

**Central Electricity Regulatory Commission  
New Delhi**

**Petition No.221/MP/2018**

**Coram:**

**Shri P. K. Pujari, Chairperson  
Dr. M.K. Iyer, Member  
Shri I.S. Jha, Member**

**Date of Order: 7.10.2019**

**In the matter of**

Application under Regulation-31(6) of CERC (Terms and Conditions of Tariff) Regulations,2014 for recoupment of under recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station during FY 2015-16 in respect of Teesta Low Dam – III Power Station.

**And**

**In the matter of**

NHPC Limited  
(A Govt of India Enterprise)  
NHPC Office Complex,  
Sector – 33,  
Faridabad –121 003

**...Petitioner**

**Vs**

The Chairman & Managing Director  
WBSEDC Ltd.,  
Vidyut Bhawan, 8th Floor, Block -DJ, Sector –II,  
Salt Lake, Kolkata-700091(West Bengal).

**...Respondents**

**Parties present:**

Shri Prashant Kaul, NHPC  
Shri A.K. Pandey, NHPC  
Shri V.N. Tripathi, NHPC  
Shri Jitender Kumar, NHPC  
Shri Piyush Kumar, NHPC

Ms. Seema Mishra, NHPC  
Shri Dhanush C.K, NHPC  
Shri M G Ramachaandran, Senior Advocate, WBSEDCL  
Ms. Tanya Sareen, Advocate, WBSEDCL  
Ms. Anushree Bardhan, Advocate, WBSEDCL

## ORDER

The Petitioner, NHPC Ltd. (hereinafter referred to as NHPC) has filed this petition seeking the following relief(s):

- a) *Hon'ble Commission may kindly consider the deviation under regulation 54 & 55 of CERC Tariff Regulations'2014 as mentioned in para- XII of the petition allowing recovery of energy charges of ₹168.58 Crs {₹152.13 Crs (already recovered energy charges) + ₹16.45 Crs (unrecovered energy charges due to reasons beyond the control of petitioner)} against approved energy charges of ₹180.355 Crs in the FY 2015-16 itself.*
- b) *Hon'ble Commission may kindly allow recovery of energy charges through actual sale of energy (i.e. 491.23 MU) in FY 2015-16 as mentioned in **para-XII**.*
- c) *To allow revision of energy bills for the period 2015-16 for recovery of energy charges of ₹168.58 Crs {₹152.13 Crs (already recovered energy charges) + ₹16.45 Crs (unrecovered energy charges due to reasons beyond the control of petitioner)}.*
- d) *To allow issuance of supplementary bill for recovery of balance energy charges directly from beneficiaries after determination of final tariff by Hon'ble Commission as mentioned in **para-IX**.*
- e) *Pass such other and further order / orders as are deemed fit and proper in the facts and circumstances of the case.*

### Background

2. The Teesta Low Dam-III Power Station (hereinafter called ' TLDP-III ' / 'Power Station') (4 x 33 = 132 MW) located in the State of West Bengal is under commercial operation w.e.f. 19.05.2013. The approved annual Design Energy (DE) of the generating station is 594.09 MU and keeping in view the provision of auxiliary losses (1.0%) and LADF (1%), the saleable energy works out to be 582.27 MU.

3. The provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as “the 2014 Tariff Regulations”) dealing with the methodology for computation of energy charges and billing in respect of hydro-generating stations are as under:

*“31(4) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiary, excluding free energy, if any, during the calendar month, on ex power plant basis, at the computed energy charge rate. Total Energy charge payable to the generating company for a month shall be:*

*(Energy charge rate in Rs. / kWh) x {Scheduled energy (ex-bus) for the month in kWh} x (100 – FEHS) / 100*

*“31(5) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis, for a hydro generating station, shall be determined up to three decimal places based on the following formula, subject to the provisions of clause (7):*

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

*Where,*

*DE = Annual design energy specified for the hydro generating station, in MWh, subject to the provision in clause (6) below.*

*FEHS = Free energy for home State, in per cent, as defined in Regulation 42.*

*“31(6) In case the actual total energy generated by a hydro generating station during an year is less than the design energy for reasons beyond the control of the generating station, the following treatment shall be applied on a rolling basis on an application filed by the generating company:*

