

ORISSA ELECTRICITY REGULATORY COMMISSION
BIDYUT NIYAMAK BHAWAN,
UNIT – VIII, BHUBANESWAR – 751 012

*** **

Present : Shri B. K. Das, Chairperson
Shri S. K. Jena, Member

CASE No.54 of 2006

DATE OF HEARING : **07.02.2007**

DATE OF ORDER : **22.03.2007**

IN THE MATTER OF : Application for approval of Annual Revenue Requirement and Tariff for the FY 2007-08 under Section 86 of the Electricity Act, 2003 read with related provisions of OERC (Terms and Conditions for Determination of Tariff) Regulations, 2004 and OERC (Conduct of Business) Regulations, 2004.

ORDER

The Orissa Hydro Power Corporation (OHPC) has filed an application before the Commission for determination of Annual Revenue Requirement (ARR) and fixation of Tariff for its different power stations for the financial year 2007-08.

1 PROCEDURAL HISTORY

- 1.1 The OHPC is a “Generating Company” under the meaning of Sec.2 (28) of the Electricity Act, 2003. After the unbundling of Orissa State Electricity Board (OSEB) in the year 1996, assets, liability and personnel of the Board were transferred to this generating company to carry out the business of generation of electricity. The entire power produced by the OHPC through its various generating stations is fully dedicated to the State of Orissa. By this historical eventuality, OHPC is supplying its entire power to GRIDCO, who in turn is supplying the same to the Distribution Licensees of the State. After the Electricity Act came into force and promulgation of Government of Orissa Transfer Scheme, 2005, the GRIDCO as a Deemed Licensee is entrusted with bulk supply business and the existing Bulk Supply Agreements and Power Purchase Agreements (PPAs) have been assigned to it. Under the existing legal set up M/s GRIDCO is evacuating the powers from the OHPC’s dedicated generating stations and delivering it at Distribution Licensee’s end.
- 1.2 From the above, it appears that the real beneficiaries of OHPC’s power are the Distribution Licensees of the State. Due to existing Single Buyer Model, as prevailing in the State of Orissa, GRIDCO acts as a medium to receive the power produced by OHPC for the Distribution Licensees.

- 1.3 As per Regulation 61(2) of the OERC (Conduct of Business) Regulations, 2004, a generating company is required to file an application by 30th November of each year to the Commission for determination of tariff for any of its generating station for sale of energy in the State of Orissa giving details of fixed and variable costs associated with the generation and sale of energy from the generating station. Accordingly, on 30.11.2006 OHPC as a generating company has filed its Annual Revenue Requirement (ARR) and fixation of tariff application before the Commission for the year FY 2007-08 in respect of each of the generating stations separately.
- 1.4 After due scrutiny and admission of the aforesaid application, the Commission directed OHPC to publish its application in the approved format. In compliance to the same public notice were published in leading and widely circulated newspapers and was also pasted in Commission's website in order to invite objections from the general public. The applicant was also directed to file its rejoinder to the objections filed by the objectors. In response to the aforesaid public notice commission received objections from the following persons/licensees.
 (1) Sri R.P. Mohapatra, Jayadev Vihar, Bhubaneswar, (2) M/s WESCO, Burla, Sambalpur, (3) M/s SOUTHCO, Courtpetta, Berhampur, (4) NESCO, Januganj, Balasore, (5) M/s Grid Corporation of Orissa, Bhubaneswar, (6) Sri Jayadev Mishra.
- 1.5 Date of hearing was fixed and it was duly notified in the leading and widely circulated newspapers mentioning the list of objectors. Commission also issued notice to the Government of Orissa through the Department of Energy informing about the date of hearing and requesting to send the Government's authorised representative to take part in the proceeding.
- 1.6 In exercise of the power u/s.94(3) of the Electricity Act, 2003, in order to protect the interest of the consumers, the Commission for the first time appointed Nabakrushna Choudhury Centre for Development Studies, Chandrasekharapur, Bhubaneswar the premier Govt. of Orissa's Institute as Consumer Counsel for objective analysis of the licensee's Annual Revenue Requirement and tariff proposal. The consumer counsel submitted its report to the Commission and its representative putforth its analysis & views on the matter in the presence of all the parties present during the proceeding.
- 1.7 In its consultative process, the Commission conducted a public hearing at its premises on 07.02.2007 and heard the applicant, objectors, consumer counsel and the representative of the Government.

2 SUBMISSION OF OHPC

- 2.1 The installed capacity of various Hydro Stations owned by Orissa Hydro Power Corporation (OHPC) is 1912 MW as on 1st of April 2006 including Orissa's share of Machkund. The details of installed capacity and design energy of the old stations and UIHEP are presented in the table below.

An additional capacity of 150 MW has been considered for FY2007-08 due to the extension of units 7&8 at Balimela power station. Accordingly, Installed Capacity of different generating stations of OHPC for FY 2007-08 is given as follows:

Table - 1

Sl. No.	Name of Power Stations	Installed Capacity (MW)	
		For 2006-07	For 2007-08
1	Hirakud (Burla & Chiplima)	347.5	347.5
2	Balimela	360	510
3	Rengali	250	250
4	Upper Kolab	320	320
5	Upper Indravati	600	600
6	Machhkund (Orissa Share)	34.50	34.50
Total		1912	2062

2.2 DESIGN ENERGY:

The Commission in its order dated 10.06.2005 at para – 6.5 (a), had directed that re-assessment of design energy of OHPC Power Stations should be done by appointing an independent group of consultants under the auspices of the Commission. Accordingly, OHPC has apprised the commission regarding the progress from time to time. The Commission has regularly monitored the progress for early completion of the job. Meanwhile, OHPC has awarded the work order to M/s SPARC, Bhubaneswar, a consultancy agency, to carry out the job of re-assessment of design energy of its Power Stations on a turn -key basis with an expected completion period of 10 months.

- 2.3 However, for determination of tariff for FY 2007-08, the design energy of OHPC Power Stations have been considered as mentioned in the table below:

Table - 2

Sl. No.	Name of the Power Stations	Design Energy (MU)	Design Energy for sale (MU)
1	HPS (Burla & Chiplima)	1174	1162.26
2	BHEP	1183	1171.17
3	RHEP	525	519.75
4	UKHEP	832	823.68
5	UIHEP	1962	1942.38
Total		5676	5619.24

2.4. PROJECT COST:

- 2.4.1. **Old Power Stations:** The transferred project cost of OHPC old Power Stations (i.e. HPS, BHEP, RHEP & UKHEP) was Rs. 1196.80 Crs as on 01.04.1996. However, while determining the tariff for FY 2005-06 & 2006-07, the Commission in its order dt. 23.03.2006, have considered Rs. 690.72 Crs. as the project cost of OHPC

old Power Stations considering the historical cost of Rs. 479.80 Crs. as on 01.04.1996 & subsequent additions till 2005-06. The Commission has indicated that the state govt. have been advised to keep the effects of up-valuation of the assets of old stations of OHPC in abeyance for a period of five years beyond FY 2005-06 i.e. till 2010-11. Accordingly, the ARR of OHPC old Power Stations for the FY 2007-08 have been computed based on the historical cost of the projects along with audited additional capital expenditure till March'2006. An addition of Rs. 180 Crs. towards 7 & 8 extension units of Balimela have been considered in case of BHEP. The historical project costs considered for ARR computation are as given hereunder:

Table - 3

(Rs. in Crs.)

Sl. No.	Name of the Power Stations	Transferred Cost as on 01.04.06	Capital Cost considered for tariff purpose (FY 2006-07)	Capital Cost considered for tariff purpose (FY 2007-08)
1	HPS	295.17	370.87	368.09
2	BHEP	334.66	117.13	297.66
3	RHEP	259.01	93.58	93.69
4	UKHEP	307.96	109.14	109.18
Total		1196.80	690.72	868.62

2.4.2 Upper Indravati H. E. Project:

The Commission has been taking the provisional Capital Cost of Rs. 1195.42 Crs. for UIHEP, for the determination of tariff for FY 2005-06 & 2006-07. The Commission has directed OHPC to produce audited accounts of the project to establish final project cost of UIHEP. OHPC had submitted a detailed note on the expenditures incurred for the project. The Commission had noted the audited capital expenditure as on 19.04.2001 i.e. the date of commercial operation of the last unit of UIHEP and advised OHPC to put forth the detailed particulars about the project cost in the ARR filing of the FY 2007-08 for finalization of the project cost of UIHEP. A detailed note on the capital expenditure of UIHEP is enclosed in this filing. Since, the project cost of Rs. 1195.42 Crs. is considered appropriate for the purpose of tariff calculation, the same has been considered for FY 2007-08.

2.5 Principles adopted for determination of Annual Revenue Requirement

OHPC has been submitting the ARR and Tariff in respect of each of the power stations separately in conformity with CERC Regulations from the financial year 2005-06 onwards. OHPC has stated that the present filing is made as per CERC Regulations with regard to the terms and conditions for determination of generation tariff.

1. The fixed assets are based on the historical cost as on 01.04.96 plus additions made after this date as adopted by the Commission in its order dated 10.06.05.
2. The ROE on the equity portion has been taken @ 14% as per CERC Regulations.
3. Depreciation is computed @ 2.57% on the Project Cost considered for FY 2007-08. In case of HPS & BHEP, where loan repayment is more than the

computed depreciation, the differential amount have been taken as Advance Against Depreciation & included in the depreciation for FY 2007-08.

4. In case of UIHEP Rs. 5.00 Crs is taken for special repair of rotor poles as approved by the Commission earlier and Rs. 1.5 Crs is taken for special repair of starter winding of unit - 4 at UKHEP.
5. The interest on working capital, taken @ 11% per annum at par with the short-term prime lending rate of State Bank of India.
6. Electricity Duty (ED) @ 20 paise / KWh on Auxiliary Consumption, limited to 0.5% of the Design for the year 2007-08 is taken in tariff. However, the Commission has been requested to allow OHPC to claim reimbursement of actual ED on Auxiliary Consumption, payable to the government at the end of the year 2007-08.
7. Income tax paid by OHPC in respect of each Power Station till FY 2005-06 has been included in the computation of ARR for the FY 2007-08. Similarly, the income tax payable for the FY 2006-07 shall be included in the ARR for FY 2008-09.

