CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 201/MP/2023

Coram:
Shri Jishnu Barua, Chairperson
Shri Arun Goyal, Member
Shri P.K. Singh, Member

Date of Order: 15.04.2024

In the matter of
Application under Regulation-44(6) of CERC (Terms and Conditions of Tariff) Regulations, 2019 for recoupment of under-recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station during the FY 2021-22 in respect of **Nimoo Bazgo Power Station**.

And

In the matter of
NHPC Limited,
(A Govt. of India Enterprise)
NHPC Office Complex, Sector-33,
Faridabad (Haryana) - 121 003. **…Petitioner**

Vs

The Principal Secretary,
Power Development Department,
New Secretariat, Jammu, UT of J&K **…Respondent**

Parties Present

Shri Rajiv Shankar Dwivedi, Advocate, NHPC
Shri Rishabh Jain, Advocate, NHPC
Shri S.K. Meena, NHPC
Shri Aman Mahajan, NHPC

ORDER

The Petitioner, NHPC Ltd. (hereinafter referred to as NHPC), vide affidavit dated 12.6.2023, has filed this petition seeking the following relief:

*a) Hon'ble Commission may kindly allow recovery of energy charges amounting to **Rs 252.8449 Lakh** against the shortfall in generation of **5.26 MU**, which is beyond control of generating station, in FY 2021-22 as per regulation 44(6) of CERC Tariff Regulations, 2019 as explained in **para-X & XI**.*

b) Hon'ble Commission is requested to allow recovery of shortfall in energy charges amounting along with interest as explained in para-XIII.

c) To allow recovery of shortfall in energy charges along with interest as mentioned in prayer 1 to 2 in six equal monthly installments.

d) To allow issuance of supplementary bill for recovery of balance shortfall in energy charges directly from beneficiaries after determination of final tariff by Hon'ble Commission as mentioned in para XII.

e) Pass such other and further order / orders as are deemed fit and proper in the facts and circumstances of the case.

2. The Petitioner, vide affidavit dated 12.10.2023, revised its claim in response to the Commission's direction vide ROP of the hearing dated 209.2023. The same has been dealt with in the order. The Petitioner has, however, not revised the prayer.

Submission of the Petitioner

3. NHPC Limited, hereinafter called 'NHPC', is a Government of India Company within the meaning of the Companies Act, 1956. Further, it is a 'Generating Company' as defined under Section 2(28) of the Electricity Act, 2003.

4. The Nimoo Bazgo Power Station (hereinafter called 'Nimoo Bazgo'/'power station') (3 x 15 = 45 MW) located in the UT of Ladakh is under commercial operation w.e.f. 10.10.2013.

5. The total power generated from this Power Station is being supplied to the Power Development Department of J&K.

6. The approved annual design energy (DE) of Nimoo Bazgo Power Station is 239.33 MU, and after accounting for actual auxiliary consumption (i.e. 3.08%), 1% towards LADF and 12% as free power to the home state, the saleable design energy works out to 201.78 MU. The Saleable Design Energy of the generating station is 201.78 MU, and the Saleable Schedule during 2021-22 is 196.53 MU. As such, there is a total shortfall of (-)5.26 MU. Out of this shortfall of energy of (-) 5.26 MU, the Energy Shortfall due to reasons beyond the control of the Petitioner is (-)0.98 MU.

7. Regulation 44(6) of the CERC (Terms and Conditions of Tariff) Regulations, 2019 is for recovery of short fall in energy charges due to a shortfall in energy generation.

8. The present petition is being filed based on the AFC approved by the Commission for FY 2021-22 vide its order dated 14.08.2022 in Petition No 282/GT/2020 based on projected additional capitalization. The AFC approval is subject to truing up after the completion of the present control period of 2019-24.

9. The claim in the present petition for recovery of energy charges is based on AFC allowed by the Hon'ble Commission for FY 2021-22 vide order dated 14.08.2022 in petition no. 282/GT/2020, which is subject to change on truing up of tariff.

