

Analysis of ARR & Tariff Proposal of OHPC for FY 2024-25

World Institute of Sustainable Energy, Pune
Consumer Counsel

Presentation Outline

- Installed capacity, NAPAF and design energy
- Project cost
- Components of annual fixed cost
- ARR and Tariff

Installed Capacity and Design Energy

Installed Capacity of OHPC Stations and NAPAF

- Total installed capacity of OHPC owned hydro station is 2099.8 MW (2039.8 MW from OHPC hydro power plant + 60 MW from share of Machhkund). After completion of RM & U works of Unit-5&6 of HHEP, Burla, each unit was uprated from 37.5MW to 43.65MW.
- The Commission in its order dated 20.03.2020 vide case no. 52 of 2019 has re-determined NAPAF of OHPC Stations for the control period from 01.04.2019 to 31.03.2024 also extend for FY 2024-25 for recovery of Capacity Charges.

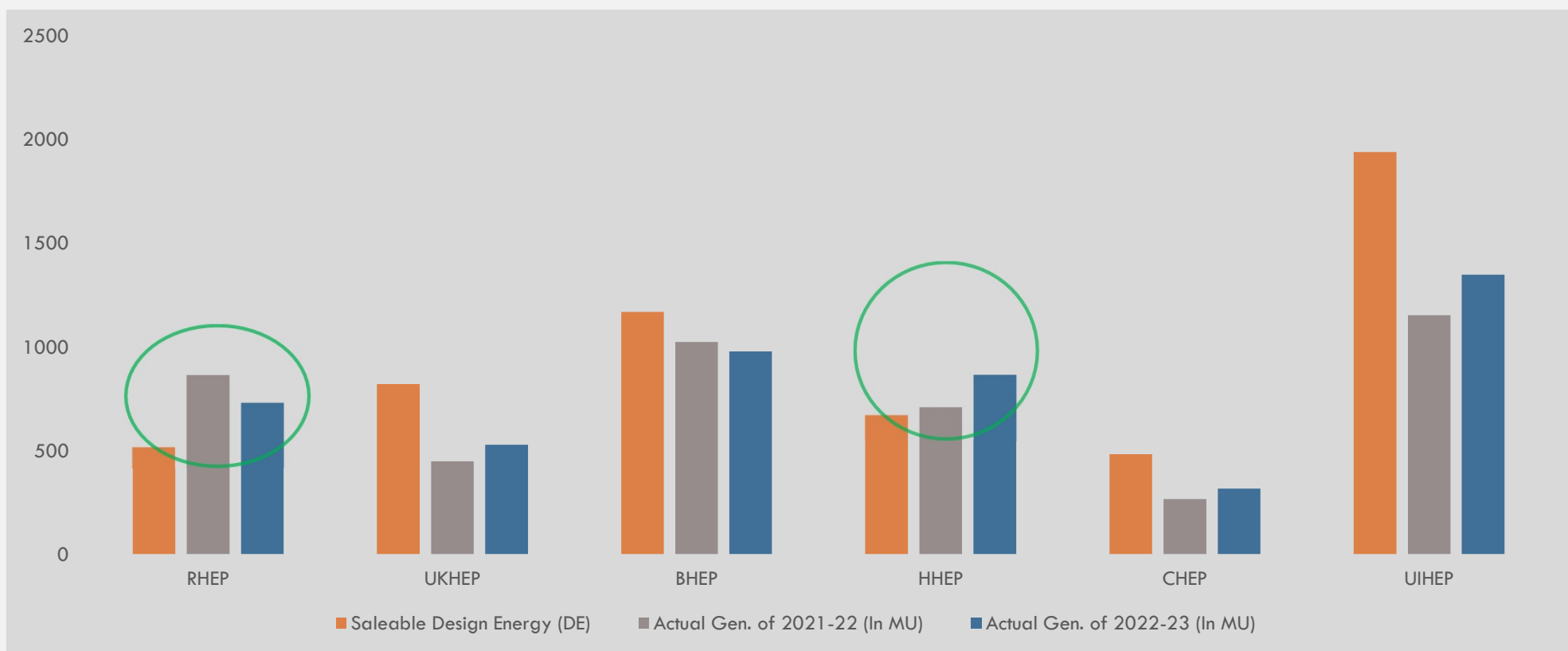
Power Stations	RHEP	UKHEP	BHEP	HHEP	CHEP	UIHEP
Approved for 2019-24 block period	80	87	83- for first 3 years, 87 – for next 2 years	75	75	88
OERC approval for FY 23-24	80	87	87	75	75	88
OHPC proposal for FY 24-25	80	87	87	75	75	88

