not prevent it from entering into any contract with a distribution licensee through the negotiated route under the NTP.

- (iii) The clear demarcation of the separate and independent jurisdiction exercised by the Central Commission and the State Commission in discharging their statutory functions has been underlined in Rule 8 of the Electricity Rules, 2005. Thus, the regulation of power procurement of a distribution licensee by the State Commission under Section 86(1)(b) is separate from the determination of tariff of a generating station by the Central Commission under Section 79 of the Act.
- (iv) The State Commission has rightly proceeded to exercise its powers under Section 86(1)(b) to

approve the PPA entered into between the NDPL (R-2) and MPL (R-3) having regard to the reasonability of the indicative tariff. The State Commission has made it amply clear in this impugned order that the PPA will be effective only after the tariff has been fixed by the Central Commission.

- (v) Section 62 and 63 are alternative methods available to the Appropriate Commission for determination of tariff. It is open to the Commission to adopt either of the procedures prescribed under Section 62 and 63 of the Act. Clause 5.1 of NTP cannot be read to debar the State Commission for exercising its statutory power for determination of tariff under Section 62 of the Act for all future procurement of power. The Tariff Policy cannot mandate the State Commission to exercise its power of approval of power procurement only in a particular manner by allowing the procurement of power only through the Competitive Bidding Process. Such a mandate will

be inconsistent with wider range of regulatory power conferred on the State Commission under Section 86(1)(b). In other words, the policy directions which are directory cannot exclude the operation of Section 62 which confers power to State Commission to determine the tariff of a company under Section 62(1)(a). In other words, the Central Government, through a policy direction, cannot take away the powers of the State Commission what has been specifically provided in the Act.

- (vi) The Appellants have no locus standi to challenge the impugned order since they cannot claim themselves as an aggrieved party as they have not shown any direct injury so as to offer it a remedy under Section 111 of the Electricity Act, 2003.

6. The Ld. Counsel for the Appellants has cited various authorities under the Supreme Court. They are as follows:

- (i) (2003) 2 SCC 111 in *Bhavnagar University versus Paltina Sugar Mills (P) Ltd. & Anr.*
- (ii) (2004) 5 SCC 409 in *Ramesh Mehra versus Sanwal Chand Singhvi and Ors.*
- (iii) (1980) Supp (2) SCC 43 in *Commissioner of Wealth Tax versus Smt. Hasmatunnisa & Ors.*
- (iv) (1965) 1 SCR 542 in *Municipal Corporation of Greater Bombay versus Lala Pancham & Ors.*

7. The Ld. Counsel for all the respondents has also cited authorities in order to substantiate their pleas. They are as follows:

- (i) (2006) 4 SCC 327 in *Kerala Samasthana Chethu Thozhilali Union versus State of Kerala and Ors.*
- (2) (1992) Supp (1) SCC 150 in *State of Madhya Pradesh & Another versus M/s G.S. Dall & Flour Mills*
- (3) (1985) 1 SCC 641 in *Agricultural Market Committee versus Shalimar Chemical Works Ltd.*

- (4) (2002) 2 SCC 95 in *British Airways Pic versus Union of India*.
- (5) (2001) 8 SCC 540 in *Anwar Hassan Khan versus Mohd Shaifi*
- (6) (1997) 1 SCC 373 in *Sultana Begum versus Prem Chand Jain*
- (7) (1997) 5 SCC 516 in *Agricultural Market Committee versus Shalimar Chemicals Works Ltd.*
- (8) (2008) 7 SCC 748 in *Deepak Agro Foods versus State of Rajasthan*
- (9) (2001) 8 SCC 676 in *Bharthidasan University versus All India Council for Technical Education*

8. We have heard the Ld. Counsel for the parties and considered carefully and perused the entire records. In the light of the rival stands taken by the respective parties, the following questions would arise for consideration in the present appeals.

- (i) Whether the compliance with the Competitive Bidding Process as envisaged in clause 5.1 in the NTP, 2006 is

mandatory for the procurement of power by a distribution company?

- (ii) Whether the State Commission has erred by ignoring the fact that the Central Commission had rejected the petition of MPL (R-3) for exemption from NTP and that the NDPL (R-2) was seeking to bypass the provisions of the NTP by seeking the approval of the State Commission to the PPA entered into with MPL (R-3) even though he same was entered into in contravention of the provisions of NTP?
- (iii) Whether the State Commission has the jurisdiction to approve the PPA entered into between NDPL (R-2) and MPL (R-3) prior to tariff determination for the PPA by the Central Commission?
- (iv) Whether Section 63 of the Electricity Act is the exception to Section 62 and the guidelines framed by the Central Government will operate only when tariff is being determined by the competitive bidding process?

- (v) Whether the Appellants are the aggrieved person as provided under Section 111 of the Electricity Act?

9. Before dealing with the various questions relating to the alleged infirmities of the impugned order, it would be appropriate at the outset to deal with the question as to whether the Appellants have the locus standi to challenge the impugned order as the aggrieved party.

10. According to the Appellants, the expression “person aggrieved” appearing under Section 111 of the Act, which has not been defined in the Act, has to be given its natural and liberal meaning in the wider sense possible and since the impugned order had been passed in disregard of clause 5.1 of the NTP which would result in denial to access of power to the Appellant through Competitive Bidding Process which consequentially would adversely affect the interest of the consumer, the Appellants would certainly come under the category of aggrieved person and therefore, the Appeal is

maintainable. Though the word “person aggrieved” as provided under Section 111 of the Act has not been defined, this Tribunal as well as the Supreme Court has given interpretation and meaning of the words “person aggrieved” in the following decisions:

- (i) (2008) 13 SCC 414 in *GRIDCO versus Gajendra Haldia and others*.
- (ii) 2007)-Aptel 746 Energy Journal in *Chhatisgarh State Electricity Board versus Chhatisgarh State Electricity Regulatory Commission and others*.
- (iii) The recent decision is (2000)-LR-Aptel 0459 *Jindal Stainless Ltd. versus State of Orissa*.

11. In the Jindal Stainless Limited case this Tribunal has quoted the various Supreme Court decisions in (2003)9 606 Banarasi and others versus Rampal; (1997) 7 SCC 452 in Northern Plastic Ltd. versus Hindustan Photo Films and referred to various propositions laid down by the Supreme Court

with reference to the term “Aggrieved person” These proportions are as follows:

- (i) A person who was not a party to the original proceedings may still file an appeal with leave of the Appellate court, provided that the person claiming himself to be the aggrieved party shall make it a prima facie case as to how he is aggrieved.
- (ii) A person can be said to be aggrieved by an order only when it caused on him some prejudice in some form or another unless the person is prejudicially or adversely affected by the order, he cannot be entitled to file an Appeal as an aggrieved person.
- (iii) The words “person aggrieved” did not mean a man who is merely disappointed of a benefit which he may have received if some other order had been passed. A person aggrieved means a person who has suffered a legal grievance, a person against whom a decision has been pronounced which have wrongly deprived him of

something or wrongfully refused him something or wrongly affected his title to something.