10. The Petitioner has recovered energy charges amounting to ₹86.91 Crs corresponding to saleable scheduled energy of 196.53 MU against energy charges of ₹89.44 Cr for FY 2021-22. Hence, there is an under-recovery of energy charges of ₹2.53 Cr for FY 2021-22. Accordingly, the under-recovery of energy charges of ₹0.47 Cr corresponding to the Energy Shortfall of (-)0.98 MU due to reasons beyond the control of the Petitioner is claimed in the revised submission.

11. Once the Commission allows the recovery of energy charges, the shortfall in energy charges will be recovered in six (6) equal monthly instalments as per Regulation 44(7) of CERC Tariff Regulations, 2019. However, subsequent to issuance of final tariff order for tariff period 2019-24, the petitioner will raise supplementary bill for recovery of shortfall on the basis of revised energy charge.

12. Further, CERC Tariff Regulations, 2019, provides for adjustment of tariff with interest at the bank rate (i.e. SBI plus 350 basis points) prevalent on 1st April of the respective year. The under-recovered amount also pertains to the AFC of the respective year. Therefore, it is requested to allow billing of the under-recovered amount with interest as above.

13. In past, CEA/CWC was requested to certify the actual inflow data of NHPC Power Stations. CWC, vide letter dated 31.01.2017, expressed their inability to certify the inflow series on a year-to-year basis.

Hearing dated 20.9.2023

14. The subject matter was heard on admission on 20.9.2023. The Commission, after admitting the petition, directed the Petitioner to submit the following information:

a) Methodology for calculating daily maximum possible generation as claimed in the Petition (in MS Excel);
b) Clarify the difference between generation beyond the design energy calculation & excess generation beyond full capacity;
c) Revision, if any, in the claim of energy charge shortfall due to reasons beyond the Petitioner's control by accounting for overload generation, energy accounted under DSM, and the revenue which would have been earned, in case, the energy accounted under DSM would have been scheduled.

d) Calculation of energy loss for all the reasons within and beyond the control of the petitioner and support documents for the claim of shortfall in energy generation due to reasons beyond the control.

e) Certified data of inflow and planned and forced outage data for petitions where the shortfall is claimed due to less inflow. The same may be correlated with generation;

f) Actual Auxiliary consumption during 2021-22 considered for calculation of shortfall in energy generation.

Submission of the Petitioner in compliance with ROP of the hearing dated 20.9.2023

15. The Petitioner, vide affidavit dated 12.10.2023, has submitted the following information:

a) The revised daily maximum possible generation has been calculated based on the daily inflow received for generation and includes overload generation, if any, during high inflow season.

b) There is no difference between generation beyond design energy calculation and excess generation beyond full capacity. The approach taken in both the nomenclatures is the same, wherein during high inflow days, the calculation of maximum possible energy has been restricted to 95% of installed capacity and energy generated beyond 95% capacity had been kept under the head generation beyond design energy calculation or excess generation beyond full capacity.

c) The claim has been revised for energy charge shortfall after accounting for overload generation (generation beyond design energy calculation/excess generation beyond full capacity). The revised day-wise analysis has been submitted.

d) The calculation of energy loss for all the reasons placed under the head 'beyond control' of the Petitioner is provided. The calculation for the same is already incorporated in the main analysis sheet.

e) Regarding certification of Inflow data, CWC, in the past, has shown its inability to certify the inflow data. Planned and forced outage data are downloaded from NPP portal, and the correlation of the same with daily generation.

f) The actual auxiliary consumption during 2021-22 considered for calculation of shortfall in energy generation is as per the Power Station's Energy Bills.

Hearing dated 18.12.2023

16. The Commission reserved its order in the matter on 18.12.2023.

17. No reply has been filed by the respondent in the petition. Accordingly, based on the submissions on record, we are analysing the claim of the Petitioner in the following paragraphs.

Analysis & Decision

18. CERC (Terms and Conditions of Tariff) Regulations, 2019, provide for recovery of shortfall in energy charges for reasons beyond the control of generating stations during the tariff period 2019-24. As such, the present application {under regulation-44(6) & (7) of CERC (Terms and Conditions of Tariff) Regulations, 2019} is for recovery of shortfall in energy charges due to a shortfall in energy generation, which is reproduced below:

> *"44(6) In case the saleable scheduled energy (ex-bus) of a hydro generating station during a year is less than the saleable design energy (ex-bus) for reasons beyond the control of the generating station, the treatment shall be as per clause (7) of this Regulation, on an application filed by the generating company.*

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 installments:…."

