



shown in the specific formats annexed to this petition. The R&M/Refurbishment & Up-rating schemes will be presented to Commission during the time of Truing-up.

3.2.4. Accordingly, the Commission has gone through the Petitioner's submission and approved the additional capitalization as per the provision of UPERC Generation Tariff Regulation, 2019.

3.2.5. The Commission has carried out Capital expenditure and additional capital expenditure exercise as per provision of Para 16 (1) of Generation Tariff Regulation 2019 which is reproduced below:

*(1) The Commission shall carry out Truing up exercise along with the tariff petition filed for the next tariff period, for the following, after prudence check:*

*(a) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024.*

*(b) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024, on account of uncontrollable factors.*

3.2.6. **Since the transfer scheme between UPJVNL and UJVNL is not finalized yet, The Commission, accordingly, has considered the Closing GFA of FY 2018-19 as the Opening GFA of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016.**

**Table 10 Gross Fixed Asset approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening GFA	77.59	77.59	77.59	77.59	77.59
Capitalization during the Year	0.00	0.00	0.00	0.00	0.00
Closing GFA	77.59	77.59	77.59	77.59	77.59

### **Depreciation**

3.2.7. The UPERC Generation Regulations, 2019 provides that the depreciation shall be calculated for each year of the tariff period, on the value of the Capital Cost of the assets admitted by the Commission. It further states that the depreciation shall be calculated on the historical cost of the asset and in the case of the existing projects, the balance depreciable value as on 01st April 2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31st March 2019 from the gross depreciable value of the assets. The rate of depreciation shall be continued to be charged at the rate specified in Appendix III till cumulative depreciation reaches 70%. Thereafter the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



3.2.8. Accordingly, the Petitioner has worked out the allowable depreciation for the control period from FY 2019-20 to FY 2023-24 on the value of Gross Fixed Assets at the beginning of FY 2019-20 and thereafter considering the proposed additional capitalizations on account of R&M scheme, during the control period. The petitioner has claimed full-year depreciation on the value of Gross Fixed Assets as on 1<sup>st</sup> April 2019 and half-yearly depreciation on the value of additions in the fixed assets during the year, being in line with the provisions of the UPERC Generation Regulations, 2019.

3.2.9. The Commission has analysed the submission made by the Petitioner and accordingly approved the Depreciation as given in the below table.

**Table 11 Depreciation as approved by the Commission (in INR Crore)**

	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	4.50	4.50	4.50	4.50	4.50

**Interest on Loan**

3.2.10. Regulation 24(ii) of UPERC Generation Regulations, 2019 prescribes the methodology for calculation of interest on loans for the determination of the Annual Revenue Requirement of the power project. The opening loan balance as on 1st April 2019 has been considered equivalent to the closing loan balance for FY 2018-19. Thereafter the normative loan addition during the year has been computed at 70% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30.

3.2.11. Further, the Petitioner has considered the repayment during the year equivalent to the normative depreciation for the year to be in line with the methodology prescribed in the UPERC Generation Regulations, 2019.

3.2.12. The Commission has gone through the Petitioner's submission and considers the closing loan of FY 2018-19 as the opening loan of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016.



**Table 12 Interest on Loan approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Balance	39.43	34.93	30.43	25.93	21.43
Additions	0.00	0.00	0.00	0.00	0.00
Repayments	4.50	4.50	4.50	4.50	4.50
Closing Balance	34.93	30.43	25.93	21.43	16.93
Average Net loan	37.18	32.68	28.18	23.68	19.18
Interest on Loan (%)	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Loan	4.55	4.00	3.45	2.90	2.35

### Return on Equity

3.2.13. The Petitioner, submitted that Regulation 44(iii) of UPERC Generation Regulations, 2019 prescribes the provisions for the calculation of return on equity for the determination of the Annual Revenue Requirement of the power project. The opening equity balance as on 01st April 2019 has been considered equivalent to the closing equity balance for FY 2018-19. Thereafter the normative equity addition during the year has been computed at 30% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30. The Return on Equity has been computed @ 15% as specified in Regulation 24(iii) of UPERC (Terms and Conditions of Tariff) Regulations 2019 for the MYT period of FY 2019-20 to FY 2023-24.

3.2.14. The Commission considers the closing equity of FY 2018-19 as the Opening loan of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016 and accordingly approved the Return on equity as depicted in the below table:

**Table 13 Return on Equity as approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Equity	23.28	23.28	23.28	23.28	23.28
Addition	0.00	0.00	0.00	0.00	0.00
Closing Equity	23.28	23.28	23.28	23.28	23.28
Average Equity	23.28	23.28	23.28	23.28	23.28
Rate of ROE	15.00%	15.00%	15.00%	15.00%	15.00%
Return on Equity	3.49	3.49	3.49	3.49	3.49

### Operation and Maintenance

3.2.15. The Petitioner submitted that Para 24 (iv) of UPERC (Terms & Conditions of Generation Tariff) Regulations 2019 deals with the allowance of O&M expenses. The Petitioner submitted that for the calculation of O&M from FY 2019-20 to FY

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



2023-24 in this petition, the escalation has been considered at 6.64% as prescribed in Tariff Regulation 2014 on the ground of increase in employee benefit expenses due to 7<sup>th</sup> pay commission that was announced in 2016. The Commission in the UPERC (Terms and Conditions of Generation Tariff) Regulations 2019 – Para 24 (iv)(e) have prescribed that the normative values of operation and maintenance expenses including insurance for FY 2019-20, shall be derived from values approved by the Commission for FY 2018-19 escalated by 4.47%.

3.2.16. Accordingly, the Commission approved the operation and maintenance expenses by escalating the approved O&M expenses of FY 2018-19 by 4.47%.

**Table 14 O&M expenses as approved by the Commission (in Rs. Crore)**

	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M Expenses	15.64	16.34	17.07	17.83	18.63	19.46

**Interest on Working Capital**

3.2.17. The Petitioner has calculated the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019. The rate of interest has been considered at 12.05% in the revised submission.

3.2.18. The Commission approved the Interest on working capital in line with the Generation Tariff Regulation 2019 and depicted in the below table:

**Table 15 Interest on Working Capital approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M for 1 month	1.36	1.42	1.49	1.55	1.62
Maintenance Spares @ 15% of O&M	2.45	2.56	2.67	2.79	2.92
Receivable for 45 days	3.72	3.75	3.78	3.81	3.85
Total Working Capital	7.54	7.73	7.94	8.16	8.39
Rate of Interest	12.05%	12.05%	12.05%	12.05%	12.05%
Interest on Working Capital	0.91	0.93	0.96	0.98	1.01

**Annual Fixed Cost**

3.2.19. The Annual fixed cost of the Obra Hydropower plant for the control period under consideration works out as under:



**Table 16 Annual Fixed Cost as determined by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	4.50	4.50	4.50	4.50	4.50
Interest on Loan	4.55	4.00	3.45	2.90	2.35
Return on Equity	3.49	3.49	3.49	3.49	3.49
Interest on Working Capital	0.91	0.93	0.96	0.98	1.01
O & M Expenses	16.34	17.07	17.83	18.63	19.46
AFC	29.79	30.00	30.23	30.51	30.81
Design Energy (MU)	279	279	279	279	279
Aux	1.00%	1.00%	1.00%	1.00%	1.00%
FEHS	0.00%	0.00%	0.00%	0.00%	0.00%
Energy charge (Rs./Unit)	0.54	0.54	0.55	0.55	0.56

**Plant Availability factor**

3.2.20. The petitioner stated that the 'Capacity Charge' is mainly dependent on the 'Plant availability factor achieved during the month (PAFM)' which is derived from the "Declared Capacity" of plants to Nodal Load Dispatch Centre.

