

CENTRAL ELECTRICITY REGULATORY COMMISSION
New Delhi

Petition No.164/MP/2023
along with
Petition No. 166/MP/2023

Coram:
Shri Jishnu Barua, Chairperson
Shri Ramesh Babu V, Member
Shri Harish Dudani, Member
Shri Ravinder Singh Dhillon, Member

Date of Order: 31st August, 2025

Petition No.164/MP/2023

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 the generating station during the FY 2021-22 in respect of **Chamera-III Power Station**.

And

In the matter of

NHPC Limited,
(A Govt. of India Enterprise)
NHPC Office Complex, Sector-33,
Faridabad (Haryana).

.....Petitioner

Vs

1. The Chairman,

Punjab State Power Corporation Ltd.,
The Mall, Near Kali Badi Mandir, Patiala-147001 (Punjab).

2. The Chairman,
Haryana Power Utilities (UHBVNL & DHBVNL),
Shakti Bhawan, Sector-6, Panchkula-134109 (Haryana).

3. The Chairman,
Uttar Pradesh Power Corporation Ltd.,
Shakti Bhawan, 14-Ashok Marg, Lucknow-226001 (Uttar Pradesh).

4. The Chief Engineer & Secretary,
Engineering Dept. 1st Floor,
UT Chandigarh, Sector-9 D, Chandigarh-160009.

5. The Chief Executive Officer,
BSES Rajdhani Power Ltd., BSES Bhawan,
Nehru Place, New Delhi-110019.

6. The Chief Executive Officer,
BSES Yamuna Power Ltd.,
Shakti Kiran Building, Karkadooma, Delhi-110072

7. The Chief Operating Officer,
Tata Power Delhi Distribution Ltd.
(A Tata Power and Delhi Govt. Joint Venture)
Erstwhile North Delhi Power Ltd., Grid Sub-station Building,
Hudson Lines, Kingsway Camp, Delhi-110009.

8. The Chairman-Cum-Managing Director,
Uttaranchal Power Corporation Ltd., Urja Bhawan,
Kanwali Road, Dehradun - 248 001 (Uttarakhand).

9. The Managing Director,
Jaipur Vidyut Vitaran Nigam Ltd. (JVVNL), Vidyut Bhawan,
Janpath, Jyoti Nagar, Jaipur-302005 (Rajasthan).

10. The Managing Director,
Ajmer Vidyut Vitaran Nigam Ltd. Old Power House,
Hatthi Bhatta, Jaipur Road, Ajmer - 305 001 (Rajasthan).

11. The Managing Director,
Jodhpur Vidyut Vitaran Nigam Ltd., New Power House,
Industrial Area, Jodhpur - 342 003 (Rajasthan).

12. The Principal Secretary,
Power Development Department, New Secretariat
Jammu (J&K)-180001.

13. The Chairman,
Himachal Pradesh State Electricity Board, Vidyut Bhawan,
Kumar House, Shimla - 171 004 (Himachal Pradesh).

.....**Respondents**

Petition No.166/MP/2023

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 **Chamera-II Power Station**.

And

In the matter of

NHPC Limited,
(A Govt. of India Enterprise)
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.....**Petitioner**

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1. The Chairman,

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Industrial Area, Jodhpur - 342 003 (Rajasthan).
12. The Principal Secretary,
Power Development Department, New Secretariat
Jammu (J&K)-180001.
13. The Chairman,
Himachal Pradesh State Electricity Board, Vidyut Bhawan,
Kumar House, Shimla - 171 004 (Himachal Pradesh).

Parties Present:

Shri Rajiv Shankar Dwivedi, Advocate, NHPC
Shri Sushant Sarkar, Advocate, NHPC
Shri S.K. Meena, NHPC
Shri Aman Mahajan, NHPC
Shri Anand K. Ganesan, Advocate, PSPCL
Shri Amal Nair, Advocate, PSPCL
Ms. Devyani Prasad, Advocate, PSPCL
Shri Sachin Dubey, Advocate, BSES Discoms
Shri Mohit Jain, Advocate, BSES Discoms
Shri Mohit K. Mudgal, Advocate, BSES Discoms

ORDER

The Petitioner, NHPC Ltd. (hereinafter referred to as NHPC), vide affidavit dated 2.5.2023, has filed these petitions seeking the following reliefs:

Petition No.164/MP/2023 (Chamera-III Power Station)

- a) *The Commission may kindly allow recovery of energy charges amounting to ` 17.43 Crs against the shortfall in generation of 88.42 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-IX & X.*
- b) *The 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 the 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.*

Petition No.166/MP/2023 (Chamera-II Power Station)

- a) *The Commission may kindly allow recovery of energy charges amounting to Rs 13.51 Crs against the shortfall in generation of 134.71 MU, which is beyond control of generating station, in FY 2021-22 as per regulation 44(6) of CERC Tariff Regulations, 2019.*
 - b) *The Commission is requested to allow recovery of shortfall in energy charges amounting along with interest.*
 - 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 the Commission.*
2. The Petitioner vide affidavit dated 13.10.2023 has revised its claim, however, the Petitioner has not revised the above prayers.