- (iv) When a person had not been deprived of a legal right, when he is not subject to legal wrong, when he has not suffered any legal grievance, when he has no legal peg for a justifiable claim to hang on, he cannot claim that he is a person aggrieved.

12. In the light of the above principles laid down by the Hon'ble Supreme Court, this question has to be analysed. There is no dispute in the fact that the Appellants were a party in the proceedings before the State Commission as they had opposed the prayer made by the NDPL (R-2). But that alone will not entitle the person to file an appeal before this Tribunal. The ratio decided by the Supreme Court as mentioned above is that a person aggrieved does not mean a man who is merely disappointed of a benefit which he might have received. On the other hand, it is to be established that the order impugned has caused a legal grievance to him, order impugned is prejudicially

or adversely affecting him, or the order impugned has wrongfully deprived him or wrongly refused him something. Only when all these ingredients are satisfied, the party can claim himself as aggrieved party and is entitled to file an appeal.

13. In the present case, the Appellant simply say that if a Competitive Bidding Process is allowed, he may have access to get the power by becoming the successful bidder in the Competitive Bidding Process and that opportunity is lost. However, it is noticed that the stand taken by the Appellants in these appeals that even if the impugned order is confirmed then such power procured under that PPA should be allocated to all the distribution companies in Delhi including the Appellants. Thus, it is evident from the pleadings of the Appellants and the prayer in the Appeal that real intention of the Appellants is to secure indirectly portion of the power procured by the NDPL (R-2) from MPL (R-3) under the PPA and as such he has not established any direct legal injury due to the impugned order. As such the Appellant have failed to establish that they suffered

a legal grievance or legal injury or they have been unjustifiably deprived and denied of something which he would have been entitled to obtain in usual course. Therefore, our conclusion is that the Appellants are not a person aggrieved.

14. However, we are of the view that in spite of our above conclusions about the maintainability of the Appeal, we deem it appropriate to go into the legal issues which are raised by the learned counsel for Appellant, who argued at length, questioning the legality or the correctness of the impugned order.

15. Let us now discuss those issues. According to the Appellants, the tariff fixed by the State Commission was not determined by a Competitive Bidding Process as contemplated by Section 63 of the Act, 2003 read with clause 5.1 of NTP and therefore the impugned order is bad in law. On going through the relevant provisions of the Act, it is evident that the legislature carved out 2 distinct fields for (i) tariff determination and (ii) PPA approval. The domain of tariff determination is

governed under Part-VII of the Act. It contains Sections 61 to 65 of the Act. There are two routes and options provided: (a) tariff determination under Section 62(1)(a) by the Appropriate Commission in terms of Section 79 and Section 86 of the Act and (b) tariff discovery in terms of the Competitive Bidding Process in accordance with the guidelines issued by the Government of India, which shall be binding on the Appropriate Commission in terms of Section 63 of the Act.

16. In terms of Section 86(1)(b), the regulation of electricity purchase and procurement process to distribution licensee including the price at which electricity shall be procured from generating companies through agreements for purchase of power for distribution and supply between the State is within the sole domain of the concerned State Commissions. Admittedly, there is no provision in the Act which overrides or restricts the said powers of the State Commission. But it is contended by the Ld. Counsel for the Appellants that clause 5.1 of NTP as well as Section 63 of the Act put such restrictions on the power of the

State Commission to give approval for the PPA without resorting to the Competitive Bidding Process.

17. Section 62(1)(a) of the Act provides that the Appropriate Commission shall determine the tariff in accordance with the provisions of the Act for the supply of electricity by a generating company to a distribution licensee, whereas Section 63 of the Act provides that the tariff arrived through a transparent Competitive Bidding Process shall be adopted by the Appropriate Commission. Section 62(1)(a) and Section 63 of the Act are quoted as under:

“Determination of tariff – (1) The Appropriate Commission shall determine the tariff in accordance with the provisions of this Act for –

(a) supply of electricity by a generating company to a distribution licensee

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.”

“63. Determination of tariff by bidding process –
Notwithstanding anything contained in Section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government.”

18. Thus these Sections provide for 2 alternatives to the concerned parties to procure power with the approval of tariff by the Appropriate Commission. These 2 alternatives are as follows:

- (i) Under Section 62(1)(a), the Appropriate Commission shall determine the tariff for the supply of electricity by a generating company to a distribution licensee.

- (ii) Under Section 63, when the tariff has been determined by the Competitive Bidding Process, the Appropriate Commission shall adopt such tariff. The wording contained in Sections 62 and 63 of the Act would make it clear that Section 63 is not couched as a non-obstante clause being an exception carved out from Section 62. Section 62 is a substantive provision. Section 63 is an exception. So the exception contained in Section 63 cannot override the scope of the substantive namely Section 62. In other words, Section 62 provides substantive power to the Appropriate Commission for determination of tariff with the sole exception of price discovery through the Competitive Bidding Process under Section 63.

19. Clause 5.1 of NTP provides that the power procurement for future should be through a transparent Competitive Bidding Process using the guidelines issued by the Central Government on 19.01.2005. Further, giving a clarification, Ministry of Power

issued a circular dated 28.08.2006 clarifying the above position. The relevant extracts of the said clarification issued by the Ministry of Power is reproduced below:

“.....3. Therefore, the concerned State Commission has a jurisdiction to regulate electricity purchase and procurement process of a distribution licensee under Section 86(1)(b) of the Act except the tariff and the tariff related matters of the PPA.

4. It is further, clarified that the PPA in cases where tariff has been determined through Competitive Bidding Process under Section 63 of the Act and in accordance with the relevant guidelines issued by the Central Government, it is finalised within the bidding process and the Appropriate Commission is required to adopt the tariff in accordance with the provisions of the law”.

20. The above relevant quoted portions of the clarification would make it clear that Section 63 is optional route for procurement of power by a distribution licensee and in case the

same is followed, the Appropriate Commission is required to adopt the said tariff. Therefore, the power under Section 62(1)(a) and Section 86(1)(b) conferred on the State Commission cannot in any manner be restricted or whittled down by way of a policy document or a subordinate legislation or notification issued by the Government/Executive. Any rules, or executive instructions or notification which are contrary to any provisions of the tariff statute shall be read down as ultra vires of the parent statute. This is a settled law as laid down by the Supreme Court in (2006) 4 SCC 327 in *Kerala Samsthana Chethu Thozhilali Union versus State of Kerala and Ors.* (quoted below)

“17. A rule is not only required to be made in conformity with the provisions of the Act whereunder it is made, but the same must be in conformity with the provisions of any other Act, as a subordinate legislation cannot be violative of any plenary legislation made by Parliament or the State Legislature:.

