

Annexure-1

Annual Report on Technical Performance of MB-II HEP

1.1 Overview

1.1.1 The petitioner in compliance of the relevant Regulations of UERC (Terms and Conditions for determination of Tariff) Regulations, 2015 & UERC (Terms and Conditions for determination of Multi Year Tariff) Regulations, 2018 is providing information with regard to the operational performance related to technical parameters of MB-II Hydro Power Station.

1.1.2 The information provided in this chapter relates to actual and expected performance in 2016-17, 2017-18 and 2018-19. The operational parameters considered are:

- (a) Gross generation
- (b) AUX (Auxiliary consumption and Transformation losses)
- (c) Plant Availability factor (PAF)

1.2 Power Station Description

1.2.1 Maneri Bhali Hydroelectric Project II with an installed capacity of 304 MW (4X76 MW) envisages the utilization of head available in the river Bhagirathi between the tail waters of Maneri Bhali Stage I and Stage II Projects. In Maneri Bhali Stage II Project, water is diverted through a barrage at Joshiyara situated near the township of Uttarkashi at about 152 Km from Rishikesh, the nearest railhead. The barrage is designed to divert 142 cumecs of water into a head race tunnel of diameter 6.0 m and length 16 km to generate electricity through a Power Station of 4X76 MW constructed at Dharasu.

1.2.2 The Power Station comprises of four hydro power generating units of 76 MW each. The generator is powered by Francis turbines of 78 MW rated capacity. The rated flow through each turbine is 35.5 cumecs and is discharged to a common tail race channel.

1.2.3 Salient features of the Power Station are provided in form F 2.3 of this petition.


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1.3 Energy Generation

1.3.1 Actual/Expected/Projected energy generation in FY 2016-17, FY 2017-18, FY 2018-19 & for the control period from FY 2019-20 to FY 2021-22 is given in the table below:

Table 1: Actual, Expected & Projected Energy

Particulars	Norms	2016-17 (A)	2017-18 (A)	2018-19 (E)	2019-20 (P)	2020-21 (P)	2021-22 (P)
Design Energy/ Actual Generation (MU)	1566.10	1,251.95	1,276.66	1,262.30	1,268.00	1,272.00	1,276.00
Auxiliary Cons. (%)	0.50%	0.68%	0.89%	1.00%	0.76%	0.78%	0.78%
Transformation/ other losses and consumption (%)	0.50%						
Net Saleable Energy (MU)	1550.44	1,243.30	1,265.36	1,255.94	1,258.04	1,262.02	1,266.00

1.3.2 From the above table it is evident that gross generation in FY 2017-18 was 1276.66 MUs. In FY 2019-20, FY 2020-21 & FY 2021-22 the expected generation is 1258.04 MUs, 1262.02 MUs & 1266.00 MUs respectively.

1.3.3 The AUX (auxiliary consumption and transformation losses) in current control period are expected to be within the normative level.

1.4 Plant Availability Factor

The recovery of the Annual Fixed Charges is dependent on the Plant Availability achieved by the Power Station. The principle for recovery of fixed charges on the basis of the availability achieved by the plant has been introduced by the Hon'ble Commission by its regulations UERC (Terms and Conditions for determination of tariff) Regulations, 2015 & 2018. The petitioner has provided this factor as per the provisions of the above regulations.

Table 2: Plant Availability Factor

Particulars	Norms	2016-17 (A)	2017-18 (A)	2018-19 (E)	2019-20 (P)	2020-21 (P)	2021-22 (P)
NAPAF/PAFM (%)	61.51%	65.15%	65.17%	64.11%	66.00%	66.00%	66.00%
	82.00%						
Planned Outages (Hrs.)	NA	7,070	7,689	6,144	6,216	6,168	6,168
Forced Outages (Hrs.)	NA	1,462	1,584	1,523	1,554	1,538	1,546


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1.4.1 PAFM:

NAPAF for Maneri Bhali-II HEP is revised by Hon'ble Commission to 82% for FY 2017-18 and FY 2018-19, However petitioner is unable to achieve approved NAPAF due to following reasons:

- Due to excessive silt in River Bhagirathi water under water parts eroded badly which results in extension of maintenance period of each machine as last year.
- Due to excessive PPM in River Bhagirathi water during monsoon period, Machines shaft seal and other parts were damaged many time and results 355 Hrs of forced outage of machines in the month of July, August and Sep 2017.
- Due to stator earth fault in machine number 4, it was under breakdown for 536 Hrs from 23 August to 14 Sep 2017.

Table 3: Actual & Expected PAFM (%)

Sl. No.	Year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average
1	2013-14	39.55	49.20	32.43	42.26	63.62	61.20	37.89	33.35	32.69	32.44	36.37	11.42	39.37
2	2014-15	-	-	41.89	84.06	85.14	88.45	56.57	45.74	24.87	30.23	23.38	-	40.03
3	2015-16	-	55.50	91.30	89.04	91.96	89.39	58.74	45.96	46.89	45.61	43.37	18.17	56.33
4	2016-17	40.04	76.05	99.24	85.50	94.65	93.93	66.94	64.74	48.18	33.98	36.00	42.58	65.15
5	2017-18	51.66	76.10	92.47	86.68	83.11	76.57	71.09	53.28	45.20	47.40	48.96	49.47	65.17
6	2018-19	63.32	76.04	97.53	96.74	95.86	93.53	58.25	48.61	39.57	37.93	37.62	24.33	64.11

High erosion & detrimental effects of high quantum of silt with quartzite contents in the Bhagirathi river water results high damages to under water parts and equipment carrying the river water such as pipelines, valves etc. In addition to above because of on-going construction work (viz. All-weather Road Project) in the upper zone of the catchment area of Bhagirathi river quantum of silt and quartz particle has increased in Bhagirathi river.

This power station was commissioned in the financial year 2007-08. Due to operation of machine for more than past 10 years under adverse operating conditions in silt laden water, availability of machines has been adversely affected as maintenance hours has substantially increased.

Therefore, in view of adverse operating conditions of MB-II, it is requested to kindly consider the relaxation and approve the NAPAF of MB-II HEP as mentioned in the table No. 2 above for FY 2017-18, FY 2018-19 & for the third control period i.e. from FY 2019-20 to FY 2021-22.

- 1.5 **Planned Outages:** Planned outages on account of annual/capital maintenance in the control period FY 2019-20 to FY 2021-22 are given below. The Petitioner shall continue to lay emphasis on preventive and planned maintenance of machines for the year 2018-19 onwards for better power station availability.

Table 4: Planned Maintenance Plan

FY	Unit No.	Date of Start	Date of Completion	No of Days	Remarks
2019-20	Unit 1	25-10-2019	29-12-2019	65	AM
	Unit 2	15-11-2019	18-01-2020	64	AM
	Unit 3	05-01-2020	10-03-2020	65	AM
	Unit 4	25-01-2020	30-03-2020	65	AM
2020-21	Unit 1	25-10-2020	29-12-2020	65	AM
	Unit 2	15-11-2020	18-01-2021	64	AM
	Unit 3	05-01-2021	10-03-2021	64	AM
	Unit 4	25-01-2021	30-03-2021	64	AM
2021-22	Unit 1	25-10-2021	29-12-2021	65	AM
	Unit 2	15-11-2021	18-01-2022	64	AM
	Unit 3	05-01-2022	10-03-2022	64	AM
	Unit 4	25-01-2022	30-03-2022	64	AM

AM- Annual Maintenance, CM-Capital Maintenance


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