2.6 Total Annual Fixed Charges (AFC) & Annual Revenue Requirement (ARR)

Based on the above parameters, the station-wise AFC & ARR for FY 2007-08 are presented in the table below:

Particulars	HPS	BHEP	RHEP	UKHEP	UIHEP
Interest on Loan	7.45	13.20	0.51	0.61	9.32
Depreciation	14.50	13.55	2.41	2.81	32.07
Return on Equity	12.88	11.68	3.28	3.82	41.82
O & M Expenses	33.29	27.57	14.74	13.23	39.88
Interest on working capital	1.66	1.57	0.61	0.59	2.79
Total AFC	69.78	67.57	21.55	21.06	125.88
ED on Aux. Consumption @20 P/U	0.12	0.12	0.05	0.08	0.20
Income Tax (MAT) for previous years	0.00	0.70	0.02	0.25	4.53
Total ARR	69.90	68.39	21.62	21.39	130.61
Average Tariff (P/U)	60.15	58.39	41.60	25.97	67.24

2.7 MACHHKUND H. E. (JT.) PROJECT

Machhkund Power Station is a joint project of Govt. of Andhra Pradesh & Govt. of Orissa with 70% and 30% share respectively for the present. The proposed tariff of 18.21 paise/KWh for Orissa drawal of Machhkund power for FY 2007-08 has been computed on cost reimbursement basis. Actual O & M Expenses of Rs. 3.64 Crs. for FY 2005-06 has been escalated @ 4% each year to arrive at Rs. 3.94 Crs. for FY 2007-08 and the power purchase cost of Rs. 0.84 Crs. has been computed @ 8 paise/KWh for 105 MU, the total annual expenditure being Rs. 4.78 Crs. for the year 2007-08. The cost per unit is arrived at 18.21 paise/unit considering 50% of design energy of 525 MU available to OHPC from Machhkund.

2.8 RATE OF PRIMARY AND SECONDARY ENERGY

2.8.1 Rate of Primary Energy :

As per the CERC Tariff Regulations, Rate of primary energy for the hydro generating stations, shall be equal to average of the lowest variable charges of the Central Sector Thermal Power Generating Stations of the concerned region for all the months of the previous year. The primary energy charges shall be computed based on the primary energy rate and saleable primary energy of the project.

In case, the primary energy charges recoverable by applying the above primary energy rate exceeds the Annual Fixed Charges of a generating station, the primary energy rate for such generating station shall be calculated by the following formula :

$$\text{Primary Energy Rate} = \frac{\text{Annual Fixed Charges}}{\text{Saleable Primary Energy.}}$$

In view of the above CERC Regulations & Lowest variable cost of the Central Sector Thermal Power Station of the region approved for payment by GRIDCO in their BST order dt. 23.03.06 for the year 2006-07, (i.e. 71.91 Paise /KWh in case of TSTPS), the rate of primary energy of all the Power Stations of OHPC for the FY 2007-08 shall be equal to the average energy rate as computed in the table at para- 5 (h) and summarized below:

Table - 5

Name of the Power Station	Rate of Primary Energy (Paise/KWh)
HPS (Burla & Chiplima)	60.15
BHEP	58.39
RHEP	41.60
UKHEP	25.97
UIHEP	67.24

2.8.2 **Rate of Secondary Energy:** As per the CERC Regulations and as approved by OERC for the previous years, the Rate of Secondary Energy is same as the Rate of Primary Energy.

2.9 **Capacity Charge:** Two-part tariff has already been implemented at UIHEP since FY 2005-06. OHPC has filed a petition before the Commission on 21.08.2006 (with amendment of the original petition filed on 02.06.2006), regarding applicability of two-part tariff for old Power Stations of OHPC with effect from FY 2006-07.

On implementation of two-part tariff in respect of old Power Stations of OHPC and with the rate of primary energy as indicated at para-6 (a), the annual capacity charges will be zero, in the event of achieving the design energy of the Power Station at the year end. In case, the design energy could not be achieved, the monthly capacity charges shall be computed as per the formula given in the CERC notification, subject to final adjustment at the yearend.

2.10 As stated in the tariff order dtd. 23.03.06 for the year 2006-07 in case no. 48 of 2005, the Commission have advised the State Govt. (i) to keep the up-valuation of

assets in abeyance & (ii) to extend the moratorium on debt servicing to the State Govt. for a period of another five years beyond FY 2005-06 i.e. till 2010-11. In view of the above, in the tariff proposal for FY 2007-08, (a) the interest on loan, depreciation & RoE on the up-valuation of assets and (b) the interest & installment of principal payment on the State Govt. loan for UIHEP have not been considered. In case the above corrective measures are not accepted by the State Govt., then OHPC may be allowed additional revenue by way of interest on loan / bonds, depreciation for principal repayments of the loan /bonds & RoE on up valued assets.

- 2.11 OHPC further submits that in case, the State Government does not set aside the up valuation of assets as contemplated by the Hon'ble Commission, the ARR and Tariff for the financial year 2007-08 shall accordingly undergo a change.

3 VIEWS OF THE OBJECTORS ON OHPC TARIFF PROPOSAL, 2007-08

OHPC was allowed in the beginning of the hearing to give a power point presentation regarding its ARR and tariff application for the FY 2007-08. Director (Tariff) then raised certain queries on the Generator's filing. Nabakrushna Choudhury Centre for Development Studies, Bhubaneswar has been appointed as Consumer Counsel and its representative put up certain queries and objections regarding ARR and tariff filing. The objectors then made many comments/observations regarding the submission of OHPC.

The Commission has considered all the issues raised by the participants in their written as well as oral submissions during the public hearing. Some of the objections were found to be of general nature whereas others were specific to the proposed Revenue Requirement and Tariff filing for the financial year 2007-08. Based on their nature and type, these objections have been categorized broadly as indicated below:

3.1 Nabakrushna Choudhury Centre for Development Studies (NCCDS)

3.1.1 In accordance with section 94(3) of Electricity Act, 2003 which stipulates that the appropriate Commission may authorize any person as it deems fit to represent the interest of consumers in the proceedings before it, the Commission for the first time engaged Nabakrushna Choudhury Centre for Development Studies as Consumer Counsel in order to receive quality inputs/feed back on the tariff matters in the interest of different sections of consumers. The representative of NCCDS had analysed the applications in the light of Kanungo Committee Report and some of the important observations are as follows:

3.1.2 Due to the existing single buyer model presently prevailing in the state of Orissa, OHPC is supplying its entire power to GRIDCO, who is a trading licensee and supplying power to the Distribution Licensees of the State. Tariff proposal for the power stations like BHEP, RHEP and UKHEP indicate significant increases in tariff during FY 2007-08 as compared to 2006-07, due to increases in their ARR. However, the proposed tariff of RHEP is in the higher side as compared to the rise indicated in the ARR.

Table - 6
Comparison of Tariff of Different Power Stations
Between 2006-07 and 2007-08(P/U)

Power Stations	2006-07	2007-08	% Change
HPS	57.10	60.15	5.34
BHEP	35.56	58.39	64.20
RHEP	21.82	41.60	90.65
UKHEP	16.35	25.97	58.84
UIHEP	65.50	67.24	2.66
MHEP	19.47	18.21	- 6.47

3.1.3 This increase in tariff proposal if allowed would impose heavy burden on the consumers of the State, observed the Consumer Counsel. OHPC has projected an increase in ARR to the tune of Rs 61 Crore during 2007-08 in order to meet the growing expenses of these five power stations. The Counsel strongly felt that the proposed increase in tariff should not be allowed. On the other hand, there should be curtailment in revenue requirement for which there is a need to assess the revenue requirement proposal of OHPC.

3.1.4 ARR proposal for the power stations like BHEP, RHEP and UKHEP has increased significantly during FY 2007-08 compared to the FY 2006-07. But the increase in ARR of BHEP is found to be significantly higher. It has increased by about 167.67% in 2007-08 as compared to only 11.87% in 2006-07. Table below clarifies the point.

Table - 7
ARR of Different Power Stations from 2005-06 to 2007-08

(Rs in Crore)

Power Stations	2005-06	2006-07	2007-08	% Change in 2006-07 over 2005-06	% Change in 2007-08 over 2006-07
HPS	61.55	66.36	69.90	7.81	5.33
BHEP	22.84	25.55	68.39	11.87	167.67
RHEP	16.33	18.48	21.62	13.17	16.99
UKHEP	11.30	13.47	21.39	19.20	58.80
UIHEP	125.33	127.23	130.61	1.52	2.66

The Counsel observed that the main reasons for significant increase in ARR of BHEP were increase in interest on loan by **877.78%** and O & M expenses by about 36%. The increase in interest on loans is understandably due to new loans for the proposed higher installed capacity, but the increase in O & M expenses seems to be too high. Similarly, the increase in O & M expenses of UKHEP is very high at 38.97% during 2007-08.

3.1.5 Besides, there is an increase in reasonable return on equity by 65.94% during 2007-08. The return on equity has been projected at Rs 73.48 Crore during 2007-08 while it was estimated at Rs 44.28 Crore during FY 2006-07. The estimation of return on equity during 2006-07 was only shown for

Hirakud Power System (Rs.2.46 Crore) and Upper Indrabati HEP (Rs 41.82). But during 2007-08 all the five power stations show reasonable return on equity. However, no reasonable return may be allowed to OHPC along the lines of thinking adopted for 2006-07. Allowing return on equity would have a negative effect on the sector in general and consumers in particular.

- 3.1.6 The Counsel summarized the presentation by saying that there is scope for reducing ARR, as some Power Stations like BHEP, RHEP and UKHEP have proposed significantly higher increases in ARR. The Counsel felt that increase in tariff should not be allowed in the best interests of the consumers. On the other hand, there should be curtailment in revenue requirement for which there is a need to assess the revenue requirement of OHPC.

3.2 GRIDCO

- 3.2.1 **Review of Design Energy:** The objectors stressed upon the review of design energy of the old stations of OHPC in compliance to Commission's order and wanted OHPC to furnish the progress in this regard.
- 3.2.2 **Sale of Power to MPSEB:** OHPC should indicate expected revenue to be earned from MPSEB and claim the balance ARR from GRIDCO pertaining to HPS.
- 3.2.3 **Income Tax:** OHPC has included Income Tax (MAT) paid during the period 2003-04 to 2005-06 in the tariff calculation. Income Tax is not an element of AFC. CERC Notification provides for re-imbursement of Income Tax. Hence OHPC should raise bills with supporting details for reimbursement by GRIDCO instead of including the same in the ARR. Inclusion of Income tax in the tariff is not justified. The rate of secondary energy is same as primary energy and hence there will be over recovery of tax in case of generation beyond Design energy. Hence, Tax claimed may be considered as a year-end claim.
- 3.2.4 **Electricity Duty:** Instead of including ED in tariff it should be claimed separately for payment through year-end bill.
- 3.2.5 **Equity Component:** OHPC have considered 25% of book value of assets as equity. Govt of Orissa has not issued any notification in this respect. Hence, it is not acceptable to GRIDCO.
- 3.2.6 **Return on Equity:** OHPC have claimed 14% ROE in the tariff calculation for 2007-08. All the Objectors have recommended OERC to allow 12% ROE as was done in previous years keeping in view the interest of the consumers.
- 3.2.7 **R&M investment of Unit No.3&4 of Burla:** The CERC norm stipulates that the R, M & U cost if any can be capitalised after deducting book value of replaced assets. In the A.R.R. filed by OHPC for the year 2006-07, Rs.114.1 crores had been provisionally capitalised towards R.M & U of Unit No.3 & 4 of Burla P.H. after deducting Rs.5.9 Crores towards cost of replaced assets. OHPC in their submission stated that after actual

capitalisation, the adjustments will be made in the ARR for the year 2007-08. OHPC have capitalised Rs.111.75 crores towards R,M&U of Burla Unit 3 & 4 and have claimed 25% of said amount as equity in the present application. In order to examine the claim OHPC may furnish year wise expenditure in the said work indicating expenditure from loan, from their resources and year wise interest capitalised as IDC. Further OHPC may furnish the amount deducted towards value of replaced assets and indicate the amount deducted from capital cost towards infirm power.

