

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No.329/MP/2018

Coram:

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

Date of Order: 19.3.2021

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 Dhauliganga Power Station.

And

In the matter of

NHPC Limited,
(A Govt. of India Enterprise)
NHPC Office Complex, Sector-33,
Faridabad (Haryana) - 121003.

....Petitioner

Vs

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

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

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

4. The Chief Engineer & Secretary,



Engineering Dept. 1st Floor,
UT Chandigarh, Sector-9 D, Chandigarh-160009.

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

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

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

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

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

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

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

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

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

....Respondents



Parties present:

Shri 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 referred to as “NHPC” or “the Petitioner”) has filed this petition seeking the following relief(s):

*“a) Hon’ble Commission may kindly allow recovery of energy charges amounting to **Rs.19.01 crore** in FY 2018-19 against the shortfall in generation of **126.92 MU** in FY 2016-17 as per regulation 31(6)(b) of CERC Tariff Regulations, 2014 as explained in **para- VIII & X.***

*b) 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-XI.***

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-IX.***

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

2. Dhauliganga Power Station (hereinafter referred to as “the generating station”) located in the State of Uttarakhand comprises of four units of 70 MW each. The generating station was declared under commercial operation on 1.11.2005. The



approved annual Design Energy (DE) of the generating station is 1134.69 MU and keeping in view the provision of auxiliary losses (1.2%) and free power to the home State (12%), the saleable energy works out to be 986.54 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 $\{DE \times (100 - AUX) \times (100 - FEHS) / 10000\}$ 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) Dhauliganga Power Station is under commercial operation w.e.f. 1.11.2005 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 as per regulation 31(6)(b) of the 2014 Tariff Regulations, which is reproduced below:

b) Actual generation during FY 2016-17 and that during during FY 2017-18 are as under:

Actual Generation during FY 2016-17	A1	956.05 MU
Actual Generation during FY 2017-18	A2	1153 MU
Design Energy	DE	1134.69 MU



c) From the above table, (A1+A2-DE) = 974.36 MU which is less than the Design Energy of the Power Station i.e., 1134.69 MU. Hence, as per Regulation 31(6)(b) of the 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) Month-wise breakup of actual generation, vis-a-vis Design Energy during FY 2016-17 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-16	56.08	43.02	-13.06
2	May-16	91.26	99.07	7.81
3	Jun-16	144.33	148.63	4.3
4	Jul-16	208.32	164.53	-43.79
5	Aug-16	208.32	154.84	-53.48
6	Sep-16	160.00	121.93	-38.07
7	Oct-16	94.40	71.63	-22.77
8	Nov-16	52.48	40.15	-12.33
9	Dec-16	31.69	32.89	1.2
10	Jan-17	31.62	25.93	-5.69
11	Feb-17	25.89	23.04	-2.85
12	Mar-17	30.30	30.39	0.09
Total		1134.69	956.05	-178.64

e) Thus, there is a total shortfall of 178.64 MU (1134.69 MU – 956.05 MU) in generation during FY 2016-17. The reasons for shortfall of 178.64 MU 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	-96.88 MU
Energy generated due to excess inflow from design inflow on some days	41.38 MU
Energy loss due to silt flushing	-71.42 MU
Total (A)	-126.92 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	15.52 MU
Less generation for increasing reservoir level on some days	-17.39 MU
Unit Outage	-45.53 MU
Other constraint (Partial load/ramping up/down during peaking/ high inflow/ TRT level etc.	-4.32 MU
Total (B)	-51.72 MU
Net Generation Loss (A+B)	- 178.64 MU

f) In terms of above table, out of total shortfall of 178.64 MU, shortfall of 126.92 MU was beyond the control of the Petitioner and shortfall of 51.72 MU is attributable to petitioner. Hence, recovery on account of generation shortfall of 126.92 MU needs to be allowed during FY 2018-19 as per Regulation 31(6)(b) of the 2014 Tariff Regulations.

g) Present claim is based on tariff allowed by the Commission for FY 2016-17 vide order dated 24.2.2016 in petition no. 230/GT/2014 and its subsequent amendment dated 26.04.2016 which is detailed as below:

Schedule* Energy (Ex-Bus) (MU)	Free* Energy (MU)	Net Energy Billed (MU)	ECR (Rs/Unit)	Annual Fixed Charges (crore)	Energy Charges to be recovered (crore)	Energy Charges actually recovered (crore)	Under recovery of Energy Charges (crore)
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
920.27	112.77	807.50	1.496	295.09	147.55	120.80	-26.75

* Schedule Energy & Free Energy are based on Regional Energy Account issued by NRPC (Annex-I of the petition)

h) In FY 2016-17, NHPC has recovered energy charges amounting to ₹120.80 crore corresponding to saleable scheduled energy of 807.50 MU against energy charges of ₹147.55 crore (50% of AFC) as allowed in tariff order dated 24.02.2016 in petition no. 230/GT/2014 and its subsequent amendment dated 26.04.2016. Hence, there is an under-recovery of energy charges amounting to ₹26.75 crore.

i) Out of total shortfall of generation of 178.64 MU, shortfall of 126.92 MU being beyond the control of the Petitioner, shortfall of energy charge amounting



to ₹19.01 crore corresponding to loss of 126.92 MU may be allowed to be recovered in FY 2018-19. Details are as under:

Total Shortfall in generation during FY 2016-17	A	178.64 MU
Total under recovery of energy charges during FY 2016-17	B	₹26.75 crore
Shortfall in generation due to reasons beyond control	C	126.92 MU
Shortfall in energy charges to be recovered during FY 2018-19	$D=C*B/A$	₹19.01 crore

j) Under prevailing mechanism of Regulation 31(6)(b) of the 2014 Tariff Regulations, the 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	239.75
Energy Charge for FY 2018-19 (₹ crore)	$B = 0.5xA$	119.88
Shortfall in Energy Charges during FY 2016-17 due to reason beyond control (₹ crore)	C	19.01
Energy Charges to be recovered in FY 2018-19 (₹ crore)	$D=(B+C)$	138.89
Modified DE for FY 2018-19 (MU)	E (as per para-c above)	974.36
Modified Energy Charge Rate for FY 2018-19 (₹)/ unit	$F=(0.5xAx10)/Ex(1-0.012)x(1-0.12)$	1.415

k) In order to fully recover shortfall in energy charges of FY 2016-17, the Petitioner may be allowed to raise energy bills during FY 2018-19 at energy charge rate of ₹1.415/ unit against its normal energy charge rate of ₹1.215/ unit.

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

5. The matter was heard on 2.5.2019. The Commission after hearing the parties, directed the Petitioner to submit the following additional information:

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 19.6.2019 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 along with other petitions of NHPC with similar subject. The Commission after hearing the parties, directed the Petitioner to file amended Petitions (wherever applicable), by 9.10.2019.

8. The matter was heard again on 18.06.2020. The Commission after hearing the parties, directed the Petitioner to submit the following information:

- a. Design Energy calculation (in MS Excel) as approved by CEA;*
- b. Analysis of Annexure-II of the Petition on daily basis in MS Excel;*
- c. Methodology for calculating daily maximum possible generation during the financial year 2018-19as claimed in the Petition (in MS Excel);*
- d. 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.*
- 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 DSM for such energy; and*
- f. 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 inspite of water availability. Explain the reasons station-wise in this regard; and*
- g. Any other relevant information/document to justify the claims in the Petition.*

9. In compliance with the above directions, the Petitioner has submitted the additional information vide affidavit dated 17.7.2020 and has served the copies of the same to the respondents.



Reply of UPPCL, Respondent No. 3

10. 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 the generating station has not been certified either by CEA or CWC.
 - (c) The rainfall data submitted by the Petitioner does not corroborate the low inflow in 2016-17 in catchment area of the project.
 - (d) The Commission may base the instant case on that of Tehri HEP where the prayer of THDC (the Petitioner therein) to reduce NAPAF from 77% to 74.408% on account of conditions beyond control for period 17.12.2010 to 28.01.2011 was dismissed by the Commission vide order dated 11.12.2013 in petition no. 220/MP/2011.
 - (e) The Petitioner may clarify the method and reasons for classification of controllable and uncontrollable factors and also why silt flushing has been considered as an uncontrollable factor.