Design Energy vs Actual/Anticipated Generation in FY 2023-24

Name of HEP	Commission approval for FY 2023-24 (Saleable) (MU)	Reservoir Level and Generation for FY 2023-24		Reservoir Level and Generation for FY 2022-23		Increase in generation in FY 2023-24 over FY 2022-23
		Reservoir level as on 15 Nov 2023	Anticipated generation (MU)	Reservoir level as on 15 Nov 2022	Actual generation (MU)	
RHEP	519.75	122.72 mtr.	752.79	122.62 mtr.	732.53	2.77%
UKHEP	823.68	855.71 mtr.	605.99	855.55 mtr.	531.94	13.92%
BHEP	1171.17	1487.90 ft.	1050.02	1482.80 ft.	980.72	7.04%
HHEP	660.52	627.93 ft.	861.66	628.43 ft.	869.91	-0.95%
CHEP	485.10		296.01		319.53	-7.36%
UIHEP	1942.38	636.02mtr	1695.21	637.94mtr	1351.5	25.43%
Total	5602.60		5261.68		4786.4	9.94%

Note: The reservoir level as on Nov 2023 are noted to be high (Except UIHEP, HHEP) compare to the level recorded as on Nov 2022; also, anticipated generation for FY 2023-24 is projected to be higher than FY 2022-23 by around 10%.; however same is lower than the Commission's approved Salable MU for FY 2023-24 by around 340MU.

Design Energy vs Historical Actual Generation



- RHEP and HHEP are performing well and having positive fund amount in Secondary fund.
- Generation of UKHEP is on lower side, w.r.t design energy (only 55%).
- In FY 22-23, total generation was considerable 2nd low (2nd lowest in last 5 years).

Project Cost

Proposed Project Cost for ARR 2024-25 (Rs. Cr)

Sl. No.	Name of the Power Stations	Asset reduction (in Crs.)			New Addition (in Crs.)				Project Cost (in Crs.)				
		Asset reduction during the FY 2011-12 to FY 2021-22 (Approved)	Asset reduction during the FY 2022-23	Total Asset reduction during the FY 2011-12 to FY 2022-23	New additions from 01.04.1996 to 31.03.2022 (Approved)	New additions for FY 2022-23 (Audited)	IDC	Less PSDF Grant for FY 2022-23	Total New additions from 01.04.1996 to 31.03.2023 considered for Tariff 2024-25	Historic cost of assets as on 01.04.96 & Original Project Cost of UIHEP	Total New additions from 01.04.1996 to 31.03.2023 considered for Tariff 2024-25	Total Asset reduction during the FY 2011-12 to FY 2022-23	Project cost considered for Tariff Calculation based on Historic Cost
1	2	3	4	5=3+4	6	7	8	9	10=6+7+8-9	11	12=10	13=5	14=11+12-13
1	RHEP	0.089	0.053	0.142	64.060	7.338		0.000	71.398	91.090	71.398	0.142	162.347
2	UKHEP	0.494	0.010	0.504	27.620	7.888		2.690	32.818	108.310	32.818	0.504	140.624
3	BHEP	7.214	-3.928	3.286	280.960	57.959		0.000	338.919	115.420	338.919	3.286	451.053
4	HHEP	14.261	4.228	18.489	390.870	27.824	2.940	0.000	421.634	72.750	421.634	18.489	475.895
5	CHEP	6.928	-4.153	2.775	120.090	0.603		0.000	120.693	92.230	120.693	2.775	210.148
	Sub Total	28.986	-3.790	25.196	883.600	101.612	2.940	2.690	985.462	479.800	985.462	25.196	1440.066
6	UIHEP	4.912	0.393	5.305	88.020	15.261		0.305	102.976	1194.790	102.976	5.305	1292.461
	Total	33.898	-3.398	30.500	971.620	116.873	2.940	2.995	1088.438	1674.590	1088.438	30.500	2732.527

