

CENTRAL ELECTRICITY REGULATORY COMMISSION

New Delhi

Petition No. 458/MP/2019

Coram:

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

Date of Order: 25.07.2023

In the matter of

Application under Regulation-31(6) of CERC (Terms and Conditions of Tariff) Regulations, 2014, for recoupment of under-recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station during the FY 2017-18 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 –121 003

...Petitioner

Vs

1. Punjab State Power Corporation Limited,
The Mall, Near Kali Badi Mandir
Patiala – 147001, Punjab

2. Haryana Power Utilities
(DHBVNL & UHBVNL),
Shakti Bhawan, Sector VI,
Panchkula- 134019, Haryana

3. Uttar Pradesh Power Corporation Limited, Shakti Bhawan, 14, Ashoka Road,
Lucknow – 226001, Uttar Pradesh

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

5. BSES Rajdhani Power Limited,



2nd Floor, B Block, Nehru Place,
New Delhi 110019

6. BSES Yamuna Power Limited,
Shakti Kiran Building, Karkardooma,
Delhi – 110092

7. Tata Power Delhi Distribution Limited,
33 kV Sub-station, Hudson Lines,
Kingsway Camp, Delhi – 110009

8. Uttaranchal Power Corporation Limited,
Urja Bhawan,
Kanwali Road, Dehradun - 248 001 (Uttrakhand).

9. Jaipur Vidyut Vitaran Nigam Limited,
Vidyut Bhawan, Janpath,
Jaipur – 302005, Rajasthan

10. Ajmer Vidyut Vitaran Nigam Limited,
Old Power House,
Hatthi Bhatta, Jaipur Road,
Ajmer-305001, Rajasthan

11. Jodhpur Vidyut Vitaran Nigam Limited,
New Power House, Industrial Area,
Jodhpur-342003, Rajasthan

12. Power Development Department,
Government of J&K,
Mini Secretariat, Jammu–180001, J&K

13. Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House,
Shimla – 171004

...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, NHPCMs. Megha Bajpeyi, BRPL

ORDER

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



1. *Hon'ble Commission may kindly allow recovery of energy charges amounting to Rs.3.74 Crs in FY 2019-20 against the shortfall in generation of 12.80 MU in FY 2017-18 as per regulation, 31(6)(b) of CERC (Terms and Conditions of Tariff) Regulations, 2014 as explained in para- X.*
2. *To allow revision of energy bills for the period 2019-20 which were already raised to beneficiary for recovery of energy charges.*
3. *To allow issuance of supplementary bill for recovery of shortfall in energy charges directly from beneficiaries after issuance of truing up order for the period 2014-19 by Hon'ble Commission as mentioned in para-IX and para-X.*
4. *Pass such other and further order / orders as are deemed fit and proper in the facts and circumstances of the case.*

Background

2. The Chamera-II Power Station (hereinafter called 'Chamera-II' / 'power station') (3x100 MW = 300 MW) located in the state of Himachal Pradesh has been declared under commercial operation on 31.03.2004. The power generated from this Power Station is being supplied to 14 Bulk Power Customers / Beneficiaries/Successor utilities in Northern Region. The approved Annual Design Energy (DE) of Chamera-II Power Station is 1499.89 MU and keeping in view the provision of 1.2% auxiliary losses and 12% Free Power to home state, the saleable energy is 1304.06 MU.

3. The present application is purported to be filed under Regulation-31(6)(b) of CERC (Terms and Conditions of Tariff) Regulations, 2014. The relevant extract for the same is reproduced as under:

“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:

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



Explanation: Suppose the specified annual design energy for the station is DE MWh, and the actual energy generated during the concerned (first) and the following (second) financial years is A1 and A2 MWh respectively, A1 being less than DE. Then, the design energy to be considered in the formula in clause (5) of these regulations for calculating the ECR for the third financial year shall be moderated as $(A1 + A2 - DE)$ MWh, subject to a maximum of DE MWh and a minimum of A1 MWh.”