Rejoinder of the Petitioner to reply of UPPCL

11. In response to the reply of UPPCL, the Petitioner vide its affidavit dated 12.4.2019 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 of the Petitioner, 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 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 BSES Rajdhani Power Limited (BRPL), Respondent No. 5

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

(a) The Petitioner in his petition has stated shortfall of 126.92 MU during the FY 2016-17 was beyond the control of the Petitioner and this alleged shortfall in monetary terms is stated to be Rs. 19.01 crores. The prayer of the Petitioner is that the Petitioner may be allowed to recover the shortfall during the FY 2018-19 from the beneficiaries. Another prayer of the Petitioner is 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.

(b) However, in the provisions of Regulation 31(6) of the 2014 Tariff Regulations, do not provide for recoupment of under-recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station. The Petitioner has also not identified any other regulatory provision under which such a claim can be sought from the beneficiaries. The



perusal of the above regulation would show only that the above regulation 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.

(c) Similarly, the other prayer related to revision of energy bills for the period 2018-19 for recovery of full energy charges are also unfounded and are also liable to be rejected. 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 alleged claim of the Petitioner is liable to be rejected by the Commission.

(d) The Petitioner has also requested to modify the design energy for FY 2018-19. The information supplied by Petitioner to claim the shortfall of 126.92 MU during the FY 2016-17 is not adequate. The Petitioner has 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).
- (e) Perusal of the letter from the Central Water Commission shows that it is not possible to certify the inflow series as requested by NHPC to the Central Electricity Authority. Thus, the daily inflow series numbering 30 stands as not



certified by the Central Water Commission. Annexure-II of the petition related to the analysis on daily basis shows that it has not been vetted by any independent authority. This data also shows that the main shortfall is in the months of April-2017. There is no explanation why Petitioner refused extra generation by depleting Reservoir level which is expected to fill up, starting April next. The Petitioner has also stated that unit outages resulted in the shortfall of 45.53 MU and during this period, there was huge spillage. There is also huge water spillage during June 2016 to September 2016. There is 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. It is also noted that the Petitioner could not effectively manage the reservoir capacity to its optimum utilization for which it is designed. Nothing has been explained on all these issues in the petition and even the Maximum Reservoir Level and minimum draw down level along with the daily reservoir levels have not been furnished. All this clearly show that the shortfall in energy generation was for reasons attributable to the Petitioner for which no one else except Petitioner is responsible. Accordingly, the claim for lower actual energy generation compared to designed energy is liable to be rejected by the Commission.

(f) 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 even been included as respondents in the petition.

(g) The Petitioner's plant had an excess of 24 MU beyond the scheduled energy (scheduled energy includes free energy). The Petitioner would have sold this energy in the market resulting in revenue of approximately Rs. 6.27 crore to the power station. The computation is as given below:



MU Generated	A	956.05
Normative Auxiliary Consumption	B	1.20%
MU Generated Net of Auxiliary Consumption	$C = A * (100\% - B)$	944.58
MU Scheduled by Station	D	920.27
Unscheduled (MU) by Station	$E = C - D$	24
IEX prices of Northern Region for FY 15-16	F	2.58
Amount Recovered for Unscheduled energy (Rs crore)	$G = E * F / 10$	6.27

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

(h) As per Annexure-III of the petition, the Petitioner seemed to have served an Energy Bill dated 06-April-2017 to the Deputy Chief Engineer/ ISB of Punjab State Power Corporation Ltd. and this supplementary Bill is for FY 2016-17. If this Energy Bill is in respect of the present claim being preferred through this petition, then the Petitioner has made itself liable for action under Sections 142 and 146 of the Electricity Act, 2003 for contravention of the Regulation 79(1) of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999.

(i) 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 blocks each of 15 minutes duration. It is also incumbent on ISGSs to declare the plant capabilities faithfully, i.e. according to their best assessment as per Regulation 6.4(18) of the Grid Code. It is not permitted for ISGS to over/under declare its plant capability faithfully and thus make money either as undue capacity charge or the charge for deviations.



