CENTRAL ELECTRICITY REGULATORY COMMISSION
New Delhi

Petition No. 320/MP/2019

Coram:

Shri I.S. Jha, Member
Shri Arun Goyal, Member
Shri P.K. Singh, Member

Date of Order: 25 April, 2023

In the matter of
Application under Regulation-31(6) of CERC (Terms and Conditions of Tariff) Regulations, 2014, read with regulation 44(8) and 44(7) of CERC (Terms and Conditions of Tariff) Regulation, 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 2018-19 in respect of Sewa-II Power Station.

And

In the matter of
NHPC Limited,
(A Govt. of India Enterprise)
NHPC Office Complex, Sector-33,
Faridabad (Haryana) - 121003. **…… Petitioner**

Versus

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)
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 (Uttrakhand).

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. **…… Respondents**

Parties Present:

Shri Ravi Shankar Dvivedi, Advocate, NHPC
Shri Sushant Sarkar, Advocate, NHPC
Shri Anand Ganesan, Advocate, PSPCL
Shri Amal Nair, Advocate, PSPCL
Shri Sachin Dubey, Advocate, BRPL
Shri S. K. Meena, NHPC
Shri Aman Mahajan, NHPC

ORDER

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

a) *Hon'ble Commission may kindly allow recovery of energy charges amounting to ₹8.22 Crs in FY 2019-20 against the shortfall in generation of 35.26 MU in FY 2018-19 as per regulation 44(8) and 44(7) of CERC (Terms and Conditions of Tariff) Regulation 2019, as explained in para- XI.*

b) Hon'ble Commission may kindly allow issuance of supplementary bills for recovery of shortfall in energy charges amounting to ₹8.22 Crs in six equal monthly installments of ₹1.37 Crs during FY 2019-20 by raising supplementary bills to the beneficiaries as explained in para-XI.

c) To allow issuance of supplementary bill for recovery of shortfall in energy charges directly from beneficiaries after determination of final tariff for the period 2014-19 by Hon'ble Commission as mentioned in para-IX and para-XI.

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

Background

2. The Sewa-II Power Station (hereinafter called ' Sewa-II power station') (3x40 = 120 MW) located in the state of Jammu & Kashmir is under commercial operation w.e.f. 24.07.2010. The power generated from this Power Station is being supplied to 12 Bulk Power Customers / Beneficiaries/Successor utilities in Northern Region. The approved Annual Design Energy (DE) of Sewa-II Power Station is 533.53 MU and keeping in view the provision of 1.0% auxiliary losses, 1% LADF and 12% Free Power to home state, the saleable energy is 459.53 MU.

3. The present application (under regulation-31(6)(a) of CERC (Terms and Conditions of Tariff) Regulations, 2014, read with regulation 44(8) and 44(7) of CERC (Terms and Conditions of Tariff) Regulation, 2019) is for recovery of short fall

in energy charges due to shortfall in generation. The relevant extracts of CERC Tariff Regulations, 2014, is reproduced below:

> *"31(6) In case the actual total energy generated by a hydro generating station during a year is less than the design energy for reasons beyond the control of the generating station, the following treatment shall be applied on a rolling basis on an application filed by the generating company:*
>
> > *a) In case the energy shortfall occurs within ten years from the date of commercial operation of a generating station, the ECR for the year following the year of energy shortfall shall be computed based on the formula specified in clause (5) with the modification that the DE for the year shall be considered as equal to the actual energy generated during the year of the shortfall, till the energy charge shortfall of the previous year has been made up, after which normal ECR shall be applicable:*
> >
> > *Provided that in case actual generation from a hydro generating station is less than the design energy for a continuous period of 4 years on account of hydrology factor, the generating station shall approach CEA with relevant hydrology data for revision of design energy of the station."*

Now, due to change in tariff period w.e.f. 01.04.2019 and consequent introduction of CERC (Terms and Conditions of Tariff) Regulation 2019, the recovery mechanism for shortfall in energy charges pertaining to the tariff period 2014-19 (un-recovered portion) has been modified by the Hon'ble Commission. The relevant portion of CERC (Terms and Conditions of Tariff) Regulation 2019, (regulation-44(8) and 44(7)) is reproduced as under:

Regulation 44(8)

"Any shortfall in the energy charges on account of saleable scheduled energy (ex-bus) being less than the saleable design energy (ex-bus) during the tariff period 2014-19 which was beyond the control of the generating station and which could not be recovered during the said tariff period shall be recovered in accordance with clause (7) of this Regulation."

