

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

**Present:** Shri B. K. Das, Chairperson  
Shri K.C. Badu, Member  
Shri B. K. Misra, Member

**Case No.143/2010**

**DATE OF HEARING : 02.02.2011**

**DATE OF ORDER : 18.03.2011**

**IN THE MATTER OF : Application for approval of Annual Revenue Requirement and Generation Tariff of OHPC stations for the FY 2011-12 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 Generation Tariff for its different power stations for the financial year 2011-12.

**PROCEDURAL HISTORY (Para 1 to 9)**

1. The OHPC is a “Generating Company” under the meaning of Sec.2 (28) of the Electricity Act, 2003. After the unbundling of the Orissa State Electricity Board (OSEB) in the year 1996, the assets, liability and personnel of the Board were transferred to this generating company to carry out the business of generation of hydro-electricity. The entire power produced by OHPC through its various generating stations is fully dedicated to the State of Orissa. Thus, 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, 2003 came into force and promulgation of the Government of Orissa Transfer Scheme, 2005, GRIDCO as the deemed trading licensee was entrusted with the 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, GRIDCO is buying the power from the bus bar of the generating stations of OHPC and selling it to the Distribution Licensees at the secondary of the 132/33 or 220/33 KV S/s of the OPTCL (STU). GRIDCO returns the transmission charges and SLDC charges to OPTCL and SLDC respectively from the receipt of DISCOMs.

2. Thus, the real beneficiaries of OHPC's power are the Distribution Licensees of the State. Due to the Single Buyer Model, as currently prevailing in the State of Orissa, GRIDCO acts as a medium to receive the power produced by OHPC for the Distribution Licensees.
3. As per Regulation 61(2) of the OERC (Conduct of Business) Regulations, 2004, a generating company is required to file an application by 30<sup>th</sup> November of each year to the Commission for determination of tariff for any of its generating stations, 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 stations. Accordingly, on 30.11.2009 OHPC, as a generating company, had filed its Annual Revenue Requirement (ARR) and fixation of tariff application before the Commission for the FY 2011-12 in respect of each of its generating stations separately.
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 was given in leading and widely circulated newspapers and was also posted in the 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 the Commission received 7nos. of objections from the following persons/organizations:  

(1) Sri G.N. Agrawal, Convenor-cum-Gen. Secy, Sambalpur District Consumers Federation, Balajee Mandir Bhawan, Khetrajpur, Dist-Sambalpur-768003,(2) Shri Jayadev Mishra, N-4/98, Nayapalli, Bhubaneswar-12,(3) Shri Ramesh Ch. Satpathy,Secretary, National Institute of Indian Labour, Plot No.302(B), Beherasahi, Nayapalli, Bhubaneswar-751012,(4) Shri R.P. Mahapatra, Retd. Chief Engineer & Member (Gen., OSEB), Plot No.775(Pt.), Lane-3, Jayadev Vihar, Bhubaneswar-751013, (5) Sri M.V. Rao, Chairman, Power Committee, Utkal Chamber of Commerce & Industry, N/6, IRC Village, Nayapalli, Bhubaneswar-751015,(6) Chief Executive Officer (Comm), NESCO, WESCO & SOUTHCO, Regd. Office- Plot No. N-1/22, IRC Village, Nayapalli, Bhubaneswar-15 & (7) Managing Director, GRIDCO, Janpath, Bhubaneswar, Govt. of Orissa

All the above named objectors were present during the tariff hearing and their written submissions filed before the Commission were taken in to record for consideration of the Commission.
5. The applicant submitted its reply to issues raised by the various objectors.
6. In exercise of the power u/S. 94(3) of the Electricity Act, 2003 and to protect the interest of the consumers, the Commission appointed WISE, Pune as Consumer Counsel for objective analysis of the applicant's Annual Revenue Requirement and tariff proposal. The Consumer Counsel presented his views on the matter in the hearing.
7. The date of hearing was fixed as 02.02.2011 and was duly notified in the leading and widely circulated newspapers mentioning the list of objectors. The Commission also issued notice to the Government of Orissa through the Department of Energy

informing them about the date and time of hearing and requesting to send the Government's authorized representative to take part in the proceedings.

8. In its consultative process, the Commission conducted a public hearing at its premises on 02.02.2011 and heard the Applicant, Objectors, Consumer Counsel and the Representative of the Dept. of Energy, Government. of Orissa at length.
9. The Commission convened the State Advisory Committee (SAC) meeting on 14.02.2010 at 3:30PM to discuss about the ARR application and tariff proposal of the generating company. The Members of SAC presented their valuable suggestions and views on the matter for consideration of the Commission.

#### **ARR PROPOSAL OF OHPC FOR FY 2011-12 (Para 10 to 22)**

##### **Installed Capacity**

10. The total installed capacity of the various Hydro Stations owned by the Orissa Hydro Power Corporation (OHPC) is projected at 2062 MW as on 01.04.2011 and shall remain the same for the entire FY 2011-12 including Orissa's share of Machkund.

The installed capacity of different generating stations as reported by OHPC for the FY 2011-12 is given in the table below.

**Table - 1**

Sl. No.	Name of the Power Station	Installed Capacity (MW)	
		2010-11	2011-12
1	Hirakud (HHEP)	275.50	275.50
2	Chiplima (CHEP)	72.00	72.00
3	Balimela (BHEP)	510.00	510.00
4	Rengali (RHEP)	250.00	250.00
5	Upper Kolab (UKHEP)	320.00	320.00
6	Upper Indravati (UIHEP)	600.00	600.00
7	Machhkund (30% Orissa share)	34.50	34.50
<b>Total</b>		<b>2062</b>	<b>2062</b>

##### **Design Energy of OHPC Stations**

11. The Design Energy (DE) of a Hydro Power Station is an important parameter for determination of tariff. The station-wise design energy proposed by OHPC for consideration during FY 2011-12 ARR and Tariff determination is given in the following table.

**Table - 2**

Sl. No.	Name of the Power Stations	Design Energy (DE) (in MU)	Design Energy for sale (MU)
1	HHEP	684.00	677.16
2	CHEP	490.00	485.10
3	BHEP	1183.00	1171.17
4	RHEP	525.00	519.75
5	UKHEP	832.00	823.68
6	UIHEP	1962.00	1942.38
<b>Total</b>		<b>5676.00</b>	<b>5619.24</b>

### Reservoir Level and Anticipated Generation for FY 2010-11

12. The reservoir level of Power stations reported by OHPC as on 01.11.2010 vis-à-vis on 01.11.2009 is given below

**Table – 3**

Sl No.	Reservoirs	As on 01.11.2009	As on 01.11.2010
1.	Hirakud	626.02 (ft)	629.08 (ft)
2.	Balimela	1467.80 (ft)	1505.90 (ft)
3.	Rengali	120.46 (m)	118.81 (m)
4.	Kolab	849.64 (m)	855.94 (m)
5.	Indravati	637.52 (m)	639.50 (m)

The actual generation of different power stations under OHPC up to 31.10.2010 and anticipated generation up to 31st March 2011 is also provided as given below in table-4, taking into consideration irrigation requirements.

**Table -4**

Sl No.	Name of the power stations	Actual generation from 01.04.10 up to 31.10.10 (MU)	Anticipated generation from 01.11.10 up to 31.03.11 (MU)	Total For 2010-11 (3+4) (MU)	Commission's Approval for 2010-11 (MU)	Total For 2011-12 projected
1	2	3	4	5	6	7
1.	HHEP	531.331	144.96	676.291	677.16	676.27
2.	CHEP	159.103	90.60	249.703	485.10	249.703
3.	BHEP	721.735	500.52	1222.255	1171.17	1222.255
4.	UKHEP	270.781	260.28	531.061	519.75	531.061
5.	RHEP	207.170	65.28	272.450	823.68	272.450
6.	UIHEP	1007.461	673.56	1681.021	1942.38	1681.021
<b>Total</b>		<b>2897.581</b>	<b>1735.20</b>	<b>4632.76</b>	<b>5619.24</b>	<b>4632.76</b>

### Project Cost

13. The revalued cost of old power stations under OHPC is Rs.1196.80 Cr as on 01.04.1996 as per the notification no 5207 dtd. 01.04.1996 of Department of Energy, Government of Orissa. The Commission in its Order dated 23.03.2006 at clause no. 5.4 (C) had approved the same. The historical cost of old power station of OHPC was Rs.479.80 Crore. Further, the Commission, in the Order dated 20.03.2008 has approved Rs.1195.42 crore as final capital cost of UIHEP for the purpose of determination of tariff. The project cost of OHPC power stations reported for computation of ARR for the FY 2011-12 is given in the table below:

**Table- 5**

(Rs. Crs.)

Sl. No.	Name of the power stations	Historical cost of asset as on 01.04.96	Revalued cost of assets as on 01.04.96	New additions up to 2010-11	Project cost considered for Tariff calculation (based on original cost)	Project cost for (based on revalued cost)
1	2	3	4	5	6 (3+5)	7 (4+5)
1.	HHEP	72.75	130.16	191.74	264.49	321.90
2.	CHEP	92.23	165.01	42.82	135.05	207.83

Sl. No.	Name of the power stations	Historical cost of asset as on 01.04.96	Revalued cost of assets as on 01.04.96	New additions up to 2010-11	Project cost considered for Tariff calculation (based on original cost)	Project cost for (based on revalued cost)
3.	BHEP	115.42	334.66	209.62	325.04	544.28
4.	RHEP	91.09	259.01	3.61	94.70	262.62
5.	UKHEP	108.31	307.96	3.82	112.13	311.78
	<b>Total (old PS)</b>	<b>479.80</b>	<b>1196.80</b>	<b>451.61</b>	<b>931.41</b>	<b>1648.41</b>
6.	UIHEP	Approved project cost				1195.42

The revalued cost of HPS of Rs.295.17 Cr. has been apportioned to HHEP (Rs.130.16 cr.) and CHEP (Rs.165.01) based on the revaluation of cost made by M/s MECON. Similarly, the historical cost of assets of HPS amounting to Rs.164.98 Cr. (HHEP Rs.72.75 cr + CHEP Rs.92.23 cr) has been apportioned based on the ratio of apportion made for revalued cost of assets. Trash Rack cleaning machine (TRCM) has been installed and commissioned in June 2010. The balance amount of Rs 5.47 Cr out of total cost of TRCM of Rs 6.80 Cr is proposed for capitalization during FY 2010-11.

#### **Determination of Annual Fixed Cost for FY 2011-12**

14. Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 specifies methodology for computation of tariff for supply of electricity from a hydro generating station. The tariff shall comprise capacity charge and energy charge to be shared on 50:50 basis for recovery of annual fixed cost. The Annual Fixed Cost of a hydro generating stations shall consist of the following components:

- a. Return on equity (ROE)
- b. Interest on loan capital
- c. Depreciation
- d. Operation and Maintenance expenses
- e. Interest on working capital
- a. **Return on equity (ROE):** Return on equity shall be computed on pre-tax basis at the base rate of 15.5% to be grossed up as per following formula.

$$\text{Rate of pre-tax return on equity} = 15.5\% / (1-t)$$

Where "t" is the MAT rate payable by OHPC

The minimum alternate tax rate payable by OHPC is 19.9305%, including surcharge and cess.

$$\therefore \text{Rate of return on equity} = 15.50\% / (1 - 0.199305) = 19.358\%$$

The pre-tax return on equity @ 19.358% has been considered by OHPC for calculating ROE for FY 2011-12 for OHPC power stations.

Based on the order of the Commission vide case no. 64/2008 dated 20.03.09 at clause no. 181, the historical cost of assets as on 01.04.96 has not been considered for ROE. The new capital additions made by OHPC from 01.04.96 up to 31.03.2010 has been taken for calculation of ROE with an equity base

25% for HHEP and 30% for all other old power stations. For UIHEP equity base of 25% on approved project cost minus infirm power cost has been considered for computation of ROE as given in the following Table-6 below:

**Table - 6**

(Rs. cr.)

Sl No.	Name of the Power Stations	Additional capital up to 31.03.2011	Equity capital	Proposed for 2011-12 ROE @ 19.358 %	Commission's Approval for 2010-11
1.	HHEP	191.74	47.97	9.28	8.87
2.	CHEP	42.82	12.85	2.49	1.68
3.	BHEP	209.62	62.89	12.17	4.13
4.	RHEP	3.61	1.08	0.21	0.16
5.	UKHEP	3.82	1.15	0.22	0.21
6.	UIHEP	Project cost 1194.79	298.70	57.82	55.78
	Total			82.19	70.83

- b. **Interest on loan:** The loan liabilities on OHPC consist of state Government loans and PFC loans. The State Government loan outstanding as on 01.04.11 is Rs. 4.19 Cr. after adjustment of repayment towards principal.

As per the order of the Commission dated 20.03.2010 in case no. 147/2009, Hon'ble Commission vide Commission letter dated 27.01.10 has advised the State Government that the effects of up-valuation of asset and moratorium on debt services of State Govt. loans may be kept in abeyance till end of FY 2012-13. i.e. end of Control Period of Business plan instead of 2010-11. The Government has agreed to modify the notification in line with the OERC suggestion after getting concurrence of Finance Department.

The OHPC has also availed PFC loans in connection with R & M projects of HHEP, Burla and extension project of BHEP, Balimela.

The Station-wise interest payable on government / PFC loan and guarantee commission for FY 2011-12 as reported by OHPC is presented in Table No 7 below:

**Table – 7**

Sl. No.	Source of loan	Interest on loan for FY 2011-12 with G.C						
		HHEP	CHEP	BHEP	UKHEP	RHEP	UIHEP	TOTAL
1.	Rs. 39.20 Cr. Govt. loan @ 9.8%	0.03	0.04	0.10	0.13	0.11	---	0.41
2.	7% interest bearing State Govt. loan for Upper Indravati	---	---	---	---	---	38.21	38.21
3.	PFC loan	2.51	---	5.10	---	---	---	7.61
4.	Normative loan	0.00	1.42	2.72	---	---	---	4.14
5.	G.C.	0.44	---	0.64	---	---	---	1.08
	<b>Total</b>	<b>2.98</b>	<b>1.46</b>	<b>0.11</b>	<b>8.56</b>	<b>0.11</b>	<b>38.21</b>	<b>51.45</b>

**c. Depreciation**

Depreciation is the refund of capital subscribed and is a constant charge against an asset to create a fund primarily for debt repayment as well as replacement. It is an important component of annual fixed cost of the generating stations.