21. Another decision cited by the Ld. Counsel for the Appellants is (1992) Supp (1) SCC 150 in *State of Madhya Pradesh versus M/s G.S. Dall and Flour Mills* (quoted below)

“19. The second ground on which the Full Bench has sought to invoke the instructions is also not correct. Executive instructions can supplement a statute or cover areas to which the statute does not extend. But they cannot run contrary to statutory provisions or whittle down their effect”.

22. In the light of the above rationale laid down by the Supreme Court, clause 5.1 of the NTP which is a subordinate legislation would not restrict or whittle down the scope of the statutory powers conferred to a State Commission under Section 62(1)(a) especially when it is noticed that clause 5.1 of NTP would apply to Section 63 only and not to Section 62 which is a substantive provision. As stated above, Section 63 is an exception to Section 62 and the same cannot be taken away by way of a policy document like guidelines – clause 5.1 of NTP.

23. Secondly it has been held that clause 5.1 of the NTP which is a policy direction cannot be held to control or override Section 62 of the Act and when these two provisions cannot be reconciled, Section 62 alone must prevail.

24. This aspect has to be viewed from one other angle. The scope and applicability of clause 5.1 of NTP in the present case involves the scrutiny of 3 issues: namely:

- (i) The power of the State Commission to approve the PPAs entered into between the distribution licensee and the generating company under Section 86(1)(b) of the Act;
- (ii) The jurisdiction of the Central Commission to determine tariff for generating companies set up under composite scheme for supply of power to more than one state and
- (iii) The mandate under clause 5.1 of the NTP in relation to procurement of power by distribution licensees through the Competitive Bidding route.

25. In regard to the first aspect, it has to be stated that the procurement of power by distribution licensees and the price at which the same is done is approved by the State Commission under Section 86(1)(b) of the Act. The power to regulate the procurement process of a distribution licensee is a wide ranging power vested exclusively with the State Commission. This cannot be curtailed in any manner by the tariff policy. In fact, even for inter-State transactions, the State Commission has been conferred with the power under Section 64(5) of the Act to determine the tariff for the supply of power by a generating company situated outside the State from whom a distribution licensee is procuring the power.

26. In regard to the second aspect, it is to be pointed out that Section 79((1)(a) and (b) of the Act confers the power on the Central Commission to regulate the tariff of a central generating station and of generating stations with a composite scheme to supply power to more than one State. The clear demarcation of the separate and independent jurisdiction exercised by the

Central Commission and the State Commissions in discharging their statutory functions has been underlined in Rule 8 of the Indian Electricity Rules, 2005.

27. A situation whereby the State Commission can examine and approve the PPA leaving it open to the Central Commission to fix the tariff component is itself contemplated in the said rules – Rule 8 . Rule 8 reads as follows:

“Tariff of generating companies under Section 79: The tariff determination by the Central Commission for generating companies under clause (a) or (b) of sub-Section 1 of Section 79 of the Act shall not be subject to redetermination by the State Commission in exercise of the functions under clause (a) or (b) of sub-Section (1) of Section 86 of the Act , and subject to the above, the State Commission may determine whether a distribution licensee in a State should enter into a PPA or procurement process with such a generating company based on the tariff determined by the Central Commission”.

28. In this case the State Commission has exactly done this following Rule 8. The relevant portion of the impugned order is reproduced as below:

“50. Subject to the incorporation of the said rule in the PPA for procurement of 300 MW of power from MPL (R-3) is approved for a period of 29 years, commencing from 2012. The tariff for supply of this power shall be fixed by the Appropriate Commission”.

29. From this paragraph it is clear that the State Commission has not fixed the tariff at all. On the other hand, it has observed that exercise has to be done by the Central Commission which alone can determine tariff under Section 79(1)(b) in respect of the inter-State transmission of electricity by the generating company. In this case, the State Commission has adopted a normative tariff only for the limited purpose of examining and scrutinising the PPA.

30. As a matter of fact, in the present case the State Commission gave conditional approval to the PPA as far as other terms and conditions were concerned. In other words, the State Commission did not embark upon the exercise of determination of tariff as the same is wholly in the domain of the Central Commission. It is also noticed from the impugned order that the State Commission has made it amply clear in its order that the PPA will be effective only after the tariff has been fixed by the Central Commission. As referred to above, the State Commission has rightly pointed out that Section 62(1)(a) and Section 63 are alternative methods available to the Appropriate Commission for determination of tariff and therefore, it is open to the Appropriate Commission to adopt either of the procedures prescribed under Section 62(1) and under Section 63 of the Act in relation to the determination of tariff.

31. In regard to the third aspect it is to be stated that clause 5.1 of the NTP which relates to the power under Section 63 of the Act cannot be read to debar the State Commission from

exercising its statutory power for determination of tariff under Section 62(1) of the Act for all future procurement of power.

32. In the light of the above discussions, the argument advanced by the Ld. Counsel for the Appellants that resort to tariff determination under Section 62(1)(a) without adopting the Competitive Bidding Process will render clause 5.1 of the NTP redundant as the distribution licensees in the future will procure power from the generating companies only through the negotiated route, cannot be accepted as it is always open to the State Commission to direct the distribution licensee to carry out power procurement through Competitive Bidding Process only in case where the rates under the negotiated agreement are high. In other words, the State Commissions have been given discretionary powers either to chose Section 62, 62(1)(a) to give approval for the PPA or to direct the distribution licensee to resort to the Competitive Bidding Process as per clause 5.1 of the NTP read with Section 63 of the Act. As such, the main

contention urged by the Ld. Counsel for the Appellant would fail.

33. Nextly, it was contended by the Ld. Counsel appearing for the Appellant that by approaching the State Commission for the approval of the PPA, MPL (R-3) and NDPL (R-2) have achieved and obtained orders indirectly from the State Commission what they could not achieve directly before the Central Commission in respect of claim for exemption from the applicability of clause 5.1 of NTP. This contention also, in our view, lacks substance. The MPL (R-3) has merely approached the Central Commission to seek a clarification for the question as to whether it will fall within the exempted category from clause 5.1 of NTP as it is state owned by virtue of the nature of control exercised by the Damodar Valley Corporation, a Central Government company. In the said petition the Central Commission did not give any findings with regard to the issues concerning the determination of tariff of MPL (R-3). It is clear from the order dated 17.01.2007 passed by the Central