Regulation 44(7)

"Shortfall in energy charges in comparison to fifty percent of the annual fixed cost shall be allowed to be recovered in six equal monthly installments:

……..”

4. The details of shortfall in generation in respect of Sewa-II Power Station during FY 2018-19 and the details of corresponding un-recovered energy charges are explained in succeeding paras.

Submission of the Petitioner

5. The Petitioner in amended petition filed on 21.7.2020 has submitted as under:

a) The present petition has been filed in order to suitably modify the Energy Charge Rate (ECR) in terms of Regulation 31(6)(a) of the 2014 Tariff Regulations for FY 2018-19 for recovery of under-recovered energy charges in FY 2017-18 due to shortfall in generation. The breakup of actual generation vis-à-vis Design Energy is tabulated below:

S. No.	Month	Design Energy (MU)	Actual Generation at GT (MU)	Shortfall/ Excess (MU)
1	**2**	**3**	**4**	**5=4-3**
1	Apr-18	55.93	44.43	-11.50
2	May-18	39.01	29.33	-9.68
3	Jun-18	81.92	22.34	-59.58
4	Jul-18	76.69	50.52	-26.17
5	Aug-18	84.82	61.71	-23.11
6	Sep-18	40.90	40.78	-0.12
7	Oct-18	21.36	28.37	7.01
8	Nov-18	14.66	23.76	9.10
9	Dec-18	11.70	12.38	0.68
10	Jan-19	9.72	20.39	10.67
11	Feb-19	22.61	75.69	53.08
12	Mar-19	74.21	88.58	14.37
Total		**533.53**	**498.27**	**-35.26**

b) Actual generation during 2018-19 is 498.27 MU against design energy of 533.53 MU. There is a shortfall of 35.26 MU (533.53 MU – 498.27 MU) in generation during 2018-19. The reasons for shortfall of 35.26 MU are as under:

A. Shortfall due to reasons beyond the control of petitioner	
Energy shortfall due to less inflow than the design inflow on some days	-157.84 MU
Energy generated due to excess inflow from design inflow on some days	97.27 MU
Total (A)	**-60.57 MU**
B. Shortfall due to reasons within the control of petitioner	
In order to meet grid requirements, sometimes powerhouse is operated at higher load resulting into depletion of reservoir and at suitable time, reservoir is to be filled again causing loss of generation. In this process, the figure of gain/loss of energy is as under:	
Energy generated by depleting reservoir level on some days	48.82 MU
Less generation for increasing reservoir level on some days	-28.50 MU
Other constraint (Partial load/ramping up/down during peaking etc.)	-1.23 MU
Excess generation beyond full capacity	6.22 MU
Total (B)	**25.31 MU**
Grand Total (A+B)	**-35.26 MU**

c) It is clear from above details that shortfall in generation due to reasons beyond the control of petitioner was 60.57 MU which was made up to the extent of 25.31 MU. Hence, recovery of energy charges on account of generation shortfall of 35.26 MU needs to be allowed to be recovered during FY 2019-20.

d) The petitioner is raising energy bills on the basis of AFC determined by Hon'ble Commission for the period 2010-14 vide order dated 06.09.2010 in petition no. 57/2010 and its subsequent amendment dated 22.09.2010. The subsequent petition no. 251/GT/2014 for truing up of AFC for the

period 2010-14 and tariff petition for the period 2014-19 were disposed of without appropriate decision because of non-availability of approved RCE.

e) As desired by CERC vide letter dated 03.07.2018 the petitioner has submitted tariff petition for the period 2009-14 and 2014-19 vide petition no. 281/GT/2018 and 322/GT/2018 respectively.

f) In view of above, the recovery of shortfall in energy charge is discussed below on the basis of allowed tariff for the period 2010-14, which will be further revised after notification of final tariff for the period 2014-19 by the Hon'ble Commission:

Schedule * Energy (Ex-Bus) (MU)	Free* Energy (MU)	Net Energy Billed (MU)	ECR (Rs/Unit)	Annual Fixed Charges (Crs.)	Energy Charges to be recovered (Crs.)	Energy Charges actually recovered (Crs.)	Under recovery of Energy Charges (Crs.)
1	**2**	**3=1-2**	**4**	**5**	**6=50% of 5**	**7=3*4/10**	**8=7-6**
485.61	**64.03**	**421.58**	**2.164**	**198.90**	**99.45**	**91.23**	**-8.22**

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

g) It is clear from above table that we have recovered energy charges amounting to ₹91.23 Crs corresponding to scheduled ex-bus energy of 485.61 MU against energy charges of ₹99.45 Crs. Hence there is an under recovery of energy charges of ₹8.22 Crs.

h) As explained at para-VIII and para-IX, petitioner requests to allow recovery of energy charge amounting to ₹8.22 Crs corresponding to 35.26 MU, which was due to reasons beyond the control of the petitioner.

i) As explained at para-V, the present application is for recovery of short fall in energy charges due to shortfall in generation due to reasons beyond the control of generator. Accordingly, recovery of shortfall in energy charge i.e., ₹8.22 Crs is supposed to be done in FY 2019-20.

j) Accordingly, Hon'ble Commission is requested to allow recovery of shortfall in energy charges during FY 2018-19 i.e., ₹8.22 Crs in six equal monthly installments of ₹1.37 Crs during FY 2019-20 by raising supplementary bills to the beneficiaries as per regulation-44(8) and 44(7) of CERC (Terms and Conditions of Tariff) Regulation 2019.

k) As mentioned at para-IX, these claims are based on interim tariff allowed by the Hon'ble Commission for FY 2010-14 vide order dated 06.09.2010 in petition no. 57/2010 and its subsequent amendment dated 22.09.2010. Hence Hon'ble Commission is requested to allow raising supplementary bills to the beneficiaries after issuance of final tariff order for period 2014-19 in respect of Sewa-II Power Station.

l) CEA/CWC were requested to certify the actual inflow data in other similar petition but they have shown inability to certify the same. The petitioner is not in position to submit the actual discharge data certified by CEA/CWC. Hence, data submitted by petitioner may be considered as authenticated data.

Replies and Rejoinder

Reply of UPPCL

6. The Respondent UPPCL vide its affidavits dated 1.10.2019 and 7.8.2020 has mainly submitted as under:

(a) The Petitioner has not submitted Rainfall data in catchment area and variation in river inflow during 2018-19 in comparison to previous years and certified inflow data from CWC.

(b) The recovery of shortfall in energy charges must be done in the years when the actual generation is greater than Design Energy rather than carrying forward to the next years.

(c) The Commission may base the instant case on that of Tehri HEP where the prayer of THDC (the Petitioner therein) to reduce NAPAF from 77% to 74.408% on account of conditions beyond control for period from 17.12.2010 to 28.01.2011 was dismissed by the Commission vide order dated 11.12.2013 in Petition No. 220/MP/2011.

(d) The Commission may please to consider to admit shortfall in generation as (-) 30.37 MU and uncovered energy charge as Rs. 6.57 Crs. provided that the Petitioner submits hydrological data in support of such shortfall in the energy to prove that there were no reasons other than less generation due to less inflow of water in the river attributable to change in hydrology.

Rejoinder to the reply filed by UPPCL

7. The Petitioner, in response to the reply of the Respondent, UPPCL, has submitted as under vide its affidavits dated 14.11.2019 and 19.8.2020:

(a) CEA/ CWC has already expressed their inability to certify the inflow data for other Power Stations of NHPC, no further request was made by NHPC to certify the inflow data in respect of Sewa-II Power Station for year 2018-19

(b) The claim of the Respondent that recovery of shortfall in Energy charges must be done in the years when the actual generation is greater than

Design Energy rather than carrying it forward to the next years is not in accordance to the provisions of Regulation 31(6) of the 2014 Tariff Regulations.

(c) The claim of the Respondent to take into consideration the case of Tehri HEP in this case is irrelevant as the case of Tehri HEP was for relaxation of NAPAF whereas the present petition is for recovery of shortfall of energy charges.