3.2.8 **7th & 8th Unit of BPH:** OHPC in their ARR for 2007-08 have capitalised Rs.180 crores towards 7th & 8th Unit of BPH to be commissioned in March, 2007. OHPC may furnish year wise expenditure in the said work indicating expenditure from loan, from own resources and year wise interest capitalised as IDC.

3.2.9 **O & M expenditure:** The claim of OHPC towards O & M expenditure is not in conformity with CERC norm. In accordance with the orders of OERC, 4% escalation can only be allowed over O & M permitted for 2006-07 to derive the O & M for 2007-08.

3.2.10 **Depreciation:** In the tariff calculation OHPC have claimed advance depreciation for HPS and BPH amounting to Rs.5.04 crores and Rs.5.9 crores respectively. As regards advance depreciation CERC norm stipulates that advance against depreciation shall be permitted only if cumulative loan repayment up to a particular year exceeds the cumulative depreciation up to that year. HPS as well as BPH do not satisfy the above condition. In case of HPS the total depreciation recovered through tariff up to 2007-08 comes to Rs.139.07 cores where as the total loan repayment up to 2007-08 is Rs.118.49 crores. Similarly in case of BPH against recovery of Rs.60.8 Crores towards depreciation up to 2007-08 the loan repayment is only Rs.15.83 crs. Hence there is no scope for allowing advance depreciation during 2007-08. OHPC have to justify their claim towards advance depreciation.

3.2.11 **UIHEP**

GRIDCO has made similar observations relating to Income Tax and Electricity Duty in case of UIHEP as in case of Old Stations.

3.2.11.1 **Capital cost of UIHEP:** OHPC have indicated capital cost of UIHEP based on CERC guidelines dt.26.03.04. The said regulation came into force with effect from 01.04.2004 and which stipulates that for the existing generating stations the capital cost admitted by the Commission prior to 01.04.2004 shall form the basis for determination of tariff. Prior to the said notification, cost of spares for 5 years was allowed to be included in the capital cost. Hence further addition of 1.5% of Project Cost towards capital spares need to be explained by OHPC.

3.2.11.2 **Repair of rotor poles:** That for repair of rotor poles of all the 4 units, Rs.5 crs. was allowed in the tariff calculation for 2005-06 and 2006-07. OHPC have claimed Rs.5 crs for the said work

during 2007-08. The actual expenditure incurred against the said work may be furnished by OHPC.

3.3 **Shri Jayadev Mishra**

3.3.1 General: OHPC should accept Rs.251.09 crore as annual revenue requirement of 2007-08. There are scopes for higher generation and higher profits even by retaining the same per unit cost of individual station as in 2006-07.

3.3.2 **Individual Station wise PPAs:** Although OHPC has indicated that it has submitted the draft PPAs to GRIDCO it has not been executed so far. Hirakud and Chiplima should be considered as separate stations and separate PPAs be developed. R & M of Chiplima units are long delayed. This is reducing both design energy and peaking capacity of Hirakud system. Losses due to this should be evaluated & be borne by responsible entities. A high level bridge may be constructed at Junagad over Hati river, if necessary being funded by OHPC to avoid stoppage of units at Upper Indravati Power Station during the rainy season.

3.3.3 **Perspective Plan for Hydro Development (Sindol I Deogaon)**

OHPC is proposing execution of Sindol I. It may examine if a channel can be constructed to put surplus water of Mahanadi river from this forebay to Rengali reservoir where additional generation would also be possible.

Sindol III – Similarly a channel from Sindol III (Godhaneswar to Samal barrage will help augmentation of irrigation & industrial water required for additional thermal generation in the state between Talcher – Dhenkanal.

The project report for Indravati Pumped Storage and Baitarani Pumped Storage schemes be developed and proposal for execution should be submitted either by themselves or through NHPC/NTPC/Private Sector.

With many large thermal stations likely to come up in the state in the near future these two projects will help OHPC to purchase off-peak or infirm thermal energy and convert it to high cost peak energy for at least intra-regional trading within the Eastern regions.

3.3.4 **Tariff Issues :** Since OHPC is not executing any new project presently, the profit of Rs.220.6 Crores as on 31.3.06 can be invested for renovation of units and discharging existing high cost loans if any. They should retain the same tariff as approved by the Commission for FY 2006-07, till the individual PPAs are approved by the Commission. Losses if any due to this in 2007-08 may be met from the revenues derived from U.I. charges, sale of higher secondary energy by maintaining full machine availability during the rainy season. The Commission should advise the State Government to retain capital cost of old stations and other incentives at the same level until the power sector turns around in the state at least till FY 2011.

OHPC & Gridco are organizations fully under state control and innovative actions by these two organizations can wipe out past losses through off peak purchase and peak sales of energy within the eastern region, which has low hydro generation capacity.

Since Gridco's position as a trading organization is under litigation, the Commission may consider for OHPC to conclude PPAs with distribution companies.

3.4 WESCO

WESCO has analysed the ARR Application under various heads as mentioned below:-

- 3.4.1 **O & M Expenses:** The Commission should consider the actual O & M expenses unit wise for the FY 2004-05 and 2006-07 (upto Sept-06) to ascertain the trend along with the norms so that appropriate O & M expenses for respective units can be worked out for FY 2007-08.
- 3.4.2 The Commission in its tariff order for FY 2005-06 allowed Rs.16 Cr. towards special repair of rotor poles of UIHEP @ Rs.5.00 Cr. per annum w.e.f. FY 2005-06. The repair of rotor poles in UIHEP are in the nature of Capital Expenditure, which should not be a part of Revenue expenditure for determination of tariff. Thus, WESCO submits that the Special repair of rotor poles in UIHEP and special repair of starter winding in unit-4 of UKHEP may be excluded from the purview of O & M expenses in 2007-08. Thus the special repair expenditure of Rs.5.00 Cr. for UKHEP may be disallowed from the tariff computation of FY2007-08.
- 3.4.3 **Interest on Loans:** In the ARR for FY 2007-08, the calculations made by OHPC under "Interest on Loans" is not as per the correctives suggested by the OERC and accepted by the Govt. of Orissa and hence no interest should be claimed on State Govt. loans for OHPC Old stations.
- 3.4.4 **Guarantee Commission:** The Guarantee Commission claimed by OHPC is on the higher side.
- 3.4.5 **Return on Equity:** Pursuant to the Commission's order and the Govt. of Orissa's Notification, OHPC shall not be entitled to earn any return on equity (ROE) till the sector becomes viable on a cash basis. WESCO submits that ROE claimed by the OHPC in the ARR on investment prior to 1.4.96 should be disallowed.
- 3.4.6 **Income Tax (MAT):** OHPC may be directed to submit the Income tax payment details for FY 2006-07 up to Second quarter for its core activities and provisional computation for the other two quarters.
- 3.4.7 **Reservoir level:** WESCO submits that the availability of power from state hydro stations would be 7128 MU in FY2007-08 as against the proposal of 5884 MU by OHPC considering the reservoir level as on 01.10.2006.

3.4.8 **Miscellaneous Income:** Interest on GRIDCO Bonds and other miscellaneous receipts are to be deducted from the ARR of OHPC.

3.4.9 **Truing up:** The benefits of high hydro years should also be passed on to the consumers of Orissa by truing up of the performance of OHPC during the previous years and the impact should be taken into account in the ARR of OHPC.

3.5 **Mr. R.P. Mohapatra**

3.5.1 The increase in the projected tariff for the year 2007-08 over that for past years is unusually high in respect of the old power stations.

3.5.2 The increase in tariff projected for the year 2007-08 is based on the projected tariff for the year 2005-06, which itself needs a review.

3.5.3 The Applicant is projecting higher tariff, taking full advantage of the cost plus principle for determination of tariff and therefore needs examination by the Commission, with a 'fine tooth comb'.

3.5.4 Though the Commission has directed OHPC to carryout certain exercises, which have a direct bearing on tariff, the Applicant is avoiding/delaying to execute the same.

3.5.5 The Applicant be asked to submit the additional data/clarifications and if it fails to submit satisfactory data/clarifications, the present application may be rejected and the tariff approved by the Commission in its Order dated 23.03.2006 may be allowed except for Upper Indravati.

3.5.6 The following comments may be noted while approving the ARR of the applicant.

3.5.6.1 **UIHEP**

(i) The steps taken during the last 4 years to approach the CEA or constitute a group of independent experts in consultation with CEA to determine the allowable capital cost on completion of the project is unsatisfactory.

(ii) The actual Capacity Index achieved by the Power Station from 01.04.2001 and the project capacity Index for the year 2007-08 has not been submitted.

(iii) The two-part tariff, indicating the primary energy charges and the capacity charges has not been given.

3.5.6.2 **OLD STATIONS:**

(i) The actual Capacity Index achieved year wise from 01.04.2001 onwards and the method of computation in respect of the Rengali, Upper Kolab, Balimela & Hirakud Power Stations, has not been given.

- (ii) Separate calculation to determine the tariff of Burla & Chiplima Power Stations has not been submitted based on the Order dated 10.06.2005 of the OERC in Case No.153/2004.
 - (iii) The design energy of the individual power stations was to be determined by approaching CEA vide OERC Order dated 09.07.2001. The submissions by the Applicant that a Consultant has been appointed in October, 2006 (against target date of November, 2005) is disquieting. The credibility of the Consultant firm appointed should be given.
 - (iv) Confirmation that the proposals for Renovation & Modernisation of the old units, which was to be submitted by 10.09.2005, vide Para 6.5(i) of the OERC Order dated 10.06.2005, have not been submitted.
 - (v) That even though the actual generation of energy of the Rengali HE Project is consistently more than 750 MU, the “design energy” is being taken as 525 MU for the purpose of tariff, which is unacceptable and constitutes an avoidable burden on the Consumers of the State.
 - (vi) The audited accounts of the OHPC, for all the years’ upto 2004-05 should be submitted to determine the cost and tariff.
- 3.5.7 The Commission may prescribe a two-part tariff, with capacity charges & primary energy charges for recovering the full fixed cost. It is necessary for Orissa, because of the very high installed capacity of the Hydro Power Stations, compared to the design energy, thus boosting up the tariff, based on the single part primary energy charges.
- 3.5.8 The Applicant has not indicated whether a separate account has been maintained to keep the funds earned out of secondary energy, the charges for which was determined as equal to primary energy charges by the Hon’ble Commission.
- 3.5.9 When two additional units are installed in the Balimela HES, there will be a sharp increase in the primary energy charges (as there will be no increase in the design energy). If in any particular year secondary energy is generated, the consumers have to pay for it, at an inflated rate.
- 3.5.10 The Applicant does not have to incur any additional expenditure for generation of secondary energy and has only to make the machines “available”, which he is anyway mandated to do. The submissions of the Applicant in Case No.153/2004, vide para 5.1.8 of the OERC order dated 10.06.2005 in this regard are not acceptable due to the following reasons.
- (i) The machines are not being overloaded to generate the secondary energy. They operate within the design load and hence within the design winding temperature. Therefore there is no question of reduction of machine life.
 - (ii) The cost of turbine lubricating oil consumed is minimal.
 - (iii) Machines are designed to operate & not for giving rest. Normal generation results in normal wear & tear and the O & M charges adequately address this.

