

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
New Delhi**

**Petition No.98/MP/2022**

**Coram:**

**Shri I.S. Jha, Member  
Shri Arun Goyal, Member  
Shri P.K. Singh, Member  
Date of Order: 26 .09.2023**

**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 2019-20 & FY 2020-21 in respect of **Chamera-II 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**

1. The Chairman,  
Punjab State Power Corporation Ltd.,  
The Mall, Near Kali Badi Mandir,  
Patiala-147001 (Punjab).
2. The Chairman,  
Haryana Power Purchase Centre (HPPC),  
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. 1<sup>st</sup> 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)  
Erst While 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

**Parties Present:**

Shri Sushant Sarkar, Advocate, NHPC  
Shri SK Meena, NHPC  
Shri Piyush Kumar, NHPC



Shri Amal Nath, Advocate, PSPCL  
Ms. Vartika Khanna, Advocate, PSPCL

## ORDER

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

a) *Hon'ble Commission may kindly allow recovery of energy charges amounting to `1.98 Crs against the shortfall in generation of 19.68 MU in FY 2019-20 as per Regulation 44(6) of CERC (Terms & Conditions of Tariff) Regulations, 2019 as explained in para-VIII, X & XI.*

b) *Hon'ble Commission may kindly allow recovery of energy charges amounting to `10.18 Crs against the shortfall in generation of 101.35 MU in FY 2020-21 as per regulation 44(6) of CERC Tariff Regulations, 2019 as explained in para-IX, X & XII.*

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

d) *To allow revision of energy bills for the period FY 2019-20 & FY 2020-21 which were already raised to the beneficiary(ies) for recovery of energy charges on account of shortfall in generation to be allowed by the Hon'ble Commission in this petition.*

e) *To allow issuance of supplementary bill for recovery of balance shortfall in energy charges as mentioned in prayer 1 to 3 directly from the beneficiaries after approval of tariff for FY 2019-20 & FY 2020-21 in petition no. 291/GT/2020 dated 30.10.2019 by the Hon'ble Commission.*

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

### **Submission of the Petitioner:**

2. 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.



3. The Chamera-II Power Station (hereinafter called 'Chamera-II' / 'power station') (3 x 100 MW = 300 MW) located in the state of Himachal Pradesh is under commercial operation w.e.f. 31.03.2004.
4. The power generated from this Power Station is being supplied to 13 Bulk Power Customers / Beneficiaries/Successor utilities in Northern Region.
5. The approved annual design energy (DE) of Chamera-II Power Station is 1499.89 MUs 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 MUs.
6. 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 generating station during the tariff period 2019-24.
7. Hence, as per Regulation 44(7) of CERC Tariff Regulations, 2019, the shortfall in energy charge for FYs 2019-20 & 2020-21 needs to be recovered in six (6) equal monthly installments, after issue of order by CERC in this matter.
8. In the FY 2019-20, saleable scheduled energy is 1071.51 MUs and saleable design energy is 1304.06 MUs. As such, there is a total energy shortfall of (-) 232.56 MUs (1071.51-1304.06) in generation during 2019-20.
9. In the FY 2020-21, saleable scheduled energy is 561.86 MUs and saleable design energy is 1304.06 MUs. As such, there is a total energy shortfall of (-)722.20 MUs (561.86-1304.06 MUs) in generation during 2020-21.
10. The petitioner has filed tariff petition No.291/GT/2020 dated 30.10.2019 for truing up of AFC in respect of Chamera-II power station for the period 2014-19 and for determination of tariff for the period 2019-24 based on projected capital expenditure. In accordance with Regulation 10(4) of CERC (Terms & Conditions of Tariff) Regulations, 2019, provisional billing from 01.04.2019 onwards was allowed



on the basis of applicable AFC of Rs.262.05 crore (which includes capacity charges and energy charges of Rs.131.03 crore each i.e.  $\frac{1}{2}$  of AFC) as on 31.03.2019 as approved by this Commission. Accordingly, presently energy billing is being done as per the AFC of FY 2018-19 approved by Hon'ble CERC vide order dated 17.06.2016 in petition No.233/GT/2014. In view of above, the claim in the present petition, for recovery of energy charges based on provisional tariff allowed by the Commission for FY 2018-19 vide order dated 17.06.2016 in petition no. 233/GT/2014, which is subject to change on outcome of tariff in petition No.291/GT/2020 dated 30.10.2019.

11. Accordingly, the Petitioner has recovered energy charges amounting to ₹107.69 Crs & ₹58.48 Crs corresponding to saleable scheduled energy of 1071.51MUs & 581.86 MUs against provisional energy charges of ₹131.03 Crs ( $262.05/2$ ) each for FY 2019-20 & 2020-21, respectively. Hence, there is under-recovery of energy charges of ₹23.34 Crs & ₹72.55 Crs for FY 2019-20 & 2020-21 respectively. Out of the reported under-recovery, the Petitioner has claimed only ₹1.98 Crs and ₹ 10.18 Crs for FY 2019-20 & 2020-21, respectively based on quantified shortfall which was for the reasons beyond the control of the Petitioner.