Proposed Project Cost for ARR 2024-25

Observations

- OHPC has considered the historical cost of its power stations as on 01.04.1996 plus new capitalization and decapitalization after 01.04.1996 up to FY 2024-25 (FY 22-23 audited and projected for FY 23-24 and FY 24-25) for computation of tariff for FY 2024-25.
- Already approved additional capitalization of Rs 971.62 Cr (Up to FY 21-22), additional capitalization of Rs 119.813 Cr (FY 22-23 audited) are being claimed for tariff determination of FY 2024-25. PSDF grant of Rs 2.995 Crs, was deducted and total project cost of Rs 2732.527 Cr has been considered for tariff determination for FY 2024-25.
- Capitalization mainly in HHEP, BHEP may be reviewed as per the OERC Generation Regulations. Capital asset not in put to use may not be considered. Details of cost overrun and time overrun, if any, may be submitted. Increased capitalization may lead to increased energy generation.
- Historical cost Rs. 1674.59 Cr., new addition Rs. 1091.43 Cr. and decapitalization Rs. 30.500 Cr. have been considered for Project cost of Rs. 2732.527 Cr for tariff calculation.

Components of Annual Fixed Cost

- Return on Equity
- Interest on Loan
- Depreciation
- Operation and Maintenance
- Interest on Working Capital

Return on Equity (Amt in Cr)

Name of the Power Station	Capital Addition considered for RoE for FY 2024-25 (in Crs)	Share of Equity (%)	Value of Equity capital (in Crs)	ROE Proposed for 2024-25 (in Crs)	RoE approved by OERC for 2023-24 (in Crs)
1	2	3	4=2*3	5=15.5 or 16% of 4	6
RHEP	71.398	30	21.420	3.320	2.975
UKHEP	32.818	30	9.845	1.526	1.261
BHEP	338.919	30	101.676	15.760	12.729
HHEP	421.634	30	126.490	19.606	17.513
CHEP	120.693	30	36.208	5.612	5.262
UIHEP	1292.461	25&30	328.264	52.522	51.781
Total	2277.923		623.903	98.346	91.521

Page 8 of tariff order FY 2023-24 "...The Commission scrutinised the PPA of the OHPC plants and it is found that for old plants the Return on Equity is 15.5% and for UIHEP the RoE is 16%." However, for old stations, decapitalization must be deducted from capital cost.

Interest on Normative Loan (FY 2024-25)

Proposal

(In Rs. Cr.)

Item	RHEP	UKHEP	BHEP	HHEP	CHEP	UIHEP	Total
Normative Loan							
Average outstanding principal	6.93	5.37	72.73	97.50	34.15	49.55	266.23
Normative Loan Interest rate (%)	9.8	9.8	9.6	8.75	9.8	7.0	-
Interest Amount (Rs. Cr.) FY 24-25	0.679	0.526	6.982	9.360	3.279	3.468	24.294
Approved Interest Amount (Rs. Cr.) <u>FY 2023-24</u>	0.335	0.280	6.31	8.57	3.722	3.010	22.227
Government loan							
Normative Loan	0.679	0.526	6.982	9.360	3.279	3.468	24.294
Govt. Loan of UIHEP	-	-	-	-	-	-	-
Total (Normative Loan+ Govt Loan) FY <u>2024-25</u>	0.679	0.526	6.982	9.360	3.279	3.468	24.294