(d) Respondent has calculated shortfall in generation and energy charges based on saleable design energy and saleable energy generated at generator terminal. In this regard, it is submitted that as per Regulation 31(6)(a) of CERC Tariff Regulations, 2014 shortfall in energy charges is to be calculated based on actual energy and not on the basis of saleable energy. The petitioner in the petition has only calculated shortfall in energy based on the provisions of CERC Tariff Regulations, 2014.

Reply of Respondent No.1 Punjab State Power Corporation Ltd. (PSPCL)

8. The Respondent No. 1, PSPCL vide its affidavits dated 19.10.2020 and 4.10.2022 has mainly submitted as under:

a) The primary claim of the Petitioner is on the basis of it not being able to achieve adequate generation corresponding to design energy. 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. This being the case any revenue which the Petitioner earns by sale of power under the DSM

mechanism should be correctly disclosed by the Petitioner and should be adjusted against any amounts to be paid by the beneficiaries to it.

b) The actual inflow will be less and, on some days, it will be more than the design inflow. 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. The Petitioner being in the business of generation of hydro power ought to have been aware of this. Therefore, the Petitioner has no basis for claiming relief by citing the loss of generation on account of less inflow.

c) Regulation 31 (6) of the Tariff Regulations 2014 specifically states that the treatment under Regulation 31 (6) (a) 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.

d) The Petitioner has placed on record the letter dated 31.01.2017 of the Central Water Commission ("CWC"), at Page 90 whereby CWC has expressed its inability to certify the inflow series on year to year basis citing hydrological uncertainties.

e) The claim made towards shortfall in energy generation in the present Petition, if allowed, be adjusted as against the revenue earned through DSM.

Rejoinder of the Petitioner to reply of PSPCL

9. In response to the reply dated 19.10.2020 of the Respondent PSPCL, NHPC vide its affidavit dated 27.8.2021 has submitted as under:

a) The generating station deviates from the schedule in order to provide support to grid as per CERC DSM Regulations, 2014 and amendments thereof. In order to provide grid support generating station has to increase generation by overloading machine or depleting reservoir level (if inflow is low) which is used to meet the increase in demand for which some incentive is provided to the generating station. Further, regarding adjustment of revenue earned from sale of power under the DSM mechanism, the petitioner would like to submit that the revenue earned for the energy supplied to grid in deviation from schedule generation is as per DSM Regulations, 2014 and amendments thereof. In order to provide grid support generating station has to increase generation by overloading machine or depleting reservoir level (if inflow is low) which is used to meet the increase in demand for which some incentive is provided to the generating station

b) Inflow of the river is beyond the control of the generating station and therefore the statement of the Respondent that vague reasons have been provided for claim of shortfall is wrong and is fit to be rejected.

c) 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 bases, 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. Therefore, factor of less inflow

is beyond the control of generating station and hence the petition in line with Regulation 31(6) has been submitted

d) The letter of CWC clearly mentions that the hydrological uncertainties on year-to-year basis are part of the planning process which can be assessed.

Analysis and Decision

10. The Petitioner has submitted the actual average inflows measured at dam site for each day of 2018-19 for which the shortfall has been claimed. Further, based on the following formulae along with certain adjustments, the Petitioner has calculated the daily maximum possible generation for 365 days based on actual inflows:

Maximum Possible Generation during a day (MU)=
(Average inflow for i^{th} day) X (Maximum generation corresponding to installed capacity) / (Rated inflow for installed capacity)

Where, the capacity of the generating station is 120 MW and rated inflow is 24.25 cumecs corresponding to 120 MW capacity. The sum of daily maximum possible generations for 365 days i.e. the annual maximum possible generation has been calculated by the Petitioner as 482.95 MU.

11. To cross check the correctness of maximum possible generation of 482.95 MU as calculated by the Petitioner, we have used the following formula (used by CEA for arriving at the Design Energy of the station) for arriving at the power potential of actual inflows restricted to 120 MW and then the daily Maximum possible energy generation in MU

Maximum Possible Generation during a day (MU) = (559.2x0.90x9.8/1000) x (24/1000) x Actual Inflow of the day available for generation

Where 559.2 is the rated head of the plant in meter, factor 0.90 represents overall plant efficiency of 90% and 9.8 m/s^2 is acceleration due to gravity. These figures have been used by CEA for arriving at the Design Energy of the plant.