12. Once, the recovery for energy charges is allowed by the Commission, the shortfall in energy charges will be recovered in six (6) equal monthly installments 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 charges.

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

14. In past, CEA/CWC was requested to certify the actual inflow data in case of some of our Power Stations. CWC vide letter dated 23.01.2017 has expressed their inability to certify the inflow series on year to year basis.



## Reply of Punjab State Power Corporation Limited (PSPCL):

15. PSPCL vide its reply dated 11.10.2022 has mainly submitted as under:

- a) The entire capital cost invested by the Petitioner is serviced by payment of tariff by the beneficiaries including PSPCL. Even the additional burden of less generation will now have to be borne by the beneficiaries.
- b) The vague reasons given by the Petitioner for shortfall in generation are, *inter alia*, that it is due to less inflow from the design inflow. The Petitioner has produced no documentary evidence for any of the aspects raised by it.
- c) With respect to certification of inflow data, the Petitioner has referred to a 2017 letter wherein the CWC has expressed its inability to certify the inflow series. From perusal of the said letter it comes out that the same has been issued with respect to the inflow of Rangit Power Station for FY 2015-16, TLD – III for FY 2014-15 and 2015-16) and Chamera–III for FY 2015-16. It is shocking to note that a reliance has been placed on a letter which has been issued 5 years ago and does not even relate to the Generating Station in issue. The claim of the Petitioner for inflow being less than design inflow ought to be rejected on this ground alone.
- d) Petitioner may be directed to file i) Actual inflow data to be certified by CWC; ii) Rainfall data for financial year in question of IMD for the district in which plant is located and adjoining districts to correlate the inflows; iii) Planned/Forced Outages certified by CEA/NRLDC and its correlation with generation data vis-à-vis available average inflows during the period of outages.
- e) The Petitioner cannot possibly ask for recovery of energy charges on account of loss of generation every time the actual inflow is less than the designed inflow. As a hydro power generator, the Petitioner ought to be aware that the quantum of inflow is not constant. This is not an unforeseen event at all or an event beyond the control of the Petitioner.



- f) It is submitted that reasons which are commonly known to be associated with hydro power generation cannot be termed to be reasons beyond the control of the Petitioner.
- g) The reasons given by the Petitioner towards shortfall alleging that they were beyond its control are with discrepancies and contradictions. By way of example at Page 96 of the petition, it is surprising to note that on 07/05/2019, when there was less inflow from design inflow, the Petitioner has taken steps to rectify the less inflow by generating excess energy by depleting reservoir level. It cannot be the case of the Petitioner that the shortfall was due to reasons beyond its control while at the same time showing its ability to mitigate the reason of less inflow. It is submitted that the meaning of the words "*beyond the control of the generating station*" have to be taken to imply any reason which could not have been mitigated by the generating station. Therefore, the reason of less inflow can in fact be mitigated and is not beyond the control of the Petitioner.
- h) Regulation 44(7) of the Tariff Regulations 2019 specifically states that the treatment under Regulation 44(7) shall be applied only when the total energy generated is less than the design energy due to reasons beyond the control of the hydro generating station. The reasons furnished by the Petitioner cannot be said to be 'beyond the control' of the Petitioner. In so far as the aspect of less inflow is concerned, it is submitted that this is a common event for a hydro power generator and therefore not something that the Petitioner could not have foreseen at the time of designing the project.
- i) Revenue earned from DSM may be adjusted towards the energy shortfall charges as has been done by the Commission in other Petitions e.g. Petition Nos 369/MP/2018 and 329/MP/2018.

**Rejoinder of the Petitioner to the reply of PSPCL:**



16. In its rejoinder dated 18.10.2022 to the reply of PSPCL, the Petitioner has mainly submitted as under:

a) The cost of hydropower plants in the form of annual fixed cost (AFC) is recovered from the beneficiary DISCOMs in two parts i.e. Capacity Charges (i.e. 50% of AFC) and Energy Charges (i.e. 50% of AFC). The present petition is being filed by the petitioner to recover the shortfall in energy charges which is the part of AFC, which the petitioner is unable to recover due to reason beyond the control of the petitioner. Thus, the submission of the respondent that this is an additional burden beyond AFC is not correct and hence denied.

b) The shortfall in energy for FY 2019-20 has been claimed on account of slightly less inflow than the design inflow, silt flushing, high silt, high trash and shutdown for rim treatment work and for FY 2020-21, shortfall in energy has been claimed on account of less inflow than design inflow and silt flushing. These factors are beyond the control of the generating station and the petitioner has submitted detailed daily analysis report and daily generation reports to substantiate its claim. Further, petitioner has also submitted the rainfall data of the upstream of dam in its compliance of ROP. Therefore, the statement of the Respondent that vague reasons have been provided for claim of shortfall is superfluous and hence liable to be rejected.