*(a) In case the energy shortfall occurs within ten years from the date of commercial operation of a generating station, the ECR for the year following the year of energy shortfall shall be computed based on the formula specified in clause (5) with the modification that the DE for the year shall be considered as equal to the actual energy generated during the year of the shortfall, till the energy charge shortfall of the previous year has been made up, after which normal ECR shall be applicable:*

*Provided that in case actual generation from a hydro generating station is less than the design energy for a continuous period of 4 years on account of hydrology factor, the generating station shall approach CEA with relevant hydrology data for revision of design energy of the station.”*

*(b) In case the energy shortfall occurs after ten years from the date of commercial operation of a generating station, the following shall apply.*

*Explanation: Suppose the specified annual design energy for the station is DE MWh, and the actual energy generated during the concerned (first) and the following (second) financial years is A1 and A2 MWh respectively, A1 being less than DE. Then, the design energy to be considered in the formula in clause (5) of these regulations for*

calculating the ECR for the third financial year shall be moderated as  $(A1 + A2 - DE)$  MWh, subject to a maximum of DE MWh and a minimum of A1 MWh.

(c) Actual energy generated (e.g. A1, A2) shall be arrived at by multiplying the net metered energy sent out from the station by  $100 / (100 - AUX)$ .

“31(7) In case the energy charge rate (ECR) for a hydro generating station, computed as per clause (5) of this regulation exceeds ninety paise per kWh, and the actual saleable energy in a year exceeds  $\{DE \times (100 - AUX) \times (100 - FEHS) / 10000\}$  MWh, the Energy charge for the energy in excess of the above shall be billed at ninety paise per kWh only:

Provided that in a year following a year in which total energy generated was less than the design energy for reasons beyond the control of the generating company, the energy charge rate shall be reduced to ninety paise per kWh after the energy charge shortfall of the previous year has been made up.

### **Submissions of the Petitioner**

4. The Petitioner in this petition has submitted as under:

(a) The present petition has been filed in order to suitably modify the Energy Charge Rate (ECR) in terms of Regulation 31(6)(a) of the 2014 Tariff Regulations for FY 2016-17 for recovery of under-recovered energy charges in FY 2015-16 due to shortfall in generation. The breakup of actual generation vis-à-vis Design Energy is tabulated below:

S.No.	Month	Design Energy (MU)	Actual energy at GT (MU)	Shortfall/ Excess	Actual PAF (%)
1	2	3	4	5=4-3	6
1	Apr-15	30.11	24.80	-5.32	97.86
2	May-15	41.12	48.53	7.41	94.36
3	Jun-15	76.83	77.93	1.10	96.20
4	Jul-15	93.30	43.88	-49.42	49.66
5	Aug-15	93.30	89.71	-3.59	99.06
6	Sep-15	74.47	91.41	16.94	100.53
7	Oct-15	70.78	49.34	-21.45	99.36
8	Nov-15	26.50	25.85	-0.65	100.65
9	Dec-15	23.23	18.23	-5.00	86.22
10	Jan-16	23.57	14.24	-9.33	74.13
11	Feb-16	16.78	12.86	-3.92	82.91
12	Mar-16	24.10	17.94	-6.16	78.35
<b>Total</b>		<b>594.09</b>	<b>514.69</b>	<b>-79.40</b>	

(b) Petitioner has submitted that maximum possible energy generation based on actual inflows for the year 2015-16 is 629.69 MU.

(c) The total shortfall in generation during 2015-16 is 79.40 MU (594.09 MU - 514.69 MU).

(d) Out of the total shortfall of 79.40 MU, shortfall of 46.29 MU was beyond the control of Petitioner while balance shortfall of 33.11 MU was not uncontrollable. Hence, as per Regulation 31(6)(a) of the 2014 Tariff Regulations, shortfall of 46.29 MU needs to be recovered by the Petitioner during FY 2016-17. The details of the shortfall and reasons for the shortfall are as under:

Sl No	Description	Generation (in MU)
<b>A</b>	<b>Shortfall due to reasons beyond the control of petitioner</b>	
i.	Energy shortfall due to less inflow from design inflow	(-) 40.56
ii.	Energy generated due to excess inflow from design inflow	76.18
iii.	Due to complete shutdown of power station for repair work of road (NH 31A)	(-) 44.07
iv.	Silt Flushing	(-) 26.61
v.	High Trash	(-) 2.35
vi.	Transmission Constraints	(-) 8.88
vii.	<b>Total (A)</b>	<b>(-) 46.29</b>
<b>B</b>	<b>Shortfall due to reasons within the control of petitioner</b>	
i.	In order to meet grid requirement (excess generation), the petitioner has to deplete the reservoir level with marginal increase in generation and had to operate the machines at lower head. Subsequently, at appropriate time, the reservoir level has been maintained with less generation. The overall operation has caused generation loss of approximately 17.93 MU, which is detailed as under.	
ii.	Energy generated by depleting reservoir level on some days	2.42
iii.	Less generation for increasing reservoir level on some days	(-)20.35
iv.	Unit Outages	(-) 0.64
v.	Other constraint (Partial load/ramping up/down during peaking etc.	(-) 14.52
	<b>Total (B)</b>	<b>(-) 33.11</b>
	<b>Grand Total (A+B)</b>	<b>(-) 79.40</b>

- (e) The truing up of AFC for the period 2013-14 and tariff petition for the period 2014-19 in case of TLDP-III have not been allowed by the Commission due to non-submission of approved Revised Cost Estimates (RCE). The tariff petition no. 193/GT/2015 and 248/GT/2014 had been disposed of by the Commission vide order dated 06.02.2017.
- (f) In view of above, claim for recovery of energy charge is based on interim tariff allowed by the Commission for FY 2013-14 vide order dated 22.01.2015 in petition no. 115/GT/2013. On the basis of above, relevant data for decision on recovery is mentioned in the table below:

Schedule Energy (Ex-Bus) (MU)	Free Energy (MU)	Net Energy Billed (MU)	ECR (Rs/Unit)	Annual Fixed Charges (₹ Cr)	Energy Charges to be recovered (Cr)	Energy Charges actually recovered (₹ Cr)	Under recovery of Energy (₹ Cr)
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
496.20	4.96	491.23	3.097	360.71	180.355	152.13	- 28.22

- (g) As out of the total loss of 79.40 MU, the loss of 33.10 MU was not uncontrollable, shortfall of energy charges amounting to ₹ 16.45 Cr corresponding to 46.29 MU only may be allowed, which was due to reasons beyond the control of the Petitioner. Details are as under:

Sl No	Description	Calculation basis	Generation / Amount
i.	Total Shortfall in generation during FY 2015-16	A	79.40 MU
ii.	Total under recovery of energy charges during FY 2015-16	B	₹ 28.22 Cr
iii.	Shortfall in generation due to reasons beyond control	D	46.29 MU
iv.	Shortfall in energy charges to be recovered during FY 2016-17	E=D*B/A	<b>₹ 16.45 Cr</b>

- (h) Under prevailing mechanism of Regulation 31(6) of the 2014, Tariff Regulations, the Petitioner is not in a position to recover the shortfall allowed by CERC. For example, in case of order dated 17.04.2017 in petition no. 251/MP/2015 for Chamera-III Power station for FY 2014-15, the petitioner could only recover ₹ 14.92 Cr against allowed recovery of ₹ 19.04 Cr. The above situation is applicable in the instant case also.

- (i) If there is continuous shortfall in generation for 2-3 years, the recovery mechanism becomes more complicated. In instant case of TLDP-III Power Station, the actual generation in 3 financial years starting from 2016-17 against the design energy of 594.09 MU is as under:

Year	Actual Generation (MU)	Schedule Generation (MU)
2015-16	514.69	496.20
2016-17	553.67	538.02
2017-18	386.88	374.04

- (j) Further, CEA and CWC were requested to certify the actual inflow data but vide letter dated 31.01.2017, they have expressed inability to certify the inflow series on year to year basis as under:

*“The hydrological uncertainties on year to year basis are part of the planning process which can be assessed from the departure of the annual rainfall from the normal. Further the consistency of inflow series of the project can be carried out using relevant hydro-meteorological data for longer period such as more than 5 years. In view of the above it may not be possible to certify the inflow series as requested vide above referred letter.”*