Commission that the Central Commission carefully refrained from finding any issue relating to clause 5.1 of NTP and instead the Central Commission directed the MPL (R-3) to approach the Central Government to seek such clarification as it felt that it does not have the jurisdiction in adjudication of such matters. This order cannot be treated as one relating to tariff determination. As a matter of fact, the Central Government has clearly observed in its order dated 28.08.2006 that it is for the Central Government to interpret its policy to determine whether a particular utility falls outside the scope of clause 5.1 of the NTP. Such an observation cannot be construed to be a finding nor a direction of the Central Commission. As such the observation does not have a binding effect. Nowhere in the order the Central Commission observed that clause 5.1 of the NTP will be binding on the State Commission while exercising their powers under Section 86(1)(b) to approve all future procurement of power by the distribution licensee. The fact that MPL (R-3) did not chose to approach the Central Government as directed by the Central Commission for a clarification cannot

prevent the MPL (R-3) from entering into any contract with a distribution licensee through negotiated route nor would it prevent the NDPL (R-2) to procure power from the MPL (R-3), the generating company through a contract to be approved by the State Commission. It cannot be said that MPL (R-3) has done anything which it otherwise is restricted in law to do. So far as NDPL (R-2) is concerned, it is purely a decision of the State Commission to decide whether to approve a negotiated tariff for the NDPL (R-2) under Section 62 or to direct the licensee to adopt the Competitive Bidding Process under Section 63 read with clause 5.1 of the NTP. Therefore, the principle that a person cannot be allowed to do something indirectly that he cannot do directly is not applicable to the present facts of the case.

34. In view of the above discussions, our conclusion is that the approval of the State Commission to the PPA entered into between NDPL (R-2) and MPL (R-3) by the order dated 30.4.2009 passed by the State Commission subject to the

various conditions, is perfectly valid in law and it does not warrant any interference. Consequentially these appeals are liable to be dismissed. Accordingly they are dismissed. No costs.

(H.L. BAJAJ)
TECHNICAL MEMBER

(JUSTICE M. KARPAGA VINAYAGAM)
CHAIRPERSON

Dated: 31st March, 2010.

REPORTABLE/NOT-REPORTABLE

Exercise for Determination of Levelised Tariff under Cost Plus Methodology

A preliminary exercise was carried out by the economics wing of the Commission to examine how the price of electricity as determined under section 62(1)(a) by the appropriate Commissions in terms of section 79 and 86 of the EA, 2003, which basically uses the cost plus methodology and the norms specified by appropriate Commissions in their respective Tariff Regulations, compares with the price of electricity as discovered under competitive bidding guidelines notified under section 63 of the EA, 2003.

The preliminary exercise involved calculating the levelised tariff for one of NTPC's latest stations (Sipat I and II), comprising of 3 units 660 MW (Sipat I- supercritical) and 2 units of 500 MW (Sipat -II non-supercritical), respectively. The cost plus methodology with the basic data and assumptions as stated in Annexure A was used to arrive at the levelised tariff. Base Year for Sipat I for the purpose of calculating the levelised tariff was assumed as 2011 and for Sipat II, the date for the purpose of calculating the levelised tariff has been assumed as 2009. While the escalation rates for fuel (Coal and Oil) and fuel transportation (coal) were taken from the latest escalation rates notified by CERC for Competitive bid evaluation, the escalation rates for the O&M costs were arrived at by using the O&M norms as specified in CERC's 2004-09 and 2009-14 Tariff Regulations as the basis and then using the 2 year and 3 year simple and double moving average methods.

The levelised costs as calculated with assumptions as stated in Annexure come out to be:

Sipat I units: Rs. 2.4102/kWh

Sipat II units: Rs. 2.46351/kWh

Tables below depicts the levelised price of electricity as discovered under competitive bidding guidelines notified under section 63 of EA, 2003. It is seen that, the levelised cost of electricity as discovered under competitive bidding process, especially for domestic coal based UMPPs and under case 2 bidding, is generally lower than the levelised costs arrived at for Sipat I and II units. The preliminary exercise thus indicates that the price of electricity as discovered under competitive bidding process could be lower than the price determined under cost plus methodology. However, in order to be able to make a definitive generalised ascertainment that the price of electricity generation as discovered under competitive bidding process is generally lower than the cost of electricity as determined under cost plus methodology using the norms prescribed in the Tariff Regulations, it would be necessary to make more detailed and wider analysis. This, however, is one of the main limitations of the preliminary exercise carried out by the economics wing.

Levelised Tariff for Procurement of Electricity through Competitive Bidding Under Case 2 (UMPPs)

Sr No	Name of the Project	Capacity (MW)	Fuel	Levelised Tariff (Rs/KWh)
1	Mundra UMPP	3800	Imported Coal	2.26
2	Sasan UMPP	4000	Domestic Coal	1.20
3	Krishnapatnam UMPP	4000	Imported Coal	2.33
4	Tilaiya UMPP	4000	Domestic Coal	1.77

Levelised Tariff under Case-2

Seller/Project Name	Procurer	Capacity (MW)	Fuel Type	Levelised Tariff (Rs/kWh)	Remarks
Indiabulls CSEB Bhaiyathan Power Ltd.	Chhattisgarh State Electricity Board	858.00	Coal	0.810	Pit head Plant
Mahatma Gandhi Super Thermal Power Plant, Jhajjar	Haryana Power Purchase Centre	1320.00	Coal	2.996	Load Centre Plant
Talwandi Sabo Power Limited	Erstwhile, PSEB	1800 ±10%	Coal	2.864	Load Centre Plant

Levelised Tariff under Case-1

Seller/Project Name	Procurer	Capacity (MW)	Fuel Type	Levelised Tariff (Rs/kWh)	Remarks
Aryan Coal Beneficiaries Pvt. Ltd.	Gujarat Urja Vikas Nigam Ltd.	200.00	Coal	2.250	Load Centre Plant
Adani Power Pvt. Ltd.	Gujarat Urja Vikas Nigam Ltd.	1000.00	Coal	2.350	Load Centre Plant
Essar Power Ltd.	Gujarat Urja Vikas Nigam Ltd.	1000.00	Imported Coal	2.401	Load Centre Plant
Adani Enterprises Ltd.	Gujarat Urja Vikas Nigam Ltd.	1000.00	Coal / Lignite	2.890	Load Centre Plant
Mundra TPS, Phase-IV, Gujarat (for Adani Power Ltd.)	Haryana Power Purchase Centre	1424.00	Coal	2.940	Delivered price in Haryana, including losses
Kamalang Thermal Power Project, Orissa (for PTC India Ltd. - GMR Project)	Haryana Power Purchase Centre	300.00	Coal	2.860	Delivered Price in Haryana, including losses