(j) The Petitioner has deliberately declared low schedule to the tune of 36.06 (956.05-919.99) MU and accordingly has earned huge benefits in the form of UI charges on account of this unscheduled generation. UI charges 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 CERC (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. 1.496 per unit only for this generating station. It is thus evident that the Petitioner is earning huge benefits by declaring low schedule consistently. Details are provided in following table:

(Generation in MU)

S. No.	Months	Scheduled Ex-bus Generation	Actual Ex-bus Generation	% Deviation
1.	April-2016	38.46	43.02	11.86
2.	May-2016	94.81	99.07	4.49
3.	June-2016	144.04	148.63	3.19
4.	July-2016	164.12	164.53	0.25
5.	August-2016	152.36	154.84	1.63
6.	September-2016	118.86	121.93	2.58
7.	October-2016	67.96	71.63	5.40
8.	November-2016	36.86	40.15	8.93
9.	December-2016	29.53	32.89	11.38
10.	January-2017	23.73	25.93	9.27
11.	February-2017	21.03	23.04	9.56
12.	March-2017	28.23	30.39	7.65
	Total	919.99	956.05	3.91

(k) The Petitioner is consistently and deliberately declaring low schedule to the tune of 36.06 (956.05-919.99) MU and accordingly earned on this unscheduled generation huge benefits 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 Deviation Settlement Mechanism Regulations, 2014. This huge benefit may be viewed with reference to the Energy Charge Rate of Rs. 1.496/kWh only for this generating station. It is thus evident that the Petitioner is earning huge benefits by declaring low schedule consistently and deliberately.



(l) Accordingly, the Petitioner is liable for 'Gaming' under Regulation 2(1)(i) of the 2014 DSM Regulations. It is also submitted that the beneficiaries could have availed at ECR and not under the charges for deviations for unscheduled injection of 36.06 MU and accordingly got undue benefit at the cost of its beneficiaries rendering itself liable for action under Regulation 6 of the 2014 DSM Regulations.

(m) 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 legislation 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 NHPC to reply of BRPL

13. In response to the reply of respondent BRPL, NHPC vide its affidavit dated 11.6.2019 has submitted as under:

(a) The recovery of AFC in case of hydro power projects are in two parts on 50:50 basis. The recovery of 50% of AFC is entirely dependent upon generation up to the Design Energy and in case of shortfall in generation, the generating company is bound to lose revenue. In case of Dhauliganga Power Station in FY 2016-17, the total shortfall in generation was 178.64 MU and loss of energy charges was Rs. 26.75 crore. The 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) The delay in submission of the Petition is due to time taken in compilation of data and its verification/ certification by external agencies like CEA/ CWC/ RLDC.

(c) As regards statement of BRPL that the data submitted by the Petitioner has not been vetted by any independent agency, it has already been stated that CEA/ CWC have denied certification of daily discharge data due to non-availability of discharge gauge at specific location.

(d) The Respondent 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 occur and Generation Company has no control over it.

ii. The loss of revenue through shortfall in generation of 45 MU due to Unit outages, which is within control of generating station and no loss has been claimed on this account.

(e) 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 they are not made respondents in the instant petition.

(f) It is also clarified that 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.

(g) 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.



(h) The bill referred at Annex-III of the petition is meant for overall adjustment of amount and for showing annual performance of the power station.

(i) Respondent BRPL has tried to link the provisions of Regulations 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 of the Petitioner is under Regulation 31(6) of the 2014 Tariff Regulations. 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.

(j) Respondent BRPL has compared the month-wise scheduled ex-bus generation of Dhauliganga Power Station with actual ex-bus generation and has calculated deviation as percentage of scheduled ex-bus generation. From the table submitted by BRPL, it can be seen that the total percentage deviation in FY 2016-17 in Dhauliganga Power Station is 3.91% (36.06 MU).

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

(l) In the table reproduced by BRPL, it has calculated the month-wise percentage deviation as percentage of scheduled generation without taking into consideration the operational aspects of a hydrogenerating station. The months in which the percentage deviation is in the range of 7.65%-11.86% 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.”

(m) In view of above illustration and regulatory provisions laid down to keep gaming in check, the %age deviation of 3.91% of scheduled generation and 3.77% 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 up by any evidence.

(n) The instant petition is 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 the control of generating station during the FY 2016-17 in respect of Dhauliganga Power Station 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.

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

14. The Respondent No. 1, PSPCL vide its affidavit dated 10.4.2019 has submitted as under:

(a) 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.