- 3.5.11 The Applicant may be given an incentive for Secondary energy generation to motivate him to maintain 100% machine availability during monsoon (Hirakud, Rengali, UIHEP) or at the time of higher inflow (Balimela Upper Kolab). This may be 5 P/U as recommended by K.P. Rao Committee. This works out to 16.67% of the primary energy charges for the old power stations and 8.5% of the primary energy charges in case of UIHEP. These incentives are reasonable. The Applicant shall however be protected against hydrology failure.
- 3.5.12 The Applicant should give the reservoir levels as on 01.11.2006 & the actual generation from April-October, 2006 of the various power stations.
- 3.5.13 It is prayed that the Commission should determine the ARR & Tariff based on the above submission of the Petitioner.
- 3.6 **NESCO**
The Submissions are the same as WESCO.
- 3.7 **SOUTHCO**
The Submissions are the same as WESCO.
- 3.8 **Views of Government of Orissa:**

The Government of Orissa representative from the Department of Energy stated that the State Government had not yet decided regarding keeping in abeyance the effect of up-valuation of assets of OHPC old stations.
- 4 **REJOINDER OF OHPC:**
Old Power Stations:
- 4.1 **Review of Design Energy:** The job of re-assessment of design energy of OHPC Power Stations has been awarded to the consultants M/s SPARC, Bhubaneswar on a turn-key basis, who are currently working on the inception report, which shall be submitted to OHPC shortly.
- 4.2 **Sale of Power to CSEB:** As per the order dtd. 17.08.06 of Govt. of India, Ministry of Power, now the power is being supplied from 05.09.06 to CSEB instead of MPSEB. Since, the difference as compared to the unit rate proposed in the application is very negligible, the same has not been considered separately.
- 4.3 **Income Tax:** OHPC has no objection, if the income tax paid by OHPC is included in the ARR of GRIDCO & reimbursed to OHPC in accordance with CERC regulation.
- 4.4 **Electricity Duty:** OHPC has no objection if the electricity duty paid to the State govt. by OHPC is included in the ARR of GRIDCO & reimbursed to OHPC as agreed in the PPA.

- 4.5 **Equity component:** Since, revaluation of assets was kept in abeyance for tariff purpose, equity base of 25% has been considered in tariff on the book value of the assets.
- 4.6 **Return on Equity :** As per CERC norms, RoE @ 14% is being allowed to the generators across the country & also to the other generators supplying power to GRIDCO. Hence, OHPC, as a generator should also be allowed RoE @ 14%.
- 4.7 **R, M & U investment of Unit 3 & 4 of Burla :** The audited capitalised cost of Rs. 111.75 Crs. has been arrived after giving credit of Rs. 4.74 Crs. for sale of infirm power till COD. There is no sale value of replaced assets as these are all scraps.
- 4.8 **7th & 8th extension units of BHEP :** BHEP extension units are expected to be in operation by March'07 / April'07. The capitalized cost is based on payments made to the contractor and liabilities to accrue as on 31.03.2007.
- 4.9 **O & M Expenses:** The O & M expenses is based on audited accounts of 2005-06 (which is more than that was claimed and allowed in the tariff of 2005-06 & plus escalations @ 4% for 2006-07 & 2007-08.
- 4.10 **Depreciation:** If the advance against depreciation to the extent of loan repayment in a year shall not be passed in the tariff, it shall be very difficult for timely repayment of the loan. This needs to continue till GRIDCO liquidates the outstanding dues in full.

UPPER INDRAVATI H. E. PROJECT:

- 4.11 **Income Tax & Electricity Duty:** Same as indicated for old Power Stations.
- 4.12 **Repair of rotor poles:** The rotor pole repair work at UIHEP is a special repair job. Considering the importance & nature of defect in the rotor pole and other relevant factors, OERC has accepted it as a deferred revenue expenditure & hence a part of O & M to be recovered over a period of three years. The depreciation of UIHEP for the proposal of tariff has been limited to repayment of PFC Loan & hence, no amount is available with OHPC to fund such expenditure.
- 4.13 **Capital cost of UIHEP:** For tariff purpose, the capital cost considering 50% of the dam cost is taken at Rs. 1195.42 Crs. against the capital expenditure of Rs. 1195.17 Crs. as on 31.03.2001 and Rs. 1253.96 Crs. as on 31.03.2006. Further, capital expenditure are being made towards rehabilitation & resettlement as & when approved by the Govt.
- 4.14 **Interest on Loans:** Interest on Govt. and PFC loans are to be paid by OHPC. Interest on deemed loans relating to projects are as per the norms and allowed to all other generators which can not be denied to OHPC.
- 4.15 **Guarantee Commission:** The guarantee commission is as per the norm of the Govt. however, OHPC has taken up with the Govt. for payment of guarantee commission on outstanding balance of loan.
- 4.16 **Reservoir level & Availability of Power:** Availability of power projected for FY 2007-08 is a speculation based on the reservoir level at the time of filling of application and the current inflow pattern. This has been proposed to the extent of

the design energy of all the Power Stations. In case of excess generation beyond design energy shall also be sold to GRIDCO.

- 4.17 **Miscellaneous Income:** Miscellaneous income is small non-recurring incomes & mostly relate to the prudential cost management. Such incomes do not find place in the CERC norms.
- 4.18 **Truing up :** Only in a few years has OHPC generated more than the design energy & in many years the generation is less than the design energy due to poor hydrology condition. Only in the year 2002-03 the lower generation is compensated in case of UIHEP but not in other old Power Stations.
General: The revalued transfer cost of the projects as on 01.04.96 have not been considered in the tariff calculation, as per OERC's tariff order for the previous year.
- 4.19 Upper Indravati H. E. Project:
- (i) **Availability of UIHEP:** Day ahead declared capacity depends upon the water & machines available for the power generation for the next day. So, it may be too early to project the capacity index for the year 2007-08.
 - (ii) In two-part tariff, the AFC is to be approved by the Hon'ble Commission. When monthly billing is made as per the formula given in the CERC notification, both Primary Energy Charges & Capacity Charges shall vary, total AFC remaining same.
- 4.20 **Old Power Stations of OHPC:** (i) Two-part tariff has not yet been implemented at the old Power Stations of OHPC. Hence, the capacity index is not being computed.
(ii) Separation of Burla & Chiplima: Chiplima Power Station utilizes the discharge water of Burla Power House. As such the operation of Chiplima Power Station is fully dependent upon the generation of Burla Power Station. Hence, separation of Burla & Chiplima Power Station is not feasible.
- 4.21 **Implementation of two-part tariff:** OHPC prefers a two-part tariff in all its Power Stations.
- 4.22 **Separate Fund:** As per OERC's order the revenue earned out of the sale of secondary energy may remain as part of normal fund of OHPC but shall be utilized to replenish the shortfall in revenue due to less generation by OHPC in years of hydrological failure. Due to huge outstanding against GRIDCO, there is no inflow of funds on A/c of sale of secondary energy during the year 2004-05.
- 4.23 The issue of pricing of the secondary energy has been discussed adequately at CERC & also at OERC during last few years. Though, there is a up-coming of two units at BHEP, design energy may not be changed as it depends upon hydrological parameters. However, this shall help to meet the peak demand.
- 4.24 **Individual Station-wise PPAs:** Draft PPAs of all the old Power Stations has been sent to GRIDCO for their concurrence & signature. The separate PPAs for Burla & Chiplima is not feasible as Chiplima Power Station utilizes the discharge water of Burla Power House. As such the operation of Chiplima Power Station is fully dependent upon the generation of Burla Power Station.
- (i) Construction of a separate channel at Chiplima may not eradicate the weeds problem and this is considered not feasible due to some Procedural & Technical prohibitions. However, OHPC has planned to construct a bridge-cum-trashrack system at the upstream of forebay pond to arrest the weeds.
 - (ii) The construction of a bridge on Hati river at Junagada may be taken up by the State Govt. through concerned deptt.

- (iii) Renovation in excitation system & governing system with latest digital type of unit I & II of Rengali Power House is being made recently.

5 COMMISSION'S OBSERVATION AND ANALYSIS OF OHPC'S PROPOSAL:

- 5.1 The Commission is duty bound by statute to fix tariff for a generating company in respect of its supply of power to distribution licensees vide S.62(1)(a) of the Act. The generating company, for this purpose, is legally liable to file its ARR & tariff application. The tariff so fixed would apply whenever a DISTCO purchases power directly from OHPC. The question that arises is whether the tariff so fixed is applicable when GRIDCO, a trader, purchases power from OHPC for the sole purpose of supplying to some DISTCOs under a contractual obligation. This is essentially a question of extended applicability of the tariff set by the Commission and not a question of power of the Commission to set tariff for generating companies supplying electricity to DISTCOs. The question is whether applicability of the tariff so determined by the Commission can, in the special circumstances of single buyer model prevailing now, extend to a trader who under a contractual arrangement buys power from the generating company to the exclusion of all other buyers and sells power to only specified DISTCOs, and none others, so long as the requirement of such specified DISTCOs remains unfulfilled. Had there been no such contractual arrangement (PPA's and BSA's), the tariff determined by the Commission would not apply. But when such contractual arrangement exists, if the Commission does not apply this tariff, in respect of sales to GRIDCO, it would amount to allowing DISTCOs to obtain power at a price different from this tariff. DISTCOs would thus be circumventing this tariff. They would also be departing from the procurement price fixed by the Commission under law [S.86(1)(b)] in the context of a single buyer model. For this reason in these special circumstances of single buyer model which exists as a fact, a rate based on the tariff fixed for generating company qua DISTCO has been thought necessary to be applied to purchases by GRIDCO functioning as the sole trader. Indeed GRIDCO is for the time being a single conduit for supply of power by the generating company to DISTCOs, such that in effect and substance the generating company is supplying power to DISTCOs. DISTCOs must not be free to depart from the Tariff set for supplies to them, by a generating company merely by reason of the technicality of the conduit of supply being a trader. The single buyer model as prevailing in the State of Orissa is not repugnant to any provision of the Electricity Act, 2003. But if tariff determined by the Commission is not made applicable to the single buyer it would frustrate the object of Sec.62(1)(a) of the Act. It could not be the intention of the legislature that where the single buyer model prevails the sales of power to DISTCOs should escape the tariff regime. Accordingly the tariff determined by the Commission shall be applicable to sale of power by OHPC to GRIDCO.
- 5.2 The Commission has thoroughly examined and analysed the proposal of OHPC. The valuable written and oral submissions of the objectors have been considered while deciding the various parameters for determining tariff. While determining the tariff for the OHPC old stations, the principles and procedures set out in CERC

Regulations have been followed with deviations, wherever required with proper reasons.

