

**CENTRAL ELECTRICITY REGULATORY COMMISSION
New Delhi**

Petition No.348/MP/2018

Coram:

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

Date of Order: 04.02.2021

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 2016-17 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 Ltd
The Mall, Near Kali Badi Mandir
Patiala – 147001, Punjab

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

3. BSES Rajdhani Power Ltd
2nd Floor, B Block, Nehru Place,
New Delhi 110019

4. Uttar Pradesh Power Corporation Ltd
Shakti Bhawan, 14, Ashoka Road,
Lucknow – 226001, Uttar Pradesh

5. BSES Yamuna Power Ltd
Shakti Kiran Building, Karkardooma,
Delhi – 110092



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

7. Jaipur Vidyut Vitaran Nigam Ltd.,
Vidyut Bhawan, Janpath,
Jaipur – 302005, Rajasthan

8. Jodhpur Vidyut Vitaran Nigam Ltd.
New Power House, Industrial Area,
Jodhpur-342003, Rajasthan

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

10. Uttrakhand Power Corporation Ltd
Urja Bhawan, Kanwali Road,
Dehradun- 248001, Uttrakhand

11. Power Department
Union Territory of Chandigarh,
Engineering Department, UT Secretariat,
Sector 9D, Chandigarh – 160009

12. Himachal Pradesh State Electricity Board
Vidyut Bhawan, Kumar House
Shimla - 171004

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

...Respondents

Parties present:

Shri Rajiv S. Dvivedi, Advocate, NHPC
Shri M. G. Gokhale, NHPC
Ms. Swapna Sheshadri, Advocate, PSPCL
Shri Amal Nair, Advocate, PSPCL
Shri Ankit Bansal, PSPCL
Shri R. B. Sharma, Advocate, BRPL
Shri Himanshu Chauhan, BRPL
Ms. Meghan Bajpeyi, BRPL
Shri Mohit Mudgal, Advocate, BYPL



ORDER

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

- a) The Hon'ble Commission may kindly allow recovery of energy charges amounting to ₹8.19 crore in FY 2018-19 against the shortfall in generation of 55.84 MU in FY 2016-17 as per regulation 31(6)(b) of CERC Tariff Regulations, 2014 as explained in para- IX & X.
- b) The Hon'ble Commission is requested to allow modified design energy for FY 2018-19 so that the recovery of allowable energy charges is assured as explained in para-X.
- c) To allow revision of energy bills for the FY 2018-19 for recovery of energy charges.
- d) To allow issuance of supplementary bill for difference in energy charges directly to beneficiaries after truing up of tariff as mentioned in para-X.
- e) Pass such other and further order / orders as are deemed fit and proper in the facts and circumstances of the case."

Background

2. Chamera-II Hydro Power Station with capacity of 300 MW (3x100 MW) is located in the State of Himachal Pradesh and is under commercial operation w.e.f. 31.03.2004. Power from this station is supplied to 14 bulk power beneficiaries in Northern region. The approved annual Design Energy (DE) is 1499.89 MU and keeping in view 1.2% auxiliary consumption and 12% free power to home State, the saleable energy is 1304.06 MU.

3. The provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff Regulations") dealing with the methodology for computation of energy charges and billing in respect of hydro-generating stations are as under:

"31(4) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiary, excluding free energy, if any, during the calendar month, on ex power plant basis, at the computed energy charge rate. Total Energy charge payable to the generating company for a month shall be:

(Energy charge rate in Rs. / kWh) x {Scheduled energy (ex-bus) for the month in kWh} x (100 – FEHS) / 100



“31(5) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis, for a hydro generating station, shall be determined up to three decimal places based on the following formula, subject to the provisions of clause (7):

$$ECR = AFC \times 0.5 \times 10 / \{DE \times (100 - AUX) \times (100 - FEHS)\}$$

Where,

DE = Annual design energy specified for the hydro generating station, in MWh, subject to the provision in clause (6) below.

FEHS = Free energy for home State, in per cent, as defined in Regulation 42.

“31(6) In case the actual total energy generated by a hydro generating station during an 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.”

(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.

(c) Actual energy generated (e.g. A1, A2) shall be arrived at by multiplying the net metered energy sent out from the station by 100 / (100 – AUX).

“31(7) In case the energy charge rate (ECR) for a hydro generating station, computed as per clause (5) of this regulation exceeds ninety paise per kWh, and the actual saleable energy in a year exceeds {DE x (100 – AUX) x (100 – FEHS) / 10000} MWh, the Energy charge for the energy in excess of the above shall be billed at ninety paise per kWh only:

Provided that in a year following a year in which total energy generated was less than the design energy for reasons beyond the control of the generating company, the energy charge rate shall be reduced to ninety paise per kWh after the energy charge shortfall of the previous year has been made up.