The cost of generation is affected by several variables and factors such as: size, technology, plant load factor, location - whether the plant is a pit head plant or needs coal transportation, coal cost - whether the plant uses imported or domestic coal, the discount rate used for arriving at levelised costs, year of procurement of plant and equipment, salvage value of the plant at the end of the useful life, whether or not carbon credits have been claimed, etc. Unless all such variables and factors are similar in case of both the options (competitive bidding as well as cost plus methodology), an apple to apple comparison is not possible. Consequently, unless all the variables and the factors that affect cost of generation are similar (or made similar through sensitivity analysis) for both options used for determination / discovery of cost of generation, it will not be possible to definitively ascertain whether or not one method or the other results in better (lower) discovery/determination of cost of generation of electricity. In case of Sipat, the units are of different scale and size as compared to UMPPs. Also the year of procurement of plant and machinery are different. While the Sipat II units are of non-supercritical technology, the UMPPs are of supercritical technology. The discounting rate used for arriving at the levelised cost for Sipat is the latest notified rate of 9.35%, whereas for UMPPs, the rates are earlier rates which have ranged between 11.1 and 10.19%. For Sipat units, no allowance has been taken for salvage value and carbon credits. Also, Sipat involves, transportation of coal over a distance of up to 125 KMs, whereas, some of the UMPPs, such as at Sasan and Tilaiya involve practically no transportation of coal and have dedicated coal mines. Thus comparing the levelised cost of Sipat, calculated by using cost plus methodology with the levelised cost of UMPPs will not exactly be an apple to apple comparison unless analysis normalises these variations.

To neutralise the effect of differences in some of the variables and factors that affect cost of generation, the cost of Sipat was calculated using varying values of plant load factor, discounting rate, coal transportation cost, and also allowing for salvage value and carbon credits. The cost of generation as calculated after allowing for these is depicted in table below. From the Table, it is seen that the cost of generation in case of Sipat II can come down to level of Rs. 2.01007/kWh in the extreme situation, where heat rate equal to supercritical units is assumed, where allowance for carbon credit and salvage value (100% of the plant cost) is taken, where PLF of 95% is assumed, and where no coal transportation cost is assumed. For Sipat I, the cost of generation with all the assumptions as stated above comes to a level of Rs. 1.97543/kWh.

These costs are still higher than costs discovered for Sasan and Tilaiya. Although they appear to be lower than some of the costs discovered under case 1 and case 2 bidding, in true sense they may not be so because, as can be seen from the remarks column in the Tables presented in the previous page, the levelised costs associated with many of the case 1 and 2 bids refer to load centre plants or cost of delivered electricity to the procurer, where coal transportation costs or transmission costs form significant part of total cost. There is a case for further detailed study in this regard, as the cost discovered under competitive bidding is likely to be lower than the cost determined under cost plus methodology.

Sipat II- 2x500MW non-super critical units	Cost Rs/kWh
Plant Load Factor (PLF) of 85 %	2.46351
PLF of 90%	2.40385
PLF of 95%	2.35048
PLF of 85 % and No coal transportation Cost	2.29964
PLF of 90 % and No coal transportation Cost	2.23998
PLF of 95 % and No coal transportation Cost	2.1866
PLF of 85 % and No coal transportation Cost and supercritical heat rates	2.23707
PLF of 85 % and No coal transportation Cost and supercritical heat rates	2.17741
PLF of 85 % and No coal transportation Cost and supercritical heat rates	2.12403
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 10.19% (Notified during Apr.2009 to March 2010)	2.21369
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 10.49% (Notified during Apr. 2008- March 2009)	2.20568
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 10.6% (Notified during Oct 2006 to March 2007)	2.20279
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 11.1% (Notified during April 2007 to March 2008)	2.18995
PLF of 95 % and No coal transportation Cost and supercritical heat rates, 100% salvage value, Carbon credits, Discounting rate of 10.6% (Notified during Oct.2006-March 2007)	2.01007

Sipat I- 3x660MW super critical units	Cost Rs/kWh
Plant Load Factor (PLF) of 85 %	2.4102
PLF of 90%	2.34825
PLF of 95%	2.29283
PLF of 85 % and No coal transportation Cost	2.30951
PLF of 90 % and No coal transportation Cost	2.24757
PLF of 95 % and No coal transportation Cost	2.19214
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 10.19% (Notified during Apr.2009 to March 2010)	2.28926
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 10.49% (Notified during Apr. 2008- March 2009)	2.28233
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 10.6% (Notified during Oct 2006 to March 2007)	2.27983
PLF of 85 % and No coal transportation Cost and supercritical heat rates, Discounting rate of 11.1% (Notified during April 2007 to March 2008)	2.26871
PLF of 95 % and No coal transportation Cost and supercritical heat rates, 100% salvage value, Carbon credits, Discounting rate of 10.6% (Notified during Oct.2006-March 2007)	1.97543

Inputs Required/Assumed For Calculation of Levelized Tariff					Remarks: Sipat I, super Critical Units	Remarks: Sipat II Non-upercritical units
S.No.	Input Parameter	Sipat I, Super Critical Units	Sipat II, super Critical Units			
1	Unit/Plant Capacity (3x860 MW)	3x860 = 1860 MW			Sipat II, Non-Super Critical	
2	Capital cost Rs. Crore	8320			23500 = 1000 MW	
3	Debt: 70%	5824			3800/3572	As approved by CERC
4	Equity: 30%	2486			2548/4382	As approved by CERC
5	ROE				1140/1072	As approved by CERC
6	Pre tax Full Tax: 33.33%, 15.5 %	0.232488376				
7	Terms of debt					
	Moratorium	3 Years				
	Repayment Amount	Linked to depreciation			Linked to depreciation	
	Repayment Period	Linked to depreciation			Linked to depreciation	
8	Interest Rate	7.06 percent			As applicable to Sipat II, assumed constant	As per actual average for Sipat II
9	Auxiliary Consumption					
	Base Year (%)	9%			7.50%	As per actual average for Sipat II
	Escalation	Constant			Constant	
10	Secondary Fuel Oil Consumption					
	Base Year (mlkWh generated)	1mlkWh			1mlkWh	As per 2009-14 Tariff Regulations
	Escalation if any	Cost = 8320/70=8250; 40%; First 12 years @5.28%; Next 13 Years @2.0492%			Constant	
11	Depreciation					90%; First 12 years @5.28%; Next 13 Years @2.0492%
12	O&M					
	Base Year Norm 11.71/MW	As per 2009-14 Tariff Regulations			As per 2009-14 Tariff Regulations	
	Escalation	4.95475% per year			6.58105% per year	
13	Generation Norms					
	Base Year (CUPLF in %)	85%			85%	
	Subsequent Years	Constant			Constant	
14	Heat Rate					
	Base Year: Kcal/KWh	2176			2450	
	Subsequent Years (decline)	Constant			Constant	
15	Coal					
	Base Year CV: Kcal/Kg	3600			3414.21	
	Subsequent Years	Constant			Constant	
16	Coal Consumption					
	Base Year: Kg/KWh	0.8044 kg/KWh			0.717589 Kg/KWh	
	Subsequent Years	Constant			Constant	
17	Coal Cost					
	Base Year		Sipat II cost of Rs. 0.87141/kg escalated at 6.01% per year for 3 years to coincide with base year of 2011			
	Escalation	Rs. 2.2 per Kg			Rs. 0.87141 per Kg	
	Coal Transportation cost:	6.01 % per year			6.01 % per Year	
18	Base Year					
	Escalation	Rs. 125.1 per ton			As per latest notification of escalation rates	As per latest notification of escalation rates
19	Subsequent Years	2.37% per year			Rs. 125.1 per ton	As per latest notification of escalation rates
20	Oil Cost:					
	Base Year		Sipat II cost of Rs. 29.33537/litre escalated at 6.01% per year for 3 years to coincide with base year of 2011			
	Subsequent Years	Rs. 34.94487 per litre			Rs. 29.33537 per litre	
	Working Capital Norm	6.01 % per year			6.01 % per year	
	Working Capital Requirement	As per 2009-14 Tariff Regulations			As per 2009-14 Tariff Regulations	
	Working Capital Interest Rate	9%			As per 2009-14 Tariff Regulations	