5.3 OHPC while requesting for approval of the annual revenue requirement and tariff for the FY 2007-08 had submitted separate calculation as per the direction of the Commission dt.10.06.05 in respect of OHPC's old stations such as Rengali, Upper Kolab, Balimela and Hirakud Power Stations. A separate ARR calculation for UIHEP has also been submitted. The tariff proposal contains technical parameters such as type of hydro stations, capacity index, potential of energy generation and financial details like loans, capital cost, calculation of depreciation, interest etc. OHPC has furnished the technical and financial details in respect of each of the old power stations as well as UIHEP. The station-wise apportionment of capital cost in respect of all these stations has also been provided along with tariff calculations.

5.4 During the course of public hearing, the objectors had raised certain specific issues to which OHPC has already submitted its response. The Commission's analysis of the issues relevant for determination of tariff of OHPC is as discussed below:

- Determination of Design Energy
- Status of Individual Stationwise PPA
- Power Procurement from OHPC
- Capital cost of UIHEP
- Annual Fixed Charges which shall consist of
 - (i) Interest on loan capital
 - (ii) Depreciation
 - (iii) Return on Equity
 - (iv) Operation and Maintenance Expenses
 - (v) Interest on working capital
 - (vi) Income Tax
 - (vii) Electricity Duty
- Primary energy charges
- Secondary energy charges
- Two-part Tariff
- Machhkund Hydro Electric Project
- Perspective Hydro Development in the State

5.4.1 **Determination of Design Energy**

As per the directives given by the Commission in its order dtd. 10.06.2005 at para 6.5, OHPC has taken steps for reassessment of design energy, which was initiated earlier. The Commission is regularly monitoring the progress in respect of reassessment of design energy. OHPC has submitted the status on the matter in its rejoinder to the query raised by the Commission as well

as the objectors. From the filing, it is evident that OHPC has already awarded the job of reassessment of design energy to the consultancy agency M/s SPARC, Bhubaneswar to carry out the job on a turnkey basis with an expected completion period of 10 months. An eminent irrigation expert with long standing experience in hydro engineering is advising the agency. The consultancy agency has also submitted the inception report on 31.01.2007 to OHPC. The Commission will be taking appropriate steps on receipt of the report.

For the purpose of determination of tariff for FY 2007-08, the figure of 3714 MU as proposed by OHPC is accepted as design energy of old power stations in terms of Commission's order dtd. 09.07.2001.

5.4.2 Status of Individual Station-wise PPA

5.4.2.1 The Commission wanted to know the status of separate PPAs for each of the power stations of OHPC. In its reply, OHPC has submitted its reply as dealt in para 4.24 of this order.

5.4.2.2 Some objectors had raised the issue of separate PPA for Hirakud & Chiplima Power Stations to which OHPC has replied that Burla and Chiplima Power Stations are considered as a single unit for administrative, O & M, Stores and Inventories, accounting and performance purposes, since their inception. Further their dispatch system is clubbed together by connecting two buses and as such, the total design energy has been assessed as 1174 MU. Chiplima Power Station utilizes the discharge water of Burla Power House. Thus, the operation of Chiplima Power Station is fully dependent upon the generation of Burla Power Station. Hence separation of Burla and Chiplima P.S. is not feasible. Excavation of second power channel at Chiplima has been rejected by Govt. of Orissa due to procedural and technical difficulties.

To the proposal for construction of a separate channel at Chiplima, OHPC has clarified its stand at para 4.24 of this order.

OHPC has to find a technical solution to the problem of Chiplima power station so that full capacity of this power house is utilized. This is important because construction of a new power station is posing innumerable problems with regard to land acquisition and problem of rehabilitation. It is all the more important that OHPC take effective steps with the help and guidance of hydro experts available within and outside the country so that Chiplima power house runs to its full capacity.

From the FY 2007-08 onwards the Commission has approved a two-part tariff structure for Hirakud power station. In that case OHPC will not be able to recover the full capacity charge unless they attain the desired capacity index due to non-functioning of Chiplima power station. In view of that the Commission approves the stand of OHPC for a single PPA for Hirakud power station.

5.4.3 Power Procurement from OHPC

5.4.3.1 The installed capacity of various Hydro Stations owned by Orissa Hydro Power Corporation (OHPC) is 2062 MW as on 1st of April 2007 including Orissa share of Machhkund. The details of drawl approved by the Commission for 2006-07 and the projections made by OHPC for 2007-08 are presented in the following table:

Table - 8
Hydro Drawl and Projections For 2007-08

Sl. No.	Name of the HE Project	Installed Capacity (MW)	Design Energy (MU)	Commission's Approval for 2006-07 (MU)	Proposed Drawl by GRIDCO for 2007-08 (MU)
1	Hirakud (Burla & Chiplima)	347.50	1174.00	1162.26	998.19
2.	Balimela	510	1183.00	1171.17	1170.18
3.	Rengali	250	525.00	519.75	688.05
4.	Upper Kolab	320	832.00	823.68	792.00
	Total	1277.50	3714.00	3676.86	3648.42
5.	UIHEP	600	1962.00	1942.38	1942.38
6.	Machhkund (Orissa Share)	34.50	262.50	265.00	265.00
	Total Hydro	2062	5938.50	5884.24	5855.80

5.4.3.2 In accordance with Section 61(a) of the Electricity Act, 2003, the Commission is to be guided by the principles and methodologies specified by the CERC for determination of tariff applicable to generating companies. This has been suitably incorporated in the OERC (Terms and Conditions for determination of Tariff) Regulation, 2004. As per CERC regulation, "*primary energy means the quantum of energy generated up to the design energy on per year basis at the generating stations*". Auxiliary energy consumption for surface hydro Electric Power Generating Station with static excitation system is to be determined at 0.5% of energy generated and transformation loss from generation voltage to transmission voltage is to be calculated at 0.5% of energy generated. Accordingly, energy sent out from the generating stations in respect of OHPC should be determined deducting 1% on gross generation treating 0.5% towards auxiliary consumption and 0.5% towards transformation loss.

5.4.3.3 As indicated in the above table, the annual energy generated by OHPC's old stations, in a year of normal hydrology, is 3714 MU. After deduction of auxiliary consumption and transformation loss, energy sent out to GRIDCO comes to 3676.86 MU. This was approved by the Commission in its order-dated 09.07.2001 in Case

No.15/2000. In case of UIHEP, the design energy is 1962.00 MU. After deduction of auxiliary consumption and transformation loss, energy sent out to GRIDCO comes to 1942.38 MU.

5.4.3.4 Based on the inflow trends from April 2006 to March 2007, OHPC furnished the tentative monthly generation programme for its different units. The same has been furnished by OHPC to GRIDCO in regard to generation during 2007-08. GRIDCO has projected the power purchase from OHPC stations based on the latest generation plan submitted by OHPC during October, 2006. GRIDCO has considered 5590.80 MU of availability from OHPC hydro stations as per the generation plan submitted by OHPC after deduction of 16.60 MU allocation to CSEB from Hirakud Power Station and 0.5% auxiliary consumption and 0.5% transformation loss. OHPC has projected a lower availability during 2007-08 as compared to the design energy to which the Commission had raised a query to GRIDCO and sought necessary clarification. In support of the proposed drawl, GRIDCO has furnished the details of drawl from different stations from 2001-02 to 2005-06 as shown in the table below.

Table - 9
Drawls from OHPC in the Past Years

Station	(In MU)					
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07 (actual + projection)
Hirakud	925	616	903	804	859	1170
Rengali	772	621	1028	731	665	857
U Kolab	640	473	640	867	611	1162
Balimela	1049	526	1118	1495	1024	1431
U Indiravati	2920	790	2110	2826	1751	2956
Total	6307	3025	5799	6723	4911	7576

5.4.3.5 As indicated earlier, the design energy of OHPC old stations in a year of normal hydrology being 3676.86 MU, it is premature to predict the rainfall at this point of time and there is absolutely no justification for adopting a figure lower than the design energy for the ensuing year. Neither the Commission can accept a figure exceeding 7000 MU as suggested by some of the objectors based on the performance of the current year as the generation shall be dependent on the rainfall, MDDL of the reservoir and water use by other agencies. Acceptance of such a high figure would mean reduced drawl from high cost energy sources which in turn would affect the power purchase cost in case of reduced generation. As such, the Commission considers it appropriate to accept and approve a figure of 3676.86 MU as energy available from these stations and 1942.38 MU in case of UIHEP for the year 2007-08.

5.4.3.6 **Machhkund:** This hydro power station is a joint venture of Government of Orissa and Andhra Pradesh with an installed capacity of 114.5 MW. Based on the 50% share of GRIDCO the quantity comes to 262.50 MU. GRIDCO has projected drawl of 265 MU for

the FY 2007-08. The Commission approves 265 MU to be drawn from this station during 2007-08 based on the drawl during the previous year.

- 5.4.3.7 The Commission's approval of power to be purchased by GRIDCO for 2007-08 from various stations of OHPC is given in the table below.

Table - 10
Drawl From Hydro Stations (2007-08) (In MU)

Source of Generation	Commission's Approval (2006-07)	GRIDCO Proposal (2007-08)	Commission's Approval (2007-08)
OHPC (Old stations)	3676.86	3648.42	3676.86
Upper Indravati	1942.38	1942.38	1942.38
Machkund	265.00	265.00	265.00
Total Hydro	5884.24	5855.80	5884.24

5.4.4 Capital Cost of UIHEP

- 5.4.4.1 Some objectors have raised the issue of determination of capital cost of UIHEP in their submissions and also during public hearing. With regard to the capital cost of UIHEP, the Commission in its order dt.12.02.2003 in case No.23 of 2000 had clarified that the estimated cost of Rs. 1195.42 crore was to be considered for determining the tariff of UIHEP as provisional. The Commission also directed in the said order that *"the actual capital cost incurred on completion of project for the purpose of determination of tariff should be got approved by CEA as per Section 42 A(2) of the Electricity (Supply) Act, 1948. If CEA refuses to do so, it can be determined by a group of independent experts in consultation with CEA."* Objections were raised during the course of hearing challenging the high cost of UIHEP on account of long gestation period and frequent revision of estimates during construction. Some other objectors were of the view that a project of 600 MW capacity with capital expenditure of Rs.1195.42 crs i.e. Rs 2 Cr /MW was lower compared to international standards. OHPC is not responsible for whatever had happened before 01.04.96.
- 5.4.4.2 OHPC contended that the project cost of Rs. 1195.42 crore as approved by the State Govt. for a 600 MW project at the current price level was reasonable and should be accepted for the purpose of determination of tariff. There was no change in the scope of the project for which CEA in its letter-dated 28.01.1997 stated that OHPC/Department of Energy should satisfy itself about the reasonableness of the revised cost estimate. OHPC has requested the Commission to retain the capital cost of UIHEP at Rs. 1195.42 crore for the purpose of tariff.
- 5.4.4.3 OHPC has submitted that the transferred value of assets of UIHEP as on 01.04.96 was Rs. 630 Crs. with a corresponding Govt. loan as the liability. OHPC negotiated with PFC for a long-term loan for the project with the revised project cost at Rs. 1107.10 Crs. excluding

interest during construction. The PFC sanctioned a loan of Rs. 320Cr. for the project for which an agreement was executed on 01.07.97. The financing pattern for the project was as under:

Table - 11

(Rs. in Crore)

Financing Pattern	
State Govt. Loan	630.00 (Transfer value of Assets)
PFC Loan	320.00
Payment by DOWR for dams	100.00
OHPC Internal Resources	57.10
Total Project Cost (excluding IDC)	1107.10

The State Govt. loan of Rs. 630 Crs. comprises of two parts.