Submissions of the Petitioner

4. The Petitioner in this Petition has submitted as under:



a) Chamera-II Hydro 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 is for recovery of shortfall in energy charges due to shortfall in generation and the request has been made as per Regulation 31(6)(b) of the 2014 Tariff Regulations.

b) The following table gives the actual generation during FY 2016-17 i.e. the year for which shortfall is being claimed and actual generation during FY 2017-18:

Actual Generation during FY 2016-17	A1	1444.05 MU
Actual Generation during FY 2017-18	A2	1487.09 MU
Design Energy	DE	1499.89 MU

c) $(A1+A2-DE) = (1444.05+1487.09-1499.89) = 1431.25$ MU. Thus, $(A1+A2-DE)$ is less than the Design Energy of the Station i.e., 1499.89 MU. Hence, as per Regulation 31(6)(b) of 2014 Tariff Regulations, the Energy Charge Rate (ECR) for FY 2018-19 needs to be modified so as to ensure recovery of under-recovered energy charges of FY 2016-17.

d) The month-wise breakup of actual generation, vis- a-vis Design Energy during FY 2016-17 is tabulated below:

Sl. No.	Month	Design Energy (MU)	Actual Generation at GT (MU)	Shortfall/ Excess (MU)
1	2	3	4	5=4-3
1	Apr-16	188.65	102.98	-85.67
2	May-16	212.04	206.58	-5.46
3	Jun-16	149.31	215.67	66.36
4	Jul-16	212.04	225.31	13.27
5	Aug-16	212.04	226.03	13.99
6	Sep-16	152.23	155.77	3.54
7	Oct-16	69.95	84.79	14.84
8	Nov-16	48.98	46.84	-2.14
9	Dec-16	39.55	36.76	-2.79
10	Jan-17	39.29	37.74	-1.55
11	Feb-17	56.43	45.24	-11.19
12	Mar-17	119.38	60.33	-59.05
Total		1499.89	1444.05	-55.84

e) The shortfall in generation is 55.84 MU (1499.89 MU – 1444.05 MU) during FY 2016-17. 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	-196.35 MU
Energy generated due to excess inflow from design inflow on some days	131.11 MU
Energy loss due to silt flushing	-5.64 MU
Total (A)	-70.88 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	20.75 MU
Less generation for increasing reservoir level on some days	-4.82 MU
Unit Outage	-0.40 MU
Other constraint (Partial load/ramping up/down during peaking/ high inflow/ TRT level etc.	-0.49 MU
Total (B)	15.04 MU
Net Generation Loss (A+B)	- 55.84 MU

f) The claim is based on tariff allowed by the Commission for FY 2016-17 vide order dated 17.06.2016 in petition no. 233/GT/2014, which is as below:

Design Energy (MU)	Aux. Consumption (MU)	Free Energy (MU)	Saleable Energy (MU)	Annual Fixed Charges (Crore)	Allowed Energy Charges (Crore.)	ECR (₹/Unit)
1	2	3	4=1-(2+3)	5	6=50% of 5	7
1499.89	18.00	177.83	1304.06	254.99	127.50	0.978

g) In actual scenario, the generation and recovered energy charges are as under:

Schedule* Energy (Ex-Bus) (MU)	Free* Energy (MU)	Net Energy Billed (MU)	ECR (₹/Unit)	Allowed Energy Charges (Rs. crore)	Energy Charges actually recovered (Rs. crore)	Under recovery of Energy Charges (Rs. crore)
1	2	3=1-2	4	5	6=3x4	7=5-6
1391.76	171.79	1219.97	0.978	127.50	119.31	8.19

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

h) Thus, in FY 2016-17, NHPC has recovered energy charges amounting to ₹119.31 crore corresponding to saleable scheduled energy of 1219.97 MU



against energy charges of ₹127.50 crore (50% of AFC) as allowed in order dated 17.06.2016 in petition no. 233/GT/2014. Hence, there is an under-recovery of energy charges amounting to ₹8.19 crore which needs to be recovered from the beneficiaries.

i) Under provisions of Regulation 31(6)(b) of the 2014 Tariff Regulations, the data details for recovery of shortfall in energy charges on account of generation shortfall (in FY 2016-17) in FY 2018-19 is as under:

AFC for FY 2018-19 (₹ crore)	A	262.05
Energy Charge for FY 2018-19 (₹ crore)	$B = 0.5 \times A$	131.03
Shortfall in Energy Charges during FY 2016-17 due to reason beyond control (₹ crore)	C	8.19
Energy Charges to be recovered in FY 2018-19 (₹ crore)	$D = (B + C)$	139.22
Modified DE for FY 2018-19 (MU)	E (as per para-VI)	1431.25
Modified Energy Charge Rate for FY 2018-19 (₹/ unit)	$F = (0.5 \times A \times 10) / E \times (1 - 0.012) \times (1 - 0.12)$	1.053

j) As per above, in order to fully recover shortfall in energy charges for FY 2016-17, the Petitioner may be allowed to raise energy bills during FY 2018-19 at energy charge rate of ₹1.053/ unit against its normal energy charge rate of ₹1.005/ unit.

5. The matter was heard on 02.05.2019. The Commission after hearing the parties, directed the Petitioner to submit the following additional information with an advance copy to the Respondents:

- a. Rainfall data reported by IMD for the district in which plant is located and other adjoining districts to correlate low inflows; and
- b. Planned/forced machine outage data certified by CEA/NRLDC and its correlation with generation data viz a viz available average inflows during the period of such outages.