CERC Tariff regulation 2009-14 has specified rates for calculation of depreciation based on the capital cost admitted by the Commission.

OHPC has computed depreciation @ 2.57% on the historical project cost plus additional capitalization up to 2009-10 considered for FY 2011-12.

In case of HHEP and BHEP, since the loan repayment is more than computed depreciation @ 2.57%, the actual loan repayment has been considered to meet the requirement for repayment of principal loan installment. For UIHEP, the Commission has allowed recovery of depreciation from balance depreciable value of the project spread equally over the balance life period of the project. Therefore, depreciation of Rs. 30.23 Cr. has been considered for FY 2011-12 for recovery through tariff. Table 8 below presents the station-wise depreciation proposed by OHPC for FY 2011-12

**Table -8  
Depreciation**

Sl. No.	Name of the power station	Proposed for 2011-12		Commission's Approval for 2010-11	
		Depreciation Amount(Cr)	Remark	Depreciation Amount(Cr)	Remark
1	HHEP	6.86	Equal to loan repayment	7.97	Equal to loan repayment
2	CHEP	3.47	2.57%	3.30	2.57%
3	BHEP	16.17	Equal to loan repayment	16.12	Equal to loan repayment
4	RHEP	2.43	2.57%	2.14	2.57%
5	UKHEP	2.88	2.57%	2.88	2.57%
	Total (old Stn)	31.81		32.68	
6	UIHEP	30.23	Spread over useful life of the Plant.	30.23	Spread over useful life of the Plant.
Grand Total (Cr)		<b>62.04</b>		62.91	

**d. Operation and Maintenance (O&M) expenses:**

As per CERC Tariff Regulations 2009, normative O&M expenses shall be calculated with escalation of @5.72% per annum. O&M as per following is proposed by OHPC for FY 2011-12

- i. O & M expenses allowed for the year 2010-11 escalated @ 5.72% to arrive at O & M expenses for the FY 2011-12.
- ii. 30% arrear salary paid by OHPC during FY 2010-11 is included in the O & M expenses for FY 2011-12.

- iii. Corporate office O & M expenses amounting to Rs. 12.38 Cr. have been apportioned to different Units under OHPC based on installed capacity and included in the O&M expenses for FY 2011-12.
- iv. As per the decision of the department of energy, employees of the Corporation drawing pension from Govt. and OHPC are to draw pension from OHPC resulting in a differential pension liability of Rs. 21.28 Cr. which has been included in the O&M expenses
- v. 30% arrear salary and terminal liabilities of Corporate Office amounting to Rs. 6.95 Cr. has been apportioned to different units and included in the O & M expenses for the tariff proposal for FY 2011-12. Table -9 below presents the details.

**Table - 9**

**Statement of O&M Expenses proposed for 2011-12**

(Rs. cr.)

Description	HHEP	CHEP	BHEP	RHEP	UKHEP	Subtotal	UIHEP	Total
O&M expenses for FY 2011-12 including arrear salary and terminal liabilities	40.78	16.55	46.80	38.10	28.07	170.28	61.97	232.25
O&M approved for 2010-11	37.93	15.92	44.30	31.55	22.82	152.53	56.38	208.91

**e. Interest on Working Capital**

As per CERC Tariff Regulation 2009, the basis for calculation of working capital shall include the following:

- i) Receivables equivalent to two months fixed cost.
- ii) Maintenance spares @ 15% operational and maintenance expenses and
- iii) Operation and maintenance expenses for one month.

The rate of interest on working capital considered for is the short-term prime-lending rate of SBI i.e. 12.5% for FY 2011-12 . In accordance with CERC guidelines, the interest on working capital shall be payable on normative basis.

Table -10 below summarises the station-wise interest on working capital as proposed by OHPC for FY 2011-12



**Table -10**

Sl. No.	Description	HHEP	CHEP	BHEP	RHEP	UKHEP	UIHEP	Total
1.	Receivables equivalent to two months of fixed cost	10.398	4.16	14.479	7.142	5.467	32.347	74.00
2.	Maintenance spares @ 15% of expenses	6.117	2.483	7.020	5.715	4.211	9.296	34.842
3.	O&M expenses for one month	3.398	1.379	3.90	3.175	2.339	5.164	19.36
4.	Total working capital	19.91	8.022	25.40	16.03	12.02	46.81	128.19
5.	Interest on working capital calculated @ 12.5%	2.49	1.00	3.17	2.00	1.50	5.85	<b>16.01</b>

**Application fee and the publication expenses:**

In CERC tariff regulation 2009, the application filing fee and the expenses incurred on publication of notices may in the discretion of the Commission, be allowed to be recovered by the generating company directly from the beneficiaries. As per the Commission notification no. 1992 on dated 31.08.2009 in the clause no. 17 Commission has fixed a fee of Rs. 5000/- per MW as application fee for determination of tariff of conventional fuel based plant/ hydel plants, subject to maximum limit of Rs. 25,00,000/- (Rupees Twenty five lakhs).

The application fee and publication expenses proposed by OHPC for FY 2011-12 are given in table - 11 below

**Table -11**

Sl. No.	Application fee (lakhs)	Publication expenses (lakhs)	Total (lakhs)
1	25.00	2.06	27.06

**Total Annual Fixed Cost :**

Based on the above parameters the station-wise ARR and tariff proposed for the FY 2011-12 by OHPC is presented in table -12 below:

**Table -12  
Station-wise ARR and Tariff for FY 2011-12**

Details expenses	HHEP	CHEP	BHEP	RHEP	UKHEP	UIHEP	(Rs. cr.)	
							Subtotal (old PS)	Total
Saleable Design Energy (Mu)	677.16	485.10	1171.17	519.75	823.68	1942.38	3676.86	5619.24
Return on Equity	9.28	2.49	12.17	0.21	0.22	57.82	24.37	82.19
Interest on	2.98	1.46	8.56	0.11	0.13	38.21	13.24	51.45

<b>Details expenses</b>	<b>HHEP</b>	<b>CHEP</b>	<b>BHEP</b>	<b>RHEP</b>	<b>UKHEP</b>	<b>UIHEP</b>	<b>Subtotal (old PS)</b>	<b>Total</b>
Loan								
Depreciation	6.86	3.47	16.17	2.43	2.88	30.23	31.81	62.04
O&M expenses	40.78	16.55	46.80	38.10	28.07	61.97	170.30	232.27
Interest on working capital	2.49	1.00	3.17	2.00	1.50	5.85	10.17	16.02
Total ARR (Rs. in Crs.)	62.39	24.97	86.87	42.85	32.80	194.08	249.89	443.97
Average Tariff (p/u)	92.134	51.480	74.178	82.451	39.824	99.919	67.964	79.010
Approved ARR for 2010-11 (Rs. in Crs.)	60.64	22.79	68.40	35.91	27.32	146.82	215.06	361.88
Approved 11 Average Tariff for 2010 (p/u)	89.54	46.98	58.41	69.09	33.17	75.59	58.49	64.40

#### **Income Tax:**

15. As per CERC Tariff regulations 2009, Tax on the income streams of the generating company shall not be recovered from the beneficiaries, provided that the deferred tax liability, excluding fringe benefit tax for the period up to 31st March 2009 whenever it materializes, shall be recoverable directly from the beneficiaries and from the long term customers. OHPC requests the Commission to approve the same.

#### **Electricity duty on Auxiliary Consumption:**

16. As per the agreed PPA between OHPC and GRIDCO, the taxes and duties including ED on auxiliary consumption etc payable by OHPC to the State Government and other statutory bodies shall be passed on to GRIDCO in the shape of supplementary bill raised by OHPC. GRIDCO will make payment accordingly within 30 days of receipt of bills. Accordingly, ED on Auxiliary consumption of all the hydro electric projects to the tune of Rs.0.57 Crore is to be reimbursed to OHPC by GRIDCO. OHPC requested that the Commission may approve the same.

#### **Licence fee for use of water for generation of Electricity:**

17. As per the gazette notification dt. 01.10.2010 OHPC has to pay Rs. 0.01/kwh as licence fee on water used for generation of electricity from all Hydro Electric Project to the tune of Rs. 5.676 Cr to be reimbursed to OHPC by GRIDCO, based on design energy. OHPC further requests that since the above calculation is based on design energy of Hydro Projects, the actual generation from OHPC Power Stations may be considered for reimbursement of licence fee paid to Govt. of Orissa from GRIDCO. The Commission may approve the same.

#### **SLDC charges**

18. As per CERC (fees & charges of regional load dispatch centre and other related matters) regulations, 2009 SLDC has to levy and collect annual charges from the

users towards system operation charges and market operation charges. The Commission has allowed Rs. 1.81 Crs. as SLDC charges for the Financial Year 2010-11 to be collected from OHPC. OHPC proposes Rs 1.91 Cr to provisionally be considered as fees and charges payable by OHPC to SLDC.

#### **Tariff for Machhkund H.E. (Jt.) Scheme**

19. Machhkund Hydro Electric Project is a joint scheme of Government of Andhra Pradesh and Government of Orissa with 70% and 30% share with option of Government of Orissa to draw an additional 20% power at a cost of 0.08 P/U as per the inter state supplementary agreement in the year 1978 between Government of Andhra Pradesh and Government of Orissa. The proposed tariff of 22.054 P/U of Orissa drawl of Machhkund power for FY 2011-12 has been computed on cost reimbursement basis. The tariff proposed by OHPC is based on assumption that GRIDCO will draw power up to 50% of design energy of Machhkund equivalent to 262.50 MU.

**Table -13**

#### **Proposed Tariff for Machhkund HEP (Joint scheme) FY 2011-12**

	<b>Proposed for 2011-12</b>	<b>Commission's Approval for 2010-11</b>
Installed Capacity (MW)	114.50	114.50
Orissa share as per Original Agreement (30%)	34.50 Mw	34.50 Mw
Net. Energy for sharing between Andhra Pradesh & Orissa	525.00 Mw	525.00 Mw
Expected Energy Drawl by Orissa (50%)	262.50 Mu	262.50 Mu
Energy Drawl of 30% of Orissa share	157.50	157.50
Purchase of Power up to 20% as per Supplementary Agreement	105.00	105.00
O&M Escalation factor @ 5.72% per year for 2 years	1.1177	1.1177
	<b>(Rs. in Crs)</b>	<b>(Rs. in Crs)</b>
1. O&M Exp. (Orissa share of Actual O&M Exp. For FY 09-10)	4.428	4.404
2. O&M Exp for FY 2011-12	4.949	4.404
3. Power purchase cost of additional 20% above 30% Orissa Share	0.84	0.84
4. Total Annual Expenditure (2 +3)	5.79	5.76
5. Tariff (Paise/Kwh)	22.054	21.95

#### **Two-Part Tariff**

20. As per Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulation 2009, the annual fixed cost of a power station shall be recovered through capacity charge (inclusive of incentives) and energy charge to be shared on a 50:50 basis.

- 1) The capacity charge (inclusive of incentive) payable to a hydro generating station for a calendar month shall be

$$\text{Capacity charge (C.C)} = \text{AFC} \times 0.5 \times \text{NDM/NDY} \times \text{PAFM/NAPAF in Rupees.}$$

Where

AFC = Annual Fixed Cost specified for the year in rupees

NAPAF= Normative Annual Plant Availability Factor in percentage

NDM = Number of days in the month

NDY = Number of days in the year

PAFM= Plant Availability Factor achieved during the month in percentage.

The PAFM shall be computed in accordance with the following formula:

$$PAFM = 10000 \times \frac{\sum_{i=1}^N DC_i}{\{N \times IC \times (100 - Aux)\}} \%$$

Where

Aux = Normative auxiliary energy consumption in percentage

N = No of days in the month

IC = Installed capacity in MW of the complete generating station

DC<sub>i</sub> = Declared Capacity (in ex-bus MW) for the i<sup>th</sup> day of the month which the station can deliver for at least (3) hours, as certified by the nodal load dispatch centre after the day is over.

- 2) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to actual drawal as the case may be by the beneficiary, during the calendar month on ex-power plant basis at the computed energy charge rate.

Total energy charge payable to the generating company for a month shall be

{(Energy charge rate in Rs./Kwh) x (Schedule energy (ex-bus)) for the month in Kwh}

- 3) Energy charge rate (ECR) in Rupees per Kwh on ex-bus plant basis for a hydro generating station shall be determined up to three decimal places based on the following formula, subject provisions in clause(6) and (7) of Schedule-22 of CERC Tariff regulations 2009.

$$ECR = AFC \times 0.5 \times 10 / \{DE \times (100 - Aux) \times 100\}$$

Where,

DE = Annual design energy specified for the hydro generating station in Mwh, subject to provisions in Clause-(6) of Schedule-22 of CERC tariff regulations 2009.