Interest on Loan : Observations and Submission

- OHPC has not considered interest on government loan and normative loan (Rs 78.74 cr) of UIHEP for FY 2024-25 as per the directives of Hon'ble Commission given in previous orders. Cumulative interest of these two loans is also not claimed.
- The normative loans of CHEP, RHEP & UKHEP is considered @ 9.8% as per Clause No. 22 of OERC (Terms & Conditions for determination of Generation Tariff) Regulation, 2020. The normative loan of BHEP, Balimela (9.6%) and HHEP, Burla (8.75) is considered based on PFC interest rate. The Normative loan of UIHEP is considered @7% being the prevailing rate of interest for State Govt. Loan.
- OHPC has considered additional capitalization based on audited account of FY 2022-23 and estimated additional capitalization for FY 2023-24 and FY 2024-25. Interest payment with respect to estimated capitalization may not be approved. Some of the loans have repayment period of only 5 years; OHPC may try to refinance the same with longer repayment period.

Depreciation, O&M and IoWC : Proposal

(Rs. in Crore)

Power Station	Depreciation Claimed		O&M Expenses		Interest on Working Capital	
	<i>Approved for</i> FY 2023-24	<i>Proposed for</i> FY 2024-25	<i>Approved for</i> FY 2023-24	<i>Proposed for</i> FY 2024-25	<i>Approved for</i> FY 2023-24	<i>Proposed for</i> FY 2024-25
RHEP	3.99	4.17	61.33	66.575	2.303	2.887
UKHEP	3.59	3.61	55.67	68.081	2.078	2.873
BHEP	11.72	11.59	60.21	64.885	2.618	3.153
HHEP	20.79	12.33	58.97	51.502	2.785	2.706
CHEP	7.61	5.40	25.49	23.061	1.184	1.153
Sub Total	47.7	37.01	261.66	274.104	10.968	12.771
UIHEP	42.75	35.45	77.166	71.93	4.044	4.308
Total	90.45	72.46	338.828	346.034	15.012	17.079

Depreciation : Observations and Submission

- OHPC has computed depreciation for FY 2024-25 @ 2.57% of historic project cost (excl. decapitalization) plus additional capitalization. The unit wise depreciation so calculated has been compared with loan repayment and which ever is higher has been considered as depreciation.
- OHPC in the present tariff application has claimed the normal depreciation of Rs 72.46 Crs for FY 2024-25.
- Depreciation is allowed as per clause 23 of the OERC Generation Tariff Regulations, 2020, i.e. for existing plants of OHPC, as per the direction of the High Court of Orissa, depreciation will be calculated at pre-1992 norms notified by Government of India.

O& M expenses : Observations and Submission

- OHPC has claimed expenses on O&M as per clause no. 25 of the OERC (Terms & Conditions for determination of Generation Tariff) Regulation, 2020
- OHPC has escalated average O&M of different power stations for FY 2020-21 and FY 2021-22, @5.72% twice to arrive at the O&M expenses for FY 2024-25. OHPC has deducted Rs. 11.07 Cr. from O&M expenses of UIHEP, Mukhiguda for FY 2023-24 on account of dam maintenance expense receivable from DoWR.
- The average O&M cost may be verified as per audited account. The escalation factor may be approved as per the provisions given in OERC (Terms & Conditions for determination of Generation Tariff) Regulation, 2020.
- Hon'ble Commission may verify the amount to be received from DoWR towards Dam Maintenance Sharing of UIHEP .