Submissions of the Petitioner

4. The Petitioner in the amended petition filed on 3.7.2020 has submitted as under:

a) Chamera-II Power Station is under Commercial operation w.e.f. 31.03.2004 and has already completed more than 10 years of operation. The present application (under Regulation-31(6)(b) of CERC (Terms and Conditions of Tariff) Regulations, 2014, is for recovery of short fall in energy charges due to shortfall in generation.

b) The following table gives the actual generation during FY 2017-18 i.e. the year for which shortfall is being claimed and actual generation during FY 2018-19:

Actual Generation during FY 2017-18	A1	1487.09 MU
Actual Generation during FY 2018-19	A2	1508 MU
Design Energy	DE	1499.89 MU

c) $(A1+A2-DE) = (1487.09+1508-1499.89) = 1495.20$ MU

Since, $(A1+A2-DE)$ i.e., 1495.20 MU is less than the Design Energy of the Power Station i.e., 1499.89 MU, hence, as per Regulation 31(6) (b) of CERC Tariff Regulations, 2014, the Energy Charge Rate (ECR) for FY 2019-20 needs to be modified so as to ensure recovery of under recovered energy charges of FY 2017-18



d) The month wise breakup of Actual Generation, vis- a-vis Design Energy during FY 2017-18 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-17	188.65	179.85	-8.80
2	May-17	212.04	218.07	6.03
3	Jun-17	149.31	212.77	63.46
4	Jul-17	212.04	217.58	5.54
5	Aug-17	212.04	216.34	4.30
6	Sep-17	152.23	155.30	3.07
7	Oct-17	69.95	86.10	16.15
8	Nov-17	48.98	49.39	0.41
9	Dec-17	39.55	43.18	3.63
10	Jan-18	39.29	33.24	-6.05
11	Feb-18	56.43	30.17	-26.26
12	Mar-18	119.38	45.10	-74.28
Total		1499.89	1487.09	-12.80

e) The shortfall in generation is 12.80 MU (1499.89 MU – 1487.09 MU) during FY 2017-18. The reasons for shortfall are as under:

A. Shortfall due to reasons beyond the control of petitioner	
Energy shortfall due to less inflow from design inflow on some days	-164.50 MU
Energy generated due to excess inflow from design inflow on some days	154.28 MU
Energy loss due to silt flushing	-11.75 MU
Total (A)	-21.96 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	18.02 MU
Less generation for increasing reservoir level on some days	-5.44 MU
Unit Outage	-3.21 MU



Other constraint (Partial load/ramping up/down during peaking, etc.	-0.21 MU
Total (B)	9.16 MU
Net Generation Loss (A+B)	- 12.80 MU

f) It is clear from above that generation shortfall beyond the control of petitioner was 21.96 MU which was made up to the extent of 9.16 MU resulting into net generation loss of 12.80 MU attributable to reasons beyond the control of petitioner. Hence, recovery of energy charges on account of generation shortfall of 12.80 MU due to reasons beyond control of the petitioner needs to be recovered during FY 2019-20.

g) The recovery of shortfall in energy charge is on the basis of interim tariff allowed for the period 2014-19, vide order dated 17.06.2016 in petition no. 233/GT/2014, which will be further revised after issuance of truing up order for the period 2014-19 by the Commission:

Schedule* Energy (Ex-Bus) (MU)	Free* Energy (MU)	Net Energy Billed (MU)	ECR (Rs./Unit)	Allowed Energy Charges (Rs. in Crs.)	Energy Charges actually recovered (Rs. in Crs.)	Under recovery of Energy Charges (Rs. in Crs.)
1	2	3	4	5	6=3x4/10	7=5-6
1443.93	176.88	1267.05	0.991	129.30	125.56	3.74

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

h) Thus, in FY 2017-18, NHPC has recovered energy charges amounting to Rs.125.56 Crs. corresponding to saleable scheduled energy of 1267.05 MU against energy charges of Rs.129.30 Crs. (50% of AFC) as allowed in tariff order dated 17.06.2016 in petition no. 233/GT/2014. Hence there is an under recovery of energy charges amounting to Rs.3.74 Crs. which needs to be recovered from the beneficiaries.



i) As explained at para-V, the present application is for recovery of shortfall 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., Rs.3.74 Crs., as explained at para-(g) & (h)above, is supposed to be done in FY 2019-20.

j) CEA/CWC were requested to certify the actual inflow data in other similar petition but they have shown inability to certify.