c) The additional information as listed by PSPCL in its reply has been submitted by the petitioner on 19.09.2022 in compliance to ROP dated 29.08.2022 and copy of same has also been served to all the respondents including the answering respondent. Therefore, contention of the respondent that relevant data has not been submitted is misleading and liable to be rejected.

d) The petitioner has submitted the petition in line with Regulation 44(6) of CERC Tariff Regulations, 2019, which allows the Petitioner to recover under recovered energy charges for shortfall in generation due to reasons beyond the control of generating station. The present shortfall petition is related to loss of generation with respect to design energy of the power station. The design energy is determined on 10 daily basis, based on discharge data in 90%





dependable year with 95% machine availability. Whenever, the actual inflow is less than the design inflow, shortfall is bound to happen. Further, it is to submit that while calculating design energy no aspect of loss of generation due to silt flushing is taken into prospect, a fact recognized by the Commission in its various orders.

e) Regarding submission of PSPCL quoted above at 15(g) with respect to the situation where reservoir level is adjusted for extra generation, it is submitted that the petitioner has to provide schedule for energy generation on day-ahead basis. The estimated schedule generation is given based on the estimated inflow, which is based on the actual inflow of last few days. If the actual inflow on the day of generation is less than the estimated inflow, petitioner has to adjust the reservoir level to try to meet the schedule to avoid penalty under CERC DSM Regulations, 2014. However, the ability to regulate the reservoir level depends on various factors and the play to vary the head of reservoir especially during monsoon season is very less as the power stations are operated with reservoir level at MDDL to accommodate for the flood. Therefore, the contention of the respondent is illogical and is made by being completely unaware of operation of hydropower stations and hence denied.

f) Regarding submission of PSPCL quoted above at 15(h), it is submitted that the reasons for which shortfall in energy has been claimed are beyond the control of generating station and though these reasons cannot be foreseen at the time of designing of the project, these reasons cannot be controlled by the petitioner and cannot be designed for. Less generation due to less inflow is a reason of shortfall which is beyond the control of generating station and has been approved by the Commission vide order dated 04.02.2021 in petition No.348/MP/2018 observing as under:

*“33. Correlating the above tabulated rainfall data as per IMD reports, indicates low rainfall in comparison to long period averages. Accordingly, the energy short fall of (-)65.24 MU between the maximum possible generation (1434.65 MU) and design energy (1499.89 MU) represents the*



*shortfall due to less inflows and we hold that the same was beyond the control of the Petitioner.”*

Therefore, contentions of the respondent are misconceived and need no consideration.

**Reply of Rajasthan Discoms (Respondent-9,10 &11):**

17. Rajasthan Discoms through their combined reply dated 17.6.2022 have mainly submitted as under:

- a) the shortfall data furnished by the Petitioner does not have data regarding rainfall in the area provided by the Indian Meteorological Department. In absence of this, it is difficult to ascertain “less inflow from Design inflow” and “Silt Flushing” events. Further the Minimum Reservoir Level as well as Minimum Drawn Down Levels have also not been included in the data provided.
- b) Petitioner has not given any justification for shortfall occurring due to “other constraints”. It is requested that the Hon’ble Commission may direct the petitioner to provide due justification for the same.
- c) The Petitioner has failed to explain whether the shortfall was caused due to forced or planned shutdown of the plant. The Hon’ble Commission may direct the petitioner to provide comprehensive data pertaining to details of shutdowns of the plant.
- d) The Hon’ble Commission is requested to direct the petitioner to submit duly certified inflow data pertaining to the current petition, failing which the claim of the petitioner should be disallowed.
- e) The Hon’ble Commission is requested to direct the petitioner for submission of Detailed Project Report in order to assess the relief claimed under silt flushing and the arrangements done by Petitioner to deal with the aspect of silt flushing.



f) Generation beyond DE is possible only when the excess inflow occurs. Hence, Generation beyond the energy design calculation must be adjusted against the “Shortfall due to reasons beyond control”.

g) Rim Treatment work is totally a planned work and therefore cannot be considered beyond the control of the petitioner. The Commission may direct the Petitioner to provide adequate justification as to why Rim Treatment work may be considered under the shortfall due to “reasons beyond control of the petitioner”. The Commission may also direct the Petitioner to justify the reason for conducting Rim Treatment Work for such a prolonged period of 16 days spread over a period of 2 months.