- (i) 13% interest bearing loan Rs. 497.86 Crs.
- (ii) 0% interest perpetual loan Rs. 132.14 Crs.

5.4.4.4 The interest accrued on the 13% interest bearing state Govt. loan till commercial operation of the project was to be capitalized. Further, the interest on the PFC loan during the construction period was to be paid by the OHPC and capitalized. The interest during construction was estimated at Rs. 320 Crs. Therefore, the total project cost including IDC was estimated at Rs. 1427.10 Crs. Setting aside the share of DOWR (Rs. 231.68 Crs.) & the value of sale of energy during trial run (Rs. 0.63 Crs.), **the capital cost of the project in the tariff was taken at Rs. 1194.79 Crs.** The break-up of equity and loan being equity 25% (Rs.298.70 Crs.) & loan 75% (Rs. 896.09 Crs.)

5.4.4.5 **Date of commercial operation of the units:**

There are 4 units each of 150 MW capacities in UIHEP. The dates of commissioning and commercial operation of the units are as under.

Table - 12

Units	Commissioning	Commercial operation
I	05.09.1999	19.09.1999
II	23.12.1999	28.12.1999
III	23.09.2000	04.10.2000
IV	16.04.2001	19.04.2001

5.4.4.6 **Capitalized value of the project:**

The capitalized value of the project as on the date of commercial operation 19.04.2001 amounted to Rs. 1331.87 crores. However, as on the date of commercial operation a number of bills of the contractors were not finalized and some capital works were pending to be completed/ carried out. As such the bills subsequently passed for payment & the work completed/carried out have been included in the capital cost of the project.

The break-up of capital cost under major heads of expenditure as at 19.04.2001, 31.03.2002 and 31.03.2006 (audited) are as follows:

Table - 13

(Rs. In cores)

Description of expenditure	As on 19.04.2001	As on 31.03.2002	As on 31.03.2005	As on 31.03.2006
1. Land	59.52	66.44	76.73	77.51
2. DOWR Civil Works	451.26	451.64	466.26	469.57
3. Power House Building	83.58	85.16	85.30	85.30
4. Power House Electro-Mech. Works	724.33	748.62	750.19	750.25
5 Other assets (including CWIP)	13.18	12.20	5.96	6.97
Total	1331.87	1364.06	1384.44	1389.60

According to CERC guidelines dtd. 26.03.04 the capital cost would include capital spares subject to a ceiling of 1.5% of the project cost as on the cut-off date.

The capital cost including the capital spares amounts to:

Table - 14

(Rs. In cores)

Description of expenditure	As on 19.04.2001	As on 31.03.2002	As on 31.03.2005	As on 31.03.2006
1. Project Cost	1331.87	1364.06	1384.44	1389.60
2. 1.5% Capital spares	19.98	20.46	20.77	20.84 [#]
3. Total	1351.85	1384.52	1405.21	1410.64
4. Less: Share of DOWR*	156.68	156.68	156.68	156.68
5 Project cost for tariff purpose	1195.17	1227.84	1248.53	1253.96

* Out of the share of Rs. 231.68 Cr of DOWR, Rs.75 Crs. has not yet been released by the DOWR and therefore, the share of DOWR has been taken at Rs.156.68 Crs.

Actual stores & spares, as on 31.03.06 was Rs. 19.65 Crs.

5.4.4.7 It may be mentioned here that the construction of the project was started during 1983 and the 4th unit was commissioned in April'2001 i.e. after a gap of 18 years. There are still a number of claims on account of escalation, extra work done, revision in rates pertaining to the period prior to **transfer of the project to OHPC** which are lying in different forums & yet to be resolved. Even land acquisition and rehabilitation & resettlement claims of the displaced persons of UIHEP are being settled now. Some of the claims have been referred to arbitration. The claims that would be settled shall be added to the capital cost of the project.

Thus, OHPC has prayed that in view of the facts & figures stated above, the capital cost of Upper Indravati H.E. Project may be approved at Rs.1195.42 Crs for the purpose of determination of tariff.

5.4.4.8 The Commission had provisionally allowed the project cost of UIHEP at Rs. 1195.42 crores in the tariff of earlier years. After giving a credit of Rs. 0.63 crores towards cost of in firm power, OHPC has been taking the project cost at Rs. 1194.79 crores for tariff purpose.

5.4.4.9 The Commission has examined and noted that the audited Capitalized cost as on 19th April, 2001 i.e. the date of commercial operation of the last unit of UIHEP as submitted by OHPC is Rs. 1195.17 crores which is slightly higher than Rs. 1194.79 crores (Rs. 1195.42 cr. Less in firm power 0.63 cores) taken in the tariff of UIHEP in the earlier years.

5.4.4.10 Having taken into consideration the diverse views expressed in the matter of determination of the project cost, the Commission agrees with the views that OHPC cannot be held responsible for the delay in execution of the project prior to the transfer to OHPCV on 01.04.1996. The cost structure now submitted to us is based on the audited report of the Accountant General of Orissa. In accordance with CERC Regulation (No.33) on determination of tariff dated 26.03.2004 “subject to the prudence check by the Commission, the actual expenditure incurred on completion of the project shall form the basis for determination of final tariff.” In view of the above, the Commission approves **Rs.1195.42 crores** as the final capital cost of UIHEP for the purpose of determination of tariff.

5.4.5 Annual Fixed Charges:

For the purpose of computation of Annual Fixed Charges as per CERC Regulation, a detailed analysis of the following components has been made in the succeeding paragraphs.

5.4.5.1 **Interest on Loan:** The loan liabilities of OHPC form two parts viz., 1) State Govt. loans and 2) PFC loans. The loan liabilities of OHPC outstanding as on 01.04.2006 are summarized in the table below.

Table - 15
Statement of State Government Loans
(Rs. In Crore)

Sl. No.	Description of loan	Amount as on 01.04.1996
1	9.8% loan	39.20
2	13% loan (UIHEP)	497.86
3	Interest free loan (UIHEP)	132.14
4	13% loan (Potteru)	14.3
5	Zero coupon Bond-I	383.10
6	Zero coupon Bond-II	383.10
7	Other loan	0.99
8	13.5% APDP loan	0

As revealed from the above table, the State Government loan of Rs.39.20 crore carries interest rate of 9.8%, with repayment period of 15 years. There is a moratorium on principal repayment for five years to start from 2001-02. The Commission during 2001-02 and 2002-03 has allowed the repayment of principal amount of Rs.3.89 crore/annum. The same loan stands at Rs.19.75 crores as on 01.04.2007 after adjustment of repayments towards principal.

As per the recommendations of the Kanungo Committee and the subsequent Govt. of Orissa Notification dtd.29.01.2003, the effect of up-valuation of assets would be kept in abeyance from the financial year 2001-02 prospectively till 2005-06 or till the sector turns around, whichever is earlier. In accordance with this notification, the interest impact of all other State Government loans excepting the above-mentioned Rs.39.20 crore is not considered for the purpose of tariff.

The PFC loans were obtained in connection with projects like Chiplima, Burla and Upper Indravati. In addition to this for extension of units 7 & 8 of Balimela loans have been obtained from PFC. The outstanding loan amount as on 01.04.2007 comes to Rs. 254.26 crores as compared to Rs 204.41 crores as on 1.4.2006, which is portrayed in the table below:

Table - 16
PFC Loan Outstanding
(Rs. in Crores)

	As on 01.04.2006	As on 01.04.2007
(a) Unit 1 & 2 Burla	11.50	3.84
(b) Unit 3 & 4 Burla	64.69	58.20
(c) Unit 7 & 8 Balimela	-	96.00
(c) UIHEP	128.22	96.22
Total	204.41	254.26

For OHPC old stations, interest on loan including guarantee Commission aggregates to Rs.21.78 crores and in case of UIHEP it comes to Rs.9.32 crores for the years 2007-08 in comparison to Rs. 12.28 and 12.12 crores for old stations and UIHEP respectively in 2006-07 as summarized in the table below:

Table – 17
Statement of OHPC Loans and Interest on Loan
(Rs. in Crore)

Source of Loan	Loan Outstanding		Interest on Loan	
	As on 1.04.2006	As on 1.04.2007	2006-07	2007-08
Govt. loan @ 9.8%	23.64	19.75	2.32	1.94
APDP Loan @ 13.5%	NIL	NIL	NIL	-
PFC Loan for 1 & 2 Burla	11.50	3.84	0.96	0.20

PFC Loan for 3 & 4 Burla	64.69	58.20	5.94	4.76
PFC Loan for Balimela 7 & 8	-	96.00	-	8.80
Deemed loan (10.25%)	15.41	11.85	1.58	1.30
Deemed loan for Balimela	-	30.00	-	3.30
Govt. Guarantee Commission	-	-	1.48	1.48
Sub total (Old Stations)	115.24	219.64	12.28	21.78
UIHEP (PFC Loan)	128.46	96.22	12.12	9.32

As such the Commission approves interest payment of Rs.21.78 crore for OHPC old stations and Rs.9.32 crore for UIHEP for the FY 2007-08.

5.4.5.2 Depreciation includes Advance Against Depreciation:

Depreciation is an important component of annual operating cost of the generating companies and it constitutes between 20 to 25% of the annual expenditure. In the instant case, the capital assets have been revalued nearly 3 times of its historical cost. Hitherto, the Commission has been calculating depreciation on prevalent norms i.e. post'94 rate which has substantially raised the revenue requirement due to upfront loading. This principle was followed upto FY 2000-01. Since 2001-02, as a part of corrective measures, depreciation was limited to the principal repayment during a particular year. However, during 2003-04, as per the directions of the Hon'ble High Court, depreciation was calculated at pre-1992 norms notified by Govt. of India on the book value of the assets. During 2004-05 again, the Commission calculated depreciation limiting to principal repayment.