As per the CERC Tariff regulation station-wise capacity charge and energy charge proposed by OHPC for FY 2011-12 is presented in table -14 below:

**Table -14****Capacity charge and energy charge of power stations**

<b>Name of the power stations</b>	<b>Annual fixed cost (Rs. in Crore)</b>	<b>Capacity charge (Rs. in Cr.)</b>	<b>Energy charge (Rs. in Cr.)</b>	<b>Energy charge rate (P/U)</b>
Hirakud HEP	62.39	31.195	31.195	46.067
Chiplima HEP	24.97	12.485	12.485	25.74
Balimela HEP	86.87	43.435	43.435	37.089
Rengali HEP	42.85	21.425	21.425	41.225
Upper Kolab HEP	32.80	16.40	16.40	19.912
Upper Indravati HEP	194.08	97.04	97.04	49.959

**Normative Plant Availability Factor (NAPAF)**

21. The Commission in the order dated 02.11.2010 vide case no. 65/2010 has approved the NAPAF of OHPC Stations for the control period from 01.04.2009 to 31.03.2014 as given in Table -15 below. OHPC proposes to consider the same NAPAF for FY 2011-12

**Table – 15****Station-wise Normative NAPAF proposed for FY 2011-12**

<b>Name of Power Stations</b>	<b>HHEP</b>	<b>CHEP</b>	<b>BHEP</b>	<b>RHEP</b>	<b>UKHEP</b>	<b>UIHEP</b>
NAPAF (%)	78	75	85	75	85	88

**Prayer**

22. OHPC has proposed an annual revenue requirement of Rs.443.97 Cr. for the FY 2011-12 with an average tariff of 79.010 paise/unit for consideration by the Hon Commission. This is against Rs. 361.88 Cr. annual fixed cost approved for 2010-11 with an average tariff of 64.40 paise/unit.

**VIEWS OF THE OBJECTORS (Para 23 to 43)****Design Energy of OHPC stations**

23. One objector submitted that the anticipated generation for the OHPC stations shall not be considered on the basis of the design energy , instead it should be projected based on the reservoir level as on November 2010 , past generation records and actual generation during 2010-11
24. One objector has pointed out that the calculation of anticipated energy generation shall be made based on design energy and not on estimated energy generation during 2011-12.
25. Some of the objectors requested the Commission not to allow OHPC to revise the design energy of their HEP every year.

**De-silting of the reservoir**

26. One of the objectors has stated that de-silting of reservoir of OHPC HEPs should be carried out to produce more hydro power in the interest of the consumers.

### **Functioning of Chiplima HEP**

27. One of the objectors, pointed out that functioning of the Chiplima Power house, water management and figures were not properly placed by the concerned authorities .He also submitted that since the reservoir levels are improved in comparison with last year and also the Chiplima HEP is functioning well, rise in OHPC tariff should not be considered by the Commission
28. One of the objectors stated that the low generation of Chiplima is the result of weed formation and maintenance of low forebay level at Chiplima to prevent spilling. To overcome this problem Chiplima B may be the solution.
29. One objector asked for Status report on Chiplima weed problem and expenditure incurred on it since 2005 by OHPC
30. One objector submitted that reasons for low energy generation by Chiplima HEP may be called for from OHPC

### **Reservoir level and anticipated generation**

31. One of the objectors suggested that based on the reservoir levels on 1st November OHPC should project the monthly generation of each HEP indicating both energy and peaking capacity availability
32. one objector submitted that the reservoir level of all OHPC stations except Rengali HEP are at higher level compared to the last year 2009-10 and therefore the tariff should not be raised

### **Return on Equity:**

33. Chief Executive Officer (Comm), NESCO, WESCO & SOUTHCO GRIDCO has submitted that the capital addition during 2010-11 may not be considered for working out the equity base.

### **O & M Expenses**

34. The submission on O & M expenses by the objectors are briefly stated as follows.
  - (a) Chief Executive Officer (Comm), NESCO, WESCO & SOUTHCO submitted that in case of O&M , the objector pointed out that arrear towards shift allowance , differential pension liability should not be allowed in the ARR.
  - (b) One objector submitted that the rent paid by OHPC for the corporation's building should not be included in the O& M cost.
  - (c) One objector suggested that OHPC should consider the depreciation and O&M as considered for FY 2010-11 OHPC should not claim escalation of 5.72% on previous years O & M expenses.

### **Depreciation:**

35. Some objectors have indicated that OHPC has claimed depreciation @ 2.57 % on the historical project cost plus additional capitalization up to 2010-11 which should not be allowed.

### **Interest on Government Loan in case of UIHEP**

36. OHPC has included interest amounting to Rs 38.21 Cr towards Government loan for Upper Indrāvati HEP. Some objectors have suggested that the interest amount should not be considered in the ARR.

### **Additional capitalization in FY2010-11**

37. OHPC in their ARR filing for FY 2011-12 have considered the additional capitalization during FY 2010-11. Some of the objectors have pointed out that the additional capitalization to the tune of Rs.6.8 Cr shall not be approved and allowed in the ARR.

### **Time Schedule for the New HEP by OHPC**

38. Some of the objectors also requested that the OHPC may submit a time schedule for getting on the other projects as indicated in para 3,4,5,6 of Annex VII of OHPC filing.

### **Status Report on HEP**

39. Some of the objectors requested Status report on Machkund HEP, Rengali HEP, Upper Kolab HEP, Balimela HEP and R& M work taken up in the units.

### **Peaking capacity of Balimela HEP**

40. One objector submitted that due to increase in peaking capacity of Balimela HEP the fixed cost and ECR of the station is increased substantially and therefore the benefit on account of the UI shall be passed on to the consumer.

### **Working capital requirement**

41. One of the objectors suggested that the working capital requirement should not be allowed in the ARR as the reserve provision for rolling working capital is there with OHPC

### **Liquidated Damage**

42. GRIDCO has pointed out that OHPC has received Rs.6,33,93,181/- as liquidated damage from M/s LMZ on account of delay in supply of equipment by encashment of Bank Guarantee as per contract terms, therefore, same should be treated as receipt .

### **Reason for increase in the ARR and Tariff for FY 2011-12**

43. Some of the objectors suggested that the OHPC should explain the main factors responsible for increase in their ARR and subsequently tariff for FY 2011-12 as compared to FY 2010-11.

### **REJOINDER OF OHPC (Para 44 to 66)**

44. The compliance by OHPC to the suggestions/objections raised by the objectors is furnished herewith:

#### **Design Energy of OHPC stations**

45. The energy considered is saleable design energy from OHPC Power Stations of 5619.24 MU. This has been considered after keeping aside 1% (56.76 MU) of design energy for auxiliary consumption as per CERC norms.OHPC has not considered any

revision in design energy for tariff calculation as it is pending before Hon'ble Commission for approval.

46. With regard to shortfall in achieving design energy in case of Chiplima HEP, it is due to the fact that its design energy has been taken as 490 MU which is considered to be higher than the achievable target in the range of 350–370 MU.

**De-silting of the reservoir**

47. At present it is not an economically and technical viable proposition to remove silt from the reservoir and it has never been practised in storage type reservoir any where in India. In Himalayan region, where the silt content in the water is very high, de-silting chambers are provided to remove the silt periodically from the reservoir particularly in the Run-of-the river **Scheme** projects. This provision has to be made in the design stage of the Dam. In Dams like Hirakud under sluice at 580 ft. has been provided to remove the silt from the reservoir by maintaining the reserve level at lower level. These sluices have only localized effect and will not able to remove silt from a reservoir having large storage area. The only solution is to manage the existing water available in the reservoir and availability of water during good hydro condition. The generation from Chiplima Power House is restricted to 64.77MW due to restriction in water carrying capacity of power channel to 12500 cusec and scouring of the spill way on maintaining a forebay level above 507ft.

**Functioning of Chiplima HEP**

48. The generation from Chiplima Power House is expected to be 273.57 MU in the current financial year which is a vast improvement from the previous years, due to installation of TRCM in the forebay of Chiplima Power House in the month of June 2010. It is expected that in the coming year the generation from Chiplima Power House will further improve to the tune of 350 MU
49. After installation of TRCM in the forebay of Chiplima Power House, the choking of Trash rack by weeds has been subsided, and there is substantial improvement in generation from CHEP. In the month of Sept. 2010, Chiplima has peak generation of 56 MW, with peak generation of 260 MW from Hirakud Power House.

Unit -3 of Chiplima is running under reduced load of 15 MW due to leakage in cable Bus-duct.

**Reservoir level and anticipated generation**

50. Based on the reservoir levels on 1st November 2010 the projected monthly generation of each of the Power Stations of OHPC indicating the energy and peaking capacity would be as given below.

**Table -16**

Name of HEP	November 10 Actual Gen/ Peak Gen.		December 10 Actual Gen/ Peak Gen.		January 11 Ant. Gen /Peak Gen		February 11 Ant. Gen/ Peak Gen		March 11 Ant. Gen/ Peak Gen	
	MU	MW	MU	MW	MW	MW	MW	MW	MW	MW
HHEP	26.35	253 (P)	33.37	221(P)	45	238	40	200	40	190
CHEP	15.69	63(P)	20.32	63(P)	30	63	25	63	25	63
BHEP	86.46	375 (P)	115.38	155.09	170	450	190	450	225	450
RHEP	7.04	195 (P)	7.87	195.2(P)	25	195.2	30	187	30	178
UKHEP	48.28	320 (P)	44.20	320(P)	100	240	120	240	120	240
UIHEP	119.69	600 (P)	113.83	600(P)	205	450	245	450	260	450



### **Return on Equity**

51. The increase in equity capital of Rs. 3.86 Crs. is due to additional capitalization of Rs. 6.80 Crs. on account of installation of Trash Rack Cleaning Machine (TRCM) in the forebay of Chiplima Power House.
52. The equity capital has been arrived based on audited Gross Block of Power Stations as on 31.03.2010. For Chiplima, TRCM has been installed in June 2010 at a cost of Rs. 6.80 Crs. which is capitalized in the FY 2010-11 and has been taken into account in the equity base of Chiplima Power House for FY 2011-12. Therefore, the return on equity is calculated based on additional capitalisation up to FY 2010-11.

### **O & M Expenses**

53. OHPC has proposed O & M expenses with escalation of 5.72% on O & M expenses approved by the Commission for FY 2010-11, as per CERC norms. OHPC also proposed arrear shift allowance of Rs. 0.30 Crs. The differential pension liability of Rs. 21.28 Crs has been included as per the directive of Govt. of Orissa.

Rent paid by OHPC for accommodation of the Corporate Office is a part of O & M Expenses; in place of depreciation, maintenance expenses of own building.

### **Depreciation:**

54. OHPC has proposed depreciation @ 2.57% on the historical project cost plus additional capitalisation up to 2010-11, except HHEP and BHEP. For HHEP and BHEP the actual loan repayment of principal loan installment has been considered as depreciation.
55. Depreciation is allowed @ 2.57% of the book value of the assets by the Hon'ble Commission. During the FY 2010-11 out of the allowed depreciation of Rs. 3.30 Crs. an amount of Rs. 1.72 Crs. has been appropriated towards normative loan & Govt. loan. The outstanding normative loan for Unit-2 of Chiplima Power House is Rs. 10.88 Crs. as on 01.04.2011. The opening gross normative loan amount is increased by Rs. 4.76 Crs. to Rs. 18.78 Crs. from Rs. 14.02 Crs. This is due to capitalization of Rs. 6.80 Crs. on account of installation of Trash Rack Cleaning Machine (TRCM) at forebay of Chiplima Power House.

### **Interest on Government Loan in case of UIHEP**

56. OHPC has included interest amounting to Rs. 38.21 Crs. towards Govt. loan for UIHEP based on the State Govt. notification dated 06.01.2010 at the rate of 7% per annum. Hon'ble Commission may take a judicious decision in the above matter.

### **Additional capitalization in FY2010-11**

57. The figures as on 31.03.2010 are as per the audited accounts. The additional capitalisation in 2010-11 is for CHEP amounting to Rs. 5.47 Crs. on account of installation of Trash Rack Cleaning Machine (TRCM). Total amount capitalized for TRCM is Rs.6.80 Crs. comprising Rs.1.33 Crs. in FY 2009-10 & Rs.5.47 Crs. in FY 2010-11.

### **Time Schedule for the New HEP by OHPC**

58. For development of new Hydro Electric Projects “Inter-development Technical Co-ordination Committee” with members from Water Resource Department and Energy Department of Govt. of Orissa.
59. The approximate capacity of the projects is given below.

<b>Projects</b>	<b>Likely Installed Capacity (MW)</b>
a) Middle Kolab H. E. Project	285
b) Tel Integrated Project	50
c) Lower Vansadhara Project	50
d) Balijori H. E. Project	160
e) Salki H. E. Project	125
f) Khadgo Dam Project	100
g) Uttei-Roul Integrated Project	40
h) Mahanadi-Bramhani River Link	150
i) Barmul H. E. Project	<u>200</u>
<b>Total</b>	<b>1160 MW</b>

### **Status Report on HEP**

60. OHPC has submitted a self-contained proposal to the Dept. of Energy, Govt. of Orissa on 11.09.2009 for grant of permission for disposal of the Potteru Small Hydro Electric Project. At present there are 4 nos. of executives employed at PSHEP.
61. In the Minister level meeting held on 03/03/2008 between Orissa Govt. and Andhra Pradesh Govt. it was decided for carrying out R, M & U of Machhkund Project at the earliest. It was also decided that OHPC contribute additional 20% share for 50:50 sharing of energy benefit between the states after R, M & U of Machhkund. Draft agreement for 50:50 sharing of Machhkund Project approved by Govt. of Orissa has been sent to Govt. of AP for concurrence.
62. Additional benefits from Renovation and Modernisation of Unit #1, #2, #3 & #4 of HHEP is 40 MW. During monsoon period it will generate additional secondary energy of 4.8 MU and also support peak demand of 40 MW.

### **Peaking capacity of Balimela HEP**

63. OHPC is not getting any financial benefit on account of trading of surplus power by GRIDCO during peak period, as U.I. charges.

### **Working capital requirement**

64. With regards to working capital, a rebate of 1% is allowed if the payment is made within one month of presentation of Bill and a surcharge of 1.25% is to be levied in case the payment is delayed beyond 60 days. As payments are to be made by GRIDCO without surcharge within a period of 60 days, it is imperative that OHPC

shall be allowed working capital at least for a period of 60 days as per CERC Tariff Regulations 2009.