19. The design energy of the station is 239.33 MU, and considering normative auxiliary energy consumption of 6%, the saleable design energy, after accounting for free power of 13%, works out to 195.72 MUs (239.33x0.94x0.87). In this regard, the Commission, vide order dated 1.10.2022 in Addendum to order dated 14.8.2022 in Petition No. 282/GT/2020 at paragraph no. 163 has observed as under:

"163. It is pertinent to mention that the Commission vide order dated 22.9.2016 in Petition No. 229/GT/2014 had allowed the auxiliary power consumption of up to 6%, based on the average actual auxiliary consumption for the period 2012-16, as against the claim of the Petitioner for 9% APC. It is observed that the Commission has already relaxed the APC up to 6% for the generating station for the 2014-19 tariff period (in truing-up petition) based on the actual performance for the 2012- 16 tariff period. Further, the Petitioner has submitted that the actual average auxiliary consumption for the past 5 years is 5.74%, which is lesser than the relaxed norms of 6%. Accordingly, the actual auxiliary power consumption of up to 6% is allowed for the 2019-24 tariff period."

20. It is observed from the above that the Commission has allowed auxiliary energy consumption of up to 6% to the instant generating station, considering the heating requirement of the station for the period 2019-24. However, the Petitioner has submitted that the actual auxiliary energy consumption of the station is 3.08% during 2021-22. As such, the Petitioner, in its calculations has mapped the energy shortfall with respect to Saleable design energy (SDE) calculated by considering actual auxiliary energy consumption of 3.08% in place of normative auxiliary consumption. Based on the above, SDE for the year 2021-22 works out to be 201.80 MU (239.33x0.9692x0.87).

However, the Petitioner has submitted the same to be 201.78 MU (the difference is due to the decimal factor used for multiplication) and the same has been considered in our analysis also.

21. The Petitioner has submitted the following table indicating month-wise details with respect to energy shortfall during the FY 2021-22:

Sl. No.	Month	Design Energy at generator terminal (MUs)	Saleable design energy at Ex-Bus (MUs)	Saleable scheduled energy At Ex-Bus (MUs)	Shortfall (-) / Excess (+) (MUs)	Actual PAF (%)
1	**2**	**3**	**4**	**5**	**6=5-4**	**8**
1.	April' 2021	11.31	9.49	8.01	-1.48	100.00
2.	May' 2021	22.95	19.48	15.65	-3.83	100.00
3.	June' 2021	30.75	26.24	26.07	-0.17	100.00
4.	July' 2021	31.81	27.12	26.99	-0.13	101.07
5.	August' 2021	31.81	27.18	27.10	-0.07	101.58
6.	September' 2021	30.78	26.30	26.73	0.43	102.22
7.	October' 2021	19.83	16.88	18.74	1.86	94.73
8.	November' 2021	14.79	12.31	11.91	-0.40	78.85
9.	December' 2021	13.48	10.91	9.11	-1.79	69.12
10.	January' 2022	11.47	9.36	7.92	-1.44	64.83
11.	February' 2022	9.81	7.81	7.12	-0.69	67.81
12.	March' 2022	10.54	8.72	11.17	2.46	67.48
Total		**239.33**	**201.78**	**196.53**	**-5.26**	**87.38**

22. As per submission of the Petitioner, saleable scheduled energy during 2021-22 is 196.53 MU and saleable design energy is 201.78 MU. There is a total shortfall of (-)5.26

MU (196.53 MU-201.78 MU) in generation during 2021-22. The reasons for the shortfall of (-) 5.26 MU as reported are as under:

(A) Saleable Design Energy (MU)	**201.78**
(B) Saleable Schedule (MU)	**196.53**
(C) Shortfall between saleable DE and Saleable Schedule (MU) (B-A)	**-5.26**
Shortfall due to reasons beyond the control of Petitioner (A)	**(MU)**
Energy Shortfall Due to Less Inflow from Design Inflow on some days	-9.9
Energy Generated Due to Excess Inflow from Design Inflow on some days	10.26
Energy Loss Due to High Silt	-0.22
Energy Loss Due to Transmission Constraint	-1.03
Total Energy Shortfall Due to Reasons Beyond Control (A)	**-0.98**
Shortfall due to reasons within the control of petitioner (B)	**(MU)**
Energy Generated by Depleting Reservoir Level on some days	3.08
Less Generation for Increasing Reservoir Level on some days	-2.62
Unit Outages	-0.05
Other Constraint (Partial Load/ Ramping Up/ Down During Peaking/ High Inflow/ TRT Level etc.)	-4.69
Total Energy Shortfall Due to Reasons Within Control (B)	**-4.28**
Total Energy Shortfall (A)+(B)	**-5.26**

23. It is noted from the above submissions of the Petitioner that there is a net energy shortfall of (-) 5.26 MU [(-)4.28 + (-)0.98] against which energy shortfall due to reasons beyond the control of the Petitioner has been indicated as (-) 0.98 MU and loss energy generation due to reasons within the control of the Petitioner have been indicated as (-) 4.28 MU.

24. On scrutiny of the daily inflow data, corresponding maximum possible generation, actual energy generated, rainfall data, reasons for shortfall beyond and within the control of the Petitioner, and corresponding quantum of energy shortfall beyond and within the control of the Petitioner, we have following observations:

a) Though inflow data has not been vetted by the CEA/CWC in this case, there is net excess generation due to inflows. As such, the Petitioner has not claimed a shortfall due to less inflows on a net basis.

b) To demonstrate the energy potential of the actual inflows during the year 2021-22, the Petitioner has calculated the maximum possible saleable ex-bus generation of 202.05 MU considering design head of 34.77 meters, design discharge of 146.10 cumecs, and 95% machine availability, overall efficiency of 91%, actual auxiliary consumption of 3.08%, average daily actual inflows and free energy to home state for 13% including 1% of LADF.

c) The maximum possible saleable ex-bus generation corresponding to actual inflows available during each day of 2021-22:

Maximum possible saleable ex-bus generation for a day =

Design energy for the day x Actual inflow (cumecs)x 0.87x0.9692/Design Inflow, where 0.87 represents the multiplying factor to account for the free energy to home states and 0.9664 represents the multiplying factor to account for the actual auxiliary consumption of 3.08%. Further, design inflow has been restricted to 95% of the combined design discharge of all units.

d) Further, the above-derived value of maximum possible saleable ex-bus generation for a day is subject to a ceiling of 0.865 MUs (45MWx24x0.87x0.9692x0.95/1000) where 0.95 is to account for the machine availably used for calculation of design energy during peak season. The summation

of 365 such derived values represent the maximum possible saleable ex-bus generation for the year.

e) Following the above methodology, the annual maximum possible saleable ex-bus generation for the year 2021-22 corresponding to actual inflows has been assessed at 194.25 MU against the value of 202.05 MU. We have considered the value of the Petitioner (being on the higher side). As such, the difference of (+) 5.52 MU between the maximum possible saleable ex-bus generation (202.05) and the saleable design energy (196.53 MU) represents the excess energy due to high inflows as compared to design inflows during the year. The Petitioner has also not claimed any net shortfall due to inflow during 2021-22. The same is in order.

f) With regard to the energy shortfall of (-) 0.22 MU due to high silt as claimed by the Petitioner, it has been held by the Commission in a number of similar petitions that the same is beyond the control of the Petitioner as generation needs to be stopped for silt flushing to avoid turbine damage as and when the silt level reaches beyond the permissible limits. The Petitioner has also submitted the daily generation report in this regard. We have verified the same, and it is in order. Accordingly, we hold that the energy shortfall of (-) 0.22 MU was beyond the control of the Petitioner.

g) With regard to the energy shortfall of (-) 1.03 MU as claimed by the Petitioner due to transmission constraints, the same has been calculated to be (-) 1.15 MU based on the unit hours reported to be lost due to transmission constraints as per the daily generation report. As such, the Commission, in consideration of the fact that energy shortfall due to transmission constraints is beyond the control of the Petitioner, allows a shortfall of (-)1.03 MU (being on the lower side) under the head of "Energy shortfall beyond the control of the Petitioner".