Petition No.164/MP/2023 (Chamera-III Power Station)

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 Chamera-III Power Station (hereinafter called 'Chamera-III' / 'power station') (3 x 77 = 231 MW) located in the state of Himachal Pradesh is under commercial operation w.e.f. 04.07.2012.

5. The power generated from this Power Station is being supplied to 13 Bulk Power Customers / Beneficiaries/Successor utilities in the Northern Region.

6. The approved annual design energy (DE) of Chamera-III Power Station is 1108.17 MU, and after accounting for the provision of 1.2% as auxiliary consumption, 1% towards Local Area Development Fund (LADF), and 12% as free power to the home state, the Saleable Design Energy (SDE) works out to 952.54 MU.

7. Regulation 44(6) of CERC (Terms and Conditions of Tariff) Regulations, 2019 provides for recovery of shortfall in energy charges for the reasons beyond the control of the generating station during the tariff period 2019-24.

8. The Petitioner had filed tariff petition No. 642/GT/2020 for truing up of AFC for 2014-19 and for determination of tariff for the period 2019-24 based on projected capital expenditure. At present, under Regulation 10(4) of CERC Tariff Regulations, 2019, provisional billing from 01.04.2019 onwards is allowed on the basis of the approved AFC for the period 2019-24. Accordingly, billing is being done with AFC approved by CERC vide order dated 29.01.2020 in petition No. 321/GT/2018. The claim in the present petition for recovery of energy charges is based on the interim tariff allowed by the Commission for FY 2021-22 vide order dated 29.01.2020 in petition no. 321/GT/2018, which is subject to change on the outcome of tariff petition No. 642/GT/2020 for the tariff period 2019-24.

9. The Petitioner has recovered energy charges as per the revised claim, amounting to Rs. 168.87 Cr corresponding to saleable scheduled energy of 857.22 MU against energy charges of Rs.187.66 Cr for FY 2021-22, respectively. Hence, there is an under-recovery of energy charges of **Rs. 18.79 Cr** for FY 2021-22. Out of the total shortfall of (-)95.32 MU

(-952.54-(-)857.22) in 2021-22, the loss of (-)32.86 MU was within control of the petitioner; hence, petitioner requested to allow shortfall of energy charge amount to **Rs. 12.31 Cr** corresponding to (-) 62.46 MU (-95.32- (-)32.86) only.

10. Once, the recovery for energy charges is allowed by the Commission, 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.

11. Further, CERC Tariff Regulations, 2019 provide 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.

12. In the past, CEA/CWC was requested to certify the actual inflow data of Chamera-III Power Station. CWC vide letter dated 31.01.2017 has expressed their inability to certify the inflow series on a year-to-year basis.

Hearings in the matter

13. The petitions were heard on multiple dates before the Commission. In the initial hearing held on 6.9.2023, the Commission admitted the petitions and directed NHPC to submit comprehensive additional information by 13.10.2023. including (i) design energy calculation in MS Excel; (ii) methodology used for calculating daily maximum possible generation; (iii) day-wise details of scheduled energy, actual energy injected into the grid, and energy accounted for in DSM along with DSM revenue; (iv) clarification on the difference between generation beyond design energy and excess generation beyond full capacity; (v) revised energy charge shortfall claims accounting for overload generation, DSM energy, and revenue that would have been earned if DSM energy had been scheduled; (vi) detailed calculation of energy loss for reasons within and beyond the petitioner's control with supporting documents; and (vii) certified inflow data and details of planned and forced outages correlating with the claimed shortfall.

14. In the hearing on 8.12.2023, the Commission asked the Petitioner whether it had approached CWC for certification of inflow data, to which the Petitioner responded that it had, but received no reply. The Commission directed the Petitioner to pursue certification from CWC for the period 2019–24. On 12.2.2024, NHPC admitted it had contacted the CEA instead of CWC. Commission reiterated its earlier direction to the petitioner for compliance.