Hearings of the petition

a) The matter was heard on 18.6.2020. During, the hearing the Learned counsel for the Respondent, BSES Rajdhani Power Limited (BRPL) objected to the admissibility of the Petition and submitted that the instant Petitions has been filed under Regulation 31(6) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (in short 'the 2014 Tariff Regulations') along with Regulation 44 (8) and 44(7) of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (in short 'the 2019 Tariff Regulations'). Since the shortfall in generation and the consequent claims of energy charges pertain to the financial years 2017-18 and 2018-19, provisions of the 2019 Tariff Regulations which came into force w.e.f. 1.4.2019, are not applicable in the present case. He added that Regulation 31(6) of the 2014 Tariff Regulations provides for the treatment in case actual total energy generated by a hydro generating station during a year is less than the design energy. Thus, the contention of the Petitioner for recoupment of under-recovered energy charges due to shortfall in energy generation for



reasons beyond the control of generating station is misconceived and the same is without any basis. In response, learned counsel for the Petitioner sought permission to amend the Petition within two weeks.

5. The Petitioner vide affidavit dated 3.7.2020 had filed amended petition.

6. The matter was heard again on 27.9.2022. The Commission after hearing the parties, directed the Petitioner to submit the following additional information with an advance copy to the Respondents.

- a) Actual inflow data to be certified by CWC;
- b) Design Energy calculation (MS Excel);
- c) Methodology for calculating daily maximum possible generation during financial year 2018-19 as claimed in the Petition (MS Excel);
- d) Planned/Forced Outages certified by CEA/NRLDC and its correlation with generation data vis-à-vis available average inflows during the period of outages, if any;
- e) Day-wise details of scheduled energy, actual energy injected in the grid and energy accounted for in DSM along with the revenue earned from the DSM for such energy.
- f) Rainfall data for financial year 2018-19 of IMD for the district in which plant is located and adjoining districts to correlate the inflows.
- g) It is observed from the daily generation analysis submitted by the Petitioner that during high inflow periods, overload capacity of 10% has not been utilized fully i.e. unit loading is less than 110% in spite of water availability. Reason for the same may be furnished by the Petitioner; and



h) Any other relevant information/document to justify the claims in the Petition.

7. The Petitioner vide affidavit dated 14.10.2022 has submitted the above information.

Replies and Rejoinder

Reply of UPPCL, Respondent No. 3

8. The Respondent, UPPCL vide its affidavit dated 24.12.2019, has submitted as under:

(a) Allowing compensation on account of low energy generation will mean burdening the beneficiaries when either there is loss of energy due to low inflow or in case of PAF due to generation of electricity more than the NAPAF.

(b) The inflow data for 2017-18 in case of Chamera-II HEP has not been certified either by CEA or CWC.

(c) The rain fall data submitted by the Petitioner does not corroborate the low inflow in 2017-18 in catchment area of the project.

(d) The method of and attribution of shortfall to controllable and uncontrollable factor needs to be clarified. Also, it is not clear as to why Silt Flushing has been considered as uncontrollable factor.

(e) In Case of Tehri HEP, the prayer of THDC to reduce NAPAF from 77% to 74.408% on account of conditions beyond control for the period 17.12.2010 to 28.01.2011 was dismissed vide Order dated 11.12.2013 in petition no. 220/MP/2011.



Rejoinder of the Petitioner to the reply of UPPCL

9. In response to the reply of the Respondent UPPCL, Petitioner vide its affidavit dated 10.2.2020 has filed its rejoinder and submitted as under:

(a) The provision of incentive against higher NAPAF and recovery of energy charge due to poor hydrology are two different issues covered under separate regulations and hence, it should not be mixed up for denying the legitimate claim of the Petitioner.

(b) The Petitioner had requested CEA/CWC to certify the actual inflow data in case of other Power Stations but CEA/CWC vide letter dated 23.01.2017 has expressed their inability to certify the inflow data. This fact has already been submitted in the petition.

(c) The method and reasons of classification of controllable and uncontrollable factors has suitably been mentioned in the petition and the loss of generation has also been categorically separated. The loss of energy due to silt flushing has been defined as un-controllable factor because the Petitioner has no control over high flow of silt in rainy season and flushing action is the subsequent compulsion.

(d) The referred case of Tehri HEP is not in cognition of the Petitioner and hence is not comparable as the case of Tehri HEP was for relaxation in NAPAF whereas the present petition is for recovery of shortfall of energy charges due to poor hydrology.

Reply of PSPCL, Respondent No. 1

10. PSPCL vide its affidavit dated 29.1.2021, has submitted as under:

(a) There is a difference of 43.16 MUs between the actual generation at GT and the Schedule Energy at Ex-Bus which has not been disclosed by the Petitioner. The answering Respondent has reasons to believe that the same maybe be accounted for in the DSM accounting and that the Petitioner may have benefited from the same.