12. Based on the above methodology, maximum possible energy generation for the year 2018-19 works out to 473.79 MU (restricting the maximum power to 120 MW i.e. capacity of the plant during peak season) against the maximum possible generation of 482.95 MU as submitted by the Petitioner. However, it is noticed that the Petitioner has been able to generate 498.27 MU which is more than the maximum possible generation as calculated by the Petitioner. The additional generation over and above the maximum possible generation is due to managing the reservoir level on certain days to produce the additional energy. Accordingly, the same is being is considered for further calculations.

13. Design Energy of the generating station is 533.53 MU. During the FY 2018-19, the Petitioner has claimed a shortfall of 35.26 MU in generation, as the actual generation was 498.27 MU.

14. The Petitioner has divided the energy shortfall into two parts, namely:

a) Net excess energy generation of 25.36 MU due to factors which were under the control of the Petitioner. The breakup is as under:

i) Energy generated by depleting reservoir level on some days: 48.82 MU

ii) Less generation for increasing reservoir level on some days: (-) 28.50 MU

iii) Other constraints (partial load/ ramping up, down during peaking): (-) 1.23 MU

iv) Excess Generation beyond full capacity.

b) Shortfall of 60.57 MU which was for the reasons not under the control of the Petitioner. The breakup of the same is as under:

i) Energy shortfall due to less inflow: (-) 157.84 MU

ii) Energy gain due to excess inflow: 97.27 MU

** Note: the sum of i) and ii) i.e (-) 60.57 MU represents the short fall due to low inflows in comparison to the design inflows associated with design year*

15. The Respondent, UPPCL has submitted that recovery of shortfall in energy charges must be done in the years when the actual generation is greater than Design Energy rather than carrying it forward to the next years. In our view, this suggestion of the Respondent is against the provisions of the 2014 Tariff Regulations and cannot be considered. The Respondent, UPPCL has further submitted that the instant petition may be considered on basis of the order dated 11.12.2013 in the Petition no. 220/MP/2011. However, this is not relevant in the present case as order dated 11.12.2013 related to prayer for reduction in NAPAF, whereas present petition is for relief on account of shortfall in generation on account of uncontrollable factors and is covered under provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations.

16. Some of the Respondents have submitted that the data submitted by the Petitioner has not been verified by any independent agency. Therefore, we have carried out further analysis in the following paragraphs to ascertain reasonability of the claim of the Petitioner which also includes whether the Petitioner has been able to utilize the full potential of actual inflows. We now proceed to analyse the claims of the Petitioner.

17. With regard to the claim of the Petitioner that energy shortfall for the year 2018-19 was due to uncontrollable factors, the Commission is of the view that low generation in comparison to Design Energy in a hydro generating station can be attributable to the following reasons:

(i) Low inflows in comparison to the design inflows associated with design year.

(ii) Prolonged planned/ forced outage of machines.

(iii) Inefficient operation of the plant which may include low overall efficiency of turbine and generator, high auxiliary power consumption, high losses in water conductor system etc.

(iv) Non-utilization of maximum power potential of actual inflows due to excessive spillage.

18. We analyse each of the above reasons in respect of the present claim of the Petitioner.

Low inflows in comparison to the design inflows associated with design year

19. Vide ROP of hearing dated 27.9.2022, the Petitioner was directed to submit rainfall data of India Meteorological Department (IMD) to correlate low inflows. The Petitioner vide affidavit dated 14.10.2022 has submitted rainfall data for the period from 2016 to 2020 for Kathua District where the instant generating station is located. Further, the Petitioner was directed to get the inflow data verified from CEA/ CWC. With regard to the certification of the inflow data by CEA/ CWC, the Petitioner has enclosed a letter from CWC dated 23.01.2017 where CWC had categorically mentioned its inability to certify the inflow data in respect of the generating station. As such, in absence of certified data by CEA/ CWC, we have relied upon the analysis of IMD data for the year 2018 and 2019 to assess whether low inflows was one of the major reasons for low generation in comparison to Design Energy.