Sipat II 2x 500 MW: Levelized

Tariff

Capital Cost

3800.357
1000

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Balance of Debt beginning of the year	2548.48	2347.832	2147.173	1946.515	1745.856	1545.188	1344.539	1143.881	943.222	742.5637	541.9052	341.2467	140.5882	62.71527	-15.1577	93.0307	-170.904	-248.777	-326.65
Dep	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585
Net replmt for interest calculation	2347.832	2147.173	1946.515	1745.856	1545.188	1344.539	1143.881	943.222	742.5637	541.9052	341.2467	140.5882	62.71527	-15.1577	93.0307	-170.904	-248.777	-326.65	-404.523
Interest rate	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Interest cost	165.7452	151.5797	137.4142	123.2487	109.0632	94.91774	80.75225	66.58677	52.42128	38.2556	24.09031	9.924827	4.427344	0	0	0	0	0	0
Equity	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1
ROE	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
ROE Amount	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596	265.0596
Generation (000 kWh)	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000	7446000
Heat rate (Kcal/KWh)	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
CV of Coal (Kcal/Kg)	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414	3414
Coal cost (Kg/KWh)	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633
Coal Cost in Tons	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497	5343497
Base Year Coal Cost/Ton	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41	871.41
Escalation	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Escalated cost of coal	871.41	923.7817	979.3071	1038.157	1100.55	1168.893	1238.812	1311.144	1389.944	1473.478	1555.914	1638.342	1721.768	1806.193	1891.618	1978.043	2065.468	2152.893	2240.318
Coal cost with Esc. (Rs. Crore)	465.6377	483.6225	523.2892	554.7389	588.0787	622.4223	660.8899	700.6094	742.7161	787.3533	834.6732	884.8371	938.0158	994.3905	1054.153	1117.508	1184.67	1255.869	1331.347
Coal transport cost per ton for 100 Km:																			
Base	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1
Escalation	1	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237
Escalated Transport Cost	125.1	128.0649	131.1	134.2071	137.3878	140.8439	143.9771	147.3894	150.8825	154.4584	158.1191	161.8665	165.7028	169.6299	173.6501	177.7657	181.9787	186.2916	190.7067
Total Transport cost in Rs. Crore	93.14946	95.3571	97.61707	99.93059	102.2989	104.7234	107.2054	109.7461	112.3471	114.9998	117.7058	120.4632	123.2733	126.1364	129.0564	132.0364	135.0731	138.1727	141.3362
Depreciation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Slaring	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35
Depreciation	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585	200.6585
O&M Norm	13	13.74	14.53	15.38	16.24	17.11	18.00	18.91	19.84	20.79	21.76	22.75	23.76	24.79	25.84	26.91	27.99	29.09	30.21
Esc. O&M Norm Rs. crore/MW	0.13	0.1374	0.1463	0.1538	0.1624	0.1711	0.1800	0.1891	0.1984	0.2079	0.2176	0.2275	0.2376	0.2479	0.2584	0.2691	0.2799	0.2909	0.3021
MW Capacity	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
O&M cost in Rs. Crore	130	137.4	145.3	153.8	162.4	171.1	180.0	189.1	198.4	207.9	217.6	227.5	237.6	247.9	258.4	269.1	279.9	290.9	302.1
Secondary Fuel Norm (ml/KWh)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Secondary Fuel Cost in Rs. Crore	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446	7446
Secondary fuel cost in Base Year Rs/KL	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37
Esc. For secondary fuel cost	1	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801
Esc. Cost of secondary fuel Rs/KL	29335.37	31098.43	32967.44	34948.78	37049.21	39275.86	41636.34	44338.69	47181.42	50169.59	53298.76	56574.51	60003.39	63590.99	67342.92	71264.72	75361.92	79640.27	84105.4
Secondary fuel cost in Rs. Crore	21.84312	23.15589	24.54756	26.02286	27.58684	29.24481	31.00242	32.86567	34.83089	36.90493	39.18461	41.5781	44.09244	46.84697	49.84243	53.07301	56.54301	60.25636	64.21483
Cost of Coal 1.5 months	58.20471	61.70282	65.41116	69.34237	73.50684	77.92778	82.61124	87.57618	92.83511	98.39343	104.25461	110.42046	116.89288	123.67242	130.76697	138.17752	145.90585	153.95362	162.33249
Cost of secondary fuel 2 months	3.840519	3.859315	4.091259	4.337144	4.597806	4.874135	5.16707	5.476711	5.808951	6.165805	6.549769	6.961968	7.403738	7.876495	8.381472	8.920071	9.493885	10.103825	10.750894
Maint Spares @ 20% of O&M	26	27.48	29.06	30.72	32.48	34.32078	36.30261	38.43488	40.72441	43.17625	45.79525	48.58641	51.55488	54.70604	58.04492	61.57604	65.30492	69.23604	73.37488
Receivables 2 months	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925
Total working Capital requir ed	202.6377	207.8348	213.3548	219.192	225.3801	232.0152	239.1734	247.1612	255.5682	264.5563	274.2889	283.0913	293.301	304.5559	316.2936	328.7634	342.0039	356.0652	370.9984
Interest rate on working Capital	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Interest Cost on Working Capital	18.2374	18.70512	19.20194	19.72728	20.28421	20.87337	21.55651	22.2463	22.94286	23.76525	24.596	25.47621	26.41509	27.41003	28.46652	29.58871	30.78035	32.04587	33.38986
Total Cost	1360.331	1385.538	1413.088	1442.865	1475.45	1512.029	1551.634	1594.447	1640.663	1690.491	1744.15	1801.873	1863.137	1928.479	1997.426	2070.543	2148.385	2230.624	2317.616
Auxiliary Consumption	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Sale Per Year core units	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755	688.755
Unit Cost Rs/KWh	1.975058	2.011656	2.051656	2.095065	2.142169	2.195038	2.252809	2.314969	2.381855	2.453811	2.531195	2.614373	2.703729	2.800659	2.905589	3.019035	3.141535	3.273649	3.415949
Discount rate 9.35 %	1	1.0935	1.195742	1.307544	1.4298	1.563486	1.709672	1.869526	2.043271	2.232471	2.438488	2.673047	2.938276	3.235276	3.565276	3.939276	4.358276	4.823276	5.335276
Discount factor	1	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935	0.935
Discounted per unit cost	1.975058	1.839649	1.715801	1.60229	1.498251	1.404111	1.317695	1.238285	1.165211	1.097941	1.035332	0.978707	0.929152	0.88515	0.84615	0.81115	0.78015	0.75215	0.72715
Levelized factor	1	0.914495	0.836301	0.764793	0.699599	0.639596	0.584908	0.534895	0.489159	0.447333	0.409084	0.374105	0.342117	0.312864	0.286113	0.261648	0.239276	0.218817	0.200107
Levelized Tariff Method I	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513	2.463513
Discount Rate	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935
Discounting Factor	1.0935	1.195742	1.307544	1.4298	1.563486	1.709672	1.869526	2.043271	2.232471	2.438488	2.673047	2.938276	3.235276	3.565276	3.939276	4.358276	4.823276	5.335276	5.893276
Discounted Total Cost	1244.015	1158.727	1080.719	1009.223	943.6925	884.3975	829.361	779.3373	733.9229	691.552									