(b) The revenue earned by the Petitioner by sale of power under the DSM mechanism should be correctly disclosed and should be rightfully adjusted against any amounts to be paid by the beneficiaries to it.

(c) The Petitioner has claimed for a recovery on account of short fall in generation for 12.80 MU while stating that the same is on account of reasons which were beyond the control of the Petitioner. However, the Petitioner has not provided any details as to what were the reasons which were beyond the control of the Petitioner

(d) The actual inflow cannot always be the same as the design inflow. On some days 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.

(e) The Petitioner has stated that the energy loss due to silt flushing is an uncontrollable event and the loss of energy due to this is recoverable from the beneficiaries. It is submitted that as a hydro power generator, the Petitioner ought to have planned for such a situation. Silt flushing is a foreseeable event which keeps on happening with hydro power projects. Therefore, the same cannot be considered as being beyond the control of the Petitioner. The Petitioner being a hydro power generator, should know how to make arrangements in such circumstances. The Petitioner ought not to be given any relief on account of silt flushing.

(f) Regulation 31 (6) of the Tariff Regulations 2014 specifically states that the treatment under Regulation 31 (6) (b) 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. The Petitioner could have made arrangements to deal with the aspect of silt flushing. 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.

Rejoinder of the Petitioner to the reply of PSPCL

11. In response to the reply of the Respondent PSPCL, Petitioner vide its affidavit dated 28.9.2022 has filed its rejoinder and submitted as under:

(a) The difference of 43.16 MUs is the difference between Actual Generation (at Generator Terminal) and Schedule Generation (ex-Bus) and hence cannot be compared. The difference between Actual Generation (ex-Bus) and Schedule Generation (ex-Bus) is 37.04 MUs i.e. the unscheduled generation to support the grid. generating station deviates from the schedule in order to provide support to grid as per DSM Regulations, 2014 and amendments thereof.

(b) 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.

(c) The reasons for shortfall in generation of 12.80 MU, which is beyond the control of Petitioner and details of same have already been provided in petition.

(d) The Petitioner has claimed shortfall in generation of 12.80 MU, which has been calculated after adjustment of excess energy generated during high inflow period. Loss of generation due to less inflow cannot be predicted and this event is beyond the control of generating station.



(e) The operational aspect of slit flushing process during monsoon season is not clear to the respondent. The Basic objective of silt flushing is to maintaining long and useful life of the project. It is necessary that the sediment entering in the reservoir is not allowed to settle down in the reservoir. For this purpose, it is necessary to flush reservoir sediment as frequently as possible during monsoon season.

(f) 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, in the design energy calculation by CEA, no impact of loss in generation due to silt flushing is taken into consideration. Therefore, both the factors viz. less inflow and silt flushing are beyond the control of generating station and hence the petition in line with Regulation 31(6) has been submitted.

Analysis and Decision

12. The Petitioner has submitted the actual average inflows measured at dam site for each day of 2017-18 for which the shortfall has been claimed. Further, the Petitioner has submitted that during high inflow season daily maximum possible generation has been calculated as per available inflow at 95% installed capacity. During low inflow period, daily maximum possible generation has been calculated as per available inflow. The sum of daily maximum possible generations for 365 days i.e. the annual maximum possible generation has been calculated by the petitioner as 1489.67 MU.



13. 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 300 MW and then arriving at the daily Maximum possible energy generation in MU.

Maximum Possible Generation during a day (MU) =
 $(243 \times 0.90 \times 9.8 / 1000) \times (24 / 1000) \times$ Actual Inflow of the day available for generation

Where, 243 is the rated head of the plant in meter, factor 0.90 represents overall plant efficiency of 90% and 9.8 m/s² is acceleration due to gravity. All these figures have been used by CEA for arriving at the design energy of the plant.

14. Based on the above methodology, maximum possible energy generation for 2017-18 works out to 1482.32 MU (restricting the maximum power to 300 MW i.e. capacity of the plant during peak season) against the maximum possible generation of 1489.67 MU as submitted by the Petitioner. The difference is due to the fact that the Petitioner has considered more power generation in favourable conditions e.g. for certain days during lean seasons when actual generation during a day is more than theoretical possible generation, the Petitioner has replaced the theoretical value with the actual value. Further, this gap also includes the additional energy generated by the Petitioner by use of overload capacity on several days during peak season.