15. During the hearing on 7.7.2025, NHPC informed the Commission that although letters were sent to CWC, no response was received, and CWC had declined to certify inflow data in similar cases. The Commission permitted NHPC to submit these letters by 20.7.2025, and with pleadings and arguments concluded, reserved the order in the matter.

16. The Petitioner vide its affidavit dated 13.10.2023 has submitted the desired information/clarifications and documents including letter dated 04.1.2024 from CWC expressing their inability to certify the inflow data, rainfall data, design energy calculation in MS Excel, methodology to calculate maximum possible generation during a day, daily generation reports for the days for which energy shortfall has been claimed, scheduled energy, actual energy injected into grid, energy accounted for in DSM along with revenue generated from such DSM energy, revised claim for energy charge shortfall after accounting for overload generation (generation beyond design energy calculation / excess generation beyond full capacity), the calculation of energy loss for all the reasons placed under the head 'beyond control', Planned and forced outage data downloaded from NPP portal etc.

17. The Respondents, the Discoms of Rajasthan, UPPCL, PSPCL, and BRPL vide their affidavit dated 7.8.2023, 12.9.2023, 29.1.2024, and 31.10.2023 have filed their replies to the petition. The Petitioner, vide its affidavits dated 10.11.2023, 10.11.2023, 5.2.2024, and 10.11.2023, has submitted its rejoinder to the above replies of the respondents. We have considered the submissions of the respondents and the petitioner. The following is a summary of the main submissions of the respondents:

- i. The Respondents emphasised that hydro power generation does not incur traditional input costs since water is a free resource. As a result, they argue that the Petitioner should not be entitled to recover energy charges for shortfalls based on hydro power generation.

- ii. Rajasthan Discoms and PSPCL asserted that the Petitioner has incorrectly classified excess generation as a shortfall or failed to provide adequate evidence to support its claims, such as certified data on actual water inflows.
 - iii. BRPL and PSPCL pointed out that variations in water inflow are a known and inherent factor in hydro generation and should not be considered an unforeseen event that warrants compensation.
 - iv. PSPCL and BRPL challenged the "Energy Charge Rate" for hydro generation under the Tariff Regulations 2019, arguing that the lack of input costs for water makes the imposition of additional charges on consumers unjustified.
 - v. BRPL highlighted that the Petitioner had excess generation, which could have been sold as unscheduled power. They suggest that the revenue from such sales could offset any claimed shortfall in energy charges.
 - vi. UPPCL and Rajasthan Discoms requested that the Petitioner's claims be subjected to a prudence check to ensure the accuracy and fairness of the compensation being sought for the energy shortfall.
18. The summary of the Rejoinder filed by the Petitioner to the above replies of the respondents:
- i. The Petitioner disputed the argument that hydro power generation has no input costs. The energy charges are meant to recover legitimate expenses (part of AFC), which include return on equity, interest on loans, and operational costs.
 - ii. The Petitioner reaffirmed that the energy charge rate is designed to recover 50% of the Annual Fixed Cost (AFC) based on the station's ability to generate energy, and the shortfall is recoverable under CERC Tariff Regulations.
 - iii. The Petitioner agreed that hydrology variations are a known factor in hydro generation, but points out that these variations are not predictable and can result in shortfalls due to factors beyond the station's control.

- iv. The Petitioner opposed PSPCL and BRPL's plea to remove the Energy Charge Rate for hydro generation, stating it is a valid mechanism to recover fixed costs as per CERC regulations and Section 61(d) of the Electricity Act, and cannot be denied merely because water is free.
- v. The Petitioner has revised its claim after considering the energy & revenue on account of energy accounted under DSM.
- vi. The Petitioner clarified that excess generation stems from higher efficiency, not misclassification, and maintains that no further prudence check is needed since shortfall calculations are transparently based on actual inflow and generation data.

19. Based on the above submissions of the parties and documents on record, we now deal with the claim of the Petitioner.

Analysis and Decision:

20. CERC (Terms and Conditions of Tariff) Regulations, 2019 provide for recovery of shortfall in energy charges for the reasons beyond the control of the generating station during the tariff period 2019-24. As such, the present application, under Regulation 44 (6) of CERC (Terms and Conditions of Tariff) Regulations, 2019, is for the recovery of a 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.”