8320:	1980:
-------	-------

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Year:																		
Balance of Debt beginning of the year	5924	5388.4	4952.8	4517.2	4091.8	3646	3210.4	2774.8	2332.2	1903.6	1468	1032.4	596.8	427.7493	253.6935	89.84775	-79.4033	-248.454
Repayment of Debt at end of year. Linked to dep.	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6
Nat debt for interest calculation	5388.4	4952.8	4517.2	4091.8	3646	3210.4	2774.8	2332.2	1903.6	1468	1032.4	596.8	427.7493	253.6935	89.84775	-79.4033	-248.454	-417.505
Interest cost	377.188	349.6429	318.8917	288.1406	257.3894	228.6392	195.887	165.1358	134.3648	103.6335	72.68228	42.1311	30.9896	18.26282	6.32663	0	0	0
Equity	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498
ROE	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
Generation (T000 kWh)	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29	580.29
Heat rate (kCal/kWh)	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080	14743080
Cv or Coal (Kcal/kg)	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176	2176
Coal consumption per ton for 100 Km Base	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
Escalated cost of coal	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444	0.804444
Escalated Transport Cost	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373	8911373
Base Year Coal Cost/Ton	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15	1038.15
Escalation	1	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601
Escalated cost of coal	1038.15	1100.543	1168.685	1236.803	1311.135	1389.834	1473.489	1562.025	1655.903	1755.422	1860.923	1972.765	2091.329	2217.017	2350.259	2491.51	2641.25	2799.989
Cost of coal with Esc. (Rs. Crore)	925.1342	980.7347	1039.677	1102.161	1168.401	1238.622	1313.063	1391.979	1475.637	1564.322	1658.338	1758.004	1863.66	1975.666	2094.404	2220.277	2353.716	2495.174
Total transport cost per ton for 100 Km Base	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1
Escalation	1	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237
Escalated Transport Cost	125.1	128.0648	131.1	134.2071	137.3878	140.8439	145.333	149.7974	154.4584	158.1911	161.8665	165.7028	169.6299	173.6501	177.657	181.7657	186.2978	190.7645
Coal Transport cost in Rs. Crore	111.4823	114.1234	116.8281	119.5898	122.4314	125.3034	128.3034	131.3447	134.4571	137.6437	140.9058	144.2453	147.6639	151.1635	154.6411	158.1116	160.7978	163.4959
Depreciation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Starting	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250	8250
Depreciation	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6	435.6
O&M Norm	11.7	12.37	13.08	13.92	14.82													
o&M Escal	1	1	1	1	1	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954	1.04954
Secondary Fuel Cost (in milio Litres	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08	14743.08
Secondary Fuel cost in Base Year Rs/Lit	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487	34.94487
Esc. Cost of secondary fuel Rs/Lit	34.94487	36.927146	41.63168	46.78618	52.57487	55.73866	59.08877	62.64	66.40467	70.39559	74.62636	79.1141	83.868	88.90635	94.24982	99.91402	105.91402	112.30418
Cost of secondary fuel cost in Rs. Crore	0.51502	0.545616	0.575898	0.606178	0.636458	0.666738	0.697018	0.727298	0.757578	0.787858	0.818138	0.848418	0.878698	0.908978	0.939258	0.969538	1.000000	1.030462
Cost of Coal 1 5 months	115.6418	122.5918	129.9596	137.7702	146.0502	154.8278	164.1329	173.9973	184.4546	195.5403	207.2823	219.7505	232.9575	246.9583	261.8005	277.5347	294.2145	311.8968
Cost of secondary fuel 2 months	0.008567	0.009103	0.009639	0.010184	0.010740	0.011296	0.011852	0.012408	0.012964	0.013520	0.014076	0.014632	0.015188	0.015744	0.016300	0.016856	0.017412	0.017968
Maint Spares @ 20% of O&M	46.332	49.9851	53.7968	57.7692	61.8932	66.2683	70.8984	75.7863	80.9336	86.3419	91.9136	97.6487	103.5419	109.5952	115.8095	122.1848	128.6211	135.2194
Recoverables 2 months	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034	223.6034
Total working Capital required	395.5657	395.1696	405.3694	416.11	427.5596	439.7006	451.5222	464.5465	478.3204	492.8871	508.2324	524.5851	541.8165	560.0409	579.3161	599.7033	621.2659	644.0773
Interest rate on working Capital	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Interest Cost on Working Capital	34.70272	35.56706	37.44999	38.48036	39.52654	40.63698	41.80919	43.04893	44.35993	45.74632	47.21266	48.76348	50.40368	52.13845	53.97327	55.91393	57.96599	60.13773
Salvage Carbon																		
Total Cost	2696.108	2740.939	2786.812	2836.936	2892.134	2949.898	3012.722	3080.9	3154.743	3234.581	3320.762	3413.655	3505.922	3598.539	3694.851	3794.901	3898.424	3999.343
Auxiliary Consumption																		
Unit Per Cost/Ro kWh	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62	1341.62
Sal Per Cost/Ro kWh	2.009591	2.043008	2.077199	2.11456	2.155702	2.198758	2.245585	2.296402	2.351443	2.410951	2.475186	2.544427	2.618811	2.698367	2.783193	2.873411	2.969059	3.063277
Discount rate 3.35 %	1	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935
Discount factor	1	0.9955	0.9957	0.9959	0.9961	0.9963	0.9965	0.9967	0.9969	0.9971	0.9973	0.9975	0.9977	0.9979	0.9981	0.9983	0.9985	0.9987
Discounted per unit cost	2.009591	1.866318	1.795742	1.707484	1.607695	1.498318	1.37346	1.228334	1.052828	0.849498	0.612559	0.342819	0.171069	0.085883	0.042582	0.021652	0.010954	0.005599
Levelizing factor	1	0.814495	0.836301	0.764793	0.699399	0.639596	0.584908	0.534895	0.489159	0.447333	0.409084	0.374105	0.342117	0.312884	0.286113	0.261648	0.239776	0.220107
Levelized Tariff Method I:	22410193																	
Discount Rate	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935	1.0935
Discounting Factor	1.0935	1.95742	1.307544	1.4298	1.593488	1.709672	1.869528	2.04327	2.235271	2.444488	2.673047	2.922977	3.196278	3.495128	3.821922	4.179272	4.570034	4.997332
Discounted Total Cost	2465.576	2292.249	2151.333	1984.15	1849.788	1725.418	1611.49	1507.049	1411.221	1323.214	1242.313	1167.869	1091.789	970.566	922.7134	879.304	839.9065	802.7047
Levelizing Factor at 9.35 %	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707
Levelized Cost	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571	3233.571
Levelized per unit cost Method II	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198	2.410198