#### **Rejoinder of the Petitioner to the reply of Reajsthan Discoms:**

18. In its rejoinder dated 19.9.2022 to the reply of Rajsthan Discoms, the Petitioner has mainly submitted as under:

a) Regarding submission of the Respondent quoted at 17(a) above, it is submitted that the Petitioner has no control over the actual inflow of water at the Chamera-II dam site or the quantity of silt flow. The Petitioner has no reasons / benefit to furnish undervalued / understated data in respect of the same. Since shortfall in generation is not attributable to any inefficiency of the Petitioner, the actual daily inflow data and the silt flushing data furnished with the petition may be considered. Ravi river originates from district Kangra (H.P.) and enters in district Chamba (H.P.) where the power station is situated. Therefore, as requested by the respondent, the rainfall data of district Chamba, where the power station is situated & adjoining district Kangra is attached herewith. Further, all technical information related to power station as per Form-3 of the CERC Tariff Regulations is also attached.

b) Regarding submission of the Respondent quoted at 17(b) above, the Petitioner has submitted that the reasons of shortfall in energy generation beyond the control of generating station and within the control of generating



station in para-VIII & IX of the petition. Also, petitioner has submitted detailed daily analysis of energy shortfall (refer page No.93 to 124 and 125 to 156 of the petition) along with documents in support of silt flushing, high trash, high silt & rim treatment (refer page No. 157 to 203 of the petition). Petitioner has not claimed shortfall in energy generation due to “other constraints”. Therefore, the contention of the respondent in this para of reply ‘the petitioner has not given any justification for shortfall occurring due to “other constraints”’ is not correct and needs no consideration.

c) Regarding submission of the Respondent quoted at 17(c) above, it is to submit that Petitioner itself has claimed shortfall in energy generation due to unit outages under ‘shortfall due to reasons within the control of petitioner’. As such it has no impact on amount of shortfall in energy charges claimed by the petitioner.

d) Regarding submission of the Respondent quoted at 17(d) above, it is to submit that CWC vide its letter dated 23.01.2017 has categorically stated 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.”*

From the content of above letter, it is clear that CWC verifies the data for longer periods only. The CWC in all other cases has also refused to certify the yearly discharge data of respective power station.

e) Regarding submission of the Respondent quoted at 17(e) above, the issue of energy loss due to silt flushing & high silt is beyond the control of generating station has already been settled by Hon’ble Commission vide its order dated 10.10.2019 in petition No.142/MP/2018. The relevant para of order dated 10.10.2019 is reproduced as under:



“36.....

*a) In our view stoppage and the consequent loss of energy to prevent the damage due to high silt level is beyond the control of the generator. Further, considering the fact that the calculation of Design Energy of the plant based on the hydrological series does not take into account the energy lost due to stoppage of plant due to high silt levels, we are of the view that the generator needs to be compensated for that. Possible generation assessed at generator terminal after accounting for the reasons beyond the control of the petitioner:”*

Further, petitioner has submitted detailed daily analysis of energy shortfall along with documents in support of silt flushing & high silt. In view of above, the contention of the respondent in this para of reply needs no consideration.

f) Regarding submission of the Respondent quoted at 17(f) above, it is to submit that any generation beyond 95% has been achieved by power station due to proper upkeep of machines and maintenance by NHPC and has therefore been considered within control of Power Station.

g) Regarding submission of the Respondent quoted at 17(g) above, it is submitted that the road connectivity from Chamba to Bharmour was cut-off during the unprecedented rainfall in September’ 2018. The maximum damage to the road was observed at a section along reservoir of Chamera-II Dam. Accordingly, Nodal officer (DM-cum Additional District Magistrate, Chamba) vide letter No. DDMA/CBA/DDMA/2016-06-133 dated 29.09.2018 directed to take up the restoration work of the road stretch. It was also directed to take up the work on reservoir rim by lowering the water level in reservoir through unrestricted free flow of water till safe working level is achieved. Since the damage was due to unprecedented rainfall, the loss on account of Rim treatment work has been considered as reason beyond the control of Power Station.

**Reply of UPPCL:**



19. UPPCL vide its reply dated 10.6.2022 has mainly submitted as under:

a) Total generation loss (-232.56 MU) in the year 2019-20 is less than total generation loss (-722.20 MU) in the year 2020-21, yet the NAPAF (54.90%) for the year 2019-20 is less than NAPAF (59.11%) in the year 2020-21. There appears some mistake in calculation that may impact even the level of generation loss in the years 2019-20 and 2020-21. The Petitioner must explain and confirm generation loss and NAPAF for the years 2019-20 and 2020-21.

b) The Petitioner is entitled to recover Rs. 12.15 Cr. @ of Rs.1.104/kWh against its claim of Rs. 12.16 Cr. in accordance with provisions of the CERC Tariff Regulations, 2019 subject to confirmation and clarification issued by the Petitioner in respect to calculation of shortfall of energy and NAPAF for year 2019- 20 and 2020-21 as submitted by the answering Respondent in Para- 6 of this reply.

c) Under the provision of Regulation 44 (7), CEA has a legal duty to get the data certified from CWC. CWC cannot refuse or express inability to certify data on year-to-year basis, which may be required for eventual revision of design energy of a generating station. Commission may like to consider to issue specific directions to CWC to verify hydrology of each generating station on year-to-year basis in a time bound manner so that accurate data could be maintained at CWC as well as with the generating company. In case of revision of design energy of a generating station, CWC as well as CEA may be made necessary parties.

d) In reply to prayer of the Petitioner, this is to submit that the Petitioner is entitled for recoupment of Rs. 1.975 Cr in 2019-20 and Rs. 10.175 Cr. in 2020-21 for shortfall of energy.