For the purpose of determination of Annual Fixed Charges, depreciation is computed @ 2.57% on the project cost considered for FY 2007-08 in case of Rengali and Upper-Kolab Hydro projects. However, in case of Hirakud Power systems and Balimela where loan repayment is more than the computed depreciation @ 2.57%, the differential amount have been taken in the calculation as Advance Against Depreciation for the FY 2007-08. The details of repayment of loan as submitted by OHPC for old stations is as under:

Table – 18
Statement of Repayment of Loans

Power Stations	2006-07	2007-08
RHEP	0.90 crores	Rs. 1.05 crores
UKHEP	1.06 crores	Rs. 1.25 crores
BHEP	1.14 crores	Rs. 13.55 crores
HPS	19.69 crores	Rs. 14.50 crores
Total	22.79 crores	Rs. 30.35 crores

It may be observed from the above table that there has been substantial increases in loan repayment during 2007-08 as compared to 2006-07, which may be attributed to the loan repayment obligations of unit 7 & 8 of Balimela extension which was vehemently objected to by some of the objectors on the ground that installation of these units will not add to

generation of units. Passing of this expenditure will raise the per unit cost only. It has been clarified by OHPC that these units are meant to support the peak demand of the state. It can get compensated through earning of UI if approved by the Commission. OHPC has stated that these two units will be capitalized by March/April 2007. The units 3 & 4 of Burla have already been capitalized during FY 2006-07 for which the audited capitalized cost has been arrived at Rs. 111.75 crores. Balimela extension units 7 & 8 are expected to be in operation by March, 07/April 07. The capitalization is under process.

For the year 2007-08, depreciation is claimed in the tariff applying 2.57% in case of RHEP, UKHEP whereas for BHEP & HPS the actual loan repayment requirement is considered for the purpose of depreciation. This is summarized in the table below.

Table – 19

Name of the Power Station	Depreciation (Rs. Crore)	Remark
RHEP	2.41	2.57(%)
Upper Kolab	2.81	2.57(%)
Balimela	13.55	Equal to loan repayment
HPS Burla	14.50	Equal to loan repayment
Total	33.27	

The evidential documents furnished by OHPC reveal that the loan repayment is to start from April 2007 in case of Balimela. The difference between the loan repayment requirement of Rs. 33.27 crores and the permitted depreciation applying the rate of 2.57% as per CERC norms i.e. Rs. 22.32 crore (same as 2006-07 as portrayed in table-18) equals to Rs. 10.95 crores which shall be treated as advance against depreciation (AAD) for Balimela (Rs. 5.90 crore) and HPS (Rs. 5.05).

The principle of depreciation linked to loan repayments provided in the PPA for UIHEP has been approved. Following this principle, the amount to be recovered through depreciation is Rs.32.07 crore during the FY 2007-08 which is being passed on to tariff.

5.4.5.3 Return on Equity:

The CERC regulation provides that Return on Equity shall be computed on the equity base determined in accordance with Regulation 36 and shall be @ 14% per annum.

In this regard, the focus has to be on the quantification of equity base of OHPC which was already decided in Commissions' tariff order dtd.19th April 2002 vide Para 6.4.2 through Para 6.4.21. The relevant extract of the said order is reproduced below:

“6.4.2 Thus, 5(i) para (B) and (ii) of the said notification should be replaced to state clearly that the break up of the provisional project cost of Rs.1195.42 Crore of UIHEP will be as under.

i) Rs.320 Crore as loan from PFC

ii) Rs.576.561 Crore as Government debt carrying no interest from 1 April 2000 onwards till sect oral turn around.

iii) Rs.298.85 Crore as Government equity

6.4.3 These measures will go a long way in bringing down the cost of OHPC power.

6.4.4 The Zero Coupon Bonds issued to the State Government for Rs.400 Crore by GRIDCO against revaluation of assets was not to carry any interest for a period of five years. Suitable amendments may be made to the relevant provisions of the transfer scheme notification allowing zero coupon bonds to continue for a further period of five years or more depending on sect oral turn around.

6.4.5 The Commission on its part would like to take the following decisions in the matter of approval of PPA between OHPC and GRIDCO in the public interest to bring down the cost of OHPC power and the cost of transmission and distribution by allowing no return on equity of Rs.300.00 Crore created on account of asset revaluation of old OHPC station until sect oral turn around.

6.4.6 However, the Commission will allow appropriate rate of return on OHPC's own investment in R&M equity of Rs.22.56 Crore and on the equity of Rs.298.70 Crore of UIHEP. Dividends, if any, payable for the first four years should be ploughed back as fresh loan to OHPC by Government of Orissa.”

Based on the contents of the above order and notification subsequent to dtd.29.01.2003 of the Government of Orissa, the Return on Equity for the year 2004-05 was allowed to OHPC on new investments only after 01.04.1996. In the meantime, the time frame notified by the Government to keep the effect of up-valuation in abeyance upto the financial year 05-06 or the time by which the sector turns around, has been completed. The Commission has advised the Government to keep in abeyance the up-valuation of assets upto 2010-11, as the sector has not yet turned around.

1. For old stations RoE is calculated @ 14% on OHPC's own investment of Rs.48.40 Cr in case of HPS. OHPC has submitted that the project cost for extension of Balimela 7 & 8 is Rs.180.00 crore. Applying CERC norms of debt/equity ratio of 70:30 the equity component for this project comes to Rs.54 crore. Thus RoE comes to Rs.6.78 Cr in case of HPS and Rs. 7.56 Cr in case of Balimela which taken together comes to Rs. 14.34 crores.

2. The proposal of OHPC to allow return on 25% of the original book value of asset is not approved by the Commission.
3. In case of UIHEP RoE is calculated @ 14% on Government equity of Rs.298.70 crore which comes to Rs. 41.82 crore. The Commission approves ROE @ 14% in line with CERC norms to this project with a view to encourage the growth of hydropower in the State. OHPC should make all attempts to explore the possibilities on a long-term basis for utilization of hydro potential in the State. The Commission approves return on equity to OHPC as summarized in the table below:

Table - 20

Name of the Power Station	Return on Equity 2006-07 (@ 12%)	Return on Equity 2007-08 (@ 14%)
RHEP	0.00	0.00
Upper Kolab	0.00	0.00
Balimela	0.00	7.56
HPS Burla	2.46	6.78
UIHEP (@ 14%)	41.82	41.82
Total	44.28	56.16

5.4.5.4 O&M Expenses:

OHPC has projected the O & M expenses for the FY 2007-08 in each of the power stations as follows:

Table – 21

(Rs. in Crs.)

Sl. No.	Particulars	HPS	BHEP	RHEP	UKHEP	UIHEP
1	Actual O & M Expenses for FY 2005-06 (Audited)	30.78	25.49	14.09	10.38	30.00
2.	4% Escalation for FY 2006-07.	32.01	26.51	14.66	10.80	33.54 *
3.	4% Escalation for FY 2007-08.	33.29	27.57	15.24	11.23	34.88
4.	Special repair.	-	-	-	1.50	5.00
5.	Adjustment due to transfer of some employees between RHEP & UKHEP.	-	-	(-) 0.50	(+)0.50	-
TOTAL (items 3+4+5)		33.29	27.57	14.74	13.23	39.88

OHPC has claimed annual escalation @ 4% on the actual O&M expenses incurred for 2005-06 to arrive at O&M expenditure required for 2007-08. The generator has also claimed an additional expense of Rs. 5.43 crore during 2005-06 on account of terminal liabilities. OHPC has stated that it is mainly attributed to accrual of terminal liabilities transferred from ex-OSEB

and included in the pension scheme pursuant to the Transfer Scheme Rules, 1996. Such terminal liabilities are recurring in nature and need to be allowed in tariff.

The Commission has examined the proposal of OHPC and observes that the total terminal liabilities may not be recurring in nature and does not qualify for annual escalations. Some of the components like gratuity, leave allowance etc. are one-time payments only. Therefore, the sum of Rs. 5.43 crore should be bifurcated into expenses which are recurring in nature and the expenses which are one time payment. Accordingly, OHPC indicated that 75% of the sum of Rs. 5.43 crore was recurring in nature and the rest 25% was a type of one time payment during 2005-06. Now, while computing O&M expenses, the Commission has given annual escalation @ 4% on the base value of 2005-06 which incorporates this 75% of the recurring terminal liabilities. The Commission also approves a sum of Rs.1.50 crore towards special repair of UKHEP as proposed by OHPC as all power stations of OHPC shall have to be maintained for availability for meeting the demand of the state with the lowest cost. Accordingly, the O&M expenses for 2007-08 have been arrived at Rs. 87.36 crore. Hence, the Commission approves an expenditure of Rs.87.36 crore for 2007-08 towards O&M expenses.

The Commission has already accepted an expenditure of Rs.16 crore for repair of rotor poles of UIHEP @Rs.5 crore per annum for a period of 3 years starting from FY 2005-06 to 2007-08 and Rs.1 crore in 2008-09 while approving the tariff order for GRIDCO in Case No.147/2004. Accordingly, for the year 2007-08, O&M expenses approved is Rs. 39.88 crore for UIHEP after considering annual escalation @ 4% over the pass through figure of FY 2006-07 and allowing Rs.5 crore towards major repair of rotor poles.

The total O&M expenses approved for OHPC for the years 2006-07& 2007-08 are presented in the table below:

Table – 22
Approved O&M Expenses
(Rs. in crore)

Name of the Stations	2006-07	2007-08
HPS	33.53	33.29
BHEP	20.34	27.57
RHEP	14.94	14.74
UKHEP	9.52	13.23
Old Stations	78.33	87.36
UIHEP	38.54	39.88
Total	116.87	127.24

5.4.5.5 Interest on Working Capital:

The basis for calculation of working capital shall include the following:

- ii) Operation and maintenance expenses for one month.
- iii) Maintenance spares @ 1% of the historical cost escalated @ 6% per annum from the date of commercial operation and

- iv) Receivables equivalent to two months of fixed charges for sale of electricity, calculated on normative capacity index.

The rate of interest on working capital shall be the short-term prime-lending rate of State Bank of India as on 01.04.2006 as all OHPC power stations are under commercial operation prior to this date. In accordance with CERC guideline, the interest on working capital shall be payable on normative basis.

Table - 23
Interest on Working Capital

	(Rs. in crore)
	2007-08
O&M expenses for one month for OHPC old stations	7.28
O&M expenses for UIHEP for one month	2.91
Receivables for two months OHPC old stations	26.79
Receivables for two month for UIHEP	20.11
Maintenance of Spares for old stations	2.80
Maintenance of Spares for UIHEP	1.00
Total working capital	60.89
Interest on working capital calculated @ 11%	6.69

5.4.5.6 Income Tax

In accordance with regulation 7 of tax on income streams of the generating company from its own business shall be computed as an expense and shall be recovered from the beneficiaries besides other terms and conditions. According to CERC regulation in respect of hydro generating stations, the rate of primary energy and secondary energy are taken as equal. Primary energy charge is calculated as a ratio of annual fixed cost to the design energy. As secondary energy is in excess of the design energy inclusion of income tax rate in primary energy would mean double recovery. The Commission has considered it and decided that for the purpose of computation of secondary energy charges the per unit charge shall exclude income tax paid by OHPC.