3.2.21. The Petitioner has submitted that Obra HPS (3X33 MW) is a storage type Hydro Power Plants and completely depends upon Monsoon However, storage in case of Obra HPS is dead storage type, as the water level is restricted to facilitate water to Obra Thermal Station. Further the units of Pipri Hydro and Obra Hydro are operated in tandem in order to maintain level at Obra, thus leaving a very thin margin for operation of machines at Obra HPS. Obra HPS is regulated by Uttar Pradesh State Load Dispatch Centre. The Petitioner is many times bound to confirm less "Declared capacity" of its plants to UPSLDC although machines are available for generation. The declaration of less "declared capacity" of its plant by UPJVNL to UPSLDC, even if machines are available for generation will cause vast financial impact.

3.2.22. The Petitioner requested to allow to calculate PAFM based on "Availability factor of a Hydro Power Plant (in %) instead of existing formula of declare capacity.

3.2.23. **The Commission noted the issue. In this regard, the Commission directs that the Petitioner shall declare its capacity as per availability of its plant and water available for generation and SLDC, while, communicating with the Petitioner shall indicate the reason for any**

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**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra,  
Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



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changes therein as per UP Gird Code 2007, its amendments and earlier  
Order of the Commission, if any.

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#### 4. Khara Hydro Power Station ARR & MYT

##### 4.1. UPJVNL Submission

4.1.1. In the Petition, UPJVNL has proposed the component-wise fixed charges for the electricity exported as given in the table below:

**Table 17 Fixed Charge component proposed by the Petitioner (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	14.03	14.46	14.86	8.70	9.37
Interest on Loan	1.41	0.77	0.46	0.00	0.00
Return on Equity	11.07	11.65	12.20	12.38	12.66
Interest on Working Capital	0.88	0.92	0.96	0.90	0.96
O & M Expenses	11.05	11.78	12.56	13.40	14.29
<b>Total</b>	<b>38.44</b>	<b>39.59</b>	<b>41.05</b>	<b>35.39</b>	<b>37.27</b>

##### 4.2. Commission Analysis

4.2.1. For the determination of components of fixed charges for the MYT period of FY 2019 -20 to FY 2023-24, the Commission opines that the parameters provided under UPERC Generation Tariff Regulations, 2019 shall be considered. Hence, the Commission has decided to allow the components of fixed charges as below:

**Table 18 Components of fixed charge as per Tariff Regulation 2019**

Particulars	Value	Remark
Return on Equity	15.00%	As Per Regulation
Interest on Loan	12.25%	As Per Regulation
O&M Expenses	Previous Year O&M escalated by 4.47%	As Per Regulation
Interest on Working Capital	12.05%-(SBI MCLR for 1 year as on 01.04.2019 i.e., 8.55%+350 basis points)	As Per Regulation
Depreciation		As Per Regulation

##### Gross Fixed Asset

4.2.2. The UPERC Generation Regulations, 2019, specifies that the Capital Cost of the project as on 01st April 2019 shall be the capital cost admitted by the Commission up to FY 2018-19. Accordingly, in the instant petition, the Petitioner has considered the value of Gross Fixed Assets for the power plant as of 31st March 2019.

4.2.3. Further the Petitioner has considered additional capitalization during the control period due to other capital works as per the provisions of UPERC Generation Regulations, 2019. The details of such capitalization have been

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**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



shown in the specific formats annexed to this petition. The R&M/Refurbishment & Up-rating schemes will be presented to Commission during the time of Truing-up.

4.2.4. Accordingly, the Commission has gone through the Petitioner's submission and approved the additional capitalization as per the provision of UPERC Generation Tariff Regulation, 2019.

4.2.5. The Commission shall carry out Capital expenditure and additional capital expenditure exercise as per provision of Para 16 (1) of Generation Tariff Regulation 2019 which is reproduced below:

*(1) The Commission shall carry out Truing up exercise along with the tariff petition filed for the next tariff period, for the following, after prudence check:*

*(a) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024.*

*(b) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024, on account of uncontrollable factors.*

4.2.6. **Since the transfer scheme between UPJVNL and UJVNL is not finalized yet, The Commission, accordingly, considered the Closing GFA of FY 2018-19 as the Opening GFA of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016.**

**Table 19 Gross Fixed Asset approved the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening GFA	245.27	245.27	245.27	245.27	245.27
Capitalization during the Year	0.00	0.00	0.00	0.00	0.00
Closing GFA	245.27	245.27	245.27	245.27	245.27

**Depreciation**

4.2.7. The UPERC Generation Regulations, 2019 provides that the depreciation shall be calculated for each year of the tariff period, on the value of the Capital Cost of the assets admitted by the Commission. It further states that the depreciation shall be calculated on the historical cost of the asset and in the case of the existing projects, the balance depreciable value as on 01st April 2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31st March 2019 from the gross depreciable value of the assets. The rate of depreciation shall be continued to be charged at the rate specified in Appendix III till cumulative depreciation reaches 70%. Thereafter

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the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.

4.2.8. Accordingly, the Petitioner has worked out the allowable depreciation for the control period from FY 2019-20 to FY 2023-24 on the value of Gross Fixed Assets at the beginning of FY 2019-20 and thereafter considering the proposed additional capitalizations on account of R&M scheme, during the control period. The petitioner has claimed full-year depreciation on the value of Gross Fixed Assets as on 1<sup>st</sup> April 2019 and half-yearly depreciation on the value of additions in the fixed assets during the year, being in line with the provisions of the UPERC Generation Regulations, 2019.

4.2.9. The Commission has analysed the submission made by the Petitioner and accordingly approved the Depreciation as give in the below table.

**Table 20 Depreciation as approved by the Commission (in INR Crore)**

	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	14.00	14.00	14.00	14.00	14.00

#### **Interest on Loan**

4.2.10. Regulation 24(ii) of UPERC Generation Regulations, 2019 prescribes the provisions for the calculation of normative interest on loans for the determination of the Annual Revenue Requirement of the power project. The opening loan balance as on 1st April 2019 has been considered equivalent to the closing loan balance for FY 2018-19. Thereafter the normative loan addition during the year has been computed at 70% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30.

4.2.11. Further, the Petitioner has considered the repayment during the year equivalent to the normative depreciation for the year to be in line with the methodology prescribed in the UPERC Generation Regulations, 2019.

4.2.12. The Commission has gone through the Petitioner's submission and considers the closing loan of FY 2018-19 as the opening loan of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016.

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



**Table 21 Interest on Loan approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Balance	15.92	1.92	0.00	0.00	0.00
Additions	0.00	0.00	0.00	0.00	0.00
Repayments	14.00	1.92	0.00	0.00	0.00
Closing Balance	1.92	0	0	0	0
Average Net loan	8.92	0.96	0.00	0.00	0.00
Interest on Loan (%)	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Loan	1.09	0.12	0.00	0.00	0.00

**Return on Equity**

4.2.13. The Petitioner submitted that Regulation 44(iii) of UPERC Generation Regulations, 2019 prescribes the provisions for the calculation of return on equity for the determination of the Annual Revenue Requirement of the power project. The opening equity balance as on 01st April 2019 has been considered equivalent to the closing equity balance for FY 2018-19. Thereafter the normative equity addition during the year has been computed at 30% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30. The Return on Equity has been computed @ 15% as specified in Regulation 24(iii) of UPERC (Terms and Conditions of Tariff) Regulations 2019 for the MYT period of FY 2019-20 to FY 2023-24.