5. The matter was heard on 09.01.2019 and the Commission after hearing directed the petitioner to file following information on affidavit, by 31.01.2019 with an advance copy to the respondent:

- a. *Planned / forced machine outage data certified by CEA / NRLDC and its correlation with energy generation data vis-à-vis available average inflows during the period of such outages; and*
- b. *IMD rain fall data to co-relate low inflows.*

6. The matter was heard again on 02.05.2019 and the Commission after hearing directed the petitioner to file following additional information on or before 24.05.2019 with an advance copy to the respondent:

- c. *Documents to validate the energy loss due to national highway road repair work.*
- d. *Documents to validate the energy loss due to transmission constraints.*

### **Reply of WBSEDCL, Respondent**

7. WBSEDCL vide its affidavit dated 13.03.2019, has submitted as under:

- a) WBSEDCL requested NHPC for providing Daily Discharge Data for the generating station for the financial year 2015-16 as well as for other financial

years involved in the various petitions filed before this Commission. Without prejudice to the above, Government of West Bengal sought for the Daily Discharge Data for the period 2014-18 in respect of River Teesta from the Central Water Commission (CWC) vide letter dated 02.11.2018. CWC has provided the data for the financial years 2013-14, 2014-15, 2015-16, 2016-17 and 2017-18 related to monsoon period i.e. from May to October each year by letter dated 30.01.2019. WBSEDCL has compared the data provided by the NHPC in the proceedings with the data made available by the CWC. Comparative study shows that on some days more water was available for generation as compared to that claimed by NHPC. This indicates operational in efficiency of NHPC.

- b) Petitioner has claimed that there were transmission constraints even when machine and water was available for generation. Being generating company, the petitioner is required to coordinate with transmission licensee for availability of transmission system.
- c) Silt flushing is a normal activity in Hydro Plants, during monsoon for 8 to 20 hrs to reduce the silt accumulation in Barrage and same has been factored by NHPC for the operation of Hydro Plant. In this regard Clause 7.4.5 (iii) of Volume VI of the Detailed Project Report (**DPR**) provides as under:

*“iii. The barrage will be emptied for about 8 to 20 hours in Monsoon months to generate the retrogressive erosion in order to remove the silt deposited in the barrage and specifically near the intake of the powerhouse. The discharge requirement for such flushing will be finalized after the hydraulic model study.”*

Accordingly, the Silt Flushing operation cannot be claimed additionally for adjustment for shortfall in generation in the TLDP-III.

- d) In the petition, NHPC has claimed that TLDP-III had to be taken under complete shut down during the period from 03.07.2015 to 17.07.2015 during the financial year 2015-16 on account of the construction activities of Border Road Organisation of National Highway 31-A which got damaged because of the absence of Rim protection. It is submitted that by letter dated 23.08.2014 and 26.09.2014, the Border Road Organisation has specifically stated that it was the responsibility of NHPC to built the Rim protection up to the full

reservoir level at the time of the construction of the project. In the letter dated 21.08.2014 (at **Page 54 of the Record**) NHPC has admitted that it was the responsibility of NHPC to build the necessary Rim protection. In the circumstances the shutdown of the power station during the period from 03.07.2015 to 17.07.2015 was for reasons attributable to NHPC and, therefore, NHPC is not entitled to claim non-generation during the above said period as shortfall in generation due to damage of National Highway, 31A.

- e) WBSEDCL does not agree to the claim for the shortfall of generation due to high trash. NHPC has failed to install Trash Rack Cleaning Machine (TRCM) despite the fact that the same has been provided for in the DPR at Page 6-23 of Vol II. In view of the above, the shortfall in generation due to Trash is for reasons attributable to NHPC and, therefore, cannot be claimed in the present proceedings.