21. Before analyzing the data as submitted by the Petitioner, we observe that the average daily inflows as submitted by the Petitioner have not been certified by CEA/CWC. In the absence of such certification, the Commission relies on other tools for verifying the claim of the Petitioner, i.e., rainfall data, machine outage data (planned and forced outage data), REAs, and daily generation reports indicating the number of hours for which

generation was affected due to high silt and other reasons of energy shortfall. Accordingly, in the instant petition, the inflow data submitted by the Petitioner, along with other data in respect of energy shortfall, has been considered to arrive at the allowable energy charge corresponding to the energy shortfall beyond the control of the Petitioner. With respect to actual Inflow, it is observed from Rainfall Data that although inflow data has not been vetted by the CEA/CWC, the rainfall data, as per IMD reports, indicates low rainfall in comparison to long-period averages. As such, we have considered the inflow data submitted by the Petitioner for further analysis.

22. Further, it is observed that for the FY 2021-22, the Petitioner has revised its claim after considering the energy & revenue on account of energy accounted under DSM. We have considered and analyzed the revised submissions of the Petitioner, filed vide affidavit dated 13.10.2023.

Shortfall for the year 2021-22:

23. The approved annual design energy (DE) of Chamera-III Power Station is 1108.17 MU, and after accounting for the provision of 1.2% as auxiliary consumption, 1% of LADF and 12% as free power to the home state, the saleable design energy (ex-bus) works out to 952.54 MU.

24. In the FY 2021-22, saleable scheduled energy is 857.22 MU and saleable design energy is 952.54 MU. As such, there is a total energy shortfall of (-) 95.32 MU (952.54-857.22) in ex-bus generation during 2021-22.

25. The month-wise breakup of saleable scheduled energy (ex-bus) vis-à-vis saleable design energy (ex-bus) for FY 2021-22 as reported by the Petitioner is as under:

FY 2021-22

Sl. No.	Month	Design Energy (MU)	Saleable design energy (MU)	Saleable scheduled energy (MU)	Shortfall (-) / Excess (+) (MU)	Actual PAF (%)
1	2	3	4	5	6=5-4	8
1.	April' 2021	80.54	69.23	45.87	-23.36	105.16
2.	May' 2021	155.31	133.50	94.41	-39.09	105.16

3.	June' 2021	154.47	132.78	136.76	3.98	105.16
4.	July' 2021	161.89	139.15	144.37	5.22	101.77
5.	August' 2021	163.27	140.34	133.68	-6.66	97.24
6.	September' 2021	119.78	102.96	108.17	5.21	101.65
7.	October' 2021	78.79	67.72	56.23	-11.49	105.16
8.	November' 2021	52.85	45.43	28.63	-16.80	102.82
9.	December' 2021	38.05	32.71	21.00	-11.71	103.54
10.	January' 2022	30.69	26.38	22.89	-3.49	78.59
11.	February' 2022	24.75	21.27	18.05	-3.22	80.12
12.	March' 2022	47.78	41.07	47.16	6.09	105.16
Total		1108.17	952.54	857.22	-95.32	99.40

26. Further, the recovery of shortfall in energy charge for 2021-22 based on AFC allowed for the FY 2018-19, which is detailed as under:

* Schedule Energy & Free Energy are based on Regional Energy Account issued by NRPC.

	Schedule energy * (Ex-bus) (MU)	Free energy * (MU)	Net energy billed (MU)	Annual Fixed Charges (Rs Cr)	Energy charges to be recovered (Rs Cr)	Energy charges actually recovered ** (Rs Cr)	Under-recovery of energy charges (Rs Cr)
	1	2	3=1-2	4	5=50% of 4	6	7=6-5
2021-22	985.287	128.064	857.223	375.31	187.66	168.87	-18.79

27. The Petitioner filed vide affidavit dated 13.10.2023 has revised claim for energy charge shortfall after accounting for overload generation (generation beyond design energy calculation / excess generation beyond full capacity). The reasons of such shortfall of (-)95.32 MU (857.22 MU - 952.54 MU) as mapped by the Petitioner are as under:

SHORTFALL SUMMARY	
CHAMERA-III (2021-2022)	
(A) Saleable design energy (MU)	952.54
(B) Saleable schedule (MU)	857.22
(C) Shortfall between saleable DE and saleable schedule (MU) (B-A)	-95.32
(D) Saleable ex bus energy (MU)	867.68