15. As such, considering the fact that the Petitioner by way of these adjustments has increased the extent of maximum possible generation, we have considered the generation of 1489.67 MU as calculated by the Petitioner for further deliberations.



16. Design Energy of the generating station is 1499.89 MU. During the FY 2017-18, Petitioner has claimed a shortfall of 12.80 MU in generation, as the actual generation was 1487.09 MU.

17. The Petitioner has divided the energy shortfall of 12.80 MU into two parts:

a) Shortfall of 21.96 MU which was for the reasons not under the control of the Petitioner. The break-up of the same is as under:

i) Energy shortfall due to less inflow: (-)164.50 MU

ii) Energy gain due to excess inflow: 154.28 MU

iii) Energy shortfall due to silt flushing: (-)11.75 MU

** Note: the sum of i) and ii) i.e. (-) 10.22 MU represents the short fall due to low inflows in comparison to the design inflows associated with design year.*

b) Net excess energy generation of (+) 9.16 MU due to factors which were under the control of the Petitioner. Breakup of the net figure is as under:

i) Energy generated by depleting reservoir level on some days: 18.02 MU

ii) Less generation for increasing reservoir level on some days: (-) 5.44 MU

iii) Unit Outage: (-) 3.21 MU

iv) Other constraints (partial load/ ramping up, down during peaking): (-) 0.21 MU

** Note sum of i) and ii) above i.e. (+) 15.58 MU is net excess generation by managing reservoir level and sum of iii) and iv) i.e. 3.42 MU is the loss for which the Petitioner is accountable.*

18. The Respondent, UPPCL has submitted that the instant petition may be considered on the basis of the order dated 11.12.2013 in Petition no. 220/MP/2011. The Petitioner in its rejoinder has submitted that the contention of the Respondent is not relevant in the present case as the petition referred by the Respondent, was related to recovery of lost capacity charges by way of reduction in NAPAF, while the present petition is for relief on account of shortfall in energy charges on account of uncontrollable factors and is covered under provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations. In this regard, we agree with the contention of the Petitioner



as the issue in the Petition no. 220/MP/2011 i.e. recovery of lost capacity charges, was not covered by any Regulation, whereas the issue in the present petition i.e. recovery of lost energy charges due to uncontrollable factors is allowable as per Regulation 31(6)(a) of 2014 Tariff Regulations.

19. With regard to the claim of the Petitioner that energy shortfall for the year 2017-18 was due to uncontrollable factors, the Commission is of the view that low generation in comparison to Design Energy in a hydro generating station may 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/ Non-utilization of maximum power potential of actual inflows due to excessive spillage.

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

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

20. Vide ROP of hearing dated 27.9.2022, the Petitioner was directed to submit IMD rainfall data to correlate low inflows. 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 of the Petitioner. As such, in absence of certified data by CEA/ CWC, we would have to rely upon the analysis of India Meteorological Department (IMD) data and data related to outages (planned or forced) to assess that low inflows was one of the major reasons for low generation in comparison to Design Energy.



21. The rainfall data issued by the IMD in respect of Chamba district for the years 2017 and 2018 is given below:

Rainfall in mm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	187.9	88.3	76.1	105.2	75.7	130.7	277.9	196.8	90.2	0	2.3	69
2018	3.6	71.7	51.1	78.1	48.9	154.3	165.4	275	279.8	19.9	54.8	13.1

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

% Departure from Long Period Averages

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	49	-22	-37	106	42	-1	-51	-59	-60	-100	-89	23
2018	-97	-36	-58	53	-8	17	-71	-43	23	-59	150	-77

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

22. As per 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.”

23. Correlating the above tabulated rainfall data as per IMD reports, indicates low rainfall in comparison to long period averages. Accordingly, on some days it might have generated in excess (154.28 MU) as compared to design energy when there were high inflows, whereas there was shortfall in energy generation (-164.50 MU) when there was less inflow compared to design flows during 2017-18. As such, the short fall of (-) 10.22 MU (-164.50+154.28) represents the net short fall due to low



inflows in comparison to the design inflows associated with design year claimed by the Petitioner under the head 'beyond its control' and we hold that the same was beyond the control of the Petitioner.