#### **Liquidated Damage**

65. OHPC has received Rs. 6, 33, 93, 181.00 as liquidated damage from M/s LMZ on account of delay in supply of equipments in the due date as per provision in the contract by encashment of Bank Guarantee of LMZ as per the clause no. 31.1 of contract no. OHPC – LMZ/01/2003 dt. 24th October 2003. However, OJSC power machines has gone for arbitration against the encashment of B.G by OHPC. Since, the case is now under arbitration, it shall not be treated as receipt from LMZ till the final verdict of arbitration. The amount has been kept under the accounts head “liability to others” till finalization of the case

#### **Reason for increase in the ARR and Tariff for FY 2011-12**

66. The increase in ARR and Tariff for FY 2011-12 is mainly due to two reasons.
- a) Inclusion of Rs. 21.28 Crs. as differential pension liability of employees drawing pensions from Govt. of Orissa.
  - b) Escalation @5.72% of the approved O&M expenses as per CERC norms excluding arrear.

#### **VIEWS OF CONSUMER COUNSEL (Para 67 to 78)**

On behalf of the World Institute of Sustainable Energy, Pune Consumer Counsel, Mr Surendra Pimparkhedkar, Senior Associate Fellow had made a presentation on the Analysis of ARR and tariff filing of OHPC for 2011-12. The Consumer counsel observations / suggestions are elaborated below.

67. Comparative analysis of ARR approved by the Commission for FY 2010-11 to that of the proposed ARR for FY 2011-12 reveals that the ARR for FY 2011-12 of UIHEP is proposed to be increased by 32% in comparison with the approved ARR of FY 2010-11, with major rise noticed in interest on Government loan (Rs.38.31 Cr)
68. During FY 2011-12, OHPC proposes to supply an estimated energy of 5619.24 MU at an average rate of 79.01 P/kWh During FY 2010-11, same unit supply was approved by Commission at an average rate of 64.40 P/kWh. Hence the proposed overall Hike in OHPC tariff will be 22.68% compared to previous year approved tariff.
69. OHPC has shown an expenditure of Rs.10.32 Cr towards capitalization of assets during 2010-11 in their ARR which includes the cost of TRCM installed at Chiplima HEP. Further it is noticed that OHPC has not taken prior approval of the Commission for these expenses. The expenditure details and the status of the work for the proposed asset capitalization is missing in the ARR. Therefore, the consumer counsel suggested that Hon. Commission may consider the expenses on account of capitalization of asset to pass through in the ARR after verifying the cost and necessity and status of the work
70. The Consumer counsel noticed that the loan liability of OHPC consists of state Govt loan and PFC loan. It is further noticed that OERC has advised the Govt that the

effects of up-valuation of assets and moratorium on debt services of state Govt loan shall be kept in abeyance till end 2012-13. In case of investment of State Government in UIHEP the Government has directed that the state Government investment actually made in Upper Indravati HEP should yield return at the rate of 7% to the state Government with effect from FY 2010-11 after clearance of loan liability of PFC

71. Accordingly OHPC has included an interest of Rs 38.21 Cr on State Government investment /loan (Rs.545.86 cr) in UIHEP, which is the main reason for OHPC tariff hike. The Consumer counsel suggested that in the interest of consumer in the state , Hon Commission may request the state Government that the interest on government investment may be kept in abeyance till end of the control period or the Commission may request the state government to make it interest-free loan.
72. This will substantially reduce UIHEP tariff as well as the average cost of supply of OHPC stations (6.8 P/U), since UIHEP contributes approximately 35% share of design energy of OHPC stations
73. The Consumer counsel noticed that OHPC has claimed O& M expenses as per CERC 2009 Regulation (@5.72 % escalation on previous yr O&M) and thereafter added various Arrear salary and terminal liabilities. In this regard the Consumer counsel pointed out that the CERC Regulation allows 5.72% escalation over the previous year's approved O&M, further addition of other expenses like arrear salary, terminal liabilities are not permitted under CERC Regulation.
74. In case of O & M, the Consumer counsel pointed out that the differential Pension liability (Rs.21.28 Cr) claimed under O&M should be met through Terminal (Pension) liabilities fund (Rs.140.95 Cr) earmarked for the purpose by OHPC and, therefore, the same should not be allowed to pass through in the ARR of FY 2011-12.
75. The Consumer counsel noticed that the CERC Tariff Regulation 2009 specifies the interest of W.C as SPLR of SBI as on 01.04.09 or 1st April of the year in which the generating station is declared under commercial operation, whichever is later.
76. It is further observed that all 6 HEPs of OHPC has put on commercial operation prior to 01.04.2009 and, therefore, it is suggested that the SBI SPLR prevailing as on 01.04.2009 may be considered for calculating interest on working capital.
77. The Consumer counsel noticed that OHPC has proposed total working capital requirement amounting to Rs 128.19 Cr for FY 2011-12. It is further noticed that OHPC had earmarked Rs 14 Cr for Rolling Working Capital during 2009-10. Therefore, the consumer counsel suggested that the proposed working capital requirement may be reduced by appropriate amount available under rolling working capital fund.
78. The Consumer counsel noticed that as per Govt. notification OHPC is claiming license fee for water used for generation of electricity from all HEP amounting Rs 5.67 Cr to be paid to Government in FY 2011-12 ARR. The Consumer counsel suggested that since it is non-consumptive use of water and OHPC is Govt. Corporation, Government may think to waive off the license fee. Hon Commission

may advise Govt. to waive the license fees in order to minimize its impact on end consumer tariff.

#### **QUERIES RAISED BY THE STAFF OF THE COMMISSION (Para 79 to 83)**

Director (Tariff), OERC during hearing on 02.02.2011 has raised the following queries:

79. OHPC has claimed an interest amount for Upper Indravati Project of Rs.38.21 cr. @7% on the Govt. of Orissa loan of Rs.545.86 cr., for the year 2011-12. The outstanding loan as on 01.04.2010 was Rs.576.09 cr. The Commission had allowed depreciation of the order of Rs.30.23 cr. in 2010-11 tariff order for OHPC. Therefore, the balance loan outstanding as on 01.04.2011 is Rs.576.09 cr. minus Rs.30.23 cr. which equals to Rs.545.86 cr. The present claim of OHPC in respect of interest on this principal amount is Rs.38.21 cr.
80. The Govt. of Orissa notification dtd.06.01.2010 had mentioned that the State Govt. investment actually made in Upper Indravati Project, excluding equity, should yield a return to the State Govt. with effect from FY 2010-11 after loan liabilities of PFC are cleared. OHPC has claimed the interest amount based on the above notification.
81. However, if we allow this Rs.38.21 cr. towards interest payment, the average tariff of Upper Indravati comes to 99.92 p/u as projected by OHPC. If we do not allow this interest amount the average tariff of Upper Indravati comes down to 80.25 p/u approximately i.e. a reduction of the order of 19.67 p/u. Since the net energy sold by Upper Indravati accounts to 35% of total hydro energy sold by OHPC, this interest component of Upper Indravati shall have a significant impact on average tariff of OHPC. This is worked out at 6.8 p/u.
82. OHPC should, therefore, pursue this matter of interest payment with the State Govt. to convert this as interest free loan in order to avoid a tariff shock to the consumers. In any case the Commission has already allowed depreciation of the order of Rs.30.23 cr. to Upper Indravati during 2010-11. For the FY 2011-12, OHPC has already claimed the same amount under the head depreciation which the Commission may allow towards principal repayment for this State Govt. loan.
83. OHPC has claimed license fee for consumption of water for generation of electricity to the tune of Rs.5.676 cr. for 2011-12 to be paid to the Govt. as per the Gazette Notification dtd.01.10.2010. The impact of this claim is 1 p/u for the entire energy sold by OHPC. Since OHPC is a Govt. owned corporation and the water is used for non-consumptive purpose, the State Govt. may waive this license fee for OHPC.

#### **REPLY OF OHPC TO QUERIES RAISED DURING HEARING (Para 84 to 95)**

**OHPC replied to the various queries raised during hearing as under:**

##### **Generation for the current year to be maintained as that of FY 2007-08**

84. The Commission desired to maintain the generation from OHPC stations for the ensuing year similar to that of FY 2007-08 as the reservoir level for the current year is more or less similar to that of FY 2007-08. OHPC has maintained that during the current year, due to the late arrival of monsoon and hydrology failure, the generation from OHPC was comparatively less during the monsoon period. Thereafter, there was

less generation due to restriction on discharge of water by the DOWR. However, OHPC has agreed to the proposal of the Commission to utilise the reservoir water available optimally during the remaining part of the water year to reach MDDL before the onset of monsoon.

#### **Peak generation from Balimela Power Station**

85. Respondents have raised the question of running of Balimela Power Station as peaking station. OHPC has stated that BHEP has already demonstrated full peaking capacity of 510 MW on 29.01.2011 at 19:00 hrs. As and when SLDC desires, BHEP can run as peaking station while generating maximum up to its installed capacity i.e. 510 MW.

#### **Spillage of water from Hirakud Reservoir during monsoon**

86. The fixation of reservoir level of Hirakud is decided by the DOWR keeping in view the priorities of flood control, irrigation requirement and then the power generation. OHPC can not decide on the monthly generation schedule all by itself without the proactive involvement of DOWR and SLDC. During the current financial year 2010-11, there was spillage of water from Hirakud Reservoir three to four times only for a short period of time. As such HHEP generated up to a maximum of 260 MW during the said period.

#### **Reservoir level of RHEP and UIHEP during 2007, 2008 and 2009**

87. On two consecutive calendar years i.e. 2007 and 2008, RHEP reached the level of 109.75 mtrs. and 109.85 mtrs. on 06.07.2007 and 17.06.2008 respectively against the declared MDDL of 109.72 mtrs. Hence, there was no loss of generation from RHEP during the years in question. On the contrary, UIHEP reached a level of 627.58 mtr on 26.06.07, 626.07 mtr on 05.06.08 and 625.18 mtr on 26.06.09. Since it is a carryover reservoir, there has been no loss of generation on account of it.

#### **MDDL (590 ft.) of Hirakud Reservoir**

88. Some respondents have raised the issue of maintaining MDDL at 590 ft. instead 595 ft. at Hirakud Reservoir and to utilize the energy potential of 32 MU available between MDDL and 595 ft. OHPC has stated that this issue has been raised time and again with the DOWR. However, DOWR is maintaining the RL as per the irrigation requirement of catchment up to the farthest reach of the canal while following the ruling curve. Nevertheless, OHPC would once again take up the issue with water resources department and prevail upon them to stress the full utilization of water available in the Hirakud Reservoir upto the MDDL i.e. 590 ft.

#### **Revising the Ruling Curve of Hirakud Reservoir**

89. Sri Jayadev Mishra raised the issue of revising the ruling curve of Hirakud Reservoir taking in to account the present situation arising out of erratic rainfall pattern, sudden inflow of water to the reservoir and construction of large number of dams in catchments of the reservoir. Such an exercise, as opined by him, will facilitate utilisation of the reservoir capacity to the fullest extent while minimizing the spillage of water. OHPC has already communicated this view point to the DOWR authorities

on numerous occasions in the past. And, the same will be again discussed in the next meeting with DOWR.

#### **Equity of Chiplima Power House**

90. GRIDCO has raised the issue of increase in equity capital of CHEP to Rs.12.85 Crs. against the equity of Rs.8.99 Crs. for FY 2010-11. OHPC agrees to the proposal of GRIDCO on the equity of Chiplima Power House at 25% similar to HHEP:-
- i. New additions after 01.04.1996 Rs. 42.82 Crs.
  - ii. Equity @ 25% of capital addition including Rs. 10.70 Crs.  
the TRCM

Total equity to be considered for FY 2011-12 will be Rs. 10.70 Crs., instead of Rs. 12.85 Crs. as proposed in the application.

#### **Additional Capitalisation**

91. The Commission has been allowing Return on Equity (ROE) on old Hydro Power Stations of OHPC in respect of new additions after 01.04.1996, which is calculated basing on the audited accounts of each power station. As such, the capital additions for the year 2011-12 is based on audited balance sheet of 2009-10 and only addition on account of TRCM in Chiplima in 2010-11.

#### **License fee for use of water for generation of Electricity**

92. Respondents raised the question of payment of license fee towards use of water for generation of Hydro energy at the rate of Rs. 0.01/kwh. Being a statutory fee, OHPC has to make the payment to the Govt. as per recent notification. The fees for six months of 2010-11 and for the year 2011-12 is a pass through in the tariff for reimbursement by GRIDCO, as per actual.

#### **Interest on Working Capital**

93. Some respondents raised the question of meeting the Working Capital requirements from the Reserve & Surplus. OHPC maintained that CERC regulations include interest on Working Capital as an element of Annual Revenue Requirement for the generating company. Hence, interest on Working Capital need to be allowed in the tariff as per the norm

#### **Reserve and Surplus**

94. Some respondents raised the issue that OHPC has been maintaining a good amount of cash surplus at present. OHPC finds nothing abnormal in the prudential fund management of its reserves and surpluses, which primarily meets (i) terminal liabilities of its employees through the trust (ii) its share in the equity for the RM&U and joint venture projects on hand etc. However, the accumulated reserves and surpluses is Rs.800 Crs only as against the estimated fund requirement of Rs.2046 Crs. As such, the shortfall of Rs.1246 Crs, is to be mobilised in the coming years from the interest income as well as from its operation. Moreover, the interest income is not an element of the Annual Fixed Cost as per the CERC Tariff Regulations and therefore excluded from the purview of determining the ARR.

### **Interest on Govt. loan and differential Pension**

95. All the respondents have raised concern about increase in tariff due to inclusion of interest on loan to be paid to GoO on account of UIHEP and differential pension liability. OHPC has included the following amount in its ARR proposal for the year 2011-12.

	<u>(Rs.in Crs.)</u>
a) Interest @7% on Govt. loan for UIHEP	38.21
b) Differential Pension for the transferred employees drawing Pension from Govt.	<u>21.28</u>
	<u><b>59.49</b></u>

OHPC clarified that the above amount has been included in the ARR proposal as per the directives of the State Govt. The Commission, if so desires, may take up these two issues with the Govt. for exclusion from the ARR of 2011-12.