4.2.14. The Commission considers the closing equity of FY 2018-19 as the Opening loan of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016 and accordingly approved the Return on equity as depicted in the below table:

**Table 22 Return on Equity as approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Equity	73.58	73.58	73.58	73.58	73.58
Addition	0.00	0.00	0.00	0.00	0.00
Closing Equity	73.58	73.58	73.58	73.58	73.58
Average Equity	73.58	73.58	73.58	73.58	73.58
Rate of ROE	15.00%	15.00%	15.00%	15.00%	15.00%
Return on Equity	11.04	11.04	11.04	11.04	11.04

**Operation and Maintenance**

4.2.15. The Petitioner submitted that Para 24 (iv) of UPERC (Terms & Conditions of Generation Tariff) Regulations 2019 deals with the allowance of O&M expenses.

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The Petitioner submitted that for the calculation of O&M from FY 2019-20 to FY 2023-24 in this petition, the escalation has been considered at 6.64% as prescribed in Tariff Regulation 2014 on the ground of increase in employee benefit expenses due to 7<sup>th</sup> pay commission that was announced in 2016. The Commission in the UPERC (Terms and Conditions of Generation Tariff) Regulations 2019 – Para 24 (iv)(e) have prescribed that the normative values of operation and maintenance expenses including insurance for FY 2019-20, shall be derived from values approved by the Commission for FY 2018-19 escalated by 4.47%.

4.2.16. Accordingly, the Commission approved the operation and maintenance expenses by escalating the approved O&M expenses of FY 2018-19 by 4.47%.

**Table 23 O&M expenses as approved by the Commission (in Rs. Crore)**

	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M Expenses	10.36	10.82	11.31	11.81	12.34	12.89

**Interest on Working Capital**

4.2.17. The Petitioner has calculated the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019. The rate of interest has been considered at 12.05% in the revised submission.

4.2.18. The Commission approved the Interest on working capital in line with the Generation Tariff Regulation 2019 and depicted in the below table

**Table 24 Interest on Working Capital approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M for 1 month	0.90	0.94	0.98	1.03	1.07
Maintenance Spares @ 15% of O&M	1.62	1.70	1.77	1.85	1.93
Receivable for 45 days	4.73	4.67	4.72	4.79	4.86
Total Working Capital	7.25	7.31	7.47	7.67	7.87
Rate of Interest	12.05%	12.05%	12.05%	12.05%	12.05%
Interest on Working Capital	0.87	0.88	0.90	0.92	0.95

**Annual Fixed Cost**

4.2.19. The Annual fixed cost of the Khara Hydropower plants for the control period under consideration works out as under:

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**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



**Table 25 Annual Fixed Cost as determined by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	14.00	14.00	14.00	14.00	14.00
Interest on Loan	1.09	0.12	0.00	0.00	0.00
Return on Equity	11.04	11.04	11.04	11.04	11.04
Interest on Working Capital	0.87	0.88	0.90	0.92	0.95
O & M Expenses	10.82	11.31	11.81	12.34	12.89
<b>AFC</b>	<b>37.83</b>	<b>37.34</b>	<b>37.75</b>	<b>38.30</b>	<b>38.88</b>
Share of UP (80%)	30.26	29.87	30.20	30.64	31.10
Design Energy (MU)	385.02	384.99	384.99	384.99	385.97
Aux	1%	1%	1%	1%	1%
FEHS	0%	0%	0%	0%	0%
<b>Energy charge (Rs./Unit)</b>	<b>0.40</b>	<b>0.39</b>	<b>0.40</b>	<b>0.40</b>	<b>0.41</b>

**Plant Availability factor**

4.2.20. The petitioner stated that the 'Capacity Charge' is mainly dependent on the 'Plant availability factor achieved during the month (PAFM)' which is derived from the "Declared Capacity" of plants to Nodal Load Dispatch Centre.

4.2.21. The Petitioner has submitted that Khara HPS is run of river type Hydro Power Plant which is highly dependent on natural runoff. Spring melts will create a lot of energy while dry seasons will create relatively little energy.

4.2.22. The Petitioner requested to allow to calculate PAFM based on "Availability factor of a Hydro Power Plant (in %) instead of existing formula of declare capacity.

4.2.23. **The Commission noted the issue. In this regard, the Commission directs that the Petitioner shall declare its capacity as per availability of its plant and water available for generation and SLDC, while, communicating with the Petitioner shall indicate the reason for any changes therein as per UP Gird Code 2007, its amendments and earlier Order of the Commission, if any.**



## 5. Upper Ganga Hydro Station ARR & MYT

### 5.1. UPJVNL Submission

8.1.1. In the Petition, UPJVNL has proposed the component-wise fixed charges for the electricity exported as given in the table below:

**Table 26 Fixed Charge component proposed by the Petitioner (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	0.06	0.06	0.06	0.06	0.06
Interest on Loan	0.04	0.03	0.02	0.02	0.01
Return on Equity	0.17	0.17	0.17	0.17	0.17
Interest on Working Capital	0.39	0.42	0.45	0.48	0.51
O & M Expenses	8.92	9.51	10.14	10.81	11.53
<b>Total</b>	<b>9.57</b>	<b>10.18</b>	<b>10.83</b>	<b>11.53</b>	<b>12.28</b>

8.1.2. The Petitioner has submitted petition for Levelized tariff for Upper Ganga SHP in accordance with UPERC (Captive and Renewable Energy Generation Plant) Regulation, 2019 and consider discount factor of 9.15% as per CERC Term and Condition for Tariff Determination from Renewable Energy Sources, Regulation 2017.

### 5.2. Commission Analysis:

5.2.1. For the determination of components of fixed charges for the MYT period of FY 2019 -20 to FY 2023-24, the Commission opines that the parameters provided under UPERC Generation Tariff Regulations, 2019 shall be considered. Hence, the Commission has decided to allow the components of fixed charges as below:

**Table 27 Components of fixed charge as per Tariff Regulation 2019**

Particulars	Value	Remark
Return on Equity	15.00%	As Per Regulation
Interest on Loan	12.25%	As Per Regulation
O&M Expenses	Previous Year O&M escalated by 4.47%	As Per Regulation
Interest on Working Capital	12.05% (SBI MCLR for 1 year as on 01.04.2019 i.e., 8.55%+350 basis points)	As Per Regulation
Depreciation		As Per Regulation

### Gross Fixed Asset

5.2.2. The UPERC Generation Regulations, 2019, specifies that the Capital Cost of the project as on 01<sup>st</sup> April 2019. shall be the capital cost admitted by the Commission up to FY 2018-19. Accordingly, in the instant petition, the

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



Petitioner has considered the value of Gross Fixed Assets for the power plant as on 31<sup>st</sup> March 2019. Further, the Petitioner has not projected any capitalization during the Control period of FY 2019-24.

5.2.3. Accordingly, the Commission has gone through the Petitioner's submission and approved the additional capitalization as per the provision of UPERC Generation Tariff Regulation, 2019.

5.2.4. The Commission has carried out Capital expenditure and additional capital expenditure exercise as per provision of Para 16 (1) of Generation Tariff Regulation 2019 which is reproduced below:

*(1) The Commission shall carry out Truing up exercise along with the tariff petition filed for the next tariff period, for the following, after prudence check:*

*(a) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024.*

*(b) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024, on account of uncontrollable factors.*

5.2.5. Since the transfer scheme between UPJVNL and UJVNL is not finalized yet, The Commission, accordingly, consider the Closing GFA of FY 2018-19 as the Opening GFA of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016.