20. The rainfall data issued by the India Metrological Department (IMD) in respect of Kathua district for the years 2017 and 2018 (verified from IMD website) is given below:

Rainfall in mm

Year	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
2018	7.2	63.6	17.9	25.9	12.5	63.4	261.4	683.7	175.5	13.3	8	12.8
2019	76.2	217.9	17.5	33.3	22.5	12.0	340.9	398.0	76.3	4.4	62.8	75.5

Note: The District Rainfall in millimetres (R/F) shown above are the arithmetic averages of rainfall of stations under the District

% Departure from Long Period Averages

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	-92	8	-61	30	0	1	-33	69	38	-54	-7	-51
2019	-8	86	-85	-48	-48	-89	-38	-17	-65	-83	164	9

Note: % Departures, are the departures of rainfall from the long period averages of rainfall for the district.

21. As per India Meteorological Department (IMD), which is the Central Agency that records and archives rainfall data in India:

> *When the rainfall for the monsoon season of June to September for the country as a whole is within the deviation of 10% of its long period average, it is categorized as a "Normal" monsoon. It is categorized as "Excess" monsoon, if it is above 110 % of long period average and "Deficient", if it is below 90% of long period average. The performance of monsoon rainfall over smaller areas of the country is monitored by evaluating the departures from the normal for each meteorological sub-division and district. The rainfall is classified as excess, normal deficient or scanty as per the following criteria. Excess +20% of normal or more, 'Normal: + 19% to -19% of normal, Deficient -20% to -59% of normal, Scanty: -60 % of normal or less*
>
> *The 'monthly normal' rainfall of a station was calculated using all the available data during the period 1941-1990. (In the Statistical Abstract, India 2004 this period was 1901-1970). (The monthly "normal rainfall" of the sub-division is the mean of monthly normal rainfall of the corresponding stations and "annual normal rainfall " is the sum of the monthly normal rainfall for all the 12 months.*

22. Correlating the above tabulated rainfall data as per IMD reports, indicates low rainfall in comparison to long period averages. Accordingly, the energy shortfall of 60.57 MU between the maximum possible generation (472.95 MU) and design

energy (533.53 MU) represents shortfall due to less inflows and we, thus, hold that the same was beyond the control of the Petitioner.

Prolonged forced/ planned outage of machines

23. In order to rule out the prolonged planned/ forced outage of machines, their impact on energy generation and in order to understand whether outage of a machine in anyway affected the energy generation by non-utilization of available water flow, the Commission vide ROP of the hearing dated 27.9.2022 directed the Petitioner to furnish the planned and forced outage data for 2018-19 along with its correlation with energy generation. The Petitioner vide affidavit dated 14.10.2022 has submitted that vide letter dated 05.07.2022 it has requested for certification of planned and forced outage and a reminder mail has been sent on 07.09.2022. However, CEA vide letter dated 28.09.2022 to the Petitioner has informed that the data of planned and forced outage for the year 2018-2019 should be obtained from RPC/RLDC. The Petitioner has further submitted that the planned and forced outage data of all the power stations of NHPC is updated daily only on the NPP portal of CEA, so efforts are being made to provide this data from CEA. However, the same has not been furnished yet. Accordingly, we have considered the daily generation details submitted by the Petitioner in the petition. On perusal of the daily generation details, it is noticed that the there is no event of shortfall in energy generation due any outages. Accordingly, it is inferred there in no shortfall in energy generation due to Prolonged forced/ planned outage of machines.

(iii) Inefficient operation of the plant & Non-utilization of maximum power potential of actual inflows due to excessive spillage

24. Maximum possible annual generation with available actual inflows after accounting for the generation loss for the reasons which were beyond the control of

the Petitioner and which are attributable to the Petitioner, the possible generation at generator terminal has been assessed as under against the actual generation of 498.27 MU:

(a) Possible generation assessed at generator terminal after accounting for the generation loss due to reasons beyond the control of the Petitioner as discussed above:

1.	Design Energy of the instant generating station	533.53 MU
2.	Energy shortfall due to less inflows (on net basis)	(-)60.57 MU
3.	Energy that could have been generated by utilizing available actual inflows 3=1+2	472.96 MU