### **VIEWS OF GOVERNMENT OF ORISSA (Para 96 to 101)**

The State Govt., in writing, has intimated their views on the issues raised during tariff hearings. Views relevant to OHPC generation tariff and new generating stations of the State are as under:

#### **Up-Valuation of Assets**

96. The suggestions of the Commission to keep the support of Govt. in the matter of keeping the effect of up-valuation of assets of GRIDCO/OPTCL and OHPC, allowing the moratorium on debt services to the State Govt. till the sector turns around and not allowing ROE to GRIDCO/OPTCL and OHPC till the sector becomes viable on cash basis has not been agreed to by the Govt. in Finance Deptt. However steps have been taken on the other recommendations of the Commission and will be placed before the cabinet for approval.

#### **Power Purchase from Renewable Sources**

97. State Govt. signed 36 MoUs with private developers for installation of around 484 MW small Hydro Electric Projects. Out of these, 3 nos. of SHEPs of capacity 57 MW (Middle Kolab, Lower Kolab and Samal Barrage) have been commissioned and supplying power to the State.

#### **Capacity Addition**

98. State Govt. have signed 30 MoUs with IPPs for setting up of the Thermal Power Plants having capacity of 3800 MW out of which state share would be 6770 MW. One unit of 600 MW of Sterilite Energy has been commissioned during Aug, 2010 and other 3 units (600X3) are expected to be commissioned during the year 2011-12.

Similarly M/s Arati Steel Ltd. has commissioned 50 MW in March, 2010. Besides GMR Kamalanga Energy Ltd. (1050 MW), Ind Barath Energy (700 MW) and Maa



Durga Thermal Power Company (60 MW) have progressed well for commissioning their projects by end of 2012.

#### **Revised Design Energy of OHPC**

99. With most of the Hydro Plants are being old, the design energy envisaged during the commissioning stage has come down in many cases as detailed in the study under taken by OHPC through Experts. Commission may examine this and take appropriate decision.

#### **Utilization of Captive Sources**

100. The Commission may provide competitive price (Tariff) for harnessing surplus power from the CGPs keeping in view of the support provided by the Govt. to CPPs in such a manner that it will not transfer into higher BSP.

#### **Implementation of Intra-State Availability Based Tariff (ABT)**

101. The Commission may take appropriate steps with regard to the implementation of ABT keeping in view of the demand and supply position of the State. However, it should be kept in mind that the general consumer shall not suffer from power Regulation on account of the implementation of ABT.

#### **OBSERVATIONS OF THE STATE ADVISORY COMMITTEE (SAC) (Para 102 & 103)**

102. The State Advisory Committee (SAC) constituted under Section 87 of Electricity Act, 2003 met on 14<sup>th</sup> February, 2011 to debate on the Annual Revenue Requirement and Tariff application for the FY 2010-11 of utilities namely OHPC, OPTCL, GRIDCO, CESU, NESCO, WESCO and SOUTHCO. The Committee inter alia observed the following regarding hydro tariff and its impact on retail tariff:

- Retail tariff is dependent on the cost of hydro generation by OHPC and cost of thermal generation by OPGC, NTPC and other Central Generating Stations, cost of procurement by GRIDCO, cost of transmission by OPTCL, expenditure required to be incurred by SLDC and the cost of distribution of the distribution companies. Even if the cost of distribution by the distribution companies is kept unchanged at the current year (2010-11), which is not at all possible, the Retail tariff is bound to increase if there is increase in the cost of generation, cost of procurement and cost of transmission and charges of SLDC.
- While fixing the tariff Commission is to be guided by the provision of Section 61(h) of the Electricity Act, 2003 read with Section 86(1)(e) regarding promotion of co-generation and renewable sources of energy. As per the target fixed by the Commission for the year 2011-12. 5% of the total energy purchase by GRIDCO for consumption in the State should be from renewable and co-generation taken together which consists of Solar 0.10%, non-solar 1.20% and co-generation 3.70%. In case the actual purchase from renewable sources falls below 5% specified for 2011-12, the obligatory entities are required to purchase the renewable certificates at higher cost. This implies that the energy to the extent of requirement is to be purchased apart from higher

Cost over and above from the high purchasing cost of renewable certificate. This would result in higher tariff implication with the consumers.

103. **Reduction in the ratio of hydro generation to total demand vis-à-vis Tariff Implication due to Revenue Gap of GRIDCO.**

- With increase in level of consumption by the existing consumers as well as increase in the number of consumers the State demand has increased from 12499.49 MU in 2004-05 to 20154 MU in 2010-11 whereas generation from State hydro for sale was 7087.82 MU in 2004-05 and has been reduced to 5826.12 MU in 2008-09, 4211.86 MU in 2009-10 and upto to September, 2010 it is 1769.7 MU. The contribution of low cost hydro generation to total state demand was 56.71% in 2004-05 which has been reduced to 31.04% in 2008-09 and 21.62% in 2009-10 and 16.66% in 2010-11 upto September, 2010. On the other hand actual generation from hydro sources is fluctuating and declining because of erratic rain fall and silting in the reservoirs for which GRIDCO has to purchase high cost power to meet the state demand and when the procurement cost would increase for GRIDCO it is bound to reflect in the retail tariff for the consumers.
- Members advised that OHPC should operate its plant optimally to maximize generation from the existing station and take up new project to improve hydro share in the generation mix.
- Shri B.K.Mohapatra is of opinion that OHPC has claimed revenue even after worsening its design energy and without any improvement in performance. OPTCL should reduce its loss by at least 1%. OPTCL can manage very well by this reduction of loss and enhanced efficiency without any hike in its tariff. In respect of SLDC he suggested that there is no need to charge any additional fees to enhance tariff and burden the consumers.
- Some SAC member pointed out that not a single MW has been added by the State in the hydro sector since long. Unless more hydel plants come up in the State the percentage of hydro power in energy pool of the State would continue to fall. It was further brought to the notice of the Commission that in spite of availability of common infrastructural facility in Ib Thermal Power Station, OPGC has not also added any additional capacity. It was also pointed out that the Govt. of Orissa has not taken adequate and noticeable steps for development of renewable energy in the State of Orissa. That is why the RPO obligation set by the Commission has not been effectively complied with by GRIDCO, the sole bulk supplier in the State. About 2000 MW of capacity in the small hydro sector has been identified by the State Govt.
- Hon'ble Member Shri Badu in his concluding remarks reiterated that the Commission would be just and fair to all stakeholders of the power sector to ensure that while the interests of the consumers need to be protected by providing service at reasonable and affordable rates, the viability and sustainability of the power utilities is also to be ensured.

**COMMISSION’S OBSERVATIONS AND ANALYSIS OF OHPC'S PROPOSAL (Para 104 to 177)**

104. The Commission has carefully examined and analysed the proposal of OHPC. The written and oral submissions of the objectors have been considered while deciding the various parameters for determining tariff. The tariff proposal of OHPC contains technical parameters such as type of hydro stations, Normative Annual Plant Availability Factor (NAPAF), 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 of UIHEP. The station-wise apportionment of capital cost in respect of all these stations has also been provided along with tariff calculations.
105. During the course of public hearing, the objectors had raised certain pertinent issues having direct impact on tariff of OHPC. Issue-wise response was submitted by OHPC. Commission’s analysis to the following pertinent issues related to tariff of OHPC are discussed as under:
- Power Procurement from OHPC
  - Annual Fixed Cost which consists of
    - (i) Interest on loan capital
    - (ii) Depreciation
    - (iii) Return on Equity
    - (iv) Operation and Maintenance Expenses
    - (v) Interest on working capital
  - Two-part Tariff (Capacity Charge & Energy Charge)
  - Machhkund Hydro Electric Project
  - Peaking capability of Balimela HEP
  - Prospective Hydro Development in the State
  - Renovation and modernisation

**Power Procurement from OHPC**

106. The installed capacity of various Hydro Stations owned by Orissa Hydro Power Corporation (OHPC) is 2062 MW as on 1<sup>st</sup> of April 2011 including Orissa share of Machhkund. The details of drawal approved by the Commission for 2010-11 and the projections made by GRIDCO for 2011-12 are presented in the following table:

**Table - 17**

**Hydro Drawal and Projections for 2011-12**

<b>Sl. No.</b>	<b>Name of the HE Project</b>	<b>Installed Capacity (MW)</b>	<b>Design Energy (MU)</b>	<b>Commission’s Approval for 2010-11 (MU)</b>	<b>Proposed Drawal by GRIDCO for 2011-12 (MU)</b>
1	Hirakud	347.50	1174.00	677.16	770.45

Sl. No.	Name of the HE Project	Installed Capacity (MW)	Design Energy (MU)	Commission's Approval for 2010-11 (MU)	Proposed Drawal by GRIDCO for 2011-12 (MU)
2.	Chiplima			485.10	375.21
3.	Balimela	510	1183.00	1171.17	1171.17
4.	Rengali	250	525.00	519.75	564.30
5.	Upper Kolab	320	832.00	823.68	823.68
	<b>Total (Old Stations)</b>	<b>1427.50</b>	<b>3714.00</b>	<b>3676.86</b>	<b>3704.81</b>
6.	UIHEP	600	1962.00	1942.38	1942.38
7.	<b>Machhkund (Orissa Share)</b>	34.50	<b>262.50</b>	<b>262.50</b>	<b>262.50</b>
	<b>Total Hydro</b>	<b>2062</b>	<b>5938.50</b>	<b>5881.74</b>	<b>5909.69</b>

107. 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 Regulations for determination of tariff applicable to generating companies. The new CERC (Terms & Conditions of Tariff) Regulations, 2009 has already come into force w.e.f. 01.04.2009 and shall remain in force for a period of five years from the date of commencement.
108. Auxiliary energy consumption for surface hydro electric power generating stations 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.
109. As indicated in the above table, the design energy of OHPC's old stations is 3714 MU. After deduction of auxiliary consumption and transformation loss, energy sent out to GRIDCO comes to 3676.86 MU. 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 which works out to 5619.24 MU at Design Energy. However, GRIDCO has proposed to draw 5909.69 MU, possibly considering the balance in form of secondary energy during monsoon months.
110. OHPC has furnished a tentative monthly generation programme for its different units. The same has also been furnished by OHPC to GRIDCO in regard to generation during FY 2011-12. GRIDCO has projected the power purchase from OHPC stations based on the latest generation plan submitted by OHPC for different stations. GRIDCO has considered 5647.19 MU of availability from OHPC hydro stations as per this generation plan after deduction of 16.60 MU of allocations to CSEB from Hirakud Power Station and 0.5% auxiliary consumption and 0.5% transformation loss.
111. As indicated earlier, the design energy of OHPC old stations being 3676.86 MU, it is premature to predict the rainfall at this point of time. The Commission cannot accept a figure of 6850 MU as suggested by some of the objectors as generation depends on hydrological condition, reservoir levels and water use by other agencies. Acceptance of such a high figure would mean reduced drawal from high cost energy sources, which in turn would affect the power purchase cost of GRIDCO in case of reduced

hydro generation. As such, the Commission considers it appropriate to accept and approve a figure of 3676.86 MU as net energy available from the Old Stations and 1942.38 MU in case of UIHEP for the year 2011-12 after deduction of auxiliary consumption and transformation loss based on design energy. However, the Commission advises OHPC to have optimal operation of its generating station to maximize generation not to spill water during monsoon months, unless it is absolutely become necessary for dam safety.

### **Machhkund**

112. This hydro power station is a joint venture of Government of Orissa and Andhra Pradesh with an installed capacity of 114.5 MW and design energy of 525 MU. Machhkund is in operation in synchronization with Southern Grid and power from Machhkund is being availed by Orissa through radial load. Based on the 50% drawal by GRIDCO, the quantity comes to 262.50 MU. GRIDCO has projected drawl of 262.50 MU for the FY 2011-12. The Commission approves 262.50 MU to be drawn from this station during 2011-12.
113. The Commission's approval of power to be purchased by GRIDCO for 2011-12 from various stations of OHPC is given in the table below.

**Table - 18**

**Drawl From Hydro Stations (2011-12) (In MU)**

<b>Source of Generation</b>	<b>Commission's Approval (2010-11)</b>	<b>GRIDCO Proposal (2011-12)</b>	<b>Commission's Approval (2011-12)</b>
Burla	677.16	770.45	677.16
Chiplima	485.10	375.21	485.10
Balimela	1171.17	1171.17	1171.17
Rengali	519.75	564.30	519.75
Upper Kolab	823.68	823.68	823.68
<b>OHPC (Old stations)</b>	<b>3676.86</b>	<b>3704.81</b>	<b>3676.86</b>
Upper Indravati	1942.38	1942.38	1942.38
Machkund	<b>262.50</b>	<b>262.50</b>	<b>262.50</b>
<b>Total Hydro</b>	<b>5881.74</b>	<b>5909.69</b>	<b>5881.74</b>

Here the Commission would like to point out that the Commission has not considered any off-take from Potteru HEP (2x6 MW), due to practical consideration explained by OHPC. The Commission advises OHPC to approach OERC in a separate petition its plan for operation of the project and/or handover the project to private developer either on O&M contract or on outright sale basis.

### **Annual Fixed Cost:**

114. For the purpose of computation of Annual Fixed Cost as per CERC Regulations, a detailed analysis of the following components has been made as under:

### **Interest on Loan:**

115. The loan liabilities of OHPC consists of State Govt. loans and PFC loans. These loan liabilities outstanding as on 01.04.1996 are summarized in the table below:

**Table - 19**  
**Statement of State Government Loans**

(Rs. cr.)

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

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 starting from 2001-02. The Commission during 2001-02 and 2002-03 had allowed the repayment of principal amount of Rs.3.89 crore/annum. The loan outstanding on this account as on 01.04.2011 is Rs.4.19 crore after adjustment of repayments towards principal. In the meanwhile OHPC has apportioned the said loan quantum to the different generating units and claimed interest thereon.