6. The Petitioner vide affidavit dated 11.6.2019 has filed its response to above direction of the Commission and submitted the following information:



- a. IMD Rainfall data
 - b. Planned/forced machine outage data certified by CEA/NRLDC
 - c. Correlation of outage data with energy generation data vis-à-vis available average inflows
7. The matter was heard again on 30.9.2019. The Commission, after hearing the parties, directed the Petitioner to file amended Petition, by 9.10.2019.
8. The Petitioner vide letter dated 7.10.2019 submitted that no relaxations are sought by the Petitioner and that the petition may be treated as final/ amended petition.
9. The matter was heard again on 18.06.2020. The Commission, after hearing the parties, directed the Petitioner to submit the following information on affidavit, by 15.7.2020 with an advance copy to the Respondents:
- a) Design Energy calculation (in MS Excel) as approved by CEA; Analysis of Annexure-II of the Petition on daily basis in MS Excel; Methodology for calculating daily maximum possible generation during the financial year 2018-19 as claimed in the Petition (in MS Excel);
 - b) Daily generation report for the days for which energy shortfall has been claimed due to planned/forced outages, reservoir flushing, high trash, plant shutdown due to strike and transmission constraints, etc.
 - c) Day-wise details of scheduled energy, actual energy injected in the grid and energy accounted for in DSM along with the revenue earned from DSM for such energy; and
 - d) As per the daily generation analysis submitted by the Petitioner, during high inflow periods, overload capacity of 10% has not been used to its fullest i.e. unit loading is always less than 110% for some generating stations in spite of water availability. Explain the reasons station-wise in this regard; and
 - e) Any other relevant information/document to justify the claims in the Petition.
10. In compliance with the above directions, the Petitioner has submitted the additional information vide affidavit dated 16.7.2020 and has served the copies of the same to the respondents.



Reply of Respondent No. 4, UPPCL

11. UPPCL vide its affidavit dated 10.12.2018, 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 2016-17 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 2016-17 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 reply of UPPCL

12. In response to the reply of UPPCL, NHPC vide its affidavit dated 7.2.2019 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 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 uncontrollable factor because the Petitioner has no control over high flow of silt in rainy season and flushing action is a 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 Respondent No. 3, BRPL

13. BRPL vide its affidavit dated 4.4.2019, has submitted as under:

(a) The Petitioner has claimed that there was shortfall of 55.84 MU during the FY 2016-17 which are stated to be beyond the control of the Petitioner which in monetary terms is Rs. 8.19 crore and the Petitioner has prayed that the shortfall may be allowed to be recovered during the FY 2018-19 from the beneficiaries. The Petitioner has also prayed to allow the modified design energy for FY 2018-19 so that the recovery of allowable energy charges is assured. The Petitioner is claiming the alleged recovery under Regulation 31(6)(b) of the 2014 Tariff Regulations. However, in the provisions of Regulation 31(6) of the 2014 Tariff Regulations, there is nothing which may allow the Petitioner recoupment of under-recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station. A perusal of the regulation would show that it only provides for the treatment in case actual total energy generated by a hydro generating station during a year is less than the design energy. The Petitioner has also not identified any other regulatory provision under which such a claim can be claimed and recovered from the beneficiaries. 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.

(b) Similarly, the other prayer related to revision of energy bills for the period 2018-19 and allowing issuance of the energy bill are also unfounded and without any basis. These claims are only imaginary as there are no express regulatory provisions under which such claims can be sought from the beneficiaries for recoupment of under-recovered energy charges, if any, by way of re-determination or under the truing up exercise. Accordingly, the claim of the Petitioner is liable to be rejected by the Commission.

(c) The Petitioner has also requested to modify the design energy for FY 2018-19 as well as the alleged shortfall of 55.84 MU during the FY 2016-17 and filed the following information for this purpose:

- i. Provisional ABT based REA issued by NREB for all the 12 months during 2016-17;
- ii. Daily inflow data of the Petitioner in respect of Chamera-II power station for FY 2016-17;
- iii. Energy Bill dated 06-April-2017 to Deputy Chief Engineer/ISB Punjab State Power Corporation Ltd.;
- iv. Certification of actual inflow in respect of Rangit Power Station (2014-15), TLD-III Power Station (2014-15 & 2015-16), and Chamera-III Power Station (2015-16).

(d) The perusal of the letter from the Central Water Commission would show that it may not be possible to certify the inflow series.

(e) Annexure-II of the petition related to the analysis on daily basis would show that the rainfall data is of the Petitioner, which has not been vetted by any independent authority. Even this data would show that the main shortfall is in the month of April 2016 which is of the order of 85.67 MU and there is no explanation whether this shortfall is owing to planned or forced shutdown of the machinery and consequent reduced schedule or the same is attributable to low generation as the Petitioner did not allow extra generation by depleting reservoir level which are expected to fill starting as early as next month. It is also noted that the water spilling from the reservoir commences right from 9th May, 2016. It may also be stated that there is a practice of doing the maintenance work before the monsoon on all the units of the generating station so that they are ready for maximum generation during the monsoon season. Nothing has been



explained on these issues in this petition and even the maximum reservoir level and the minimum draw down level along with the daily reservoir levels have not been furnished. It is also noted that the outage occurred during the mid-monsoon on 30.07.2016 which further resulted in low generation and more spillage. All this would clearly show that the shortfall in energy generation was for reasons attributable to the Petitioner.