(E) Shortfall between saleable DE and saleable Ex bus energy (MU) (D-A)	-84.86
BEYOND CONTROL REASONS	ENERGY (MU)
Energy shortfall due to less Inflow from the design Inflow on some days	-110.00
Energy generated due to excess Inflow from the design Inflow on some days	52.61
Energy loss due to high silt	-5.07
Total energy shortfall due to reasons beyond control (a)	-62.46
Within control reasons	ENERGY (MU)
Energy generated by the depleting reservoir level on some days	8.79
Less generation for increasing the reservoir level on some days	-17.11
Unit outages	-10.07
Other constraints (partial load/ ramping up/ down during peaking/ high Inflow/ TRT Level, etc.)	-4.02
Total energy shortfall due to reasons within control (b)	-22.41
Difference between the saleable schedule and the saleable Ex bus (c)	-10.45*
Summary	
Total energy shortfall due to reasons beyond control (a)	-62.46
Total energy shortfall due to reasons within control (b)	-22.41
Energy accounted under DSM (c)	-10.45*
Total energy shortfall (a)+(b)+ (c)	-95.32

*Energy accounted under DSM (-) sign indicated the Difference between the saleable schedule and the saleable ex-bus.

28. The Petitioner, in reply to ROP for hearing dated 6.9.2023, has submitted the Day-wise details of scheduled energy, actual energy injected into the grid, and energy

accounted for in DSM, along with the revenue earned from DSM (Rs 2.62 Cr) for such energy. The revenue earned from DSM energy @ *Energy Charge Rate of Rs. 1.970/kWh is Rs 2.06 Cr (=10.45*1.970/10)

**Energy Charge Rate (Rs./kWh) =187.66 Cr./952.54 MU = 1.97*

29. Petitioner has further submitted that in the recent orders issued by CERC, the revenue earned from DSM energy (Rs 2.62 Cr) or the revenue that could have been earned from DSM energy @ ECR (Rs 2.06 Cr), whichever is lower, has been adjusted against the total shortfall in energy charges. The total shortfall in energy charges is reduced to Rs 16.73 Cr (=Rs 18.79 Cr – Rs 2.06 Cr). As the revenue from DSM energy has been reduced from the total shortfall in energy charges, the total shortfall in energy has also been reduced by DSM energy. Thus, the total shortfall in energy on an ex-Bus basis works out to 84.87 MU, out of which 62.46 MU is beyond the control of the generating station.

Total shortfall in generation during FY 2021-22 (after adjustment of DSM)	A	84.87 MU
Total under-recovery of energy charges during FY 2021-22 (after adjustment of DSM)	B	Rs 16.73 Cr
Shortfall in generation due to reasons beyond control	C	62.46 MU
Shortfall in energy charges to be recovered for FY 2021-22	D=C*B/A	Rs 12.31 Cr

30. As a first step in our analysis for ascertaining the claim of the Petitioner towards shortfall due to reasons beyond the control of the Petitioner (Reference table at para 24 above), the following formulae have been used to calculate 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 0.87 x 0.988/Design Inflow, where 0.87 represents a multiplying factor to account for the 1% LADF & Free Energy of 12% to home states, and 0.988 represents a multiplying factor to account for the auxiliary consumption of 1.2%. Further, design inflow has been restricted to 95% of the combined design discharge of all units.

31. Further, the above-derived value of maximum possible saleable ex-bus generation for a day is subject to a ceiling of 4.53 MU (231MWx24x0.87x0.988x0.95/1000), where 0.95 is to account for the machine availability, which is also used for the calculation of

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design energy. Summation of 365 such derived values represents the maximum possible saleable ex-bus generation for the year, assuming 95% machine availability.

32. Following the above methodology, the annual maximum possible saleable ex-bus generation for the year 2021-22 works out to 895.15 MU. The Petitioner has also claimed the same. As such, we have considered the petitioner's claim for further calculations.

33. The Petitioner has calculated as 895.15 MU by utilizing 95% of installed capacity against saleable ex-bus design energy of 952.54 MU. As such, the difference between these two figures, i.e. (-)57.39 MU (895.15-952.54), represents the Net Shortfall in energy due to less inflows as compared to design inflows during the year. Petitioner has a claim (-) 57.39 MU due to less inflow from the design inflow on the same days. Thus, the energy shortfall of (-) 57.39 MU due to lower inflows as compared to the design inflow was beyond the control of the Petitioner.

34. With regard to the energy shortfall of (-) 5.07 MU due to High Silt for the period from 12.7.2021 to 13.7.2021, the Petitioner has submitted a daily generation report for the above period. On perusal of the same, it is noted that machines were available during the period, and there was a spillage of water during that period. As such, the Petitioner's claim towards energy shortfall due to High Silt is in order. With regard to the claim of the Petitioner that such shortfall is beyond the control of the Petitioner, the Commission in similar petitions has already held that generation needs to be stopped for High Silt to avoid turbine damage as and when the silt level in the reservoir reaches beyond the permissible limits and such loss is not accounted for in the design energy calculations approved by CEA. Accordingly, an energy shortfall of (-) 5.07 MU is allowed under the shortfall beyond the control of the Petitioner.