**Table 28 Gross Fixed Asset approved the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening GFA	3.68	3.68	3.68	3.68	3.68
Capitalization during the Year	0.00	0.00	0.00	0.00	0.00
Closing GFA	3.68	3.68	3.68	3.68	3.68

**Depreciation**

5.2.6. The UPERC Generation Regulations, 2019 provides that the depreciation shall be calculated for each year of the tariff period, on the value of the Capital Cost of the assets admitted by the Commission. It further states that the depreciation shall be calculated on the historical cost of the asset and in the case of the existing projects, the balance depreciable value as on 01<sup>st</sup> April 2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31<sup>st</sup> March 2019 from the gross depreciable value of the assets. The rate of depreciation shall be continued to be charged at the rate specified in Appendix III till cumulative depreciation reaches 70%. Thereafter the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.



5.2.7. Accordingly, the Petitioner has worked out the allowable depreciation for the control period from FY 2019-20 to FY 2023-24 on the value of Gross Fixed Assets at the beginning of FY 2019-20 and thereafter considering the proposed additional capitalizations on account of R&M scheme, during the control period. The petitioner has claimed full-year depreciation on the value of Gross Fixed Assets as on 1<sup>st</sup> April 2019 and half-yearly depreciation on the value of additions in the fixed assets during the year, being in line with the provisions of the UPERC Generation Regulations, 2019.

5.2.8. The Commission has analysed the submission made by the Petitioner and accordingly approved the Depreciation as given in the below table.

**Table 29 Depreciation as approved by the Commission (in Rs. Crore)**

	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	0.06	0.06	0.06	0.06	0.06

**Interest on Loan**

5.2.9. Regulation 24(ii) of UPERC Generation Regulations, 2019 prescribes the provisions for calculation of normative interest on loans for the determination of the Annual Revenue Requirement of the power project. The opening loan balance as on 1<sup>st</sup> April 2019 has been considered equivalent to the closing loan balance for FY 2018-19. Thereafter the normative loan addition during the year has been computed at 70% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30.

5.2.10. Further, the Petitioner has considered the repayment during the year equivalent to the normative depreciation for the year to be in line with the methodology prescribed in the UPERC Generation Regulations, 2019.

5.2.11. The Commission has gone through the Petitioner's submission and considers the closing loan of FY 2018-19 as the opening loan of FY 2019-20 as approved in the MYT order dated 3<sup>rd</sup> July 2018 in Petition No. 1109/2016.

**Table 30 Interest on Loan approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Balance	0.33	0.27	0.21	0.15	0.12
Additions	0.00	0.00	0.00	0.00	0.00
Repayments	0.06	0.06	0.06	0.06	0.06
Closing Balance	0.27	0.21	0.15	0.09	0.06
Average Net loan	0.30	0.24	0.18	0.12	0.09
Interest on Loan (%)	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Loan	0.04	0.03	0.02	0.01	0.01

\*

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### Return on Equity

5.2.12. The Petitioner submitted that Regulation 44(iii) of UPERC Generation Regulations, 2019 prescribes the provisions for the calculation of return on equity for the determination of the Annual Revenue Requirement of the power project. The opening equity balance as of 01<sup>st</sup> April 2019 has been considered equivalent to the closing equity balance for FY 2018-19. Thereafter the normative equity addition during the year has been computed at 30% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30. The Return on Equity has been computed @ 15% as specified in Regulation 24(iii) of UPERC (Terms and Conditions of Tariff) Regulations 2019 for the MYT period of FY 2019-20 to FY 2023-24.

5.2.13. The Commission considers the closing equity of FY 2018-19 as the Opening loan of FY 2019-20 as approved in the MYT order dated 3<sup>rd</sup> July 2018 in Petition No. 1109/2016 and accordingly approved the Return on equity as depicted in the below table:

**Table 31 Return on Equity as approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Equity	1.10	1.10	1.10	1.10	1.10
Addition	0.00	0.00	0.00	0.00	0.00
Closing Equity	1.10	1.10	1.10	1.10	1.10
Average Equity	1.10	1.10	1.10	1.10	1.10
Rate of ROE	15.00%	15.00%	15.00%	15.00%	15.00%
Return on Equity	0.17	0.17	0.17	0.17	0.17

### Operation and Maintenance

5.2.14. The Petitioner submitted that Para 24 (iv) of UPERC (Terms & Conditions of Generation Tariff) Regulations 2019 deals with the allowance of O&M expenses. The Petitioner submitted that for the calculation of O&M from FY 2019-20 to FY 2023-24 in this petition, the escalation has been considered at 6.64% as prescribed in Tariff Regulation 2014 on the ground of increase in employee benefit expenses due to 7<sup>th</sup> pay commission that was announced in 2016. The Commission in the UPERC (Terms and Conditions of Generation Tariff) Regulations 2019 – Para 24 (iv)(e) have prescribed that the normative values of operation and maintenance expenses including insurance for FY 2019-20, shall be derived from values approved by the Commission for FY 2018-19 escalated by 4.47%.

5.2.15. Accordingly, the Commission approved the operation and maintenance expenses by escalating the approved O&M expenses of FY 2018-19 by 4.47%.





**Table 32 O&M expenses as approved by the Commission (in Rs. Crore)**

	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M Expenses	8.36	8.73	9.12	9.53	9.96	10.40

**Interest on Working Capital**

5.2.16. The Petitioner has calculated the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019. The rate of interest has been considered at 12.05% in the revised submission.

5.2.17. The Commission approved the Interest on working capital in line with the Generation Tariff Regulation 2019 and depicted in the below table

**Table 33 Interest on Working Capital approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M for 1 month	0.73	0.76	0.79	0.83	0.87
Maintenance Spares @ 15% of O&M	1.31	1.37	1.43	1.49	1.56
Receivable for 45 days	1.17	1.22	1.28	1.33	1.39
Total Working Capital	3.21	3.35	3.50	3.65	3.81
Rate of Interest	12.05%	12.05%	12.05%	12.05%	12.05%
Interest on Working Capital	0.39	0.40	0.42	0.44	0.46

**Annual Fixed Cost**

5.2.18. The Annual fixed cost of the Upper Ganga Hydropower plants for the control period under consideration works out as under:

**Table 34 Annual Fixed Cost as determined by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	0.06	0.06	0.06	0.06	0.06
Interest on Loan	0.04	0.03	0.02	0.02	0.01
Return on Equity	0.17	0.17	0.17	0.17	0.17
Interest on Working Capital	0.39	0.40	0.42	0.44	0.46
O & M Expenses	8.73	9.12	9.53	9.96	10.40
<b>Total</b>	<b>9.38</b>	<b>9.78</b>	<b>10.20</b>	<b>10.64</b>	<b>11.10</b>

5.2.19. The Petitioner has claimed the Levelized tariff as per CERC Term and Condition for Tariff Determination from Renewable Energy Resources Regulation, 2017 for small hydro Power considering the discount tariff of 9.15%. **Accordingly, the Commission has considered the discount rate**

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



of 9.15% and CUF of 30% as per CERC Term and Condition for Tariff Determination from Renewable Energy Resources Regulation, 2017 to determine the Levelized tariff for Upper Ganga SHP for FY 2019-20 to FY 2023-24:

**Table 35 Calculation of Levelized Tariff for the Control Period**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Installed Capacity	13.7	13.7	13.7	13.7	13.7
Gross Generation	36.10	36.00	36.00	36.00	36.10
Aux. Consumption	1%	1%	1%	1%	1%
Net Generation	35.64	35.64	35.64	35.64	35.64
Per Unit Depreciation	0.02	0.02	0.02	0.02	0.02
Per Unit Interest on Loan	0.01	0.01	0.01	0.00	0.00
Per Unit Return on Equity	0.05	0.05	0.05	0.05	0.05
Per Unit IoWC	0.11	0.11	0.12	0.12	0.13
Per Unit O&M Expenses	2.45	2.56	2.67	2.79	2.92
Per Unit Tariff Component	2.63	2.74	2.86	2.98	3.11
Discount rate	9.15%				
Discount Factor	1.00	0.92	0.84	0.77	0.70
Discounted Tariff	2.63	2.51	2.40	2.30	2.19
Levelized Tariff (Rs./Unit)	2.85				



## 6. Babail Hydro Station ARR & MYT

### 6.1. UPJVNL Submission

6.1.1. In the Petition, UPJVNL has proposed the component-wise fixed charges for the electricity exported as given in the table below:

**Table 36 Fixed Charge component proposed by the Petitioner (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	1.38	1.38	1.38	0.32	0.32
Interest on Loan	1.53	1.36	1.19	1.08	1.04
Return on Equity	0.00	0.00	0.00	0.00	0.00
Interest on Working Capital	0.09	0.09	0.09	0.07	0.07
O & M Expenses	0.93	0.99	1.06	1.13	1.20
<b>Total</b>	<b>3.93</b>	<b>3.82</b>	<b>3.72</b>	<b>2.61</b>	<b>2.65</b>

6.1.2. The Petitioner has submitted petition for Levelized tariff for Babail SHP in accordance with UPERC (Captive and Renewable Energy Generation Plant) Regulation, 2019 and consider discount factor of 9.15% as per CERC Term and Condition for Tariff Determination from Renewable Energy Sources, Regulation 2017.

### 6.2. Commission Analysis:

6.2.1. For the determination of components of fixed charges for the MYT period of FY 2019 -20 to FY 2023-24, the Commission decides that the parameters provided under UPERC Generation Tariff Regulations, 2019 shall be considered. Hence, the Commission has decided to allow the components of fixed charges as below:

**Table 37 Components of fixed charge as per Tariff Regulation 2019**

Particulars	Value	Remark
Return on Equity	15.00%	As Per Regulation
Interest on Loan	12.25%	As Per Regulation
O&M Expenses	Previous Year O&M escalated by 4.47%	As Per Regulation
Interest on Working Capital	12.05% (SBI MCLR for 1 year as on 01.04.2019 i.e., 8.55%+350 basis points)	As Per Regulation
Depreciation		As Per Regulation

### Gross Fixed Asset

6.2.2. The UPERC Generation Regulations, 2019, specifies that the Capital Cost of the project as on 01<sup>st</sup> April 2019 shall be the capital cost admitted by the Commission up to FY 2018-19. Accordingly, in the instant petition, the Petitioner has considered the value of Gross Fixed Assets for the power plant

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



as on 31<sup>st</sup> March 2019. Furthermore, the Petitioner has not projected any capitalization during the Control period of FY 2019-24.

6.2.3. Accordingly, the Commission has gone through the Petitioner's submission and approved the additional capitalization as per the provision of UPERC Generation Tariff Regulation, 2019.

6.2.4. The Commission has carried out Capital expenditure and additional capital expenditure exercise as per provision of Para 16 (1) of Generation Tariff Regulation 2019 which is reproduced below:

*(1) The Commission shall carry out Truing up exercise along with the tariff petition filed for the next tariff period, for the following, after prudence check:*

*(a) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024.*

*(b) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024, on account of uncontrollable factors.*

6.2.5. Since the transfer scheme between UPJVNL and UJVNL is not finalized yet, The Commission, accordingly, considering the Closing GFA of FY 2018-19 as the Opening GFA of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016.

**Table 38 Gross Fixed Asset approved the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening GFA	24.21	24.21	24.21	24.21	24.21
Capitalization during the Year	0.00	0.00	0.00	0.00	0.00
Closing GFA	24.21	24.21	24.21	24.21	24.21

**Depreciation**

6.2.6. The UPERC Generation Regulations, 2019 provides that the depreciation shall be calculated for each year of the tariff period, on the value of the Capital Cost of the assets admitted by the Commission. It further states that the depreciation shall be calculated on the historical cost of the asset and in the case of the existing projects, the balance depreciable value as on 01<sup>st</sup> April 2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31<sup>st</sup> March 2019 from the gross depreciable value of the assets. The rate of depreciation shall be continued to be charged at the rate specified in Appendix III till cumulative depreciation reaches 70%. Thereafter the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.



6.2.7. Accordingly, the Petitioner has worked out the allowable depreciation for the control period from FY 2019-20 to FY 2023-24 on the value of Gross Fixed Assets at the beginning of FY 2019-20 and thereafter considering the proposed additional capitalizations on account of R&M scheme, during the control period. The petitioner has claimed full-year depreciation on the value of Gross Fixed Assets as on 1<sup>st</sup> April 2019 and half-yearly depreciation on the value of additions in the fixed assets during the year, being in line with the provisions of the UPERC Generation Regulations, 2019.

6.2.8. The Commission has analyzed the submission made by the Petitioner and accordingly approved the Depreciation as given in below table.

**Table 39 Depreciation as approved by the Commission (in Rs. Crore)**

	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	1.38	1.38	1.38	0.32	0.32

**Interest on Loan**

6.2.9. Regulation 24(ii) of UPERC Generation Regulations, 2019 prescribes the provisions for calculation of normative interest on loans for the determination of the Annual Revenue Requirement of the power project. The opening loan balance as on 1<sup>st</sup> April 2019 has been considered equivalent to the closing loan balance for FY 2018-19. Thereafter the normative loan addition during the year has been computed at 70% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30.

6.2.10. Further, the Petitioner has considered the repayment during the year equivalent to the normative depreciation for the year to be in line with the methodology prescribed in the UPERC Generation Regulations, 2019.

6.2.11. The Commission has gone through the Petitioner's submission and considers the closing loan of FY 2018-19 as the opening loan of FY 2019-20 as approved in the MYT order dated 3<sup>rd</sup> July 2018 in Petition No. 1109/2016. The Interest on Loan approved is subject to the True-up.

**Table 40 Interest on Loan approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Balance	0.33	13.15	11.77	10.39	9.01
Additions	0.00	0.00	0.00	0.00	0.00
Repayments	0.06	1.38	1.38	1.38	0.32
Closing Balance	0.27	11.77	10.39	9.01	8.69
Average Net loan	0.30	12.46	11.08	9.70	8.85
Interest on Loan (%)	12.25%	12.25%	12.25%	12.25%	12.25%

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**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Beika, Babail, and Sheetla Hydro Power Station (UPJVNL)**



Interest on Loan	0.04	1.53	1.36	1.19	1.08
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**Return on Equity**

6.2.12. The Petitioner submitted that Regulation 44(iii) of UPERC Generation Regulations, 2019 prescribes the provisions for the calculation of return on equity for the determination of the Annual Revenue Requirement of the power project. The opening equity balance as on 01<sup>st</sup> April 2019 has been considered equivalent to the closing equity balance for FY 2018-19. Thereafter the normative equity addition during the year has been computed at 30% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30. The Return on Equity has been computed @ 15% as specified in Regulation 24(iii) of UPERC (Terms and Conditions of Tariff) Regulations 2019 for the MYT period of FY 2019-20 to FY 2023-24.