(f) The shortfall of 55.84 MU claimed during the FY 2016-17 is required to be verified from independent agencies such as CEA/CWC.

(g) Besides the certification of the inflow series, the Petitioner is also required to produce certification from NRPC and NRLDC that the shortfall as claimed is not due to factors which are within the control of the Petitioner. However, neither NRPC nor NRLDC have been included as respondents in the petition.

(h) Recoupment of under-recovered energy charges due to shortfall in energy generation and also the treatment by way of modification in the Design Energy for the year following the year of energy shortfall amounts to double benefits.

(i) Further, the Petitioner's plant had an excess of 35 MU beyond scheduled Energy (which includes free energy). The Petitioner would have sold this energy in the market resulting in revenue to the power station and this comes out to be approx Rs. 9.02 crore as shown below:

MU generated	A	1444.05
Normative auxiliary consumption (in %)	B	1.20%
MU generated net of auxiliary consumption	C= $A*(100\%-B)$	1,426.72
MU scheduled by station	D	1391.76
Unscheduled (MU) by station	$E=C-D$	35
IEX prices of Northern Region for FY 2015-16	F	2.58
Amount recovered for unscheduled energy (Rs. crore)	$G=E*F/10$	9.02

Therefore, the Petitioner has already recovered the amount which it is claiming as a loss due to shortfall.



14. Further, BRPL in its additional reply, filed vide its affidavit dated 16.6.2020, has submitted as under:

(a) The declaration of schedule for the next day is entirely within the domain of the Inter-State Generating Station (ISGS). As per Regulation 6.4(16) of the Grid Code, ISGSs are required to make advance declaration of ex-power plant MW and MWh capabilities for the next day i.e. 00.00 hrs. to 24.00 hrs. in the 96 time-blocks each of 15 minutes duration. It is also incumbent upon ISGSs to declare the plant capabilities faithfully, i.e. according to their best assessment. As per Regulation 6.4(18) of the Grid Code, any over/under declaration of plant capability contemplating to deviate from schedules and thus make money either as undue capacity charge or the charge for deviations, is not permissible.

(b) The Petitioner is consistently and deliberately declaring low schedule to the tune of 52.29 (1444.05-1391.76) MU and accordingly earned benefits on account of unscheduled generation from the beneficiaries of Northern Region in the form of UI charges which vary from Rs. 1.99 per unit to Rs. 8.24 per unit for frequency deviation range from 50 Hz to 49.70 Hz respectively as per provisions of the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 (hereinafter referred to as 'the 2014 DSM Regulations'). This huge benefit may be viewed with reference to the Energy Charge Rate of Rs. 0.978/kWh only for this generating station. Details are provided in following table:

(Generation in MU)				
S. No.	Months	Scheduled Ex-bus Generation	Actual Ex-bus Generation	% Deviation
1.	April-2016	96.71	102.98	6.48
2.	May-2016	202.12	206.58	2.21
3.	June-2016	210.31	215.67	2.55
4.	July-2016	222.75	225.31	1.15
5.	August-2016	223.54	226.03	1.11
6.	September-2016	151.82	155.77	2.60
7.	October-2016	79.80	84.79	6.25
8.	November-2016	42.53	46.84	10.13
9.	December-2016	32.80	36.76	12.07
10.	January-2017	33.35	37.74	13.16
11.	February-2017	41.27	45.24	9.62
12.	March-2017	54.76	60.33	10.17
	Total	1391.76	1444.05	3.76



(c) The Petitioner is liable for 'gaming' under Regulation 2(1)(i) of the 2014 DSM Regulations for such action. The beneficiaries could have availed energy at ECR and not under the charges for deviations for unscheduled injection of 52.29 MU and accordingly the Petitioner got undue benefit at the cost of beneficiaries rendering itself liable for action under Regulation 6 of the 2014 DSM Regulations.

(d) Power to remove difficulty can be exercised to the extent it is necessary for applying or giving effect to the legislation and in doing so, the authority exercising the power to remove difficulty may slightly tinker with the legislation to round off angularities, or smoothen joints or remove minor obscurities to make it workable, without doing violence to the basic structure and primary features of the regulations. Further, under the guise of removing difficulties, the scheme and essential provisions of the legislations cannot be changed. Accordingly, the request of the Petitioner seeking relaxation under Regulations 54 and 55 of the 2014 Tariff Regulations should be limited to parameters laid down by the Hon'ble Supreme Court.

Rejoinder of the Petitioner to reply of BRPL

15. In response to the reply of BRPL, the Petitioner vide its affidavit dated 3.6.2019 has filed its rejoinder and submitted as under:

(a) The recovery of AFC in case of hydropower projects is in two parts on 50:50 basis. The recovery of 50% of AFC is entirely dependent on generation up to design energy and in case of shortfall in generation, generating company is bound to lose revenue. In case of Chamera-II Power Station in FY 2016-17, the total shortfall in generation was of 55.84 MU and loss of energy charges was Rs. 8.19 crore. Regulations 31(6)(a), 31(6)(b) & 31(6)(c) of the 2014 Tariff Regulations lay down the methodology for recovery of shortfall as applicable to generating stations.