**Rejoinder of the Petitioner to the reply of UPPCL:**

20. In its rejoinder dated 19.9.2022 to the reply of UPPCL, the Petitioner has mainly submitted as under:



a) Regarding submission of the Respondent quoted at 19(a) above, it is confirmed that there is no mistake in data of PAF & energy generation of 2019-20 & 2020-21. The same can be verified from the REA of respective month. All the monthly REA for 2019-20 & 2020-21 are attached. The generation loss is due to unit outages from August 2019 to October 2020.

b) Regarding submission of the Respondent quoted at 19(b) above, it is submitted that the energy charge rate (ECR) of 2019-20 worked out by the respondent as Rs.1.004/kWh in this para of reply is not correct. The ECR should be Rs.1.005/kWh based on annual fixed charges of Rs.262.05 crore. The same can be verified from bill of 2019-20, which is attached.

c) Regarding submission of UPPCL at 19 (c) above, it is submitted that CEA gets the necessary assistance from CWC for hydrology related data for all new projects. As per provision of CERC Tariff Regulations 2019, revision of design energy for existing generating stations is required from CEA in case of shortfall due to hydrology factor for 4 consecutive years. In present case, there is no shortfall in energy generation due to hydrology factor for 4 consecutive years and hence revision of design energy is not required. Therefore, the contention of the respondent in this para of reply needs no consideration.

### **ROP Compliance:**

21. Commission vide ROP dated 25.08.2022 directed the Petitioner to file certain additional information. The Petitioner vide its affidavit dated 19.9.2022 submitted the desired information/clarifications and documents including letter 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, supporting letter for rim treatment work during 2019-20, day wise details of scheduled energy, actual energy injected into grid, energy accounted for in DSM along with revenue generated from such DSM energy etc.



## **Analysis and Decision:**

22. CERC (Terms and Conditions of Tariff) Regulations, 2019 provide for recovery of shortfall in energy charges for the reasons beyond the control of 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 recovery of short fall in energy charges due to 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.”*

23. 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 this regard, it is to bring out that in absence of such certification, the Commission relies on other tools of verifying the claim of the Petitioner i.e. rainfall data, machine outage data (planned and forced outage data), REAs, and daily generation reports indicating number of hours for which generation was affected due to transmission constraints, silt flushing, high silt and other reasons of energy shortfall. Accordingly, in the instant petition also the inflow data as 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 energy shortfall beyond the control of the Petitioner.

24. Further, it is observed that for the FY 2019-20, the Petitioner has accounted “Energy Generated beyond design energy” under “Shortfall due to reasons within the control of petitioner”. However, in all its Petitions for recovery of energy charge shortfall for the period 2009-14 and 2014-19, the Petitioner itself used to place this energy generated by using machine capacity over 95% under the reasons beyond the control of petitioner. The Respondents have also pointed out that such excess generation should be placed under reasons beyond the control of the Petitioner. In our considered opinion, such quantum of generation is only possible if actual inflows





are more than the design inflow required for generation corresponding to 95% of the installed capacity and actual inflows being a factor beyond the control of the Petitioner, the placement of such excess generation is appropriate under reasons beyond the control of the Petitioner.

**Shortfall for the year 2019-20:**

25. 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.

26. In the FY 2019-20, saleable scheduled energy is 1071.51 MU and saleable design energy is 1304.06 MU. As such, there is a total energy shortfall of (-) 232.56 MU (1071.51-1304.06) in generation during 2019-20.

27. The month wise breakup of saleable scheduled energy (ex-bus) vis- a-vis saleable design energy (ex-bus) for FY 2019-20 as reported by the Petitioner is as under:

Sl. No.	Month	Design Energy (MU)	Saleable design energy (ex bus) (MU)	Saleable scheduled energy (ex bus) (MU)	Shortfall (-) / Excess (+) (MU)	Actual PAF (%)
1	2	3	4	5	6=5-4	8
1.	April' 2019	188.65	164.02	158.90	-5.12	100.84
2.	May' 2019	212.04	184.36	175.06	-9.29	102.15
3.	June' 2019	149.31	129.82	182.54	52.73	100.49
4.	July' 2019	212.04	184.36	189.82	5.46	100.26
5.	August' 2019	212.04	184.36	85.96	-98.39	43.73
6.	September' 2019	152.23	132.35	15.27	-117.09	8.25
7.	October' 2019	69.95	60.82	58.01	-2.80	33.74
8.	November' 2019	48.98	42.59	44.78	2.19	33.74