(b) Possible energy generation at generator terminal after accounting for the reasons within the control of the Petitioner as considered by the Commission:

		Based on actual available flow at 100% machine capacity
1.	Energy that could be generated after taking into account reasons beyond control	472.96 MU
2.	Excess generation due to reasons within the control of Petitioner (as claimed by the Petitioner)	25.31 MU {(+)20.32 MU by managing the reservoir level, (-1.23) Other constraints and (+) 6.22 MU Energy generation beyond full capacity}
3.	Energy that could be generated 3=1+2	498.27 MU

25. In view of the above calculations and the fact that actual generation of the generating station i.e. 498.27 MU is in agreement with the theoretical calculations, it is held that Petitioner has been able to generate according to the actual inflows after accounting for the reasons under its control and reasons beyond its control. Accordingly, the Petitioner cannot be faulted with inefficient operation of the plant and non-utilization of maximum power potential of actual inflows or excessive spillage.

26. In light of above deliberations, the Commission is of the view that the Petitioner shall be allowed to recover shortfall in energy charges in proportion to the energy shortfall which occurred due to reasons which were not under the control of the Petitioner i.e. 60.57 MU. However, the Petitioner by managing the reservoir level has managed to generate additional energy of 20.32 MU. The Petitioner has accounted this additional generation under the reasons which were under the control of the Petitioner, nevertheless same needs to be adjusted for arriving at the allowable recovery of energy charges. Accordingly, out of total shortfall of 35.26 MU of shortfall for reasons under the control of the Petitioner the shortfall of (-)1.23 MU (due to other constraint, etc.) has not been considered and shortfall for the reasons beyond the control of the Petitioner has been taken as 34.03 MU {35.26 MU – 1.23 MU}.

27. The Petitioner has submitted the following position with respect to under recovery of energy charges:

Schedule * Energy (Ex-Bus) (MU)	Free* Energy (MU)	Net Energy Billed (MU)	ECR (Rs/Unit)	Annual Fixed Charges (Crs.)	Energy Charges to be recovered (Crs.)	Energy Charges actually recovered (Crs.)	Under recovery of Energy Charges (Crs.)
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
485.61	64.03	421.58	2.164	198.90	99.45	91.23	-8.22

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

28. The Commission vide ROP of the hearing dated 27.9.2022 directed the Petitioner to submit the details of energy accounted in DSM. The Petitioner, has vide affidavit dated 14.10.2022, submitted the details of energy accounted for in DSM. Payment for energy under DSM is governed by provisions of the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters)

Regulations, 2014 (hereinafter referred to as “the 2014 DSM Regulations”). It has been submitted that 7.80 MU has been accounted for in DSM and corresponding revenue earned from DSM is Rs. 371.11 Lakh. Regulation 31(6)(a) of the 2014 Tariff Regulations provides for recovery of energy charge shortfall corresponding to the energy which could not be generated for the reasons beyond the control of the Petitioner. There is no doubt that the energy accounted for in DSM is actual energy generated and also that the Petitioner has received payment for the same in terms of provisions of the 2014 DSM Regulations. Therefore, the energy that has been accounted for in DSM cannot be counted towards shortfall in energy in terms of Regulation 31(6)(a) of the 2014 Tariff Regulations and, therefore, corresponding energy charge cannot be recovered in terms of that regulation. Thus, revenue generated by the Petitioner under DSM needs to be appropriately accounted for while deciding the quantum of shortfall under provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations.

29. We are also conscious of the fact that generating stations are required to provide support to the grid and for that purpose, payments for energy supplied is accounted for under provisions of the 2014 DSM Regulations. Also, often the support to the grid is through governor mode operation and is beyond control of the Petitioner. Therefore, in case the revenue received under provisions of the 2014 DSM Regulations is less than the amount that would have been received had the same energy been supplied to the beneficiaries, the generator should not be adversely affected. Thus, with a view to balance the interest of the generator as well as the beneficiaries, it would be prudent to calculate the energy charge shortfall by adjusting lower of:

a) the actual revenue earned by the generating station through DSM in the financial year (for which shortfall is claimed) and

b) the amount that would have been paid by the beneficiaries had the same energy been scheduled and received by the beneficiaries in that financial year.