(b) There is no case of double benefit under recovery mechanism defined in Regulation 31(6) of the 2014 Tariff Regulations. In fact, the Petitioner is recovering loss of energy charges of FY 2016-17 in next FY. The modification



in DE of FY 2018-19 for recovery of losses in FY 2016-17 is as per procedure defined in Regulation 31(6) of the 2014 Tariff Regulations.

(c) CEA/CWC has denied certification of daily discharge data due to non-availability discharge gauge at specific location.

(d) BRPL has commented on operational conditions of the project causing loss in Design Energy. The necessary clarification is as under:

- i. In case given discharge is beyond reservoir capacity, the spillage of water is bound to be there and generating company has no control over it.
- ii. The reasons for shortfall of 85.67 MU in generation during the month of April 2016 has already been explained in the petition.
- iii. As per practice in NHPC, maintenance activities are done during lean season i.e. (November to March).
- iv. On 30.07.2016, there is no shortfall. The design target was 6.8 MU and actual generation was 7.10 MU.

(e) As per allocation letter issued by MoP, full power is allotted to different beneficiaries of Chamera-II Power Station except 12% free power to home State. Thus, Chamera-II Power Station has no free power to be sold under market/ exchange for recovery of additional revenue. The indicated generation (ex-bus) of 35 MU is unscheduled energy generated as per grid requirement under the 2014 DSM Regulations.

(f) Northern Regional power Committee (NRPC) and NRLDC are the nodal agencies for regulation of power in the region. They are not supposed to certify the data related with loss of generation. As the above agencies have no share allocation from the generating station and as per definition of beneficiary in the 2014 Tariff Regulations, they are not beneficiaries of power station and not made respondents in the instant petition.

(g) Spillage of water and shortfall in generation may occur in any financial year when the discharge is not in line with hydrology considered in design energy.

(h) In case of heavy rain in a short span of time, the spillage of water cannot be stopped due to limited capacity of reservoir, whereas deficient discharge in other time will cause loss of design generation.



16. Further, In response to the additional reply of the Respondent BRPL, NHPC vide its affidavit dated 4.7.2020 has submitted:

(a) Respondent BRPL in this para has tried to link the provisions of Regulation 6.4(16) and 6.4(18) of the Grid Code and provisions of Regulation 31(6) of the 2014 Tariff Regulations. The present petition is under Regulation 31(6) of the 2014 Tariff Regulations and in terms of this provision, whenever the actual total energy generated by a Power Station during a year is less than the design energy for reasons beyond the control of the generating station, the Petitioner is entitled for the claim of shortfall in energy beyond its control.

(b) Further, the Respondent BRPL has compared the month-wise scheduled ex-bus generation of Chamera-II Power Station with actual ex-bus generation and has calculated deviation as percentage of scheduled ex-bus generation. It can be seen that the total percentage deviation in FY 2016-17 in Chamera-II Power Station is 3.76% (52.29 MU).

(c) Further, respective RLDC keeps a close eye on the scheduling and if any ISGS is suspected of gaming, respective RLDC or the Commission can initiate action as per provisions of Regulation 6.4(18) of the Grid Code and Regulation 6(3) of the 2014 DSM Regulations.

(d) In the table reproduced by BRPL, it has calculated month-wise percentage deviation as percentage of scheduled generation without taking into consideration the operational aspects of a hydro-generating station. The months in which the percentage deviation is in the range of 12.07%-13.16% are months of lean season in which the scheduled generation is very low and any small deviation from scheduled generation will result in high percentage of deviation. Further, during lean period, a hydro generator only operates its machine during peaking hours to support grid and, therefore, the energy generated during the start of machine will ultimately result in deviation. This can be illustrated by a simple example:

“Suppose during the month of November, the peaking hours is from 6 PM to 9 PM, due to less inflow in the lean season the generating station will operate its machines during the peaking hours only. Therefore, the schedule as declared by the generating station shall be from 6 PM to 9 PM, however to avoid any last minute delay the generating station normally synchronizes its machines with grid say upto one time block prior to the start of schedule. Therefore, any energy generated



during the start of machine in the lean period will ultimately land up in deviation which is because of the inherent nature of hydro generating station and cannot be avoided.”

(e) In view of above illustration and regulatory provisions for keeping gaming in check, the deviation of 3.76% of scheduled generation and 3.62% of actual generation by no means can be called ‘gaming’ as permitted limit is 12% of scheduled injection (maximum upto 48 MW in case of plants with installed capacity upto 400 MW) or 150 MW whichever is lower and therefore alleged charge of gaming by BRPL is baseless and is not backed by any evidence.

(f) The instant petition has been filed under Regulation 31(6) of the 2014 Tariff Regulations for recoupment of under-recovered energy charges due to shortfall in energy generation for reasons beyond its control during the FY 2016-17 and no relief has been sought under Regulation 54 ‘Power to Relax’ and Regulation 55 ‘Power to Remove Difficulty’. Therefore, the submission of BRPL is not relevant and does not pertain to the instant petition.