9.	December' 2019	39.55	34.39	39.09	4.71	33.74
10.	January' 2020	39.29	34.16	35.40	1.24	33.74
11.	February' 2020	56.43	49.06	32.35	-16.72	33.74
12.	March' 2020	119.38	103.79	54.32	-49.48	33.74
<b>Total</b>		<b>1499.89</b>	<b>1304.06</b>	<b>1071.51</b>	<b>-232.56</b>	<b>54.90</b>

28. The reasons of such shortfall of (-) 232.56 MU (1071.51-1304.06) as mapped by the Petitioner are as under:

<b>A. Shortfall due to reasons beyond the control of petitioner</b>	
Energy shortfall due to less inflow from design inflow	-68.71 MU
Energy generated due to excess inflow from design inflow	67.29 MU
Energy loss due to silt flushing	-9.09 MU
Energy loss due to high silt	-5.82 MU
Energy loss due to high trash	-0.16 MU
Energy loss due to rim treatment work	-3.19 MU
<b>Total (A)</b>	<b>-19.68 MU</b>
<b>B. Shortfall due to reasons within the control of petitioner</b>	
In order to meet grid requirement, the petitioner has to deplete the reservoir level with marginal increase in generation for some days. Further, for some days generation was decreased for increasing the reservoir level. In this process, the figure of gain/loss of energy is as under:	
Energy generated by depleting reservoir level on some days	7.65 MU
Less generation for increasing reservoir level on some days	-5.58 MU
Unit Outages	-228.04 MU
Other constraint (Partial load / ramping up/down during peaking / high inflow / TRT level etc.)	-1.89 MU
Generation beyond design energy calculation	28.82 MU
Difference between saleable (ex-bus) and saleable schedule	-13.84 MU
<b>Total (B)</b>	<b>-212.88 MU</b>
<b>Grand Total (A+B)</b>	<b>- 232.56MU</b>

\*(-) 13.84 MUs represents the DSM energy



29. Further, the energy charge shortfall for the year 2019-20 based on saleable schedule energy billed is as under:

FY	Schedule energy (Ex-bus) (MU)	Free energy (MU)	Net energy billed (MU)	Annual Fixed Charges (Rs Crs.)	Energy charges to be recovered (Rs Crs.)	Energy charges actually recovered (Rs Crs.)	Under-recovery of energy charges (Rs Crs.)
	1	2	3=1-2	4	5=50% of 4	6	7=6-5
2019-20	1219.51	148.00	1071.51	262.05	131.03	107.69	-23.34

30. Out of this energy charge shortfall of Rs. 23.34 crore, the shortfall claimed by the Petitioner is Rs1.98 crore as under:

Total shortfall in generation during FY 2019-20	A	(-)232.56 MU
Total under-recovery of energy charges during FY 2019-20	B	₹23.34 Crs
Shortfall in generation due to reasons beyond control of petitioner	C	(-) 19.68 MU
Shortfall in energy charges to be recovered	D=C*B/A	<b>₹1.98 Crs</b>

31. As observed at para 24 above, we are considering the excess energy of (+)28.82 MU generated beyond design energy calculation by utilization of capacity beyond 95% and actual inflows, under the reasons beyond the control of the Petitioner, accordingly, the table under para 27 is modified as under (without getting into other reasons of shortfall) :

<b>A. Shortfall due to reasons beyond the control of petitioner</b>	
Energy shortfall due to less inflow from design inflow	-68.71 MU
Energy generated due to excess inflow from design inflow	67.29 MU
Energy loss due to silt flushing	-9.09 MU
Energy loss due to high silt	-5.82 MU
Energy loss due to high trash	-0.16 MU
Energy loss due to rim treatment work	-3.19 MU
Generation beyond design energy calculation	(+)28.82 MU
<b>Total (A)</b>	<b>(+) 9.14 MU</b>
<b>B. Shortfall due to reasons within the control of petitioner</b>	
In order to meet grid requirement, the petitioner has to deplete	



the reservoir level with marginal increase in generation for some days. Further, for some days generation was decreased for increasing the reservoir level. In this process, the figure of gain/loss of energy is as under:	
Excess Energy generated by depleting reservoir level on some days	7.65 MU
Less generation for increasing reservoir level on some days	-5.58 MU
Unit Outages	-228.04 MU
Other constraint (Partial load / ramping up/down during peaking / high inflow / TRT level etc.)	-1.89 MU
Difference between saleable (ex-bus) and saleable schedule	-13.84 MU
<b>Total (B)</b>	<b>-241.70 MU</b>
<b>Grand Total (A+B)</b>	<b>(-) 232.56MU</b>

32. From the above table, there is no energy shortfall for reasons which are beyond the control of the petitioner. Accordingly, the claim of the Petitioner for energy charge shortfall of Rs.1.98 crore is not allowed.

**Shortfall for the year 2020-21:**

33. 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 home state, the saleable design energy (ex- bus) works out to 1304.06 MU.

34. In the FY 2020-21, saleable scheduled energy is 561.86 MU and saleable design energy is 1304.06 MU. As such, there is a total energy shortfall of (-)722.20 MU (561.86-1304.06 MU) in generation during 2020-21.