35. In view of the above deliberations, the shortfall due to reasons beyond the control of the Petitioner, as per our calculations, is as under:

Shortfall due to reasons beyond the control of the Petitioner	
Energy shortfall due to less inflow from the design inflow (i)	-110 MU
Excess energy due to excess inflow from design inflow (ii)	52.61 MU
Net energy shortfall due to less inflows (iii)= (i)+(ii)	-57.39

Energy Loss Due To High Silt (iv)	-5.07 MU
Total energy shortfall due to reasons beyond control (iii)+(iv)	-62.46 MU

Note: Out of the total shortfall of (-)95.32 MU balance shortfall of (-) 32.86 MUs {(-)95.32-(-)62.46} is for reasons within the control of the Petitioner, including DSM energy of 10.45 MU.

Based on the above, the Petitioner is entitled to compensation for an energy shortfall of (-) 62.46 MU, which has occurred due to reasons beyond the control of the Petitioner, after adjusting the energy accounted under DSM. As such, the energy charge to be recovered from the beneficiaries, for the net shortfall in energy generation of (-) 62.46 MU, works out to be Rs. 12.31 Cr (i.e., $62.46 \times 1.97/10$), considering the ECR of Rs. 1.97/kWh.

Accordingly, in terms of Regulation 44(6) of the 2019 Tariff Regulations, we allow an energy charge shortfall of Rs. 12.31 Cr 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 truing-up order dated 09.6.2023 in Petition No. 642/GT/2020 in respect of the generating station, for the period 2019-24, shall be recovered by the Petitioner directly, from the beneficiaries, through supplementary bills.

Petition No. 166/MP/2023 (Chamera-II Power Station):

Shortfall for the year 2021-22:

36. The Chamera-II Power Station (hereinafter called 'Chamera-II') (3 x 100 MW = 300 MW) located in the state of Himachal Pradesh is under commercial operation w.e.f. 31.03.2004.

37. The approved annual design energy (DE) of Chamera-II Power Station is 1499.89 MU, and after accounting for the provision of 1.2% as auxiliary consumption and 12% as free power to the home state, the saleable design energy (ex- bus) works out to 1304.06 MU.

38. In the FY 2021-22, saleable scheduled energy is 1169.35 MU and saleable design energy is 1304.06 MU. As such, there is a total energy shortfall of (-) 134.71 MU (1169.35 -1304.06) in generation during 2021-22.

39. The month-wise breakup of saleable scheduled energy (ex bus) vis-à-vis saleable design energy (ex bus) for FY 2021-22 as reported by the Petitioner is as under:

FY 2021-22

Sl. No.	Month	Design Energy (MU)	Saleable design energy (MU)	Saleable scheduled energy (MU)	Shortfall (-) / Excess (+) (MU)	Actual PAF (%)
1	2	3	4	5	6=5-4	7
1.	April' 2021	188.65	164.02	72.65	-91.37	101.22
2.	May' 2021	212.04	184.36	138.57	-45.78	101.22
3.	June' 2021	149.31	129.82	182.90	53.08	101.22
4.	July' 2021	212.04	184.36	187.52	3.17	98.6
5.	August' 2021	212.04	184.36	186.69	2.33	102.9
6.	September' 2021	152.23	132.35	147.10	14.74	102.9
7.	October' 2021	69.95	60.82	72.29	11.47	102.9
8.	November' 2021	48.98	42.59	35.78	-6.81	92.86
9.	December' 2021	39.55	34.39	27.17	-7.22	94.93
10.	January' 2022	39.29	34.16	28.90	-5.26	86.33
11.	February' 2022	56.43	49.06	24.52	-24.54	74.44
12.	March' 2022	119.38	103.79	65.27	-38.52	92.77
Total		1499.89	1304.06	1169.35	-134.71	96.16

40. Further, the recovery of shortfall in energy charge for 2021-22 based on AFC allowed for the FY 2018-19, which is detailed as under:

	Schedule energy * (Ex-bus) (MU)	Free energy * (MU)	Net energy billed (MU)	Annual Fixed Charges (Rs Cr)	Energy charges to be recovered (Rs Cr)	Energy charges actually recovered ** (Rs Cr)	Under-recovery of energy charges (Rs Cr)
	1	2	3=1-2	4	5=50% of 4	6	7=6-5
2021-22	1333.91	162.56	1169.35	262.05	131.03	117.52	-13.51

* Schedule Energy & Free Energy are based on the Regional Energy Account issued by NRPC