#### **Rejoinder of the Petitioner to reply of WBSEDCL**

8. In response to the Respondent WBSEDCL, NHPC vide its affidavit dated 31.05.2019 has submitted its rejoinder:

9. NHPC has submitted that Regulation 44 (8) of the 2019, Tariff Regulations allows recovery of shortfall during 2014-19 in FY 2019-20. The regulation reads as under:-

*“44 (8) Any shortfall in the energy charge on account of saleable scheduled energy (ex-bus) being less than the saleable design energy (ex-bus) during the tariff period 2014-19 which was beyond control of the generating station and which could not be recovered during the said tariff period shall be recovered in accordance with Clause 7 of this regulation. ”*

*44 (7) Shortfall in energy charges in comparison to fifty percent of the annual fixed cost shall be allowed to be recovered in six equal monthly instalments:*

*Provided that in case actual generation from a hydro generating station is less than the design energy for a continuous period of four years on account of hydrology factor, the generating station shall approach the Central Electricity Authority with relevant hydrology data for revision of design energy of the station.”*

10. The petitioner has further submitted that the Respondent has compared the inflow data provided by NHPC with inflow data provided by CWC at Teesta Bazar (Gauge & Discharge Site) and interpreted that the inflow data provided by NHPC are different from CWC discharge data. In this regards, following has been submitted by the petitioner:

- a) Inflow data computed by NHPC is based on 24 Hours average inflow at dam site measured through control structure, whereas majority of data provided by CWC are computed based on one time water level.
- b) For the period 2013-17, for the discharge data of Teesta Bazar (CWC), at one water level, discharge/inflow values indicated are different and data is very scattered. The discharge variation ranges from 250 cumecs to 2000 cumecs at same water level.
- c) In the month of October, the average 10 daily discharge at Teesta Bazar (2014-15 to 2017-18) provided by respondent is higher by about 82% than the average long term 10 daily discharge at Teesta Bazar of CWC data (1978-94 & 2003-06) available with NHPC for hydrology study. Whereas the average 10 daily discharge based on NHPC data (2014-15 to 2017-18) is 21% less than long term average 10 daily discharge at Teesta Bazar. A sample comparison of data for the month of October is as follows:

10 Daily discharge for October 2015	Average of 1978-94 & 2003-06 (CWC data) at Teesta Bazar	Average of 2014 15 & 2017-18 (CWC /WBSEDCL data at Teesta Bazar	Average of 2014- 15 & 2017-18 (NHPC data) at TLDP-III
I	723	1247	594
II	567	1195	505
III	525	865	340
Average	602	1095	475
% Higher / Lower		82%	-21%

11. Petitioner also mentioned that the rainfall as per IMD in sub Himalayan Basin & West Bengal region was 80% deficit in October 2014, 67% deficit in October 2015 and 1% surplus in October 2016 with respect to normal rainfall in this region. The Petitioner

has submitted that the inflow data of TLDP-III provided by NHPC is consistent and there is no discrepancy in the data provided by petitioner.

12. Daily discharge data has already been provided along with submitted petition. Regarding certification of daily discharge data from CEA/CWC, NHPC has submitted that it had requested CEA/CWC to certify actual inflows of TLDP-III Power Station, but CWC vide letter dated 23.01.2017 has shown its inability to certify the inflow series as requested.

13. For claim against transmission constraints, petitioner has submitted documents claiming that schedule had been revised by the WBSLDC. The petitioner has submitted that the transmission lines are under the control of WBSETCL and petitioner always pursued with them immediately, if any constraint in transmission system / generation side happened.

14. The Petitioner has further submitted that the Respondent has categorically accepted that there is need of silt flushing in hydro power station during monsoon season. In its reply respondent has quoted the design criteria of silt flushing arrangement indicated in DPR. Design Energy is determined on the basis of discharge in 90% dependable year with 95% machine availability. The Design Energy is not directly linked with design of project structure for spillage or de-silting arrangement. In view of above, the petitioner has submitted that the quoted lines of DPR are not relevant for analyzing the generation loss.

15. In response to WESEDCL's submission that rim protection work in the vicinity of the reservoir was the responsibility of the NHPC, which led to damage of NH 31 A, Petitioner has submitted that NH 31 A is being maintained by Border Road Organization (BRO). The rim protection work up to Full Reservoir Level (FRL) and other identified critical locations were to be attended by NHPC. Balance protection work of NH 31 A was the responsibility of the BRO. After two years of project operation, water arose in road due to heavy flood water. The matter was immediately reported to BRO vide NHPC letter dated 15.07.2014 for early protection work. The damaged condition was subsequently detailed to BRO vide

NHPC letter dated 21.08.2014. The referred two letters of BRO dated 23.08.2014 & 26.09.2014 were in response to NHPC letters dated 15.07.2014 & 21.08.2014 which was actually not correct and an ambiguous statement has been made. Ultimately, the critical protection work was attended by BRO but during execution of work, reservoir was depleted in the mid monsoon season leading to loss of generation.