(ii) Prolonged planned/ forced outage of machines

24. 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 hearing dated 27.9.2022 had directed the Petitioner to furnish the planned and forced outage data for the year 2017-18 along with its correlation with energy generation. In response, the Petitioner vide affidavit dated 14.10.2022 has submitted that NHPC has requested CEA for certification of planned and forced outage. However, CEA has informed that the data of planned and forced outage should be obtained from RPC/RLDC. 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.

25. The matter has been examined, in absence of the above data, with regard to planned and forced outages in the instant generating station for the period 2017-18, we have verified the same from CEA Report of November 2018 on '*REVIEW OF PERFORMANCE OF HYDRO POWER STATIONS 2017-18*'. It is noticed from above report that various units of the generating station were under Planned Outage between the period from 15.11.2017 to 31.12.2017. With regard to forced outages, the above report includes data of those plants/units which are under forced outage for more than 24 hours. However, for the instant generating station, in the above report it is indicated that forced outages were 0.13% during 2017-18. This



percentage is also validated from the daily generation report submitted by the Petitioner along with the petition where total forced outage shortfall is (-)1.9 MU [(-)1.1 Mu of unit outages and (-)0.8 MU for other constraint] out of total Design energy of 1499.89 MU.

26. With regard to instances of planned outages, it is noticed that during the above planned outage events, there is no shortfall in energy generation as compared to design energy for the period except for the duration when there was less inflow as compared to design inflow which was beyond the control of the Petitioner and less generation to increase reservoir level which the Petitioner has considered within its control. The same is in order.

27. With regard to instances of forced outages and shortfall due to other constraints, it is noticed that during the above events, there is no shortfall in energy generation as compared to design energy for the period except for the period when there was less generation due to less inflow as compared to design inflows. However, the Petitioner has considered net shortfall of (-)3.42 MU ((-) 3.21 MU due to unit outage and (-)0.21 MU due to other constraint within its control. The same is in order.

Energy shortfall due to silt flushing:

28. The Petitioner has claimed generation loss of 11.75 MU on account of silt flushing. In our view, the calculation of Design Energy of the plant based on the hydrological series does not consider the energy lost due to stoppage of plant on account of silt flushing, Considering the fact that energy which may be lost during stoppage of plant due to high silt (and consequently silt flushing) is not under the control of the Generator and is not accounted for in the calculation of design energy,



we allow the energy shortfall of 11.75 MU under reasons beyond the control of the generating station.

29. In view of the above deliberations, it is held that there is a shortfall of 3.42 MU of energy due to outages and other constraints. However, the Petitioner has put the same under controllable factors and has not claimed the corresponding energy charges.

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

30. To assess 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 1487.09 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	1499.89 MU
2.	Energy shortfall due to less inflows (on net basis)	(-)10.22 MU
3.	Energy loss due to silt flushing	(-)11.75 MU
4.	Remaining Energy that could be generated 4=1+2+3	1477.92 MU

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

		Based on actual available flow at 100% machine capacity
1.	Remaining Energy that could be generated after considering reasons beyond control (as arrived above)	1477.92 MU
2.	Excess generation due to reasons within the control of Petitioner (as claimed by the Petitioner)	9.16 MU {(+)12.58 MU by managing the reservoir level, (-) 3.21 MU due to unit outages and (-)0.21MU due to Other constraints}
3.	Remaining Energy that could be generated 3=1+2	1487.08 MU



31. In view of the above calculations and the fact that actual generation of the generating station i.e. 1487.09 MU is almost in agreement with the above theoretical calculations of 1487.08 MU, 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.

32. 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. (-) 21.96 MU. However, the Petitioner by managing the reservoir level has managed to generate additional energy of 12.58 MU. The Petitioner has accounted this additional generation under the reasons which were under the control of the Petitioner, nevertheless the same needs to be adjusted for arriving at the allowable recovery of energy charges. Accordingly, out of total shortfall of (-) 12.80 MU, shortfall for reasons under the control of the Petitioner has been taken as (-)3.41 MU (due to unit outages and other constraint) and shortfall for the reasons not under the control of the Petitioner has been taken as (-) 9.39 MU $\{(-)12.88 \text{ MU}-3.41 \text{ MU}\}$.

33. The Commission vide ROP of the hearing dated 27.9.2022 directed the Petitioner to submit the details of energy accounted in DSM. In response to the ROP, the Petitioner has submitted the details of energy accounted for in DSM vide affidavit dated 14.10.2022. It has been submitted that 37.04 MU is the energy which has been accounted for in DSM and corresponding revenue earned from DSM is Rs.840.28 lakh.