30. In the instant case, the Petitioner has been able to generate revenue to the tune of Rs. 371.11 Lakh for the energy accounted for in DSM i.e 7.80 MU. On the other hand, if this energy (7.80 MU) would have been scheduled to the beneficiaries, the scheduled energy would have increased to 493.41 (= 485.61+7.80) MU and the energy charge shortfall of the generating station would have reduced in comparison to the claimed energy charge shortfall of Rs.8.22 crore. The following table captures the reduction in energy charge shortfall after adding the energy accounted for in DSM in the actually scheduled energy:

	Schedule Energy (Ex-Bus) (MU)	**Free Energy (MU)**	**Net Energy Billed (MU)**	**ECR (₹/Unit)**	**Allowed Energy Charges (crore)**	**Energy Charges actually recovered (crore)**	**Energy charge shortfall (crore)**
	1	**2**	**3=1-2**	**4**	**5**	**6=3x4/10**	**7=5-6**
As claimed by the petitioner based on actually scheduled energy	485.61	64.03 (As per Regional Energy Account)*	421.58	2.164	99.45	91.23	8.22
As modified by adding the DSM energy in the actually scheduled energy	493.41 (485.61+7.80)	64.14 (12% free energy +1% LADF)	429.27	2.164	99.45	92.89	6.56

* Note: Free Energy accounted is more than 13% (12% free energy +1% LADF) of Schedule Energy (Ex-Bus). The petitioner is directed to clarify the same from NRPC.

31. From the above table, we observe that the energy charges recoverable for the energy accounted for in DSM would have been Rs.1.66 (= 92.89-91.23) crore as against Rs.3.71 crore recovered by the Petition from the DSM pool.

32. Since the energy charge accounted for in DSM (Rs.1.66 crore) is on lower side as compared to revenue earned from the DSM pool (Rs.3.71 crore), the actual shortfall of Rs.8.22 crore reduces to Rs.6.56 (=8.22-1.66) crore. Accordingly, the energy charge allowed to be recovered in the FY 2018-19 due to shortfall in energy generation from the Design Energy during 2019-20 has been calculated as under:

Total Shortfall in generation during FY 2018-19 (MU) claimed by the petitioner	A	35.26
Actual under-recovery of energy charges during FY 2018-19 (₹ crore) claimed by the petitioner	B	8.22
Total under-recovery of energy charges during FY 2018-19 after accounting for the revenue which would have been earned if the energy accounted under DSM would have been scheduled to the beneficiaries (in ₹ crore) (para 29)	C	6.56 (=8.22-1.66)
Shortfall in generation due to reasons beyond control (MU) considered by Commission (para 25)	D	34.03
Shortfall in energy charges allowed to be recovered during FY 2018-19 in this order (₹ crore)	E=C*D/A	6.33

33. In terms of Regulations 31(6)(a) and 31(6)(c) of the 2014 Tariff Regulations the ECR for the year following the year of energy shortfall shall be computed based on the formula specified in clause (5) with the modification that the DE for the year shall be considered as equal to the actual energy generated during the year of the

shortfall, till the energy charge shortfall of the previous year has been made up and the same shall be treated on rolling basis. In this regard, the Petitioner in its prayer has submitted that to allow recovery of energy charges in FY 2019-20 against the shortfall in generation in FY 2018-19 as per Regulation 44(8) and 44(7) of CERC (Terms and Conditions of Tariff) Regulation 2019.

34. The matter has been considered, we notice that, in this case, the immediate recovery year i.e. 2019-20 falls in the tariff period 2019-24. Accordingly, in terms of Regulation 44(7) of the 2019 Tariff Regulations, we allow the energy charge shortfall of Rs. 6.33 crore for the period 2018-19 and the same shall be recovered by the petitioner in six equal monthly instalments. Further, the difference in energy charge shortfall to be recovered for the year 2018-19 which may arise after the true-up of tariff for the period 2014-19 shall be recovered directly by the generating station from beneficiaries through supplementary bills.

35. Petition No. 320/MP/2019 is disposed of in terms of above.

sd/-	sd/-	sd/-
(P. K. Singh)	**(Arun Goyal)**	**(I. S. Jha)**
Member	**Member**	**Member**