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 the meanwhile, the Commission has suggested to the Govt. of Orissa for extension of these financial benefits to the consumers of the State beyond 2005-06. The State Govt. has responded vide its Notification dtd. 06.01.2010 as follows:

*“Keeping in view the earlier decision of the State Government on the recommendations of Kanungo Committee’s Report, the present suggestions of the OERC the State Government with approval of the cabinet has decided that the upvaluation of the assets of GRIDCO/OPTCL and OHPC indicated in the Notification No. 5210 dtd. 01.04.1996 and No. 5207 dtd. 01.04.1996 would be kept in abeyance for the financial year 2006-07 to 2010-11 and has agreed to the following:*

- (i) *The bonds issued by GRIDCO and OHPC, to the State Government, consequent upon revaluation of assets shall not carry any interest for a further period of five years from FY 2006-07 to FY 2010-11.*
- (ii) *The additional equity share, allotted to the State Government based on revaluation of assets, should not earn any Return on Equity for a further period of five years from FY 2006-07 to FY 2010-11.*
- (iii) *Both GRIDCO/OPTCL and OHPC would be entitled to depreciation on the revalued (pre-92) assets.*
- (iv) *Both GRIDCO/OPTCL and OHPC shall repay the principle amount of the loan amount actually taken from the State Government along with the interest*

*as per the terms and condition of loan other than those attributable to the revaluation of assets.*

- (v) *The State Government investment actually made in Upper Indravati project, excluding the normative equity, should yield return to the State Government with effect from FY 2010-11 after clearance of loan liabilities of PFC. However, interest at the rate of 7% should be charged and paid on this investment from FY 2006-07 onwards.*
- (vi) *Returns on equity on the old Hydro Power Plants may be allowed to OHPC, in respect of new projects commissioned after 01.04.1996.”*

In response to the above Notification of GoO, the Commission in its letter dtd. 27.01.2010 has advised the State Government that “the effects of up-valuation of asset and moratorium on debt services of State Govt. loan may be kept in abeyance till end of FY 2012-13 i.e. end of control period of Business Plan instead of 2010-11 as approved by the State Govt. in their Notification dtd. 06.01.2010”.

In response to Commission’s letter dtd. 27.01.2010, the State Government vide their letter No. 1577 dtd. 23.02.2010 has intimated that “*In this regard necessary notification for keeping in abeyance the upvaluation of assets of GRIDCO and OHPC till 2010-11 has been issued by Government under intimation to all concerned. Government orders will be obtained for modification of the above notification on the basis of the suggestion of OERC intimated vide their letter No. JD(F)-175/02/3235 dtd. 27.01.2010.*”

- 116. In the meantime, the Department of Energy, Govt. of Orissa vide letter No.R&R-II-1/2011/1728 dtd.28.02.2011 endorsed the views of the Govt. on this aspect which is reproduced below:

Keeping in Abeyance the Upvaluation of Assets, Moratorium of Debt Services etc.

The suggestions of the Hon’ble Commission to keep the support of Govt. in the matter of keeping the effect of upvaluation of assets of GRIDCO/OPTCL and OHPC, allowing the moratorium and debt services to the State Govt. till the sector turns around and not allowing ROE to GRIDCO/OPTCL and OHPC till the sector becomes viable on cash basis has not been agreed to by the Govt. in Finance Department. However, steps have been taken on the other recommendations of the Hon’ble Commission and will be placed before the cabinet for approval.

- 117. Commission on this issue would like to observe that the entire power sector has not yet come out of the deficit situation on cash basis, on account of exorbitant rise in power purchase cost due to increase in fuel price and other statutory expenses such as employee cost etc. Further, the Commission feels that the effect of upvaluation has a cascading effect in increase in price of energy which ultimately would have to be borne by the consumers through higher retail tariff. This issue has also been referred to Inter-Ministerial Committee formed by the State Govt. In view of the above and in view of Kanungo Committee recommendations, the Commission again advises Govt. of Orissa to reconsider **keeping in abeyance the effect of upvaluation** till the sector is viable on cash basis. This is necessary in overall interest of the consumers because higher the purchase cost, still higher is the retail tariff for the consumers.

118. Hence, the Commission does not consider interest on State Govt. loan as a pass through in the revenue requirement of OHPC for the FY 2011-12.

Accordingly, the interest impact of all other State Government loans except the above-mentioned Rs.39.20 crore (Rs.4.19 crore outstanding as on 01.04.2011) is not considered for the purpose of calculation of tariff of OHPC stations.

The PFC loans were obtained in connection with projects like Chiplima, Burla, Upper Indravati and for extension of units 7 & 8 of Balimela. The outstanding PFC loan amount as on 01.04.2010 is indicated in the table below:

**Table - 20**  
**PFC Loan Outstanding**

(Rs. cr.)

Name of the Units	As on 01.04.2010	As on 01.04.2011	Loan Repayment for FY 2011-12
(a) Unit 3 & 4 Burla	39.07	32.55	6.52
(b) Unit 7 & 8 Balimela	67.20	57.60	9.60
<b>Total</b>	<b>106.27</b>	<b>90.15</b>	<b>16.12</b>

For OHPC old stations, interest on loan including Guarantee Commission aggregates to Rs.13.24 crore and in case of UIHEP since the loan amount is fully repaid, the outstanding is nil for the year 2011-12 as compared to Rs.15.20 crore and Rs.0.00 crore respectively for the FY 2010-11 as summarized in the table below:

**Table – 21**  
**Statement of OHPC Loans and Interest on Loan**

(Rs. cr.)

Source of Loan	Loan Outstanding		Interest on Loan		
	As on 1.04.2010	As on 1.04.2011	OERC Appr. for FY 2010-11	OHPC Proposal for FY 2011-12	Commission's Approval for FY 2011-12
Govt. loan @ 9.8%	8.08	4.19	0.79	0.41	0.41
PFC Loan for 3 & 4 Burla	39.07	32.55	3.09	2.51	2.51
PFC Loan for Balimela 7 & 8	67.20	57.60	(-) 2.78	5.10	5.10
Deemed loan for Burla	1.17	0.00	0.05	0.00	0.00
Deemed loan for Chiplima	12.24	15.64	0.92	1.42	1.42
Deemed loan for Balimela	39.00	33.43	3.25	2.72	2.72
Govt. Guarantee Commission	-	-	1.08	1.08	1.08
<b>Sub-Total (Old Stations)</b>	<b>166.76</b>	<b>143.41</b>	<b>6.40</b>	<b>13.24</b>	<b>13.24</b>
7% interest bearing State Govt. loan for UIHEP	-	<b>545.86</b>	-	<b>38.21</b>	<b>0.00</b>
<b>Total</b>				<b>51.45</b>	<b>13.24</b>

The Commission approves interest payment of Rs.13.24 crore for OHPC old stations for the FY 2011-12 as proposed by OHPC. But incase of Upper Indravati the proposal of interest payment of Rs.38.21 cr on 7% interest bearing State Govt. loan is not passed on to ARR, as clarified above. Thus the interest on loan allowed for tariff



purpose in 2011-12 is Rs.13.24 cr. as against a claim of Rs.51.45 cr. by OHPC in its proposal.

**Depreciation:**

119. 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 re-valued nearly 3 times of its historical cost. Earlier, upto FY 2000-01, the Commission had calculated depreciation on prevalent norms i.e. post'94 rate, which substantially raised the revenue requirement due to upfront loading. Since 2001-02, as a part of corrective measures depreciation was limited to the principal loan repayment during a particular year. However, during 2003-04, as per the directions of the High Court of Orissa, 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.
120. For the purpose of determination of Annual Fixed Cost, depreciation computed @ 2.57% of the project cost is considered for FY 2011-12. However, in case of Burla and Balimela where loan repayment is more than the computed depreciation @ 2.57%, the differential amount has been considered and the depreciation amount has been extended to meet full repayment of principal loan for the FY 2011-12. The details of repayment of loan as submitted by OHPC for old stations is as under:

**Table – 22**

**Statement of Repayment of Loans**

(Rs. cr.)

<b>Power Stations</b>	<b>2010-11</b>	<b>2011-12</b>
HHEP	7.97	6.86
CHEP	1.72	2.63
BHEP	16.12	16.17
RHEP	1.05	1.11
UKHEP	1.25	1.32
UIHEP	0.00	0.00
<b>Total</b>	<b>28.11</b>	<b>28.09</b>

121. For the year 2011-12, depreciation is claimed in the tariff applying 2.57% in case of RHEP, UKHEP and CHEP whereas for BHEP and HHEP the requirement for actual loan repayment is considered for recovery through depreciation by OHPC as summarized below:

**Table – 23**

<b>Name of the Power Station</b>	<b>Depreciation (Rs. Crore)</b>	<b>Remark</b>
<b>Burla</b>	6.86	Equal to loan repayment
<b>Chiplima</b>	3.47	2.57%
<b>Balimela</b>	16.17	Equal to loan repayment
<b>RHEP</b>	2.43	2.57%
<b>Upper Kolab</b>	2.88	2.57%
<b>Total</b>	<b>31.81</b>	

The amount of depreciation of Rs.31.81 crore is approved by the Commission for the FY 2011-12 for the old power stations of OHPC. In respect of UIHEP, the depreciation is calculated based on straight line method after deducting the cumulative depreciation allowed in ARR till 2009-10 from the depreciable value of the project cost. This comes to Rs.30.23 crore as determined during FY 2010-11. The same amount is also approved for the FY 2011-12. Thus we approve a total amount of Rs.62.04 cr. on account of depreciation for tariff purpose in ARR of FY 2011-12, as against claim of same amount by OHPC in its proposal.

**Return on Equity:**

122. The new CERC Tariff Regulations for the period 2009-14 provides the following:
- (a) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% and the rate of return on equity shall be computed by grossing up the base rate with the normal tax rate for the year 2008-09 applicable to the concerned generating company.
  - (b) Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:  
$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

Where t is the applicable tax rate.
123. Accordingly, the rate of return for OHPC power stations comes to 19.358% for the year 2011-12, at applicable fare rate of MAT at 19.93% and Base rate at 15.50%.
124. In regard to the equity base of OHPC, the same was already decided in the Commission's tariff order dtd.19th April 2002 in Case No. 65 of 2001 & Case No. 04 of 2002 vide Para 6.4.17 through Para 6.4.21.
125. Based on the contents of the above order and subsequent Govt. Notification dtd.29.01.2003, the Return on Equity for the year 2004-05 was allowed to OHPC on new investments made only after 01.04.1996. Further, the State Govt. vide its Notification dtd. 06.01.2010 has extended the same upto the year 2010-11. The Commission vide its letter No.2807 dtd. JD(F)- 175/02/3235 dtd. 27.01.2010 had advised the Government to keep in abeyance the up-valuation of assets and other policy measures till 2012-13 and the Govt. vide its Lr. No. 1577 dtd. 23.02.2010 has rendered its views that Government orders will be obtained for modification of the above notification on the basis of the suggestions of OERC intimated vide their letter No. JD(F)-175/02/3235 dtd. 27.01.2010. In the meantime the Govt. of Orissa has sent its views vide Letter No. R&R-II-1/2011/1728 dtd. 28.02.2011 as indicated in Para 130 above and the Commission's observations in this regard has been provided in Para 131 of this Order.
126. Based on the above, RoE for Old Stations is calculated @ 19.358% on OHPC's own investment of Rs.47.97 crore in case of HPS and Rs.12.85 Cr in case of CHEP and Rs.62.89 Cr in case of Balimela. Thus RoE comes to Rs.9.28 crore in case of HHEP, Rs.2.07 cr in case CHEP and Rs.12.17 cr in case of Balimela. Similarly, for Rengali and Upper Kolab the RoE on the own investments of OHPC after 01.04.1996 comes

to Rs.0.21 crore and Rs.0.22 crore respectively. The total RoE for OHPC old stations comes to Rs.23.96 crore for FY 2011-12.

127. In case of UIHEP RoE is calculated @ 19.358 % on Government equity of Rs.298.70 crore which comes to Rs.57.82 crore. The Commission approves RoE @ 19.358% in line with new 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 for all the OHPC stations amounting to Rs.81.78 crore for the FY 2011-12 as summarized in the table below:

**Table – 24**

**(Rs. cr.)**

<b>Name of the Power Station</b>	<b>Return on Equity 2010-11 (@18.674%)</b>	<b>Return on Equity 2011-12 (@ 19.358%)</b>
<b>HHEP</b>	8.87	9.28
<b>CHEP</b>	1.68	2.07
<b>Balimela</b>	11.69	12.17
<b>RHEP</b>	0.16	0.21
<b>Upper Kolab</b>	0.21	0.22
<b>UIHEP</b>	55.78	57.82
<b>Total</b>	<b>78.39</b>	<b>81.78</b>

128. Thus, we approve an amount of Rs.81.78 cr. as ROE of all OHPC station, as against OHPC proposal of Rs.82.19 cr.

**O&M Expenses:**

129. OHPC has projected the O&M expenses of each of its power stations as given in the table below:

**Table – 25**  
**O & M Expenses for 2011-12**

**(Rs.cr.)**

<b>Sl No</b>	<b>Particulars</b>	<b>HHEP</b>	<b>CHEP</b>	<b>BHEP</b>	<b>RHEP</b>	<b>UKHEP</b>	<b>UIHEP</b>	<b>Subtotal</b>	<b>C.O</b>	<b>TOTAL</b>
<b>1</b>	O&M expenses by OERC allowed for FY 2010-11.	31.11	13.31	31.52	24.54	16.69	45.06	117.17	11.71	173.94
<b>2</b>	O&M expenses for 2011-12 with escalation @ 5.72% over 2010-11.	32.89	14.07	33.32	25.94	17.64	47.64	123.87	12.38	183.89
<b>3</b>	Corporate Office expenses apportioned to different units under OHPC based on installed Capacity.	1.68	0.44	3.11	1.53	1.95	3.66	8.72	12.38	
<b>4</b>	<b>Total O&amp;M expenses for the year 2011-12.</b>	<b>34.57</b>	<b>14.51</b>	<b>36.44</b>	<b>27.47</b>	<b>19.60</b>	<b>51.30</b>	<b>132.59</b>	<b>0.00</b>	<b>183.89</b>
<b>Add: Arrear salary and terminal liabilities</b>										
<b>5</b>	30% Arrear salary paid by OHPC during Financial Year 2010-11.	2.00	0.86	3.02	2.70	1.96	3.98	10.54	1.11	15.63
<b>6</b>	Arrear terminal liabilities of Rs. 78.01 Cr. as on 31.03.2009 claimed over a	1.84	0.79	3.96	1.03	0.98	0.99	8.60	1.56	11.15