34. 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”) as amended. It has been submitted by the Petitioner that 37.04 MU has been accounted for in DSM and corresponding revenue earned is Rs. 840.28 lakh. Regulation 31(6)(a) of the 2014 Tariff Regulations provides for recovery of energy charge 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 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.

35. 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 the control of the Petitioner. Therefore, in case the revenue received under provisions of the 2014 DSM Regulations is less than the energy that would have been received had the same 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 after adjustment of the amount which is 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.

36. In the instant case, the Petitioner has been able to generate revenue to the tune of Rs. 8.40 crore for the energy accounted for in DSM i.e 37.04 MU. On the other hand, if this DSM energy would have been scheduled, the scheduled energy would have increased to 1480.97 (=1443.93 + 37.04) MU and the energy charge shortfall of the generating station would have reduced in comparison to the claimed energy charge shortfall of Rs 3.74 crore. The following table captures the reduction in energy charge shortfall after adding the DSM energy in the actually scheduled energy:

	Schedule Energy (Ex-Bus) (MU)	Free Energy (MU)	Net Energy Billed (MU)	ECR (Rs./Unit)	Allowed Energy Charges (Rs. in crore)	Energy Charges actually recovered (Rs. in crore)	Energy charge shortfall (Rs. in crore)
	1	2	3=1-2	4	5	6=3x4/10	7=5-6
As claimed by the petitioner based on actually scheduled energy	1443.93	176.88 (As per Regional Energy Account)*	1267.05	0.991	129.30	125.56	3.74
As modified by adding the DSM energy in the actually scheduled energy	1480.97 (=1443.93 + 37.04)	177.72	1303.25	0.991	129.30	129.15	0.15

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



37. From the above table, it is concluded that the energy charges recoverable for the DSM energy would have been Rs.3.59 (= 129.15 - 125.56) crore as against Rs.8.40 crore recovered by the generator from the DSM pool. In terms of above decision, since the energy charge attached to DSM energy (Rs.3.59 crore) is on lower side as compared to revenue earned from the DSM pool (Rs.8.40 crore), the actual shortfall of Rs.3.74 crore reduces to Rs.0.15 (=3.74-3.59) crore. Accordingly, the energy charge allowed to be recovered in the FY 2019-20 due to shortfall in energy generation from the Design Energy during 2017-18 has been calculated as under:

Total Shortfall in generation during FY 2017-18 (MU)	A	12.80
Total under recovery of energy charges claimed during FY 2017-18 (in Rs. crore)	B	3.74
Total under-recovery of energy charges during FY 2017-18 after accounting for the revenue which would have been earned if the energy accounted under DSM would have been scheduled to the beneficiaries (in Rs. crore) para 40	C	0.15 (=3.74-3.59)
Shortfall in generation due to reasons beyond control (MU) para 35	D	9.39
Shortfall in energy charges allowed to be recovered during FY 2019-20 (in Rs. crore)	E=C*D/A	0.11

38. The Petitioner in original petition had requested to allow recovery of shortfall in energy charges during FY 2019-20 in six equal monthly instalments by raising supplementary bills to the beneficiaries as per Regulation-44(8) and 44(7) of CERC (Terms and Conditions of Tariff) Regulation 2019. However, during the hearing on 18.6.2020 on contention of the learned counsel of the Respondent BRPL, the Petitioner vide affidavit dated 3.7.2020 has amended the petition and claimed the recovery of shortfall in energy charges under the Regulation 31(6)(b) of the 2014 Tariff Regulation. The matter has been considered, we notice that, in this case, the



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. 0.11 crore for the period 2017-18 and the same shall be recovered in six equal monthly instalments by raising supplementary bills to the beneficiaries as per Regulation-44(8) and 44(7) of CERC (Terms and Conditions of Tariff) Regulation 2019. Further, the difference in energy charge shortfall to be recovered for the FY 2017-18 which may arise after true up of tariff for the period 2014-19 shall be recovered directly by the generating station from the beneficiaries through supplementary bills after true-up.

39. Petition No. 458/MP/2019 is disposed of in terms of above.

Sd/-
(Pravas Kumar Singh)
Member

Sd/-
(Arun Goyal)
Member

Sd/-
(I. S. Jha)
Member