Interest on Working capital and Non-tariff income: Observations and Submission

- OHPC has claimed interest on working capital on normative basis as per provision under clause no. 24(4) of the OERC (Terms & Conditions for determination of Generation Tariff) Regulation, 2020 .
- Interest is calculated based on the SBI Marginal Cost of Funds based Lending Rate (MCLR) prevailing on 01.04.2023 plus 300 basis points; i.e. 8.5%.
- Working capital may be approved based on approved O&M cost and receivable according to annual fixed cost.
- **Non-tariff income:** OHPC claimed NTI as per Clause 26 and 41 of OERC Generation Tariff Regulations, 2020. Claimed Rs 11.23 Cr as 50% of deductible non-tariff income. Further, as per review order, OHPC has adjusted 2nd installment (4.954 Cr) of recovery of excess NTI deducted by the Commission in FY 2021-22.

ARR and Tariff

Proposed ARR (Rs Cr) and Tariff (FY 2024-25)

Considering Saleable D.E.of 5602.60MU

Detail Expenses	RHEP	UKHEP	BHEP	HHEP	CHEP	Sub Total	UIHEP	Total FY 2024-25	Approved for FY 2023-24
Saleable Design Energy (MU)	519.75	823.68	1171.17	660.52	485.10	3660.22	1942.38	5602.60	5602.60
Return on Equity	3.324	1.549	16.095	20.268	5.934	47.17	52.561	99.733	91.52
Interest on Loan	0.679	0.526	6.982	9.360	3.279	20.83	3.468	24.294	21.88
Depreciation	4.172	3.614	11.592	12.231	5.401	37.01	35.450	72.460	67.14
O & M expenses	66.575	68.081	64.885	51.502	23.061	274.10	71.930	346.034	338.83
Interest on Working Capital	2.887	2.873	3.153	2.706	1.153	12.77	4.308	17.079	14.45
Total Cost	77.638	76.643	102.707	96.067	38.827	391.881	167.718	559.599	533.819
Less Non Tariff Income	0.159	0.664	0.100	0.220	0.020	1.163	0.499	1.662	11.485
Adjustment of Non-Tariff Income of FY2022-23	0.607	0.777	1.239	0.699	0.175	3.497	1.457	4.954	4.954
Less Sale of Power to CSPDCL				3.321		3.321		3.321	3.500
Total ARR for FY2024-25	78.086	76.756	103.846	93.225	38.982	390.895	168.676	559.571	523.788
Average Tariff (P/U) for 2024-25	150.24	93.19	88.67	141.14	80.36	106.80	86.84	99.88	93.49
Average Tariff for the FY 2023-24 (P/U) (Approved)	135.64	76.51	78.84	139.64	79.40	97.430	86.07	93.49	

Percentage Increase in Tariff of 2023-24 over Tariff of FY 2022-23

- During FY 2024-25, OHPC proposes to sale an estimated energy of 5602.60 MU at an average tariff of 99.88 paise/unit.
- During FY 2023-24 , 5602.60 MU was approved by the Commission at an average tariff of 93.49 paise/kWh
- Over all increase of **6.83%** is proposed by OHPC during FY 2024-25 tariff .

Comparison of proposed Tariff of FY 2024-25 (With Saleable D.E. of 5602.60 MU)

Power Station	Average tariff (P/U) FY 2020-21	Average tariff (P/U) FY 2021-22	Average tariff (P/U) 2022-23	Average tariff (P/U) 2023-24	Average tariff (P/U) 2024-25	Increase in P/U (% increase)
RHEP	129.3	128	151	135.64	150.2	14.56 (10.73%)
UKHEP	80.49	80.9	74.6	76.51	93.19	16.68 (21.80%)
BHEP	65.95	64.9	66.3	78.84	88.67	9.83 (12.46%)
HHEP	129.4	126	117	139.64	141.1	1.46 (0.83%)
CHEP	74.69	74	84	79.40	80.36	0.98 (1.20%)
UIHEP	92.14	88.1	85.3	86.07	86.84	0.89 (1.03%)

FY 24-25 proposed, all others are approved

Proposed Capacity Charge and Energy Charge (FY 2024-25)