** Energy charged as per the bill of the respective year based on provisional AFC.

41. The Petitioner vide affidavit dated 13.10.2023 has revised claim for energy charge shortfall after accounting for overload generation (generation beyond design energy calculation / excess generation beyond full capacity) is as under:

SHORTFALL SUMMARY	
CHAMERA -II (2021-2022)	
(A) Saleable design energy (MU)	1304.06
(B) Saleable schedule (MU)	1169.35
(C) Shortfall between saleable DE and saleable schedule (MU) (B-A)	-134.71
(D) Saleable Ex bus energy (MU)	1192.12
(E) Shortfall between saleable DE and saleable Ex bus energy (MU) (D-A)	-111.94
BEYOND CONTROL REASONS	ENERGY (MU)
Energy shortfall due to less Inflow from design Inflow on some days	-228.79
Energy generated due to excess Inflow from design Inflow on some days	119.79
Energy loss due to high silt	-6.43
Total energy shortfall due to reasons beyond control (a)	-115.43
WITHIN CONTROL REASONS	ENERGY (MU)

Energy generated by depleting reservoir level on some days	12.22
Less generation for increasing reservoir level on some days	-5.73
Unit outages	-1.67
Other constraint (partial load/ ramping Up/down during peaking/ high Inflow/TRT Level etc)	-1.33
Total energy shortfall due to reasons within control (b)	+3.49
Difference between saleable schedule and saleable ex bus (c)	-22.77*
Summary	
Total energy shortfall due to reasons beyond control (a)	-115.43
Total energy shortfall due to reasons within control (b)	+3.49
Energy accounted under DSM (c)	-22.77*
Total energy shortfall (a)+(b)+(c)	-134.71

*Energy accounted under DSM (-) sign indicated the Difference between the saleable schedule and the saleable ex bus

42. The Petitioner, in reply to ROP for hearing dated 6.9.2023, has submitted the Day-wise details of scheduled energy, actual energy injected into the grid, and energy accounted for in DSM, along with the revenue earned from DSM (Rs 5.20 Cr) for such energy. The revenue earned from DSM energy @ *Energy Charge Rate of Rs. 1.005 Rs./kWh is Rs 2.28 Cr (=22.77*1.005/10).

**Energy Charge Rate (Rs./kWh) = 131.03 Cr./1304.06 MU = 1.005*

43. Petitioner has further submitted that in the recent orders issued by CERC, the revenue earned from DSM energy (Rs 5.20 Cr) or the revenue that could have been earned from DSM energy @ ECR (Rs 2.28 Cr), whichever is lower, has been adjusted against the total shortfall in energy charges. The total shortfall in energy charges is reduced to Rs 11.23 Cr (=Rs 13.51 Cr – Rs 2.28 Cr). As the revenue from DSM energy has been reduced from the total shortfall in energy charges, the total energy shortfall has also been

reduced by DSM energy. Thus, the total shortfall in energy on an ex-Bus basis works out to 111.94 MU, whereas 115.43 MU is beyond the control of the generating station.

Total shortfall in generation during FY 2021-22 (after adjustment of DSM)	A	111.94 MU
Total under-recovery of energy charges during FY 2021-22 (after adjustment of DSM)	B	Rs 11.23 Cr
Shortfall in generation due to reasons beyond control	C	115.43 MU
Shortfall in energy charges to be recovered for FY 2021-22	$D=C*B/A$	Rs 11.58 Cr

44. As a first step in our analysis for ascertaining the claim of the Petitioner towards shortfall due to reasons beyond the control of the Petitioner (Reference table at para 40 above), the following formulae have been used to calculate 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 0.87 x 0.988/Design Inflow

Where 0.87 represents a multiplying factor to account for the 1% LADF & Free Energy of 12% to home states, and 0.988 represents a multiplying factor to account for the auxiliary consumption of 1.2%. Further, design inflow has been restricted to 95% of the combined design discharge of all units.

45. Further, the above-derived value of maximum possible saleable ex-bus generation for a day is subject to a ceiling of 5.87 MUs ($300\text{MW} \times 24 \times 0.87 \times 0.988 \times 0.95 / 1000$) where 0.95 is to account for the machine availability, which is also used for the calculation of design energy. Summation of 365 such derived values represents the maximum possible saleable ex-bus generation for the year assuming 95% machine availability.

46. Following the above methodology, the annual maximum possible saleable ex-bus generation for the year 2021-22 works out to 1195.06 MU. The Petitioner has also claimed the same. As such, we have considered the petitioner's claim for further calculations.