SI No	Particulars	HHEP	CHEP	BHEP	RHEP	UKHEP	UIHEP	Subtotal	C.O	TOTAL
	period of seven years starting from 2010-11.									
7	Arrear shift allowance	0.05	0.02	0.05	0.07	0.04	0.07	0.23		0.30
8	Differential pension liability	1.37	0.12	1.58	5.97	4.39	3.57	13.43	4.28	21.28
9	Total Arrear Salary and Terminal liabilities	5.26	1.79	8.61	9.77	7.37	8.61	32.80	6.95	48.36
10	Arrear salary and terminal liabilities of Corporate office apportioned to different units under OHPC on the basis of installed capacity.	0.94	0.25	1.75	0.86	1.10	2.06	4.89	6.95	
11	Total Arrear Salary and Terminal Liabilities.	6.20	2.04	10.36	10.63	8.47	10.67	37.69	0	48.36
12	<b>Total O&amp;M expenses for the year 2011-12 including arrear salary and terminal liabilities.</b>	<b>40.78</b>	<b>16.55</b>	<b>46.80</b>	<b>38.10</b>	<b>28.07</b>	<b>61.97</b>	<b>170.28</b>	<b>0</b>	<b>232.25</b>

130. OHPC has justified its proposal as under:

- (i) O & M expenses allowed for the year 2010-11 escalated @ 5.72% to arrive at O & M expenses for the FY 2011-12 as per CERC Regulation.
- (ii) 30% arrear salary paid by OHPC during FY 2010-11 is included in the O & M expenses for FY 2011-12.
- (iii) Corporate office O & M expenses amounting to Rs. 12.38 Crs. has been apportioned to different Units under OHPC based on installed capacity and included in the O&M expenses for FY 2011-12.
- (iv) As per the decision of the department of energy, employees of the Corporation drawing pension from Govt. and OHPC are to draw pension from OHPC resulting in a differential pension liability of Rs. 21.28 Crs. which has been included in the O&M expenses
- (v) 30% arrear salary and terminal liabilities of Corporate Office amounting to Rs.6.95 Crs. has been apportioned to different units and included in the O & M expenses for the tariff proposal for FY 2011-12.

131. The Commission has examined the above O&M expenses proposal of OHPC and considering the suggestion of various stake holders and consumer association approves the O&M expenses as under:

- i) O & M expenses allowed for the year 2010-11 escalated @ 5.72% to arrive at O & M expenses for the FY 2011-12 and in addition to it;
- ii) 30% arrear salary paid by OHPC during FY 2010-11 is allowed to be included in the O & M expenses for FY 2011-12;
- iii) Corporate office O & M expenses amounting to Rs.12.38 crore has been apportioned to different Units under OHPC based on installed capacity and included in the O&M expenses for FY 2011-12 – Allowed;

- iv) OHPC has claimed an amount of Rs.21.28 crore towards differential pension liability of the retired employees drawing pension from Govt. as well as from OHPC, as per the decision of the DoE, Govt. of Orissa. The Commission has not passed the same in the ARR of OHPC for the FY 2011-12. However, the Commission agrees in-principle for passing through such differential pension liability of retired employees in the ARR of OHPC in subsequent years, after submission of detailed calculation of actual payment made/to be made to this effect by OHPC as per the notification of the State Govt. and necessary scrutiny by the Commission.
- v) 30% arrear salary and terminal liabilities of Corporate Office amounting to Rs.2.67 crore has been apportioned to different units and included in the O & M expenses for the tariff proposal for FY 2011-12 - Allowed.

132. The details of O&M expenses approved by the Commission for the FY 2011-12 is presented in the table below:

**Table – 26**  
**O & M Expenses approved for the FY 2011-12**

(Rs. cr.)										
Sl No	Particulars	HHEP	CHEP	BHEP	RHEP	UKHEP	UIHEP	Subtotal	C.O	TOTAL
1	O& M expenses by OERC allowed for FY2010-11	31.11	13.31	31.52	24.54	16.69	45.06	<b>117.17</b>	11.71	<b>173.94</b>
2	O& M expenses for 2011-12 with escalation @ 5.72% over 2010-11.	32.89	14.07	33.32	25.94	17.64	47.64	<b>123.87</b>	12.38	<b>183.89</b>
3	Corporate office expenses apportioned to different units under OHPC based on installed Capacity	1.68	0.44	3.11	1.53	1.95	3.66	<b>8.72</b>	12.38	
4	Total O&M expenses for the year 2011-12	34.57	14.51	36.44	27.47	19.60	51.30	<b>132.59</b>	0.00	<b>183.89</b>
<b>Add: Arrear salary and terminal liabilities</b>										
5	30% Arrear salary paid by OHPC during Financial Year 2010-11.	2.00	0.86	3.02	2.70	1.96	3.98	<b>10.54</b>	1.11	<b>15.63</b>
6	Arrear terminal liabilities of Rs.78.01 Cr. as on 31.03.2009 claimed over a period of seven years starting from 2010-11.	1.84	0.79	3.96	1.03	0.98	0.99	<b>8.60</b>	1.56	<b>11.15</b>
7	Arrear shift allowance	0.05	0.02	0.05	0.07	0.04	0.07	<b>0.23</b>		<b>0.30</b>
8	Differential pension liability	0.00	0.00	0.00	0.00	0.00	0	<b>0.00</b>	0	<b>0.00</b>
9	Total Arrear Salary and Terminal liabilities	3.89	1.67	7.03	3.80	2.98	5.04	<b>19.37</b>	2.67	<b>27.08</b>
10	Arrear salary and terminal liabilities of Corporate office apportioned to different units under OHPC on the basis of installed	0.36	0.09	0.67	0.33	0.42	0.79	<b>1.88</b>	2.67	

Sl No	Particulars	HHEP	CHEP	BHEP	RHEP	UKHEP	UIHEP	Subtotal	C.O	TOTAL
	capacity									
11	Total Arrear Salary and Terminal liabilities	4.25	1.76	7.70	4.13	3.40	5.83	<b>21.25</b>	0	<b>27.08</b>
12	Total O&M expenses for the year 2011-12 including arrear salary and terminal liabilities	38.82	16.28	44.14	31.60	23.00	57.13	<b>153.84</b>	0	<b>210.97</b>

Thus, the Commission approves an amount of Rs.210.97 cr. on account of O&M expenses in the ARR of OHPC for FY 2011-12, as against OHPC proposal of Rs.232.25 cr.

#### **Interest on Working Capital:**

133. As per the prevailing CERC Regulations the basis for calculation of working capital shall include the following:

- (i) Receivables equivalent to two months of fixed cost
- (ii) Maintenance spares @ 15% of Operational and Maintenance expenses and
- (iii) Operation and maintenance expenses for one month.

The rate of interest on working capital shall be the short-term prime-lending rate of State Bank of India. In accordance with CERC guideline, the interest on working capital shall be payable on normative basis as shown in table below:

**Table – 27**  
**Interest on Working Capital for FY 2011-12**

Description	(Rs. cr.)	
	OHPC Old Stations	UIHEP
Receivables equivalent to two months of fixed cost.	38.70	25.00
Maintenance spares @ 15% of Operational and Maintenance expenses	23.08	8.57
Operation and Maintenance expenses for one month.	12.82	4.76
<b>Total Working Capital</b>	<b>74.60</b>	<b>38.33</b>
<b>Interest on working capital calculated @ 12.50%</b>	<b>9.32</b>	<b>4.79</b>

Thus, the Commission approves an amount of Rs.14.11 cr. as normative interest on working capital as against OHPC proposal of Rs.16.01 cr.

#### **Total Annual Fixed Cost**

134. Based on the above parameters the station-wise ARR and tariff calculated for the year 2011-12 is indicated in the table below:

**Table – 28**  
**Station-wise Tariff Approved For 2011-12**

(Rs. cr.)								
Details of expenses	RHEP	UKHEP	BHEP	HHEP	CHEP	Sub-Total	UIHEP	Total
Saleable Design Energy (MU)	519.75	823.68	1171.17	677.16	485.10	<b>3676.86</b>	1942.38	<b>5619.24</b>
Interest on loan	0.11	0.13	8.56	2.98	1.49	<b>13.27</b>	0.00	<b>13.27</b>
Return on Equity	0.21	0.22	12.17	9.28	2.07	<b>23.96</b>	57.82	<b>81.78</b>
Depreciation	2.43	2.88	16.17	6.86	3.47	<b>31.82</b>	30.23	<b>62.05</b>
O&M expenses	31.60	23.00	44.14	38.82	16.28	<b>153.84</b>	57.13	<b>210.97</b>
Interest on working capital	1.67	1.24	3.04	2.39	0.98	<b>9.32</b>	4.79	<b>14.11</b>
<b>Total ARR (Rs. Crore)</b>	<b>36.03</b>	<b>27.48</b>	<b>84.08</b>	<b>60.33</b>	<b>24.29</b>	<b>232.21</b>	<b>149.97</b>	<b>382.18</b>
<b>Average cost (P/U) 2011-12</b>	<b>69.31</b>	<b>33.36</b>	<b>71.79</b>	<b>89.10</b>	<b>50.07</b>	<b>63.15</b>	<b>77.21</b>	<b>68.01</b>
Average cost (P/U) for 2010-11	<b>69.09</b>	<b>33.17</b>	<b>58.41</b>	<b>89.54</b>	<b>46.98</b>	<b>58.49</b>	<b>75.59</b>	<b>64.40</b>

**ARR & Tariff Application Fees and related Publication Expenses**

135. As per Regulation 42 of CERC Tariff Regulations, 2009, the application filing fee and the expenses incurred on publication of notices in the application for approval of tariff, may in the discretion of the Commission, be allowed to be recovered by the generating company or the transmission licensee, as the case may be, directly from the beneficiaries or the transmission customers, as the case may be. Accordingly, OHPC has claimed for reimbursement of Rs.0.27 cr. from GRIDCO towards ARR and tariff application fees and related publication expenses. The Commission approves the said amount of Rs.0.27 cr. as pass through in the ARR of GRIDCO for the year 2011-12.

**License fee for use of water for generation of Electricity:**

136. As per the Govt. of Orissa Gazette Notification dt. 01.10.2010, a licence fee @ Rs.0.01/kwh is to be paid to the State Govt. for water used for Hydro power generation. Accordingly OHPC has claimed an amount of Rs.5.676 cr. on the generation of electricity from its Hydro Electric Projects based on design energy which is to be reimbursed by OHPC from GRIDCO. The station-wise details is summarized in the table below:

**Table - 29**

(Rs. Crore)							
Description	RHEP	UKHEP	BHEP	HHEP	CHEP	UIHEP	Total
Licence fee for Consumption of water for generation of electricity	0.525	0.832	1.183	0.684	0.49	1.962	5.676

OHPC has further stated that the above calculation is based on design energy of its Hydro Projects; however, the license fee for water use is to be computed on the actual generation of OHPC Power Stations for the FY 2011-12. Therefore, the Commission may allow for reimbursement of licence fee for water use on the basis of actual amount paid to Govt. of Orissa.

137. The Commission considered the above proposal of OHPC and accordingly approves for reimbursement of license fee for use of water for generation of electricity based on

the actual payment made to the State Govt. on this account. However, the Commission provisionally approves an amount of Rs.5.676 cr. to be reimbursed from GRIDCO in the FY 2011-12 based on the design energy of OHPC power stations @ Rs.0.01 per KWh.

#### **Electricity Duty on Auxiliary Consumption**

138. As per the agreed PPA between OHPC and GRIDCO, the taxes and duties including ED on auxiliary consumption etc payable by OHPC to the State Government and other statutory bodies shall be passed on to GRIDCO in the shape of supplementary bill raised by OHPC. GRIDCO will make payment accordingly within 30 days of receipt of such bills.
139. Accordingly, ED on Auxiliary consumption of all the hydro-electric projects to the tune of Rs.0.57 crore is to be reimbursed to OHPC by GRIDCO through separate billing. The Commission approves the same.

#### **SLDC Charges**

140. The Commission, while determining the ARR and Fees & Charges of SLDC for the FY 2011-12 in Case no.150/2010, has allowed SLDC to levy and collect Annual Charges from the users towards System Operation Functions and Market Operation Functions in accordance with Regulations 22 & 23 of CERC (Fees and Charges of Regional Load Despatch Centre and Other Related Matters) Regulations, 2009. Accordingly, the Commission has fixed Rs.8688.81/MW/Annum to be collected from the generators towards annual charges of SLDC. Considering the installed capacity of 2027.50 MW of OHPC (as submitted by SLDC in its ARR application), the total SLDC charges of OHPC comes to Rs.1.762 cr. for the FY 2011-12, which is to be collected by SLDC from OHPC on monthly basis and OHPC shall get the amount reimbursed from GRIDCO.
141. The details of ED on auxiliary consumption, licence fee for use of water for generation of electricity and SLDC charges for FY 2011-12 of OHPC are summarized in the table below:

**Table – 30**

	(Rs. cr.)						
<b>Component of Costs</b>	<b>RHEP</b>	<b>UKHEP</b>	<b>BHEP</b>	<b>HHEP</b>	<b>CHEP</b>	<b>UIHEP</b>	<b>Total</b>
ED on Auxil. Consumption	0.05	0.08	0.12	0.07	0.05	0.20	<b>0.57</b>
License fee for use of water for generation of Electricity	0.525	0.832	1.183	0.684	0.49	1.962	<b>5.676</b>
Application fees and publication expenses							<b>0.27</b>
SLDC Charges for the FY 2011-12							<b>1.76</b>
<b>Total</b>							<b>8.276</b>

Thus, the Commission approves the miscellaneous charges, as above, exactly the same as proposed by OHPC, except the SLDC charge at Rs.1.76 cr. as against Rs.1.91 cr. claimed by OHPC.