5.4.5.7 Total Annual Fixed Charges

Based on the above parameters the station-wise ARR and tariff calculated for the year 2007-08 is portrayed in the table below:

Table – 24
STATION-WISE TARIFF APPROVED FOR 2007-08
(Rs. in crore)

Details of expenses	RHEP	UKHEP	BHEP	HPS	Total of Old Stations	UIHEP
Saleable Design Energy (MU)	519.75	823.68	1171.17	1162.26	3676.86	1942.38
Interest on loan	0.51	0.61	13.20	7.45	21.78	9.32
Return on Equity	0	0	7.56	6.78	14.34	41.82
O&M expenses	14.74	13.23	26.10	33.29	87.36	39.88
Depreciation	2.41	2.81	13.55	14.50	33.27	32.07
Interest on working capital	0.55	0.51	1.49	1.55	4.06	2.64
ED @ 20 P/U	0.05	0.08	0.12	0.12	0.37	0.20
Income Tax (MAT)	0.02	0.25	0.70	0	0.97	4.53
Total ARR (Rs.crore)	18.28	17.50	62.68	63.68	162.14	130.46
Average cost (P/U)	35.17	21.24	53.52	54.79	44.10	67.16

The principles governing computation of the primary and secondary energy rates are enunciated in the CERC (Terms and Conditions of Tariff) Regulations, 2004 as amended from time to time. These principles are mentioned here under:

5.4.6 Primary Energy Charges

"Rate of Primary Energy for all hydro electric power generating stations except for pumped storage stations shall be equal to average of the lowest variable charges of the central sector thermal power generating station of the concerned region for all months of the previous year. The primary energy charge shall be computed based on the primary energy rate and saleable scheduled primary energy of the station.

Provided that in case the primary energy charge recoverable by applying the above primary energy rate exceeds the annual fixed charges of a generating station, the primary energy rate for such generating station shall be calculated by the following formula:

$$\text{Primary Energy rate} = \frac{\text{Annual Fixed Charge}}{\text{Saleable Design Energy}}$$

Primary Energy Charge = Saleable Scheduled Primary Energy x Primary Energy Rate.

5.4.6.1 Since the average of the lowest variable cost of the central sector thermal generating stations in the Eastern Region for 2006-07 (considering 2007-08 as the tariff year) as approved in CERC Notification dtd. 09.05.2006 for approval of tariff of Talcher Super Thermal Power Station for the period from 01.4.2004 to 31.3.2009 is 41.10 p/u (excluding FPA¢ral transmission loss), the amount recoverable by applying this rate to the design energy will exceed the

annual fixed charges in case of Rengali Hydro Electric Project and Upper Kolab Hydro Electric Project. However, in case of BHEP and HPS this rate of 41.10 p/u can be considered as the primary energy rate. After recovering the primary energy charges by applying this rate the balance will be recovered through capacity charges per month. The primary energy rate for RHEP and UKHEP is determined by the formula as stated in para No.5.4.6.

5.4.6.2 Accordingly, the primary energy rate for each of the old OHPC stations for the FY 2007-08 is approved as mentioned in the table below:

Table – 25

Primary Energy Rates for FY 2007-08 (w.e.f. 01.04.2007)

Name of the Power Stations	Paise/Unit (2006-07)	Paise/Unit (2007-08)
Rengali HEP	35.56	35.17
Upper Kolab HEP	16.35	21.24
Balimela HEP	21.82	41.10
Hirakud Power System	57.10	41.10
Upper Indravati HEP	46.38	41.10

This rate shall be applicable for sale of power upto design energy. In addition to the above, capacity charge shall also be applicable for Balimela, Hirakud & UIHEP which is dealt under appropriate heading.

5.4.7 Secondary Energy Charges:

5.4.7.1 As per the CERC Regulation, the rate of secondary energy shall be equal to the rate of primary energy. Some objectors had stated that the secondary energy rate should not be equal to the rate of primary energy. The Commission has examined the suggestions given by the objectors with regard to pricing of secondary energy. The Commission's order in Case No.153/2004 dtd.10.06.2005 approving secondary energy rate equal to primary energy rate remains unaltered for the reasons already given in the aforesaid order. The Commission therein had directed to maintain a separate fund to deposit the revenue earnings out of sale of secondary energy. OHPC had come with a petition explaining the difficulties for maintenance of such a separate fund and requested that the amount so earned shall be earmarked and maintained as a part of OHPC's revenue. Accordingly, the Commission has issued a clarificatory order vide Case No.38/2005 dt.22.10.2005 confirming that *“the revenue out of the sale of secondary energy may remain as part of normal fund of OHPC but shall be utilised to replenish the shortfall in revenue due to less generation by OHPC in years of hydrological failure to provide necessary comfort to the consumers of the state in accordance with para 6.5(e) of our order dt.10.06.05.*

5.4.7.2 The Commission following the CERC Regulation has worked out the Rates of Secondary Energy which shall be equal to Primary

Energy rate in case of BHEP, HPS and UIHEP. In respect of charges of RHEP and UKHEP the per unit cost of generation is lower than the lowest variable charges of the central sector thermal generating stations of the Eastern Region for all the months of 2006-07. Therefore, for the purpose of determination of secondary energy, the Commission accepts the average cost per unit less the income tax per unit payable to be the rate of secondary energy. Thus, the secondary energy rate is determined by taking annual fixed charges excluding income tax. Hence, the Commission approves the following secondary energy rates as mentioned in the table below:

Table – 26

Secondary Energy Rates for FY 2007-08 (W.e.f. 01.04.2007)

Name of the Power Stations	Paise/Unit
Rengali HEP	35.14
Upper Kolab HEP	20.94
Balimela HEP	41.10
Hirakud Power System	41.10
Upper Indravati HEP	41.10

5.4.8 Two-Part Tariff

5.4.8.1 The Commission had directed in Case No.153/2004 to implement two-part tariff in case of all power stations of OHPC. Subsequently OHPC had filed a petition for implementation of two-part tariff in respect of old stations of OHPC, and the Commission had admitted it as case No. 24/2006. The Commission heard the case on 11.8.2006 and the order was reserved. In the said hearing GRIDCO was the respondent and it agreed with the petition filed by OHPC. In case of UIHEP, already a two-part tariff structure i.e. capacity charge and primary energy rate have already been implemented since FY 05-06. The Commission directs to implement the same principle in case of all power stations of OHPC from FY 2007-08 onwards.

5.4.8.2 In this context reference may be made to Commission's observation relating to rate of primary energy in Case No. 88/2004. The extract of the said order is reproduced below for reference.

“The Commission would like to observe that according to para 39 of the CERC notification dt.26.03.04, primary energy charges has to be worked out on the basis of paise per kwh and the rate of primary energy shall be equal to the lowest variable charges of the central sector thermal power generating station of the concerned region with a proviso that in case the primary energy charge recoverable by applying the above primary energy rate exceeds the annual fixed charge of a generating station, the annual fixed charge in respect of such a station has to be recovered from the saleable primary energy multiplied by the primary energy rate which could be lower than the lowest variable charge of the central sector thermal power generating station of the region. The Commission does not find any rationale for deviating from the norms fixed by the CERC. Besides,

GRIDCO has not provided any calculation to indicate that the adoption of the concept of capacity charge and the energy charge as proposed by them will not exceed the per unit tariff calculated on the basis of norms specified in CERC regulation as stipulated in para 11 of the notification. In view of this, the Commission accepts conditions mentioned in the PPA.”

Further, when GRIDCO came up with a review petition in the same matter the Commission had observed at Para 10 of the order dtd 17.04.2006 in case No 53/2005 wherein that billing and payment of capacity charge would be done in accordance to the norms specified in CERC Regulation. The extract of the said order is given below:-

“In accordance with clause 37(1), capacity charge is to be determined after deducting primary energy charges from the annual fixed charges. In case of less generation when the generator is unable to recover the annual fixed charge, the gap between the AFC and the primary energy charge shall have to be treated as capacity charge. The method of recovery may be calculated in accordance with the CERC regulation for such a recovery. In the present scenario when the cost of generation of old OHPC stations is less than the lowest variable cost of the central generating station, the provision of penalty can not be implemented when the generation is equal to or more than the design energy. However, OHPC and GRIDCO should continue to calculate the capacity index as specified in the CERC regulations which can be utilized in case of shortfall in generation.”

5.4.8.3 On the basis of the ARR now determined the Commission approves the rate of primary energy, the rate of secondary energy and the capacity charges as summarized in the table below:

Table - 27

Primary Energy, Secondary Energy and Capacity Charges for 2007-08

Name of the Power Stations	Primary Energy P/U	Capacity Charge Rs. Cr.	Secondary Energy P/U
Rengali HEP	35.17	-	35.14
Upper Kolab HEP	21.24	-	20.94
Balimela HEP	41.10	14.55	41.10
Hirakud Power System	41.10	15.91	41.10
Upper Indravati HEP	41.10	50.62	41.10

5.4.9 Machhkund Hydro Electric Project

OHPC had furnished @18.21 paise/unit for Machhkund Power Station for the year 2007-08 based on energy drawl of 265 MU. The Commission has taken into consideration the net share payable by Orissa towards O&M expenses for the year 2005-06 (actual) which is to the tune of Rs.3.64 crore. Allowing an escalation of 4% per annum for the year 2006-07 and

subsequently for 2007-08, O&M expenses come to Rs. 3.94 crores and the rate per unit comes to 18.21 paise for the year 2007-08. Accordingly, the procurement cost works out to Rs.4.78 crore for an approved energy drawl of 265 MU.

5.4.10 Perspective Hydro Development in the State

Objections have been raised with regard to installation of two additional units at Burla whose impact has been a rise in OHPC tariff for FY 2007-08 due to its capitalization. Keeping the overall objective of the power sector the Commission has allowed it as a pass through in OHPC tariff with a view that after introduction of Availability Based Tariff benefits could accrued to the Orissa power sector by means of unscheduled interchange. This will offset the additional burden of the consumers and the net impact would be beneficial for the consumers of the state as a whole.

5.4.11 Before we conclude we direct that OHPC shall take necessary action on the following matters: -

- (i) OHPC shall keep the Commission informed about the progress of determination of design energy of its power stations on monthly basis.
- (ii) **Renovation and Modernization:** The Commission is very much conscious about the renovation and modernization of the OHPC power stations for which directions are being given in tariff orders of 2004-05, 2005-06 and 2006-07. The Commission has taken note of the submissions of OHPC from time to time. OHPC shall continue to keep the Commission informed regarding any major developments in renovation and modernization programs of its power stations.
- (iii) During the course of public hearing, very eminent hydro experts of the state have given their valuable suggestions for development of the hydropower in the state, which is very relevant for the Power Sector in Orissa. The OHPC and Govt. of Orissa should give due importance to the suggestions made by the objectors as recorded in this order.

6. The application of OHPC for approval of its Annual Revenue Requirement and fixation of generation tariff for the financial year 2007-08 thus stands disposed.

The Tariff now approved shall be operative from 01.04.2007 and continue until further order.

**Sd/-
(S.K. JENA)
MEMBER**

**Sd/-
(B.K DAS)
CHAIRPERSON**