6.2.13. The Commission considers the closing equity of FY 2018-19 as the Opening loan of FY 2019-20 as approved in the MYT order dated 3<sup>rd</sup> July 2018 in Petition No. 1109/2016 and accordingly approved the Return on equity as depicted in the below table:

**Table 41 Return on Equity as approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Return on Equity	0.00	0.00	0.00	0.00	0.00

**Operation and Maintenance**

6.2.14. The Petitioner submitted that Para 24 (iv) of UPERC (Terms & Conditions of Generation Tariff) Regulations 2019 deals with the allowance of O&M expenses. The Petitioner submitted that for the calculation of O&M from FY 2019-20 to FY 2023-24 in this petition, the escalation has been considered at 6.64% as prescribed in Tariff Regulation 2014 on the ground of increase in employee benefit expenses due to 7<sup>th</sup> pay commission that was announced in 2016. The Commission in the UPERC (Terms and Conditions of Generation Tariff) Regulations 2019 – Para 24 (iv)(e) have prescribed that the normative values of operation and maintenance expenses including insurance for FY 2019-20, shall be derived from values approved by the Commission for FY 2018-19 escalated by 4.47%.

6.2.15. Accordingly, the Commission approved the operation and maintenance expenses by escalating the approved O&M expenses of FY 2018-19 by 4.47%.



**Table 42 O&M expenses as approved by the Commission (in Rs. Crore)**

	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M Expenses	0.87	0.91	0.95	0.99	1.04	1.08

**Interest on Working Capital**

6.2.16. The Petitioner has calculated the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019. The rate of interest has been considered at 12.05% in the revised submission.

6.2.17. The Commission approved the Interest on working capital in line with the Generation Tariff Regulation 2019 and depicted in the below table

**Table 43 Interest on Working Capital approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M for 1 month	0.08	0.08	0.08	0.09	0.09
Maintenance Spares @ 15% of O&M	0.14	0.14	0.15	0.16	0.16
Receivable for 45 days	0.49	0.47	0.46	0.31	0.31
Total Working Capital	0.70	0.69	0.69	0.56	0.57
Rate of Interest	12.05%	12.05%	12.05%	12.05%	12.05%
Interest on Working Capital	0.08	0.08	0.08	0.07	0.07

**Annual Fixed Cost**

6.2.18. The Annual fixed cost of the Babail Hydropower plants for the control period under consideration works out as under:

**Table 44 Annual Fixed Cost as determined by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	1.38	1.38	1.38	0.32	0.32
Interest on Loan	1.53	1.36	1.19	1.08	1.04
Return on Equity	0.00	0.00	0.00	0.00	0.00
Interest on Working Capital	0.08	0.08	0.08	0.07	0.07
O & M Expenses	0.91	0.95	0.99	1.04	1.08
<b>Total</b>	<b>3.90</b>	<b>3.77</b>	<b>3.64</b>	<b>2.51</b>	<b>2.52</b>

6.2.19. The Petitioner has claimed the Levelized tariff as per CERC Term and Condition for Tariff Determination from Renewable Energy Resources Regulation, 2017 for small hydro Power considering the discount tariff of 9.15%. Accordingly, the Commission has considered the discount rate of 9.15% and CUF of 30% as per CERC Term and Condition for Tariff

Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)



Determination from Renewable Energy Resources Regulation, 2017 to determine the Levelized tariff for Babail SHP for FY 2019-20 to FY 2023-24:

**Table 45 Calculation of Levelized Tariff for the Control Period**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Installed Capacity	3	3	3	3	3
Gross Generation	7.884	7.884	7.884	7.884	7.884
Aux	0.01	0.01	0.01	0.01	0.01
Net Generation	7.80516	7.80516	7.80516	7.80516	7.80516
Per Unit Depreciation	1.77	1.77	1.77	0.41	0.41
Per Unit Interest on Loan	1.96	1.74	1.52	1.39	1.34
Per Unit Return on Equity	0.00	0.00	0.00	0.00	0.00
Per Unit IoWC	0.11	0.11	0.11	0.09	0.09
Per Unit O&M Expenses	1.16	1.22	1.27	1.33	1.39
Per Unit Tariff Component	5.00	4.83	4.67	3.21	3.22
Discount rate	9.36%				
Discount Factor	1.00	0.91	0.84	0.76	0.70
Discounted Tariff	5.00	4.42	3.90	2.46	2.25
Levelized Tariff (Rs./Unit)	4.28				

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## 7. Belka Hydro Station ARR & MYT

### 7.1. UPJVNL Submission

7.1.1. In the Petition, UPJVNL has proposed the component-wise fixed charges for the electricity exported as given in the table below:

**Table 46 Fixed Charge component proposed by the Petitioner (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	1.02	1.02	1.02	0.24	0.24
Interest on Loan	1.15	1.02	0.89	0.82	0.79
Return on Equity	0	0	0	0	0
Interest on Working Capital	0.06	0.06	0.06	0.05	0.05
O & M Expenses	0.68	0.73	0.78	0.83	0.88
<b>Total</b>	<b>2.91</b>	<b>2.83</b>	<b>2.76</b>	<b>1.94</b>	<b>1.96</b>

7.1.2. The Petitioner has submitted petition for Levelized tariff for Babail SHP in accordance with UPERC (Captive and Renewable Energy Generation Plant) Regulation, 2019 and consider discount factor of 9.15% as per CERC Term and Condition for Tariff Determination from Renewable Energy Sources, Regulation 2017.

### 7.2. Commission Analysis:

7.2.1. For the determination of components of fixed charges for the MYT period of FY 2019 -20 to FY 2023-24, the Commission opines that the parameters provided under UPERC Generation Tariff Regulations, 2019 shall be considered. Hence, the Commission has decided to allow the components of fixed charges as below:

**Table 47 Components of fixed charge as per Tariff Regulation 2019**

Particulars	Value	Remark
Return on Equity	15.00%	As Per Regulation
Interest on Loan	12.25%	As Per Regulation
O&M Expenses	Previous Year O&M escalated by 4.47%	As Per Regulation
Interest on Working Capital	12.05% (SBI MCLR for 1 year as on 01.04.2019 i.e., 8.55%+350 basis points)	As Per Regulation
Depreciation		As Per Regulation

### Gross Fixed Asset

7.2.2. The UPERC Generation Regulations, 2019, specifies that the Capital Cost of the project as on 01<sup>st</sup> April 2019 shall be the capital cost admitted by the

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



Commission up to FY 2018-19. Accordingly, in the instant petition, the Petitioner has considered the value of Gross Fixed Assets for the power plant as on 31<sup>st</sup> March 2019. Furthermore, the Petitioner has not projected any capitalization during the Control period of FY 2019-24.

7.2.3. Accordingly, the Commission has gone through the Petitioner's submission and approved the additional capitalization as per the provision of UPERC Generation Tariff Regulation, 2019.

7.2.4. The Commission has carried out Capital expenditure and additional capital expenditure exercise as per provision of Para 16 (1) of Generation Tariff Regulation 2019 which is reproduced below:

*(1) The Commission shall carry out Truing up exercise along with the tariff petition filed for the next tariff period, for the following, after prudence check:*

*(a) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024.*

*(b) Capital Expenditure including Additional Capital Expenditure incurred up to 31.03.2024, on account of uncontrollable factors.*

7.2.5. Since the transfer scheme between UPJVNL and UJVNL is not finalized yet, The Commission, accordingly, considers the Closing GFA of FY 2018-19 as the Opening GFA of FY 2019-20 as approved in the MYT order dated 3rd July 2018 in Petition No. 1109/2016.