35. The month wise breakup of saleable scheduled energy (ex bus) vis- a-vis saleable design energy (ex-bus) for FY 2020-21 as reported by the Petitioner is as under:



Sl. No.	Month	Design Energy (MU)	Saleable design energy (ex bus) (MU)	Saleable scheduled energy (ex bus) (MU)	Shortfall (-) / Excess (+) (MU)	Actual PAF (%)
1	2	3	4	5	6=5-4	8
1.	April' 2020	188.65	164.02	61.75	-102.27	33.74
2.	May' 2020	212.04	184.36	64.16	-120.20	33.74
3.	June' 2020	149.31	129.82	62.13	-67.69	33.74
4.	July' 2020	212.04	184.36	62.55	-121.80	33.74
5.	August' 2020	212.04	184.36	62.69	-121.66	33.74
6.	September' 2020	152.23	132.35	60.55	-71.80	33.74
7.	October' 2020	69.95	60.82	51.25	-9.57	47.16
8.	November' 2020	48.98	42.59	37.80	-4.79	91.66
9.	December' 2020	39.55	34.39	31.44	-2.95	101.21
10.	January' 2021	39.29	34.16	28.88	-5.28	98.68
11.	February' 2021	56.43	49.06	25.67	-23.39	67.48
12.	March' 2021	119.38	103.79	32.99	-70.81	100.13
<b>Total</b>		<b>1499.89</b>	<b>1304.06</b>	<b>581.86</b>	<b>-722.20</b>	<b>59.11</b>

36. The reasons of such shortfall of (-) 722.20 MU (581.86-1304.06) as mapped by the Petitioner are as under:

<b>A. Shortfall due to reasons beyond the control of petitioner</b>	
Energy shortfall due to less inflow from design inflow (i)	-176.08 MU
Energy generated due to excess inflow from design inflow (ii)	(+)76.28 MU
Net of above two rows representing shortfall due to less inflows (iii)= (i)+(ii)	<b>-99.80</b>
Energy loss due to silt flushing (iv)	-1.55 MU
<b>Total (A) = (iii)+(iv)</b>	<b>-101.35 MU</b>
<b>B. Shortfall due to reasons within the control of petitioner</b>	



In order to meet grid requirement, the petitioner has to deplete the reservoir level with marginal increase in generation for some days. Further, for some days generation was decreased for increasing the reservoir level. In this process, the figure of gain/loss of energy is as under:	
Energy generated by depleting reservoir level on some days	5.59 MU
Less generation for increasing reservoir level on some days	-3.36 MU
Unit Outages	-601.70 MU
Other constraints (Partial load / ramping up/down during peaking / high inflow / TRT level etc.)	-3.13 MU
Difference between saleable (ex-bus) and saleable schedule	-18.26* MU
<b>Total (B)</b>	<b>-620.86 MU</b>
<b>Grand Total (A+B)</b>	<b>-722.20 MU</b>

\*(-) 18.26 MU represents the DSM energy

37. Further, the energy charge shortfall for the year 2020-21 based on saleable schedule energy billed is as under:

FY	Schedule energy * (Ex-bus) (MU)	Free energy * (MU)	Net energy billed (MU)	Annual Fixed Charges (Rs Crs.)	Energy charges to be recovered (Rs Crs.)	Energy charges actually recovered ** (Rs Crs.)	Under-recovery of energy charges (Rs Crs.)
	1	2	3=1-2	4	5=50% of 4	6	7=6-5
2020-21	663.70	81.83	581.86	262.05	131.03	58.48	-72.55

38. Out of this energy charge shortfall of Rs.72.55 crore, the shortfall claimed by the Petitioner is Rs10.18 crore as under:

Total shortfall in generation during FY 2020-21	A	(-)722.20 MU
Total under-recovery of energy charges during FY 2020-21	B	₹72.55 Crs
Shortfall in generation due to reasons beyond control	C	(-) 101.35 MU
Shortfall in energy charges to be recovered during FY 2020-21	D=C*B/A	<b>₹10.18 Crs</b>



39. It is noted that actual saleable ex-bus generation is 600.12 MU out of which only 581.86 MU being saleable scheduled generation has been billed @ ECR i.e. Rs.1.005/kWh, thus recovering energy charge of Rs.58.48 crore. The gap of 18.26 MU (600.12-581.86) is DSM energy. As such, energy shortfall between actual saleable ex-bus generation of 600.12 MU and saleable design energy of 1304.06 MU is (-) 703.94 MU (600.12-1304.06). As per table 35 submitted by the Petitioner, out of this shortfall of (-)703.94 MU, the shortfall beyond the control of the Petitioner is (-) 101.35 MU and shortfall within control of the Petitioner is (-)602.59 MU (101.35-703.94)

40. The Petitioner has earned revenue of Rs. 3.62 crore under DSM w.r.t. energy of 18.26 MU as against corresponding energy charges of Rs.1.84 crore (18.26 MU@Rs.1.005/kWh). In this regard, Commission has held in similar cases that if revenue earned from DSM pool is more than corresponding energy charges, then adjustment to the tune of corresponding energy charge shall only be considered for arriving at the allowable energy charge shortfall and the balance amount can be retained by the generator for providing primary response to the grid. Accordingly, after adjustment of Rs. 1.84 crore i.e. deemed recovery of energy charge for DSM energy of 18.26 MU, the actual energy charge shortfall works out to 70.71 crore (72.55-1.84) against energy shortfall of (-)703.94 MU after accounting for DSM energy.