16. Petitioner submitted that provision of Trash Rack is there in the DPR. Trash Rack being imported item which could not be imported on time and modification as per site requirement also delayed the installation of the same.

### **Analysis and Decision**

17. Maximum possible energy generation for the year 2015-16 has been assessed by us based on actual inflow data as submitted by the petitioner as follows :

Maximum Possible Generation during a day =  $(132 \times 0.024 / 694) \times \text{Actual Inflow}$

Where 132 MW is the capacity of the plant and 694 cumecs is the corresponding design discharge of all four units of the plant.

Based on the above methodology maximum possible energy generation during the year 2015-16 which is the sum of daily maximum possible generations during 365 day, works out to 627.83 MU, whereas the petitioner has submitted that the maximum possible generation is 629.69 MU. It is possible that the difference of 1.86 MU is due to petitioner having considered more power generation in favourable conditions. We have, therefore, considered maximum possible generation by the generating station as 629.69 MU.

18. Design Energy of the generating station is 594.09 MU. During the FY 2015-16, petitioner has claimed a shortfall of 79.40 MU in generation, as the actual generation was 514.69 MU. Petitioner has clarified that generation loss of 46.29 MU was beyond the control of the petitioner, while for balance 33.10 MU the reasons were within the control of the petitioner. The Petitioner has invoked provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations to claim relief for the shortfall of 46.29 MU.

19. The break-up of unclaimed generation loss of (-) [33.10 MU] on account of controllable factors by the Petitioner is as under:

- (a) Additional energy generated by depleting reservoir: 2.42 MU
- (b) Shortfall in generation for increasing reservoir: (-) 20.35 MU
- (c) Unit Outage: (-) 0.64 MU
- (d) Other constraints (partial load/ ramping up, down during peaking): (-)14.52 MU

20. The break-up of generation loss of (-) [46.29 MU] claimed by the petitioner on account of uncontrollable factors is as under:

- (a) Energy shortfall due to less inflow: (-) 40.56 MU
- (b) Energy gain due to excess inflow: 76.18 MU
- (c) Energy shortfall due to silt flushing: (-) 26.61 MU
- (d) High Trash: (-) 2.35 MU
- (e) Transmission Constraints : (-) 8.88 MU
- (f) Energy shortfall due to Complete shutdown of power plant due to repair work of NH 31 A: (-) 44.07 MU

21. The claim of the petitioner to the extent energy shortfall which has occurred due to uncontrollable factors is being deliberated in the following paragraphs:

### **Energy short fall due to inflows**

22. It is made out from the data as submitted by the petitioner that on certain days of the year under consideration, actual inflows were lower than the design year inflows and accordingly possible generation was on lower side as compared to the design energy of these days. On the remaining days the actual inflows were more than the design year inflows and accordingly possible generation was on higher side as compared to the design energy of these days. On overall basis, petitioner's data indicates that with the actual flows during the year, the possible energy generation with actual inflows, over which it has no control, was more by 35.62 MU (76.18 MU - 40.56 MU) in comparison to design energy. As such, maximum possible generation with actual inflows works out to 629.71 MU (594.09 MU + 35.62 MU) which is almost in

line with the maximum possible generation of 629.69 MU accepted by us at para 17 above.

23. In this regard, WBSEDCL has submitted the actual inflow data as obtained from the Central Water Commission (CWC) in respect of River Teesta measured at Teesta Bazar. WBSEDCL has compared the inflow data provided by the NHPC in the proceedings with the data made available by the CWC. Comparison table made by respondent shows that on some days, more water was available (especially in the month of October) for generation as compared to claim of NHPC. WBSEDCL has concluded that it clearly indicates the operational inefficiency of NHPC.

24. Petitioner in its reply has submitted that data as submitted by the WBSEDCL for the month of October is higher by about 82% than the average long term 10 daily discharge at Teesta Bazar based on CWC data (1978-94 & 2003-06) available with NHPC for hydrology study, whereas the data measured by the petitioner at the dam side for the month of October is 21% less than the long term average 10 daily discharge at Teesta Bazar based on the actual inflow data for the years 1978-94 to 2003-06.