**Table 48 Gross Fixed Asset approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening GFA	17.92	17.92	17.92	17.92	17.92
Capitalization during the Year	0.00	0.00	0.00	0.00	0.00
Closing GFA	17.92	17.92	17.92	17.92	17.92

**Depreciation**

7.2.6. The UPERC Generation Regulations, 2019 provides that the depreciation shall be calculated for each year of the tariff period, on the value of the Capital Cost of the assets admitted by the Commission. It further states that the depreciation shall be calculated on the historical cost of the asset and in the case of the existing projects, the balance depreciable value as on 01<sup>st</sup> April 2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31<sup>st</sup> March 2019 from the gross depreciable value of the assets. The rate of depreciation shall be continued to be charged at the rate specified in Appendix III till cumulative depreciation reaches 70%. Thereafter

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.

7.2.7. Accordingly, the Petitioner has worked out the allowable depreciation for the control period from FY 2019-20 to FY 2023-24 on the value of Gross Fixed Assets at the beginning of FY 2019-20 and thereafter considering the proposed additional capitalizations on account of R&M scheme, during the control period. The petitioner has claimed full-year depreciation on the value of Gross Fixed Assets as on 1<sup>st</sup> April 2019 and half-yearly depreciation on the value of additions in the fixed assets during the year, being in line with the provisions of the UPERC Generation Regulations, 2019.

7.2.8. The Commission has analyzed the submission made by the Petitioner and accordingly approved the Depreciation as given in below table.

**Table 49 Depreciation as approved by the Commission (in Rs. Crore)**

	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	1.02	1.02	1.02	0.24	0.24

**Interest on Loan**

7.2.9. Regulation 24(ii) of UPERC Generation Regulations, 2019 prescribes the provisions for the calculation of normative interest on loans for the determination of the Annual Revenue Requirement of the power project. The opening loan balance as on 1<sup>st</sup> April 2019 has been considered equivalent to the closing loan balance for FY 2018-19. Thereafter the normative loan addition during the year has been computed at 70% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30.

7.2.10. Further, the Petitioner has considered the repayment during the year equivalent to the normative depreciation for the year to be in line with the methodology prescribed in the UPERC Generation Regulations, 2019.

7.2.11. The Commission has gone through the Petitioner's submission and considers the closing loan of FY 2018-19 as the opening loan of FY 2019-20 as approved in the MYT order dated 3<sup>rd</sup> July 2018 in Petition No. 1109/2016. The Interest on Loan approved is subject to the True-up.

**Table 50 Interest on Loan approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Opening Balance	9.86	8.84	7.82	6.79	6.55
Additions	0.00	0.00	0.00	0.00	0.00
Repayments	1.02	1.02	1.02	0.24	0.24

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



Closing Balance	8.84	7.82	6.80	6.55	6.31
Average Net loan	9.35	8.33	7.31	6.67	6.43
Interest on Loan (%)	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Loan	1.15	1.02	0.90	0.82	0.79

**Return on Equity**

7.2.12. The Petitioner submitted that Regulation 44(iii) of UPERC Generation Regulations, 2019 prescribes the provisions for the calculation of return on equity for the determination of the Annual Revenue Requirement of the power project. The opening equity balance as on 01<sup>st</sup> April 2019 has been considered equivalent to the closing equity balance for FY 2018-19. Thereafter the normative equity addition during the year has been computed at 30% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30. The Return on Equity has been computed @ 15% as specified in Regulation 24(iii) of UPERC (Terms and Conditions of Tariff) Regulations 2019 for the MYT period of FY 2019-20 to FY 2023-24.

7.2.13. The Commission considers the closing equity of FY 2018-19 as the Opening loan of FY 2019-20 as approved in the MYT order dated 3<sup>rd</sup> July 2018 in Petition No. 1109/2016 and accordingly approved the Return on equity as depicted in the below table:

**Table 51 Return on Equity as approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Return on Equity	0.00	0.00	0.00	0.00	0.00

**Operation and Maintenance**

7.2.14. The Petitioner submitted that Para 24 (iv) of UPERC (Terms & Conditions of Generation Tariff) Regulations 2019 deals with the allowance of O&M expenses. The Petitioner submitted that for the calculation of O&M from FY 2019-20 to FY 2023-24 in this petition, the escalation has been considered at 6.64% as prescribed in Tariff Regulation 2014 on the ground of increase in employee benefit expenses due to 7<sup>th</sup> pay commission that was announced in 2016. The Commission in the UPERC (Terms and Conditions of Generation Tariff) Regulations 2019 – Para 24 (iv)(e) have prescribed that the normative values of operation and maintenance expenses including insurance for FY 2019-20, shall be derived from values approved by the Commission for FY 2018-19 escalated by 4.47%.

**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



7.2.15. Accordingly, the Commission approved the operation and maintenance expenses by escalating the approved O&M expenses of FY 2018-19 by 4.47%.

**Table 52 O&M expenses as approved by the Commission (in Rs. Crore)**

	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M Expenses	0.87	0.91	0.95	0.99	1.04	1.08

**Interest on Working Capital**

7.2.16. The Petitioner has calculated the working capital requirement based on the normative parameters prescribed in Para 24 (v) of the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019. The rate of interest has been considered at 12.05% in the revised submission.

7.2.17. The Commission approved the Interest on working capital in line with the Generation Tariff Regulation 2019 and depicted in the below table

**Table 53 Interest on Working Capital approved by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
O&M for 1 month	0.06	0.06	0.06	0.06	0.07
Maintenance Spares @ 15% of O&M	0.10	0.10	0.11	0.11	0.12
Receivable for 45 days	0.36	0.35	0.34	0.23	0.23
Total Working Capital	0.52	0.51	0.51	0.41	0.42
Rate of Interest	12.05%	12.05%	12.05%	12.05%	12.05%
Interest on Working Capital	0.06	0.06	0.06	0.05	0.05

**Annual Fixed Cost**

7.2.18. The Annual fixed cost of the Belka Hydropower plants for the control period under consideration works out as under:

**Table 54 Annual Fixed Cost as determined by the Commission (in Rs. Crore)**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Depreciation	1.02	1.02	1.02	0.24	0.24
Interest on Loan	1.15	1.02	0.90	0.82	0.79
Return on Equity	0.00	0.00	0.00	0.00	0.00
Interest on Working Capital	0.06	0.06	0.06	0.05	0.05
O & M Expenses	0.67	0.70	0.73	0.76	0.80
<b>Total</b>	<b>2.90</b>	<b>2.80</b>	<b>2.71</b>	<b>1.87</b>	<b>1.87</b>

7.2.19. The Petitioner has claimed the Levelized tariff as per CERC Term and Condition for Tariff Determination from Renewable Energy Resources Regulation, 2017 for

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**Multi-Year Tariff and ARR for FY 2019-20 to FY 2023-24 for Obra, Khara, UGC, Belka, Babail, and Sheetla Hydro Power Station (UPJVNL)**



small hydro Power considering the discount tariff of 9.15%. Accordingly, the Commission has considered the discount rate of 9.15% and CUF of 30% as per CERC Term and Condition for Tariff Determination from Renewable Energy Resources Regulation, 2017 to determine the Levelized tariff for Babail SHP for FY 2019-20 to FY 2023-24:

**Table 55 Calculation of Levelized Tariff for the Control Period**

Particulars	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Installed Capacity	3.00	3.00	3.00	3.00	3.00
Gross Generation	7.91	7.88	7.88	7.88	7.91
Aux. Consumption	1.00%	1.00%	1.00%	1.00%	1.00%
Net Generation	7.83	7.81	7.81	7.81	7.83
Per Unit Depreciation	1.30	1.31	1.31	0.31	0.31
Per Unit Interest on Loan	1.46	1.31	1.15	1.05	1.01
Per Unit Return on Equity	0.00	0.00	0.00	0.00	0.00
Per Unit IoWC	0.08	0.08	0.08	0.06	0.06
Per Unit O&M Expenses	0.85	0.89	0.93	0.98	1.02
Per Unit Tariff Component	3.70	3.59	3.47	2.39	2.40
Discount rate	9.15%				
Discount Factor	1.00	0.92	0.84	0.77	0.70
Discounted Tariff	3.70	3.29	2.91	1.84	1.69
Levelized Tariff (Rs./Unit)	3.18				

*des*

*\**



**8. Sheetla Hydro Station ARR and MYT**

8.1.1. The Petitioner submitted that the Sheetla project was put on commercial load in FY 2006-07 and is a small hydro plants-old project as per the provision contained in UPERC (Captive and Non-Conventional Energy Generating Plants) Regulations, 2019.