Reply of PSPCL, Respondent No. 1

17. PSPCL vide its affidavit dated 8.4.2019, has submitted as under:

(a) The Petitioner has claimed for recovery on account of shortfall in generation for 55.84 MU stating that the same is on account of reasons beyond its control. However, the Petitioner has not provided any details as to what were the reasons which were beyond the control of the Petitioner.

(b) 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.



(c) The Petitioner has stated that the energy loss due to silt flushing is an uncontrollable event and that the loss of energy due to this is recoverable from the beneficiaries. 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 hydropower projects. Therefore, the same cannot be considered as being beyond the control of the Petitioner.

(d) Regulation 31(6) of the 2014 Tariff Regulations 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. In so far as the aspect of less in flow is concerned, it is submitted that this is a common event for a hydropower generator and, therefore, not something that the Petitioner could not have foreseen at the time of designing the project.

Rejoinder of the Petitioner to reply of PSPCL

18. In response to the Respondent PSPCL, NHPC vide its affidavit dated 3.6.2019 has filed its rejoinder and submitted as under:

(a) The reasons for shortfall in generation of 55.84 MU, which is beyond the control of Petitioner, have already been provided in the petition. Shortfall in generation of 55.84 MU 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.

(b) The operational aspect of silt flushing process during monsoon season is not clear to the Respondent PSPCL. The basic objective of silt flushing is to maintain 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. Accordingly, power station has to carry out reservoir silt flushing operations in June, July, August and September when discharge exceeds 1500 cumecs, 2500 cumecs, 2000 cumecs and 1500 cumecs respectively as per defined NHPC guidelines in reservoir operational manual. If



during the month of May and October discharge exceeds 1500 cumecs, the flushing shall be resorted to in these months as well. Further, turbine has a specified safe silt passage limit defined by the OEM. Regulation 50(2) (Normative Annual Plant Availability Factor (NAPAF)) of the 2014 Tariff Regulations states that a “*further allowance may be made by the commission in NAPAF determination under special circumstances, e.g. abnormal silt problem or other operating conditions, and known plant limitations*”. Accordingly, Power Stations are operated to minimize damages caused by silt/ sedimentation. Any damages due to silt ultimately results in increased O&M cost. To achieve the appropriate level of silt concentration, generally the silt flushing period is 20 hours. However, in case of very high silt content, the silt flushing period has sometimes been extended to more than 20 hours (even 40-80 hours), details of which is already explained in daily analysis (Annex-II of the petition). Therefore, on account of higher discharge/ very high silt conditions, the flushing takes more time and is factored under reason beyond the control of power station as these silt/ sedimentation mitigation measures accrue benefit to the beneficiaries only.

(c) Silt flushing during monsoon season is regular phenomena and the Petitioner has no control over it. It is not correct to say that the less inflow is a common event. In last five years (i.e. from 2014-15 to 2018-19), Chamera-II Power Station has generated more than design energy during 2014-15, 2015-16 & 2018-19. The less inflow is only due to hydrological reasons and it is not within the control of generating station.

Analysis and Decision

19. The Petitioner has submitted the actual average inflows measured at dam site for each day of 2016-17 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 station in MW is 300 and rated inflow in cumecs is 142 cumecs corresponding to 300 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 1434.65 MU.

20. 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) = $(243 \times 0.91 \times 9.8 / 1000) \times (24 / 1000) \times$ Actual Inflow of the day available for generation

Where, 243 is the rated head of the plant in meter, factor 0.91 represents overall plant efficiency of 91% and 9.8 m/s^2 is acceleration due to gravity. All these figures have been used by CEA for arriving at the design energy of the plant.

21. Based on the above methodology, maximum possible energy generation for 2016-17 works out to 1426.74 MU (restricting the maximum power to 300 MW i.e. capacity of the plant during peak season) against the maximum possible generation of 1434.65 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.

22. 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 1434.65 MU as calculated by the Petitioner for further deliberations.

23. In the instant case, it is noticed that the Petitioner has been able to generate 1444.05 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 depletion of reservoir level on certain days to produce additional energy.

24. Design Energy of the generating station is 1499.89 MU. During the FY 2016-17, Petitioner has claimed a shortfall of 55.84 MU in generation, as the actual generation was 1444.05 MU.

25. The Petitioner has divided the energy shortfall of 55.84 MU into two parts:

a) Net excess energy generation of (+) 15.04 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: 20.75 MU
- ii) Less generation for increasing reservoir level on some days: (-) 4.82 MU
- iii) Unit Outage: (-) 0.40 MU
- iv) Other constraints (partial load/ ramping up, down during peaking): (-) 0.49 MU

** Note sum of i) and ii) above i.e. (+) 15.93 MU is net excess generation by managing reservoir level and sum of iii) and iv) i.e. 0.89 MU is the loss for which the Petitioner is accountable.*

b) Shortfall of 70.88 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: (-)196.35 MU
- ii) Energy gain due to excess inflow: 131.11 MU
- iii) Energy shortfall due to silt flushing: (-)5.64 MU

** Note: the sum of i) and ii) i.e. (-) 65.24 MU represents the short fall due to low inflows in comparison to the design inflows associated with design year.*

26. The Respondent, UPPCL has submitted that the instant petition may be considered on basis of the order dated 11.12.2013 in the 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 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.