25. In this regard, Commission observes that for certain months out of six months for which respondent has provided the CWC data, the actual inflows as submitted by the petitioner are more as compared to CWC inflows and for certain months there is very less difference in the two sets of data under consideration. It is only for the month of October that CWC flows are on much higher side as compared to the actual inflows measured by the petitioner. As such, power potential of the CWC inflows is on higher side if October data is included for comparison purposes.

26. However, we are not inclined to go by the data as submitted by WBSEDCL for two reasons: i) CWC vide its letter dated 23.1.2017 has categorically refused to vet the inflow data in response to the petitioner's request which it has made to CWC to meet the requirement of the Commission. ii) WBSEDCL has submitted CWC inflow data only for six months out of twelve months period under consideration.

27. As such, for above two reasons, annual power potential of actual inflows has

been calculated based on the petitioner's data measured at the dam site which comes out to 629.69 MU as deliberated above. Accordingly, we allow the energy shortfall of (-) 40.56 MU and 76.18 MU as claimed by the petitioner due to less/excess inflows.

### **Energy shortfall due to silt flushing**

28. Hydro projects are designed to handle certain PPM level of silt and beyond that level, the generation is required to be stopped till the level comes down to the permissible limits. Reservoir / silt flushing is critical activity in hydro projects. Respondent has also accepted the necessity of reservoir / silt flushing in its reply. Petitioner has claimed generation loss of 26.61 MU on account of reservoir / silt flushing. Hence, we have considered the generation loss of 26.61 MU for reason beyond the control of the generating station.

### **Energy shortfall due to High Trash**

29. Commissioning of Trash Rack Cleaning Machine (TRCM) is a requirement before COD. The petitioner needs to ensure the commissioning of the same on time to avoid the possible loss of energy due to high trash. Petitioner has claimed generation loss of 2.35 MU due to high trash. This generation loss cannot be considered due to reasons beyond the control of the generating station.

### **Energy shortfall due to Transmission Constraints**

30. Petitioner has submitted that loss of generation due to transmission constraints was (-) 8.82 MU. However, as per the document of State Load Despatch Centre, WBSETCL, as submitted by the petitioner in response to Commission's ROP in hearing dated 2.5.2019, it is evident that no schedule was given on 25.07.2015 from 62<sup>nd</sup> to 64<sup>th</sup> block and in 58<sup>th</sup> block on 09.08.2015 against the declared capacity. Total generation loss for above time blocks works out to 0.13 MU only, but the petitioner has claimed a generation loss of 8.82 MU due to transmission constraints. Hence, we have considered the generation loss of only 0.13 MU due to reason beyond the control of generating station. Balance generation loss of 8.69 MU is considered due to reasons within the control of the generating station.

**Energy shortfall due to complete shutdown of power plant due to repair work of NH 31 A**

31. Petitioner has submitted that plant was under shutdown from 03.07.2015 to 15.07.2015 due to construction activities being undertaken by Border Road Organisation (BRO). Protection work along NH 31 A was being discussed between NHPC and BRO bilaterally and also in the Planning Commission during review of TLDP – III. It was directed by the Planning Commission that NHPC and BRO together should expedite the protection work of NH 31A. However, work could not be completed on time. Detailed claim is as follows:

Description	Design Energy (DE) (MU) (a)	Maximum possible generation at GT with available inflows without outages and with use of installed capacity during high inflow period (MU) (b)	Actual Generation (MU) (c)	Shortfall w.r.t to DE (d)=(c)-(a)	Shortfall w.r.t to maximum possible generation (e)= (c)-(b) (MU)
03.07.2015 to 17.07.2015 due to landslide	47.52	47.52	3.48	(-)44.04	(-)44.04

32. Maintaining NH 31 A is the responsibility of BRO, but rim protection work along the TLDP – III reservoir was to be done by the petitioner. Petitioner has submitted that protection work to maintain NH 31 A was earlier done by BRO and Petitioner but it got damaged by water inflows during monsoon season which affected NH 31 A adversely. Commission is of the view that this energy loss was inevitable as the restoration work of the NH 31 A was to be carried out by BRO and as such was not under the control of the petitioner. Hence, the loss of generation of 44.04 MU as claimed by the petitioner is considered under the reasons beyond the control of the generating station.

