

Annexure-1

Annual Review of Technical Performance of Chilla 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, 2011 & UERC (Terms and Conditions for determination of Multi Year Tariff) Regulations, 2015 is providing information with regard to the operational performance related to technical parameters of Chilla Power House.

1.1.2 The operational parameters considered are:

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

1.1.3 The information provided in this chapter relates to operational performance:

- Actual in FY 2013-14, 2014-15, 2015-16, 2016-17, 2017-18 (up to 30.09.2017)
- Expected in FY 2017-18 & 2018-19.

1.2 Power Station Description

1.2.1 Chilla Hydro Power Station with an installed capacity of 144 MW (4x36 MW) is a run of river scheme constructed on river Ganga 5 km upstream of holy town Hardwar and is situated in District Pauri Garhwal of Uttarakhand state. The scheme consists of a 312 m long, 11.5 m high gated diversion barrage at Pashulok, about 4 km downstream of holy town Rishikesh. The river inflows are diverted via head regulator with silt ejector constructed 500 m downstream in the bed of lined power channel, 14.3 km long and 565 cumec capacity, which ends at fore bay of Chilla Power Station where the water is fed to the generating units through 4 nos. 4.6 m dia. and 55 m long steel lined penstocks.

1.2.2 There are four generating units having vertical Kaplan turbines directly coupled with synchronous generator. The turbine output is 36 MW for a rated net head of 32.5 m. The generators are designed for a nominal output of 36 MW with lagging power factor of 0.9 and class "B" insulation.

1.2.3 This Power Station was commissioned in the year 1980-81. Due to operations of machines for past 34 years in highly abrasive silt laden water, efficiency of machines has substantially decreased and availability of machines has been adversely affected in spite of regular and timely maintenance undertaken by Petitioner.

1.2.4 The Technical and other details of the Power Stations are provided in form F2.3 of this petition.

1.3 Energy Generation

1.3.1 Actual/Expected/Projected Energy generation in FY 2013-14, 2014-15 & 2015-16, 2016-17, 2017-18 & 2018-19 is given in the table below:

Table 1: Actual, Expected & Projected Energy

Particulars	Norms	2013-14 (A)	2014-15 (A)	2015-16 (A)	2016-17 (A)	2017-18 (E)	2018-19 (P)
Design Energy/ Actual Generation (MU)	671.29	784.61	800.28	754.79	768.74	830.38	735.00
AUX (%)	1%	1.88%	1.72%	1.32%	1.70%	1.73%	1.78%
Net Saleable Energy (MU)	664.58	769.86	786.77	744.83	755.65	816.03	721.91

1.3.2 From the above table it is evident that gross generation in previous control period was more than the design energy of the plant and same is expected for FY 2017-18 & 2018-19.

1.3.4 The AUX (auxiliary and transformation losses) in previous years were more than the normative level. AUX in FY 2017-18 & FY 2018-19 are expected to be more than the normative level. Petitioner is trying to bring down the higher AUX.

1.4 Plant Availability factor

1.4.1 The recovery of the Annual Fixed Charges is dependent on the Plant Availability achieved by the plant. 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 of tariff), 2011 & 2015 with effect from the year 2013-14. The petitioner has started computing this factor as per the provisions of the above regulations from FY 2013-14.

Table 2: Plant Availability Factor (Norm/Actual)

Particulars	Norms	2013-14 (A)	2014-15 (A)	2015-16 (A)	2016-17 (A)	2017-18 (E)	2018-19 (P)
NAPAF / PAFM (%)	74	70.50	70.07	67.51	73.83	77.74	77.74
Planned* Outages (Hrs)	NA	5640	4801	4495	3862	2030	5400
Forced Outages (Hrs)	NA	1111	1446	456	271	50	259

Table 3: Actual & Expected PAFM (%)

Actual PAF from 2013-14 to Sept. 2017-18 and anticipated from October 2017 to March 2019														
Sl.No.	Year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Avg.
1	2013-14	69.19	69.26	79.05	89.22	91.98	83.05	85.37	63.04	62.20	58.42	44.07	51.12	70.50
2	2014-15	63.34	65.03	78.54	79.63	73.52	89.16	75.62	59.88	60.46	67.11	64.18	64.40	70.07
3	2015-16	62.27	69.96	88.45	87.57	83.04	75.57	76.87	32.10	28.69	71.30	71.65	62.61	67.51
4	2016-17	52.61	68.00	87.82	84.40	92.21	76.41	73.22	67.27	67.61	71.16	72.10	73.13	73.83
5	2017-18	73.33	70.47	87.87	90.50	92.65	93.59	73.22	67.27	67.61	71.16	72.10	73.13	77.74
6	2018-19	73.33	70.47	87.87	90.50	92.65	93.59	73.22	67.27	67.61	71.16	72.10	73.13	77.74

1.4.2 PAFM:

The Chilla Power Station is likely to achieve the normative plant availability factor for the FY 2017-18 & FY 2018-19.

The Petitioner does not seek any deviation in NAPAF for the FY 2017-18 & 2018-2019 from the norms as determined by Hon'ble Commission in its order.

1.4.3 **Planned Outages:** Planned outages in FY 2018-19 are given below. The Petitioner shall continue to lay emphasis on preventive and planned maintenance of machines for better availability of power station for the year 2017-18 and onwards too.

Table 4 A: Planned Outages for FY 2018-19

Unit 1	15-04-2019	19-05-2019	35	AM
Unit 2	31-01-2019	06-03-2019	35	AM
Unit 3	01-10-2018	28-01-2019	120	CM
Unit 4	09-03-2019	12-04-2019	35	AM


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