(b) Regulation 31 (6) of the 2014 Tariff Regulations specifically states that the treatment under Regulation 31(6)(a) shall be applied only when the total energy generated is less than the design energy due to reasons beyond the control of the hydro generating station. The reasons furnished by the Petitioner cannot be said to be 'beyond the control' of the Petitioner. The Petitioner could have made arrangements to deal with the aspect of silt flushing. In so far as the aspect of less in flow 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.

(c) The Petitioner has placed on record the letter dated 23.01.2017 of the Central Water Commission ("CWC"), whereby CWC has expressed its inability to certify the inflow series on year to year basis. Therefore, the CWC has taken the position that the hydrological uncertainties are part of the planning process and are to the account of the generator. By no stretch of imagination the letter dated 23.01.2017 is a proof of the Petitioner's claim that the recovery sought due to the shortfall in generation is for reasons beyond the control of the Petitioner. In fact, the letter states to the contrary.

Rejoinder of NHPC to reply of PSPCL

15. In response to the reply of respondent PSPCL, NHPC vide its affidavit dated 10.6.2019 has submitted as under:

(a) The seasonal variation in hydrology as indicated by the Respondent PSPCL is correct. In the instant case also, the generation is affected by seasonal variations. However, if overall annual discharge is less than the



expected discharge, the loss of generation is bound to be there. The Petitioner has lost 96.88 MU in some months due to less inflow, whereas 41.38 MU extra energy is generated in some other months due to higher inflow.

(b) Silt flushing is a seasonal requirement in hydro power stations during monsoon season. Requirement of silt flushing depends on silt content in the water and it cannot be ascertained. Regarding generation as compared to design energy, it is submitted that design energy is determined on the basis of discharge in 90% dependable year with 95% machine availability. The Design Energy is directly not linked with design of project structure for spillage or de-silting arrangement.

(c) The letter of CWC dated 23.01.2017 clearly mentions that the hydrological uncertainties on year-to-year basis are part of the planning process which can be assessed from the departure of the annual rainfall from the normal.

Analysis and Decision

16. The Petitioner has submitted the actual average inflows measured at dam site for each day of the year 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)



The capacity of the station in MW is 280 and rated inflow in cumecs is 107 cumecs. The sum of daily maximum possible generations for 365 days as submitted by the Petitioner is 1079.19 MU.

17. To cross-check the correctness of maximum possible generation of 1079.19 MU as calculated by the Petitioner, we have used the following formula (used by CEA for arriving at the Design Energy of the station) for arriving at the power potential of actual inflows restricted to 280 MW and then the daily Maximum possible energy generation in MU

Maximum Possible Generation during a day (MU) = $(297 \times 0.91 \times 9.8 / 1000) \times (24 / 1000)$
x Actual Inflow of the day available for generation

Where 297 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. These figures have been used by CEA for arriving at the Design Energy of the plant.

18. Based on the above methodology, maximum possible energy generation for the year 2016-17 works out to 1083.15 MU without considering overload capacity utilized by the Petitioner on certain days. Further, it is observed that on certain days 47 days , the actual generation is more than the theoretical power potential of inflows by 2.87 MUs because of two reasons i) high head availability in comparison to rated head during lean period as the tail race level is at its minimum and (ii) due to utilization of overload capacity to the extent declared by the petitioner during peak season. As such, for these days (47 days) maximum possible generation has been replaced with actual generation to arrive at the annual maximum possible generation. Accordingly, maximum possible generation based on the above, works out to 1086.02 MU(1083.15 + 2.87) against the maximum possible generation of 1079.19 MU as calculated by the



Petitioner. The difference of 6.83 MU (1086.02 - 1079.19) represents 0.60% of the design energy i.e 1134.69. As such, this difference is being considered as a loss attributable to the Petitioner and is adjusted from allowed shortfall in energy charges at paragraph no. 47. However, considering the fact that the Petitioner has mapped the energy shortfall with respect to maximum energy generation of 1079.19 MU, the same is being considered for further deliberations.

19. Design Energy of the generating station is 1134.69 MU. During the FY 2016-17, the Petitioner has claimed a shortfall of 178.64 MU in generation, as the actual generation was 956.05 MU.