Sipat II 2x 500 MW: Levelized
Tariff
Capital Cost
Capacity

Year	20	21	22	23	24	25
Balance of Debt beginning of the year	-404,523	-482,398	-560,269	-638,141	-716,014	-780,058
Repayment at the end of year: linked to						
Dep.	77,87297	77,87297	77,87297	77,87297	44,04175	0
Net debt for interest calculation	-482,398	-560,269	-638,141	-716,014	-760,058	-780,058
Interest rate	7%	7%	7%	7%	7%	7%
Interest cost	0	0	0	0	0	0
Equity	1140.1	1140.1	1140.1	1140.1	1140.1	1140.1
ROE	23%	23%	23%	23%	23%	23%
ROE Amount	265,0598	265,0598	265,0598	265,0598	265,0598	265,0598
Generation (T000 kWh)	7448000	7448000	7448000	7448000	7448000	7448000
Heat rate (kJ/kWh)	2450	2450	2450	2450	2450	2450
CV of Coal (Kcal/Kg)	3414	3414	3414	3414	3414	3414
Coal con (kg/kWh)	0.717633	0.717633	0.717633	0.717633	0.717633	0.717633
Coal Con in Tons	5343497	5343497	5343497	5343497	5343497	5343497
Base Year Coal Cost/Ton	871.41	871.41	871.41	871.41	871.41	871.41
Escalation	1.0801	1.0801	1.0801	1.0801	1.0801	1.0801
Escalated cost of coal	2841.268	2800.008	2868.288	3148.682	3335.798	3538.278
Coal cost with Esc. (Rs. Crore)	1411.341	1488.183	1586.104	1681.428	1782.493	1889.61
Coal transport cost per ton for 100 Km:						
Base	125.1	125.1	125.1	125.1	125.1	125.1
Escalation	1.0237	1.0237	1.0237	1.0237	1.0237	1.0237
Escalated Transport Cost	195.2265	196.8533	204.5888	209.4388	214.4023	219.4837
Coal Transport cost in Rs. Crore	145.3656	148.8108	152.3376	155.948	159.644	163.4275
Depreciation	2%	2%	2%	2%	2%	2%
Starting	3800.35	3800.35	3800.35	3800.35	3800.35	3800.35
Depreciation	77,87297	77,87297	77,87297	77,87297	77,87297	3420.25
O&M Norm						
O&M Esca	1.06591	1.06591	1.06591	1.06591	1.06591	1.06591
Esc. O&M Norm Rs crore/MW	0.423052	0.450936	0.480657	0.512337	0.548105	0.582059
MW Capacity	1000	1000	1000	1000	1000	1000
O&M cost in Rs. Crore	423.0523	450.9357	480.6569	512.337	548.1051	582.0889
Secondary Fuel Norm (m3/kWh)						
Secondary Fuel Con. in kbo Lines	1	1	1	1	1	1
Secondary fuel cost in Base Year Rs/KL	7446	7446	7446	7446	7446	7446
Esca. For secondary fuel cost	29335.37	29335.37	29335.37	29335.37	29335.37	29335.37
Esca. Cost of secondary fuel Rs/KL	1.0601	1.0601	1.0601	1.0601	1.0601	1.0601
Secondary fuel cost in Rs. Crore	88816.31	94280.18	98925.22	105620.7	112287.2	118046.2
Cost of Coal 1.5 months	66.20708	70.18613	74.40432	78.87602	83.61846	88.64181
Cost of secondary fuel 2 months	178.4201	187.0228	196.293	210.1788	222.8103	236.2012
Maint Spares @ 20% of O&M	11.03451	11.89769	12.40072	13.148	13.93908	14.77364
Receivables 2 months	84.81048	90.18714	96.13137	102.4874	109.221	116.4188
Total working Capital required	114.7925	114.7925	114.7925	114.7925	114.7925	114.7925
Interest rate on working Capital	388.8578	403.7003	421.5878	440.5845	460.7589	482.1872
Interest cost on Working Capital	34.81718	36.33022	37.84288	39.65281	41.48838	43.39684
Total Cost	0	0	0	0	0	0
Auxiliary Consumption	2423.735	2545.382	2674.378	2811.175	2956.249	3110.108
Sale Per Year crore units	688.755	688.755	688.755	688.755	688.755	688.755
Unit Cost Rs/kWh	3.518009	3.685627	3.882917	4.081531	4.292164	4.51555
Discount rate 9.35 %	1.0835	1.0835	1.0835	1.0835	1.0835	1.0835
Discount factor	5.484582	5.975521	6.534232	7.145182	7.813257	8.543797
Discounted per unit cost	0.643987	0.618461	0.594242	0.571228	0.549344	0.528518
Levelized factor	0.182897	0.167348	0.15304	0.139854	0.127988	0.117044
Levelized per unit cost Method 1						
Discount Rate	1.0835	1.0835	1.0835	1.0835	1.0835	1.0835
Discounting Factor	5.975521	6.534232	7.145182	7.813257	8.543797	9.342642
Discounted Total Cost	405.6107	388.8456	374.2811	358.7955	346.0112	332.8838
Levelizing Factor at 9.35 %	0.104707	0.104707	0.104707	0.104707	0.104707	0.104707
Levelized Cost	1696.757	1696.757	1696.757	1696.757	1696.757	1696.757
Levelized per unit cost Method 2						