Name of power station	Annual Fixed Cost (ARR) (Rs. in Crs)	Annual Capacity Charge (ACC) (50% of ARR) in Rs. Cr.	Annual Energy Charge (AEC) (Rs. in Crs)	Salable design energy (MU)	Energy Charge Rate (ECR) (in p/u)
RHEP	78.086	39.043	39.043	519.75	75.118
UKHEP	76.756	38.378	38.378	823.68	46.593
BHEP	103.846	51.923	51.923	1171.17	44.334
HHEP	93.225	46.613	46.613	660.52	70.570
CHEP	38.982	19.491	19.491	485.10	40.180
UIHEP	168.676	84.338	84.338	1942.38	43.420

Comparison of Two-Part Tariff

Name of power station	Approved Tariff (2023-24)		<u>Proposed Tariff (2024-25)</u>	
	Capacity Charge (Rs Cr)	Energy Charge Rate (P/U)	<u>Capacity Charge (Rs Cr)</u>	<u>Energy Charge Rate (P/U)</u>
RHEP	35.25	67.82	39.043	75.118
UKHEP	31.51	38.25	38.378	46.593
BHEP	46.17	39.42	51.923	44.334
HHEP	46.12	69.82	46.613	70.570
CHEP	19.26	39.70	19.491	40.180
UIHEP	83.59	43.04	84.338	43.420

Details of Reimbursement

Component of Costs	RHEP	UKHEP	BHEP	HHEP	CHEP	UIHEP	Total (FY (FY24-25))	FY 23-24 (approved)
(a) License fee for use of water for generation of electricity for FY 2024-25.	0.945	1.458	2.129	1.231	0.882	3.532	10.217	9.649
(b) ED on Auxiliary Energy Consumption for FY2024-25.	0.289	0.458	0.651	0.376	0.270	1.079	3.122	3.122
(c) SLDC charges for FY 2024-25.							1.6344	1.546
(d) Application fees and publication expenses for FY202-25							0.270	0.270
(e) Differential publication expenses for FY2021-22								
(f) ERPC charges for FY2024-25							0.160	0.16
(g) Differential ARR of MHEP for FY2020-21								
(h) Income Tax as per Audited Account of FY 2022-23							17.02	2.06
(i) Unapproved Income Tax of 2023-24 as per Audited Account of FY 2021-22							1.33	
Total (Rs cr)							33.753	16.807

Proposed Tariff for Machhakund HEP (FY 2024-25)

- Orissa has a share of 262.5 MU (50% of total generation) power in Machhakund Hydro Electric Project.
- As per the provisions made in the Agreement dated 23 Oct 2020, for acquiring additional 20% share of the Joint Scheme, Govt. of Odisha / OHPC made payment of Rs 27.42 Crores to GoAP/APGENCO towards present depreciated cost of the Project and shared the expenditure on account of RM & U works for all the generating units along with auxiliaries and switchyard system in the ratio of 50:50

Particulars	Amount (Rs CR)
1. Total Audited Cost of O&M Bill of MHEP (Jt.) for the FY 2022-23	57.5011
2. 50% O&M Expenditure share (Orissa share of Actual O&M Expenditure for 2021-22)	28.7506
3. O&M Expenditure for FY 2024-25 applying the escalation factor	32.1337
Total Expected Expenditure during the FY 2024-25	32.1337
Tariff (Tariff of MHEP(Jt.) Scheme for FY2024-25 (paisa/ kWh)	<u>123.651</u>

- Tariff approved by Commission for FY 2023-24 – **116.972 Paise/Unit**

Conclusion

- Hon Commission may consider submissions of the consumer counsel on following parameters –
 - Capital cost and additional capitalization: based on historical cost and review of proposed additional capitalization
 - return on equity: allowed as per regulations
 - Interest on loan: as per previous orders of Commission
 - Depreciation: allowed as per regulations
 - Interest on working capital: based on approved components
- Hon Commission may decide the ARR and tariff accordingly.

Thank You