33. Accounting the generation loss for the reasons which were beyond the control of the Petitioner and which are attributable to the petitioner, the possible generation at generator terminal has been assessed, against the actual generation of 514.69 MU, as follows:

- a) Maximum possible generation has been considered as 629.69 MU (as per para 17).

b) Possible generation assessed at generator terminal after accounting for the generation loss due to reasons beyond the control of the petitioner:

		(In MU)
1.	Energy that could have been generated by utilizing available actual inflows and 100% machine capacity i.e. 132 MW, as submitted by the Petitioner	629.69
2.	Energy lost due to plant stoppage due to Silt	(-) 26.61
3.	Energy lost due to damage of NH 31 A	(-) 44.04
4.	Energy lost due to Transmission constraint	(-) 0.13
5.	Remaining Energy that could be generated	<b>558.91</b>

c) Possible energy generation assessed at generator terminal after accounting for the reasons within the control of the Petitioner as claimed by the Petitioner:

		(In MU)
		Based on actual available flow at 100% machine capacity
1.	Remaining Energy that could be generated after taking into account reasons beyond control	558.91
2.	Energy loss due to Unit Outage	(-) 0.64
3.	Energy loss due to High Trash	(-) 2.35
4.	Other constraints (Partial ramping up/ down during peaking) (MU), shortfall in generation for increasing the reservoir level & additional energy generated by depleting the reservoir.	(-) 32.45 [{-14.52} + {-20.35} + 2.42]
5.	Generation loss due to transmission constraints rejected due to non-submission of documents	(-) 8.69 {(-)8.82 + 0.13}
	<b>Remaining Energy that could be generated</b>	<b>514.78</b>

34. As per above calculations, possible generation of the station is assessed at 514.78 MU, which is in line with the actual generation of 514.69 MU (difference is due to rounding off in calculations).

35. The Commission is of the view that the Petitioner is entitled to be compensated for the energy shortfall due to reasons which were not under the control of the generating station, which works out to be 35.18 MU (594.09 MU – 558.91 MU) i.e. the difference between Design Energy and maximum possible energy generation after accounting for the reasons beyond control of Petitioner.

36. Thus, the energy charge shortfall is worked out as follows:

Schedule Energy (Ex-Bus) (MU)	Free Energy (MU)	Net Energy Billed (MU)	ECR (₹ / Unit)	Annual Fixed Charges (₹ Cr)	Energy Charges to be recovered (₹ Cr)	Energy Charges actually recovered (₹ Cr)	Under recovery of Energy (₹ Cr)
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
496.20	4.96	491.23	3.097	360.71	180.355	152.13	-28.22

37. Therefore, the amount to be recovered in the FY 2016-17 due to shortfall in energy generation from the Design Energy during 2015-16 works out as follows:

SI No	Description		MU / Amount
1.	Total Shortfall in generation during FY 2015-16 (MU)	A	79.40
2.	Total under recovery of energy charges during FY 2015-16 (Rs. Crore)	B	28.22
3.	Shortfall in generation due to reasons beyond control (MU)	C	35.18
4.	Shortfall in energy charges to be recovered during FY 2016-17 (Rs. Crore)	D= C*B/A	<b>12.50</b>

38. Accordingly, in terms of Regulation 31(6) (a) and 31(6) (c) of the 2014, Tariff Regulations, we decide that the Design Energy for the FY 2016-17 shall be 514.69 MU till the energy charges shortfall of ₹ 12.50 Cr for the period of FY 2015-16 is recovered by the petitioner by revision of energy bills of FY 2016-17. Further, the difference in energy charges shortfall to be recovered for the FY 2015-16 which may arise after true up of tariff for the period 2014-19 shall be recovered directly by the generating station from the beneficiaries through supplementary bills after true-up.

39. Petition No. 221/MP/2018 is disposed of in terms of above.

**Sd/-**  
**(I S Jha)**  
**Member**

**Sd/-**  
**(Dr. M.K. Iyer)**  
**Member**

**Sd/-**  
**(P. K. Pujari)**  
**Chairperson**