27. The Respondent, BRPL has raised the issue that recoupment of under-recovered energy charges due to shortfall in energy generation and also the treatment by way of modification in the Design Energy for the year following the year of energy shortfall amounts to double benefits. The Petitioner has stated that there is no case of double benefit and claimed relief is covered under provisions of the 2014 Tariff Regulations. In this regard, Commission is of the view that there is no double benefit to the Petitioner as the modification of design energy and corresponding increase of energy charge rate for the third financial year, is allowed only till the energy charge shortfall for the year of energy shortfall is recovered by the Petitioner.

28. With regard to the claim of the Petitioner that energy shortfall for the year 2016-17 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.; and
- (iv) Non-utilization of maximum power potential of actual inflows due to excessive spillage.



29. 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

30. Vide ROP of hearing dated 02.05.2019, 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.

31. The rainfall data issued by the IMD in respect of Chamba district for the years 2016 and 2017 is given below:

Rainfall in mm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	22.7	58.9	223.7	55.6	88.8	83.6	209.5	274.7	34.8	8.5	0	0.9
2017	187.9	88.3	76.1	105.2	75.7	130.7	277.9	196.8	90.2	0	2.3	69

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

% Departure from Long Period Averages

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	-82	-48	86	9	66	-37	-63	-43	-85	-83	-100	-98
2017	49	-22	-37	106	42	-1	-51	-59	-60	-100	-89	23

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

32. 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 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.”

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.

(ii) Prolonged planned/ forced outage of machines

34. 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 2.5.2019 had directed the Petitioner to furnish the planned and forced outage data for the year 2016-17 along with its correlation with energy generation. In response, the Petitioner vide affidavit dated 11.6.2019 has submitted details of 58 events of forced outages and planned outages during the year 2016-17. The break-up of the same is as under:

Events (a)	Design Energy (MU) (b)	Spillage (Cume cs) (c)	Maximum Possible generation based on actual inflow available (MU) (d)	Actual Generation at GT (MU) (e)	Energy shortfall (MU) with respect to design energy (f)=(e)-(b)	Claimed under the head:- Shortfall Beyond control of Power Station (g)=(d)-(b)	Claimed under the head:- Shortfall Within control of Power Station (h)=(e)-(d)	Reasons
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49	83	0.00	72.04	74.41	-8.56	-10.93	2.37	-10.93 MU claimed by the Petitioner for reason of less inflow from design inflow.
8	37.30	404.87	40.21	39.25	1.97	2.92	-0.95	2.92 MU Excess inflow from design inflow has been Adjusted in the shortfall claimed.
1	5.8	170.6	7.2	1.56	-4.25	1.39	0	1.39 MU Excess inflow from design inflow has been Adjusted in the shortfall claimed. There was spillage of water and the loss of generation was due to Silt Flushing
						-5.64	0	-5.64 MU has been adjusted in the shortfall claimed due to due to Silt Flushing

35. From the above data, we note that out of 58 outages as reported by the Petitioner, during 49 outages, the inflows were less than the corresponding design energy inflows. During these instances of lower inflows, the maximum possible generation from available inflows was 72.04 MU as against design energy of 83 MU and the actual generation was 74.41 MU. As such, there is no shortfall in energy generation as compared to maximum possible generation and the excess generation of 2.37 MU has been accounted by the Petitioner under the head of 'shortfall within control'. However, the shortfall of (-) 8.56 MU with respect to design energy during these 49 instances was solely attributable to less inflows which was not under the control of the Petitioner and same is included in the shortfall of (-) 196.35 MU claimed by the Petitioner. Accordingly, it is held that these outages did not have any major impact on energy generation.

36. During 8 instances of outages, the inflows were more than the corresponding design energy inflows. We note that there was no shortfall with respect to design



energy. However, for the shortfall of (-) 0.95 MU with respect to the maximum possible generation, the Petitioner has owned the responsibility by putting the same under the head "Shortfall Within control of Power Station". Accordingly, it is concluded that these instances of partial outages did not have any major impact on the energy generation and the minor loss of (-) 0.95 MU due to the reasons such as outages, other constraints & less generation to maintain reservoir level, has not been claimed by the Petitioner under the shortfall.

37. Further, it is noticed that there is 1 (one) instance i.e. on 26.6.2016, when inflow was more than the corresponding design year inflow but the Petitioner was not able to generate to full potential of available inflows due to silt flushing. The Petitioner has claimed shortfall of energy generation for (-) 5.64 MU due to Silt Flushing.

38. Stoppage of plant due to high silt level/silt flushing results in loss of energy and is beyond the control of the generator. In our view, 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 on account of high silt levels/silt flushing, the generator needs to be compensated for that.

39. It is noticed that planned outages in 47 instances (included in table above wherein during 49 outages, the inflows were less than the corresponding design energy inflows) for the purpose of annual/ capital maintenance of individual machines have been carried out during the months of November 2016 to January 2017 which are lean months during which available water inflow can be utilized for energy generation by available machines which are not under planned outage. As such, there was no spillage in these 47 instances except for the days wherein lower generation in comparison to Design Energy was due to reasons such as Unit outages, energy loss due to grid requirements, other constraints (partial ramping up/



down during peaking) for which the Petitioner has taken the responsibility by putting them under the list of reasons within the control.