47. The Petitioner has calculated as 1195.06 MU by utilizing 95% of installed capacity against saleable ex-bus design energy of 1304.06 MU. As such, the difference between

these two figures, i.e., (-)109 MU (1195.06-1304.06), represents the Net Shortfall in energy due to lower inflows compared to the design inflows during the year. Petitioner has a claim (-) 109 MU due to less inflow from the design inflow on some days. As such, it is held that the energy shortfall of (-) 109 MU due to less inflows as compared to the design inflow was beyond the control of the Petitioner.

48. With regard to the energy shortfall of (-) 6.43 due to High Silt for the period from 12.7.2021 to 13.7.2021, the Petitioner has submitted a daily generation report for the above period. On perusal of the same, it is noted that the total shortfall due to High Silt is (-) 6.43 MU, and the Petitioner has also claimed the same. Furthermore, it is also noted that the machine was available during the period, and a water spill occurred during that time. As such, the Petitioner's claim towards energy shortfall due to High Silt is in order. With regard to the claim of the Petitioner that such shortfall is beyond the control of the Petitioner, the Commission in similar petitions has already held that generation needs to be stopped on account of High Silt to avoid turbine damage as and when the silt level in the reservoir reaches beyond the permissible limits and such loss is not accounted for in the design energy calculations approved by CEA. Accordingly, an energy shortfall of (-) 6.43 MU is allowed under the shortfall beyond the control of the Petitioner.

49. In view of the above deliberations, the shortfall due to reasons beyond the control of the Petitioner, as per our calculations, is as under:

Shortfall due to reasons beyond the control of Petitioner	
Energy shortfall due to less inflow from the design inflow (i)	-228.79 MU
Excess energy due to excess inflow from design inflow (ii)	119.79 MU
Net energy shortfall due to less inflows (iii)= (i)+(ii)	-109.00 MU
Energy loss due to high silt (iv)	-6.43 MU
Total energy shortfall due to reasons beyond control (iii)+(iv)	-115.43 MU

Note: Out of the total shortfall of (-)134.71 MUs, the balance shortfall of (-) 19.28 MUs {(-)134.71-(-)115.34} is for reasons within the control of the Petitioner

50. It is to be mentioned that there is a net shortfall of (-)111.94 MU during the FY-2021-22. The Commission vide RoP of the hearing dated 8.12.2023 directed the Petitioner to submit the reasons for claiming a higher shortfall in energy of (-)115.43 MU under the head 'for reasons due to beyond the control' than the total shortfall in energy generation of (-) 111.94 MU. The Petitioner, in reply to the above, has submitted that the shortfall due to reason beyond the control of generating stations is 115.43 MU. Therefore, Petitioner has claimed the shortfall for energy charges for energy corresponding to 115.43 MU. In this regard, it is to be mentioned that the Petitioner, due to reasons within its control, had managed to generate excess energy on some days, which has reduced the net shortfall to (-)111.94 MU during the FY-2021-22.

51. Based on the above, the Petitioner is required to be compensated for a net energy shortfall of (-) 111.94 MU, which has occurred due to reasons beyond the control of the Petitioner, after adjusting the energy accounted under DSM. As such, the energy charge to be recovered from the beneficiaries, for the net shortfall in energy generation of (-) 111.94 MU, works out to be Rs. 11.25 Cr (i.e., $111.94 \times 1.005/10$), considering the ECR of Rs. 1.005/kWh.

52. Accordingly, in terms of Regulation 44(6) of the 2019 Tariff Regulations, we allow the energy charge shortfall of Rs. 11.25 Cr for the 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 truing-up order dated 09.6.2023 in Petition No. 642/GT/2020 in respect of the generating station, for the period 2019-24, shall be recovered by the Petitioner directly, from the beneficiaries, through supplementary bills.

53. The summary amount claimed and allowed in the petitions is under:

Petition No.	164/MP/2023 (Chamera-III)	166/MP/2023 (Chamera-II)
Energy Charges	2021-22	2021-22
Claimed in the main petition (Rs. in Cr)	17.43	13.51
Claim revised in reply to ROP dated <u>13.10.2023</u> (Rs. in Cr)	12.31	11.58
Allowed in this order (Rs. in Cr)	12.31	11.25

54. Petition No. 164/MP/2023 and Petition No.166/MP/2023 are disposed of in terms of the above.

Sd/-
(Ravinder Singh Dhillon)
Member

Sd/-
(Harish Dudani)
Member

Sd/-
(Ramesh Babu V)
Member

Sd/-
(Jishnu Barua)
Chairperson