8.1.2. The relevant clause from CNRE Regulations 2019 is reproduced below

*"D. Small Hydro based Generation Plants*

*i. Tariff for Old Small Hydro Projects Commissioned*

*The effective tariff for the old Small Hydro Power Plants shall be as given below:*

*Table 35: Total Tariff- Old Small Hydro Plants (Rs./kWh)*

Year of Commissioning	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
FY 2005-06	1.48	1.51	1.54	1.58	1.62
FY 2006-07	1.52	1.56	1.59	1.63	1.67
FY 2007-08	1.56	1.60	1.64	1.68	1.72
FY 2009-10	1.61	1.65	1.68	1.73	1.77

8.1.3. The Commission has gone through the Petitioner's submission and accordingly approved the AFC for Sheetla Small hydro projects in as per terms of CRE Regulations, 2019 Schedule II (D) (i)

**Table 56 Annual Fixed Cost as determined by the Commission (in Rs. Crore)**

Year of Commissioning	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
2006-07	1.52	1.56	1.59	1.63	1.67

## 9. Summary of Order

Table 57 Summary of MYT and ARR Submitted by Petitioner and Approved by Commission in (Rs. Crore)

Hydro Station	FY 2019-20		FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24	
	Petition	Approved	Petition	Approved	Petition	Approved	Petition	Approved	Petition	Approved
<b>Obra Hydropower Station</b>										
Depreciation	4.50	4.50	4.50	4.50	4.50	4.50	4.52	4.50	4.66	4.50
IoL	4.55	4.55	4.00	4.00	3.45	3.45	2.92	2.90	2.57	2.35
ROE	3.49	3.49	3.49	3.49	3.49	3.49	3.50	3.49	3.61	3.49
IoWC	0.92	0.91	0.96	0.93	1.00	0.96	1.05	0.98	1.10	1.01
O&M	16.68	16.34	17.79	17.07	18.97	17.83	20.23	18.63	21.57	19.46
AFC	30.14	29.79	30.74	30.00	31.41	30.23	32.22	30.51	33.52	30.81
<b>Khara Hydropower Station</b>										
Depreciation	14.03	14.00	14.46	14.00	14.86	14.00	8.70	14.00	9.37	14.00
IoL	1.41	1.09	0.77	0.12	0.46	0.00	0.00	0.00	0.00	0.00
ROE	11.07	11.04	11.65	11.04	12.20	11.04	12.38	11.04	12.66	11.04
IoWC	0.88	0.87	0.92	0.88	0.96	0.90	0.90	0.92	0.96	0.95
O&M	11.05	10.82	11.78	11.31	12.56	11.81	13.40	12.34	14.29	12.89
AFC	38.44	37.83	39.59	37.34	41.05	37.75	35.39	38.30	37.27	38.88
<b>Upper Ganga Hydro Station</b>										
Depreciation	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.06
IoL	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01
ROE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
IoWC	0.39	0.39	0.42	0.40	0.45	0.42	0.48	0.44	0.51	0.46
O&M	8.92	8.73	9.51	9.12	10.14	9.53	10.81	9.96	11.53	10.40
AFC	9.57	9.38	10.18	9.78	10.83	10.20	11.53	10.64	12.28	11.10
<b>Babail Hydropower Station</b>										
Depreciation	1.38	1.38	1.38	1.38	1.38	1.38	0.32	0.32	0.32	0.32
IoL	1.53	1.53	1.36	1.36	1.19	1.19	1.08	1.08	1.04	1.04
ROE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IoWC	0.09	0.08	0.09	0.08	0.09	0.08	0.07	0.07	0.07	0.07
O&M	0.93	0.91	0.99	0.95	1.06	0.99	1.13	1.04	1.20	1.08
AFC	3.93	3.90	3.82	3.77	3.72	3.64	2.61	2.51	2.65	2.52
<b>Belka Hydropower Station</b>										
Depreciation	1.02	1.02	1.02	1.02	1.02	1.02	0.24	0.24	0.24	0.24
IoL	1.15	1.15	1.02	1.02	0.89	0.9	0.82	0.82	0.79	0.79
ROE	0	0	0	0	0	0	0	0	0	0
IoWC	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05
O&M	0.68	0.67	0.73	0.7	0.78	0.73	0.83	0.76	0.88	0.8
AFC	2.91	2.9	2.83	2.8	2.76	2.71	1.94	1.87	1.96	1.87
<b>Sheetal Hydropower Station</b>										
Tariff (Rs./unit)	1.52	1.52	1.56	1.56	1.59	1.59	1.63	1.63	1.67	1.67

9.1. The Commission has determined and approved the Annual Fixed charges as above for the control period 2019-24 as the process of finalization of GFA should not delay the tariff determination process. The Petitioner should expedite the process of finalization of GFA and submit the True UP for the past period. The Annual Fixed Charges approved by the Commission for the Control Period of 2019-24 are subject to True up.



## 10. Other Provisions

### ➤ Recovery of Statutory levies and Tax on Income etc.

In addition to the above tariff, UPJVNL is allowed to recover the payment of statutory charges like service tax, rates and taxes and regulatory fee paid to the Commission etc., on production of details of actual payments made and duly supported with the certificate of the Statutory Auditors.

### ➤ Incentive

Incentive as applicable shall be calculated according to the provisions of the relevant UPERC (Terms and Conditions of Generation tariff) Regulations as defined for the different periods.

### ➤ Billing & Payment

Billing and Payment of Capacity Charges shall be done under provisions of Regulation 51 of UPERC (Terms and Conditions of Generation Tariff) Regulations, 2019.

### ➤ Finalization of GFA and submission of True-up Petition

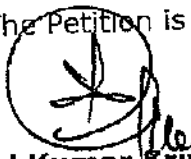
The Petitioner should ensure that the GFA balances for the hydro power stations are finalized at the earliest. Post finalization, the Petitioner should submit the True-up Petition for the years as per the provisions of the Regulations. The generating company shall submit for the purpose of truing up, details of capital expenditure and additional capital expenditure incurred duly audited and certified by the auditors.

## 11. Implementation of the Order

10.1.1. This order shall be reckoned to have come into effect from 01.04.2019 and shall remain effective till 31.03.2024 for the Multi-Year Tariff period of F.Y. 2019-20 to FY 2023-24 for Obra, Khara, Upper Ganga, Belka, Babail and Sheetla hydro power station.

10.1.2. UPJVNL is entitled to raise the bills as per the tariff order under provisions of UPERC (Terms & Conditions of Generation Tariff) Regulations as prevalent from time to time.

The Petition is hereby disposed of in terms of the above

  
(Vinod Kumar Srivastava)  
Member (Law)

  
(Raj Pratap Singh)  
Chairman

Place: Lucknow  
Dated: 15.03.2023