20. The petitioner has divided the energy shortfall of 178.64 MU into two parts:

a) Shortfall of 51.72 MU which was for reasons which were under the control of the Petitioner. The break-up of the same is as under:

i) Energy generated by depleting reservoir level on some days: 15.52 MU

ii) Less generation for increasing reservoir level on some days: (-) 17.39 MU

iii) Unit Outage: (-) 45.53 MU

iv) Other constraints (partial load/ ramping up, down during peaking): (-) 4.32 MU

** Note sum of i) and ii) above i.e. (-) 1.87 MU is net shortfall in generation by managing reservoir level and sum of iii) and iv) i.e. (-) 49.85 MU is the loss for which the Petitioner is accountable.*

b) Shortfall of 126.92 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: (-)96.88 MU

ii) Energy gain due to excess inflow: 41.38 MU

iii) Energy shortfall due to high silt/silt flushing: (-) 71.42 MU

** Note: the sum of i) and ii) i.e. (-) 55.50 MU represents the net short fall due to low inflows in comparison to the design inflows associated with design year.*



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

22. 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. Per contra, the Petitioner has stated that there is no case of double benefit and claimed relief is covered under provisions of the 2014 Tariff Regulations. As per the Petitioner, the Respondent has in effect challenged the provisions of the Regulations and the same is not permitted through this Petition. In this regard, Commission is of the view that there is no double benefit to the Petitioner as by modification of design energy and corresponding increase of energy charge rate for the third financial year from the year in which there is shortfall in energy generation, is allowed only till the energy charge shortfall for the year of energy shortfall is recovered by the Petitioner.



23. The Respondent, BRPL has also pointed out that the Petitioner has not been able to utilise the full potential of the inflows, especially during June-September 2016 as there was lot of spillage as observed from the 365 days data submitted by the Petitioner in the main petition. This proposition is not correct since the capacity of the reservoir is limited and as per technical parameters, whenever the inflows are more than the design discharge, spillage is bound to occur. The full potential of the incoming flows subject to limitation of the reservoir capacity, needs to be utilized by the generating station without spillage. From the scrutiny of the 365 days data as submitted by the Petitioner, we observe that on most of the days, spillage has occurred only when the inflows are more than the design discharge. It is also observed that, during the instances of spillage, when there are unit outages also, the Petitioner has booked the loss in generation due to these outages under its control and has not claimed the energy generation for these outages. Therefore, we do not agree to the contention of BRPL that the Petitioner has not been able to utilize the full potential of the inflows and that the Petitioner has allowed water to spill over.

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

25. With regard to the claim of the Petitioner that energy shortfall to the extent claimed 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 attributed to the following reasons:

- (i) Low inflows in comparison to the design inflows associated with design year.
- (ii) Prolonged planned/ forced outage of machines.
- (iii) Inefficient operation of the plant which may include low overall efficiency of turbine and generator, high auxiliary power consumption, high losses in water conductor system etc.
- (iv) Non-utilization of maximum power potential of actual inflows due to excessive spillage.

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

26. The Petitioner was directed to submit IMD rainfall data to correlate low inflows vide ROP (Record of Proceedings) of hearing dated 02.05.2019. The Petitioner vide affidavit dated 19.6.2019 has submitted rainfall data for the period 2014-2018 of Pithoragarh District of the State of Uttarakhand, where the instant generating station is located. Further, the Petitioner was directed to get the inflow data verified from CEA/ CWC. With regard to the certification of the inflow data by CEA/ CWC, the Petitioner has enclosed a letter from CWC dated 23.01.2017 where CWC had categorically mentioned its inability to certify the inflow data in respect of the generating station of the Petitioner. As such, in absence of certified data by CEA/ CWC, we would have to rely upon the analysis of IMD data for the year 2016 and



2017 and data related to outages (planned or forced) to assess whether low inflows was one of the major reasons for low generation in comparison to Design Energy.

27. The rainfall data issued by the Indian Metrological Department (IMD) in respect of Pithoragarh 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	14.1	32.0	45.2	13.0	208.0	235.8	556.2	325.9	144.9	39.1	0.0	8.4
2017	27.2	15.3	57.1	85.9	133.7	180.9	642.6	532.0	132.8	19.3	0.2	15.1

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

% Departure from Long Period Averages

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	-72	-44	-31	-72	122	-21	0	-40	-51	-40	-100	-56
2017	-46	-73	-13	86	43	-40	16	-1	-55	-70	-98	-22

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

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

"When the rainfall for the monsoon season of June to September for the country as a whole is within 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."