h) Net excess energy generation of 0.46 MU due to managing the reservoir level as claimed by the Petitioner is in order and has been rightly placed by the Petitioner under the head of "Energy shortfall within the control of the Petitioner". This reduced the quantum of total shortfall in energy generation. Accordingly, we allow the same.

i) Energy shortfall of (-) 0.05 MU, as claimed by the Petitioner due to unit outage, is in order and has been rightly placed by the Petitioner under the head of "Energy shortfall within the control of the Petitioner". Accordingly, we allow the same.

j) Energy shortfall of (-) 4.69 MU claimed on account of "Other constraint", has been rightly placed by the Petitioner under the head of "Shortfall due to reasons within the control of petitioner". Accordingly, we allow the same.

25. Further, it should be mentioned that no energy accounted for under DSM in Nimoo Bazgo Power Station during 2021-22.

26. Accordingly, in consideration of the above findings, the shortfall in energy charges in respect of shortfall in energy for reasons beyond the control of the generating station is as under

(A) Saleable Design Energy (MU)	**201.78**
(B) Saleable Schedule (MU)	**196.53**
(C) Shortfall between saleable DE and Saleable Schedule (MU) (B-A)	**-5.26**
Shortfall due to reasons beyond the control of Petitioner (A)	**(MU)**
Energy Shortfall Due to Less Inflow from Design Inflow on Some Days	-9.90
Energy Generated Due to Excess Inflow from Design Inflow on Some Days	10.26
Energy Loss Due to High Silt	-0.22
Energy Loss Due to Transmission Constraint	-1.03
Total Energy Shortfall Due to Reasons Beyond Control (A)	**-0.98**

Shortfall due to reasons within the control of petitioner (B)	**(MU)**
Energy Generated by Depleting Reservoir Level on Some Days	-2.62
Less Generation for Increasing Reservoir Level on Some Days	3.08
Unit Outages	-0.05
Other Constraints (Partial Load/ Ramping Up/ Down During Peaking/ High Inflow/ TRT Level, etc.)	-4.69
Total Energy Shortfall Due to Reasons Within Control (B)	**-4.28**
Total Energy Shortfall (A)+(B)	**-5.26**

27. Based on the above deliberations, the Petitioner needs to be compensated for an energy shortfall of (-) 0.98 MU, which had occurred due to reasons beyond the control of the Petitioner out of a total energy shortfall of (-) 5.26 MU.

28. A total energy charge shortfall of ₹2.53 Crs has been reported by the Petitioner based on energy billed as per Regional Energy Accounts. The same has been verified from the amount billed to the beneficiaries and the amount allowable as Energy Charges, which is one-half of the AFC allowed for the year 2021-22 by the Commission vide order dated 14.8.2022 in petition No. No.282/GT/2020. The energy charges recoverable by the Petitioner out of a total shortfall of ₹2.53 Crs. for the shortfall of energy of (-) 0.98 MU due to reasons beyond the control of the Petitioner has been worked out as under:

Total shortfall in generation during FY 2021-22	A	(-) 5.26 MU
Total under-recovery of energy charges during FY 2021-22	B	₹ 2.53 Cr
Shortfall in generation due to reasons beyond control	C	(-) 0.98 MU
Shortfall in energy charges to be recovered for FY 2021-22	D=C*B/A	**₹ 0.47 Cr**

29. Accordingly, in terms of Regulation 44(6) of the 2019 Tariff Regulations, we allow the energy charge shortfall of Rs.0.47 crore for FY 2021-22. The same shall be

recovered in six equal monthly interest-free instalments by raising supplementary bills to the beneficiaries as per Regulation 44(7) of CERC (Terms and Conditions of Tariff) Regulation 2019. Further, the difference in energy charge shortfall to be recovered for the FY 2021-22, which may arise after the determination and true-up of tariff for the period 2019-24, shall be recovered directly by the generating station from the beneficiary through supplementary bills after true-up.

30. Petition No. 201/MP/2023 is disposed of in terms of the above.

Sd/-	sd/-	sd/-
(Pravas Kumar Singh)	**(Arun Goyal)**	**(Shri Jishnu Barua)**
Member	**Member**	**Chairperson**