### Two-Part Tariff

142. As per Regulation-22 of new CERC Tariff Regulations, 2009, the tariff for supply of electricity from a hydro generating station shall comprise of capacity charge and energy charge to be derived in the manner as indicated below:

As per Central Electricity Regulatory Commission (Terms and conditions of Tariff) Regulation 2009, the annual fixed cost of a power station shall be recovered through capacity charge (inclusive of incentives) and energy charge to be shared on a 50:50 basis as per the formula indicated at para 20 above.

143. Accordingly, the Commission approves the rate of energy charge and the capacity charge of OHPC power stations for FY 2011-12 as summarized in the table below:

**Table - 31**  
**Energy Charge and Capacity Charge for 2011-12**

Name of the Power Stations	Annual Fixed Cost (Rs. crore)	Capacity Charge (Rs. crore)	Energy Charge (Rs. crore)	Energy Charge Rate (P/U)
Rengali HEP	36.03	18.015	18.015	34.661
Upper Kolab HEP	27.48	13.74	13.74	16.681
Balimela HEP	84.08	42.04	42.04	35.896
Hirakud HEP	60.33	30.165	30.165	44.546
Chiplima HEP	24.29	12.145	12.145	25.036
Upper Indravati HEP	149.97	74.985	74.985	38.605

The recovery of capacity charge and energy charge for a calendar month shall be as per the CERC Tariff Regulations, 2009.

### Normative Annual Plant Availability Factor (NAPAF)

144. The Commission in its order dated 02.11.2010 vide Case No. 65/2010 has approved the NAPAF of OHPC Stations for the control period from 01.04.2009 to 31.03.2014 as given in the table below:-

**Table - 32**

Name of Power Stations	HHEP	CHEP	BHEP	RHEP	UKHEP	UIHEP
NAPAF (%)	78	75	85	75	85	88

The monthly capacity charge of each OHPC stations shall be computed for the FY 2011-12 based on the above NAPAF.

### Annual Revenue Requirement and Tariff for Machhkund H.E. (Jt.) Scheme:-

145. Machhkund Hydro Electric Project is a joint scheme of Government of Andhra Pradesh and Government of Odisha with 70% and 30% share with option of Government of Orissa to draw an additional 20% power at a cost of Rs. 0.08 per Kwh as per the inter state supplementary agreement in the year 1978 between Government of Andhra Pradesh and Government of Orissa.
146. The proposed tariff of 22.054 paise/Kwh of Orissa drawl of Machhkund power for FY 2011-12 has been computed on cost reimbursement basis. Actual O&M expenses of Rs. 4.428 crore for FY 2009-10 escalated @5.72% per year to arrive at O&M

expenses of Rs. 4.949 crore for FY 2011-12. The power purchase cost of Rs. 0.84 Crs. for additional 20% share (105 MU) is computed @ 8 paise/Kwh. Based on the above, the total annual expenditure is computed to be Rs. 5.79 Cr for FY 2011-12. The cost per unit comes to 22.054 paise considering 50% share of design energy Machhkund i.e 262.50 MU.

147. Since, all the Units of Machhkund project are more than 50 years old, it has been proposed to go for R&M of all the six units and up-gradation wherever possible taking into account of the existing water conductor system.

148. The projected tariff calculation is given in the table below:

**Table - 33**  
**Tariff of Machhkund H.E (Jt.) Scheme for FY 2011-12**

Installed Capacity (MW)	114.50
Orissa share as per Original Agreement (30%)	34.50 Mw
Net. Energy for sharing between Andhra Pradesh & Orissa	525.00 Mw
Expected Energy Drawl by Orissa (50%)	262.50 Mu
Energy Drawl of 30% of Orissa share	157.50
Purchase of Power up to 20% as per Supplementary Agreement	105.00
O&M Escalation factor @ 5.72% per year for 2 years	1.1177
	<b>(Rs. in Crs)</b>
1. O&M Exp. (Orissa share of Actual O&M Exp. For FY 09-10)	4.428
2. O&M Exp for FY 2011-12	4.949
3. Power purchase cost of additional 20% above 30% Orissa Share	0.84
4. Total Annual Expenditure (2 +3)	5.79
5. Tariff (Paise/Kwh)	22.054
Note: The tariff is calculated on cost reimbursement basis. Any penalty for over drawl of power by M/s GRIDCO above 50% limit shall be paid directly to APGENCO separately by GRIDCO.	

149. The Commission approves the above rate of 22.054 Paise per Unit as proposed by OHPC for sale of power from Machhkund Hydro Electric Station.

**De-silting of Reservoir:**

150. Some objectors have expressed that the capacity of the reservoirs particularly Hirakud has been reduced considerably due to silting. It called for a detailed technical analysis of the problem along with views of experts for increasing the capacity of the reservoir through removal of silt.

151. In this regard, OHPC has submitted that for a large storage type reservoir like Hirakud, detailed analysis need to be carried out along with techno-economic feasibility before taking up the work. For Hirakud reservoir having catchment area of 83, 400 Km<sup>2</sup> and having gross storage of 8136 Mm<sup>3</sup>, there is a need for expert opinion and detailed study of similar type of work if any, carried out in any other reservoirs in India.

152. The Commission observed that, in Himalayan region, the silt content in the water is very high. Provision of de-silting chambers is incorporated from the design stage of the Dam, to periodically remove the silt deposited in the diversion dam of the 'Run-of-the River Scheme Project'.

153. OHPC has stated that in case of Hirakud, there is no such provision incorporated from the design stage of the Dam. Further, Hirakud is storage dam project for de-silting arrangement. 64 nos. of under sluices have been provided at RL 580 ft. to remove the silt from the reservoir by maintaining the reservoir level at minimum level. Those sluices have only localised effect.
154. The Commission directs OHPC to seek expert opinion particularly in the context that whether any special de-silting arrangement has been done in large storage dam project, (other than the normal design provision of sluice gate operation). Experience of Bhakra, Sharavati Dam or other such large storage dam completed operation of 30 years or more, in this context would be very useful. OHPC may try to get information on the matter, and explore the possibilities for de-silting of the reservoirs as proposed by the objectors, which will help in optimal utilization of the water for generation purpose.
155. The expenses for the time being may be met from reserve fund of OHPC which would be subsequently recovered.

#### **Peak generation from Balimela and other Power Stations**

156. Most of the objectors and the Commission are critical about the operation of Power Stations to meet the peak demand of the State. Unit-7 & 8 of Balimela Hydro Electric Project have been added to meet the peak demand of the State, without increase in design energy. Therefore, the Commission directs OHPC to properly maintain the generating units with sufficient availability of critical spares, so that there will be maximum availability during peak hours. Commission has noted the categorical reply of OHPC that Balimela is capable of full peaking generation matching its installed capacity (510 MW) at any given time as and when SLDC desires (Para-85), We direct SLDC to avail the peaking capability of Balimela and other stations in preparation of schedule as well as real-time operative instruction for system requirement as well as ABT management for UI gain from ER-pool.
157. The Commission also desires that all the critical maintenance work to be completed before onset of monsoon, so that additional water available during monsoon can be fully utilised for secondary generation. All the generating units should be operated round the clock at its full peaking capacity subject to availability of inflow during monsoon months, to avoid the spillage of water from reservoirs unless it becomes absolutely necessary for Dam safety point of view.

#### **Renovation & Modernisation of Unit-1 Rengali**

158. GRIDCO has submitted that the Commission has approved Renovation and Modernization programme of unit-1 of Rengali Power House at an estimated cost of Rs.47.50 Crore with completion period of two years. The zero date of R&M programme has been taken from 25.11.2009 as decided by OHPC and GRIDCO. In the PPA executed between OHPC & GRIDCO for Rengali Power House stipulates the following that "In case of any generating unit under R&M work, for the purpose of computation of NAPAF, the capacity of the unit under R & M shall not be reckoned and the relatable fixed charges relating to O & M and depreciation apportioned to the

capacity under R & M shall not be included in the ARR and shall not be paid for by GRIDCO as approved by OERC”.

159. OHPC in its filing for Rengali Power House have not considered the above provision of the PPA. OHPC may recast the ARR for Rengali Power House in accordingly.
160. OHPC has stated that O&M expenses of a power station include expenditure on manpower, insurance, repair, spares, consumables and overheads etc. OHPC has to bear the expenditure on manpower and insurance etc. even if one generating unit of the power stations goes under Renovation & Modernization works. Therefore, only repair and maintenance expenditure, spares and consumables apportioned to the generating unit under Renovation & Modernization is to be deducted from ARR.
161. The Commission observed that the tariff for OHPC stations are being determined based on the CERC Regulations. In case a generating unit kept under R&M work, it would affect the Plant Availability Factor (PAF) and hence there would be a reduction in capacity charge. However, both OHPC & GRIDCO have agreed in PPA that in case of any unit under R & M work, for the purpose of computation of PAF, the capacity of the unit shall not be reckoned and the relatable fixed charges relating to O&M and depreciation apportioned to the capacity under Renovation & Modernization work shall not be included in the ARR.
162. The Commission is of the view that ARR/AFC of a hydro generating station consists of energy charge and capacity charge. In case any unit is kept under R&M, it will not affect the energy charge, but the capacity charge of the station will be reduced. Therefore, both OHPC & GRIDCO should compute the amount of depreciation and O&M expenses (excluding the expenditure on manpower and insurance, if any) apportioned to the unit capacity under Renovation and Modernization and arrive at a consensus. This amount should be deducted as a year end adjustment from the annual capacity charge claim of OHPC.
163. The Commission has approved to undertake Renovation & Modernization of Unit-1 of Rengali of a cost of Rs.47.50 Crs. vide case no. 125/2009 dt. 18.01.2010. The Commission has directed to complete the aforesaid R&M work within estimated capital cost and completion period.  
  
OHPC has submitted that major components of Stator like Stator core punching has already arrived at site and Stator bars and Rotor poles will be delivered in the month of March'11.
164. The Commission directs OHPC to complete the R&M work within the stipulated time period and start generation from the unit.

#### **Development of SINDOL – I, II & III on river Mahanadi**

165. Many objectors raised that OHPC and the State Govt. should take initiatives for development of hydropower in the State. Development of hydropower is very crucial for the power sector in Odisha to supply power at affordable cost to the consumers of the State. OHPC submitted that, SINDOL – I, II & III will be developed in the 12<sup>th</sup> plan. Pre-feasibility Report (PFR) along with Form – 1 has been forwarded to MOEF, Govt. of India for first stage clearance. Upon receipt of clearance, preparation of

Detailed Project Report (DPR) will be taken up by WAPCOS on behalf of OHPC. Hydrological report and Power Potential study report will be sent shortly to the concerned authorities for vetting.

#### ARR and Approval of Tariff

166. To sum up, the Commission hereby approves the ARR and generation tariff of OHPC for FY 2011-12 as follows:

**Table – 34**

Name of the Power Stations	RHEP	UKHEP	BHEP	HHEP	CHEP	Sub-total	UIHEP	Total
<b>2010-11</b>								
Total ARR (Rs. Crore)	35.91	27.32	68.40	60.64	22.79	215.06	146.82	361.88
Average cost (P/U)	69.09	33.17	58.41	89.54	46.98	58.49	75.59	64.40
<b>Approval for 2011-12</b>								
Total ARR (Rs. Crore)	<b>36.03</b>	<b>27.48</b>	<b>84.08</b>	<b>60.33</b>	<b>24.29</b>	<b>232.21</b>	<b>149.97</b>	<b>382.18</b>
Average cost (P/U)	<b>69.31</b>	<b>33.36</b>	<b>71.79</b>	<b>89.10</b>	<b>50.07</b>	<b>63.15</b>	<b>77.21</b>	<b>68.01</b>

Based on this approved Annual Revenue Requirement the rate of energy charge and the capacity charge of OHPC power stations are determined for FY 2011-12. The Capacity charge and the rate of Energy charge as approved at para 143 above and the corresponding approved rates for the FY2010-11 are summarized in the table below :

**Table – 35**

#### Energy Charge and Capacity Charge for 2010-11 & Approval for 2011-12

Name of the Power Stations	Annual Fixed Cost (Rs. crore)		Capacity Charge (Rs. crore)		Energy Charge (Rs. crore)		Energy Charge Rate (P/U)	
	10-11	11-12	10-11	11-12	10-11	11-12	10-11	11-12
Rengali HEP	35.91	36.03	17.955	18.015	17.955	18.015	34.545	34.661
Upper Kolab HEP	27.32	27.48	13.660	13.74	13.660	13.74	16.584	16.681
Balimela HEP	68.40	84.08	34.20	42.04	34.20	42.04	29.201	35.896
Hirakud HEP	60.64	60.33	30.32	30.165	30.32	30.165	44.775	44.546
Chiplima HEP	22.79	24.29	11.395	12.145	11.395	12.145	23.490	25.036
Upper Indravati HEP	146.82	149.97	73.410	74.985	73.410	74.985	37.793	38.605

The unit cost of energy from Machhkund is approved at 22.057 paise for 2011-12 against 21.95 paise per unit approved for 2010-11.

167. **The Normative Annual Plant Availability Factor (NAPAF)** have already been approved by the Commission in its order dated 02.11.2010 vide Case No. 65/2010 for the control period FY 2009-14. OHPC is directed to recover the capacity charge accordingly. The corresponding approved NAPAF for FY 2011-12 are presented in the table below:

**Table – 36**

#### NAPAF approved for 2010-11 & 2011-12

Name of the power station	HHEP	CHEP	BHEP	RHEP	UKHEP	UIHEP
<b>NAPAF (%) for 2010-11</b>	82	70	85	75	85	87
<b>NAPAF (%) for 2011-12</b>	78	75	85	75	85	88

168. The application of OHPC for approval of its Annual Revenue Requirement and fixation of generation tariff for the FY 2011-12 thus stands disposed of.

The Tariff now approved shall be operative from 01.04.2011 and shall continue until further order.

**Sd/-**  
**(B.K. MISRA)**  
**MEMBER**

**Sd/-**  
**(K. C. BADU)**  
**MEMBER**

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