41. As a first step in our analysis for ascertaining the claim of the Petitioner towards shortfall due to reasons of beyond the control of petitioner (Reference table at para 36 above), the following formulae has been used to calculate the maximum possible saleable ex-bus generation corresponding to actual inflows available during each day of 2020-21:

**Maximum possible saleable ex-bus generation for a day =**

Design energy for the day x Actual inflow (cumecs) x 0.88x0.988/Design  
Inflow



Where 0.88 represents multiplying factor to account for the free energy of 12% to home states and 0.988 represents 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.

42. Further, the above derived value of maximum possible saleable ex-bus generation for a day is subject to ceiling of 5.947 MUs ( $300\text{MW} \times 24 \times 0.88 \times 0.988 \times 0.95 / 1000$ ) where 0.95 is to account for the machine availability which is also used for calculation of design energy. Summation of 365 such derived values represents the maximum possible saleable ex-bus generation for the year using 95% machine availability.

43. Following the above methodology, the annual maximum possible saleable ex-bus generation for the year 2020-21 works out to 1202.11 MU by utilizing 95% of installed capacity against saleable ex-bus design energy of 1304.06 MU. As such, the difference of these two figures i.e. (-)101.95 MU ( $1202.11 - 1304.06$ ) represents net shortfall in energy due to less inflows as compared to design inflows during the year as against the Petitioner's claim of (-) 99.80 MU (Reference third row from top of table at para 36 above). As such, it is held that energy shortfall of (-)101.95 MU due to less inflows was beyond the control of the petitioner.

44. With regard to energy shortfall of (-) 1.55 MU due to reservoir flushing on 9.8.2020, it is noted from the generation report submitted by the Petitioner that two units were out due to generator fault and the only available unit of 100 MW was stopped for a period of 18 hours 43 minutes. Accordingly, the energy lost due to reservoir flushing considering the maximum possible generation of the day i.e. 5.947 MUs works out to 1.55 MUs ( $5.947 \times 18.72 / 72$ ). As such, the claim of the Petitioner towards energy shortfall due to silt flushing 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 reservoir flushing 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, energy shortfall of (-) 1.55 MU is allowed under the shortfall beyond the control of the Petitioner.

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

<b>Shortfall due to reasons beyond the control of petitioner</b>	
Energy shortfall due to less inflow from design inflow (i)	<b>(-)177.86 MUs</b>
Excess Energy due to excess inflow from design inflow (ii)	<b>(+)75.91 MUs</b>
Net energy shortfall due to less inflows (iii)= (i)+(ii)	<b>-101.96 MUs</b>
Energy loss due to reservoir flushing (iv)	-1.55 MUs
<b>Total (v)= (iii)+(iv)</b>	<b>-103.51 MUs</b>

\*Accordingly, out of total shortfall of (-)703.94 MUs (after DSM adjustment), balance shortfall of (-) 600.43 MUs  $\{(-)703.94-(-)103.51\}$  is for reasons within control of the Petitioner

46. Based on above deliberations, the Petitioner needs to be compensated for energy shortfall of (-) 103.51 MUs which has occurred due to reasons beyond the control of the Petitioner out of total energy shortfall of (-)703.94 MU. Accordingly, the energy charge to be recovered out of energy charge shortfall of Rs.70.71 crore from the beneficiaries works out as under:

Total shortfall in generation during FY 2020-21 (after adjustment of DSM energy)	A	(-)703.94 MUs
Total under-recovery of energy charges during FY 2020-21 (after adjustment of energy charge corresponding to DSM energy)	B	₹70.71 Crore
Shortfall in generation due to reasons beyond control	C	(-) 103.51 MUs
Shortfall in energy charges to be recovered during FY 2020-21	D=C*B/A	<b>₹10.40 Crs</b>



47. Accordingly, in terms of Regulation 44(6) of the 2019 Tariff Regulations, we allow the energy charge shortfall of Rs.10.40 crore for the FY 2020-21. 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 2020-21, which may arise after determination and true up of tariff for the period 2019-24 shall be recovered directly by the generating station from the beneficiaries through supplementary bills after true-up.

48. Petition No. 98/MP/2022 is disposed of in terms of above.

**Sd/-**  
**(P.K. Singh)**  
**Member**

**Sd/-**  
**(Arun Goyal)**  
**Member**

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