40. In view of the above deliberations, it is held that there is no major shortfall of energy due to planned/ forced outage of machines. Further, the Petitioner has put the minor shortfall of 0.89 MU under controllable factors and has not claimed the corresponding energy charges.

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

41. 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 1444.05 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)	(-)65.24 MU
3.	Energy that could have been generated by utilizing available actual inflows 3=1+2	1434.65 MU
4.	Energy loss due to silt flushing	(-)5.64 MU
5.	Remaining Energy that could be generated 5=3+4	1429.01 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 taking into account reasons beyond control	1429.01 MU
2.	Excess generation due to reasons within the control of Petitioner (as claimed by the Petitioner)	15.04 MU {(+)15.93 MU by managing the reservoir level and (-) 0.89 MU due to unit outages etc.}
3.	Remaining Energy that could be generated 3=1+2	1444.05 MU



42. In view of the above calculations and the fact that actual generation of the generating station i.e. 1444.05 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.

43. 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. (-) 70.88 MU. However, the Petitioner by managing the reservoir level has managed to generate additional energy of 15.93 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 (-) 55.84 MU, shortfall for reasons under the control of the Petitioner has been taken as (-)0.89 MU (due to plant outages etc.) and shortfall for the reasons not under the control of the Petitioner has been taken as (-) 54.95 MU $\{(-)70.88 \text{ MU} + 15.93 \text{ MU}\}$.

44. Respondent BRPL has submitted that the generating station had an excess of 35 MU beyond scheduled energy and the Petitioner would have sold this energy in the market resulting in revenue to the power station (approx. Rs. 9.02 crore). In our view, the stated energy of 35 MU being sold in market is ill-conceived since NHPC has stated that as per allocation letter issue by MoP, full power is allotted to different beneficiaries of Chamera-II Power Station (except 12% free power to home State).



Thus, Chamera-II Power Station has no free power to be sold in power exchange for recovery of additional revenue.

45. The Commission vide ROP of the hearing dated 18.6.2020 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 16.7.2020. It has been submitted that 48.42 MU is the energy which has been accounted for in DSM and corresponding revenue earned from DSM is Rs.1006.06 lakh.

46. 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 48.42 MU has been accounted for in DSM and corresponding revenue earned is Rs. 1006.06 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.



47. 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 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.

48. In the instant case, the Petitioner has been able to generate revenue to the tune of Rs. 1006.06 Lakh for the energy accounted for in DSM i.e 48.42 MU. On the other hand, if this DSM energy would have been scheduled, the scheduled energy would have increased to 1440.18 (=1391.76 + 48.42) MU and the energy charge shortfall of the generating station would have reduced in comparison to the claimed energy charge shortfall of Rs.8.19 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 (₹/Unit)	Allowed Energy Charges (Rs. crore)	Energy Charges actually recovered (Rs. crore)	Energy charge shortfall (Rs. crore)
	1	2	3=1-2	4	5	6=3x4/10	7=5-6
As claimed by the petitioner based on actually scheduled energy	1391.76	171.79	1219.97	0.978	127.50	119.31	8.19
As modified by adding the DSM energy in the actually scheduled energy	1440.18 (=1391.76 +48.42)	172.82	1267.36	0.978	127.50	123.95	3.55

49. From the above table, it is concluded that the energy charges recoverable for the DSM energy would have been Rs.4.64 (=123.95 - 119.31) crore as against Rs.10.06 crore recovered by the generator from the DSM pool. In terms of above decision, since the energy charge attached to DSM energy (Rs.4.64 crore) is on lower side as compared to revenue earned from the DSM pool (Rs.10.06 crore), the actual shortfall of Rs.8.19 crore reduces to Rs.3.55 (=8.19-4.64) 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 2016-17 has been calculated as under:

Total Shortfall in generation during FY 2016-17 (MU)	A	55.84
Total under recovery of energy charges during FY 2016-17 (₹ crore)	B	8.19
Total under-recovery of energy charges during FY 2016-17 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)	C	3.55 (=8.19-4.64)
Shortfall in generation due to reasons beyond control (MU)	D	54.95
Shortfall in energy charges to be recovered during FY 2018-19 (₹ crore)	E=C*D/A	3.49



50. In terms of the Regulation 31(6)(b) of the 2014 Tariff Regulations, the design energy for the year 2018-19 shall be modified to 1431.25 MU (A1+A2-DE) considering the actual generation (A1) of 1444.05 MU during FY 2016-17, actual generation (A2) of 1487.09 MU during FY 2017-18 and Design Energy (DE) of 1499.89 MU, till the energy charge shortfall of ₹ 3.49 crore for FY 2016-17 is recovered by the Petitioner. Further, the difference in energy charge shortfall to be recovered for the FY 2016-17 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.

51. Petition No. 348/MP/2018 is disposed of in terms of above.

Sd/
(Arun Goyal)
Member

Sd/
(I. S. Jha)
Member

Sd/
(P. K. Pujari)
Chairperson