29. The above tabulated rainfall data as per IMD reports, indicates low rainfall in comparison to long period averages. Accordingly, the energy shortfall of 55.50 MU



between the maximum possible generation (1079.19 MU) and design energy (1134.69 MU) represents the shortfall due to less inflows and the same was beyond the control of the Petitioner.

(ii) Prolonged forced/ planned outage of machines

30. In order to rule out the prolonged planned/ forced outage of machines, their impact on energy generation and in order to understand whether outage of a machine in anyway affected the energy generation by non-utilization of available water flow, the Commission vide ROP of the hearing dated 2.5.2019 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 19.6.2019 has submitted that there have been 211 instances of forced and planned outages during the year 2016. We note that out of these 211 outages, 49 incidences of forced outage was due to leakage at MIV body drain valve, regulator fault, failure of incomer breaker from UAT, high LGB vibration, malfunctioning of Main Inlet Valve (MIV), main distributing valve, earth fault in XLPE cable, etc. as reported by the Petitioner. It is noticed that there are 118 instances pertaining to the months of November 2016 and December 2016 during which the plant was under planned shutdown for carrying Annual Maintenance. It is further noticed that, there are 44 instances of planned outages other than annual maintenance for reasons such as, runner inspection, balancing of machine to reduce excessive vibration, removal of vegetation at Potyard, rectification of XLPE cable and transformer fault. In order to estimate energy shortfall due to forced outages and planned outages, calculations



have been made. Based on these calculations, the results in respect to the 211 cases of forced/ planned outages are summarized as under:

Events (a)	Design Energy (MU) (b)	Spillage (Cumeecs) (c)	Maximum possible generatio n based on Installed Capacity of 180 MW ,actual inflow available & overload margins wherever used without consideri ng excess generatio n due to reservoir adjustme nt (MU) (d)	Actual Genera tion at GT (MU) (e)	Energy shortfall (MU) (f) = (e)-(b)	Claimed under the head:- Shortfall Beyond control of Power Station (g) = (d)- (b)+loss due to high silt	Claimed under the head:- Shortfall Within control of Power Station (h)=(e)- (d)-loss due to high silt	Observation
49 (Forced/ Machine outages)	224.21	2617.45	227.82	183.65	(-)40.56	3.61	(-)6.44	3.61 MU of additional generation due to excess inflow from design inflow has been adjusted in the shortfall claimed and (-) 6.44 MU shortfall in energy generation due to various reasons such as unit outages, other constraint, increasing/decreasing of reservoir level, etc. accounted under the head 'within control of the Petitioner' and has not been claimed by the Petitioner.
						(-) 37.73		Shortfall of (-) 37.73 MU due to high silt/silt flushing accounted under the head beyond the control of the Petitioner and has been claimed by the Petitioner.



118 (Planned outages during Annual Maintenance)	124.69	0.00	111.14	109.47	(-15.22	(-13.55	(-1.67	(-13.55 MU claimed by the Petitioner for reason of less inflow from design inflow and (-)1.67 MU shortfall in energy generation due to various reasons such as other constraint, increasing/decreasing of reservoir level, etc., accounted under the head 'within control of the Petitioner' and has not been claimed by the Petitioner.
44 (Planned outages other than Annual Maintenance)	275.27	3126.37	268.59	193.91	(-)81.36	(-)6.68	(-)41.01	(-6.68 MU claimed by the Petitioner for reason of less inflow from design inflow and (-)41.01 MU shortfall in energy generation due to various reasons such as unit outages, increasing/decreasing of reservoir level, etc., accounted under the head 'within control of the Petitioner' and has not been claimed by the Petitioner.
								-33.67
Total Events: 211	624.17	5743.82	607.55	487.03	-137.14	-88.02	-49.12	

31. From the above data, we note that out of 211 outages as reported by the Petitioner, during 49 instances of forced/ machine outages, there was total energy generation shortfall of 40.56 MU. It is noticed in this shortfall of 40.56 MU, there is additional generation of 3.61 MU due to excess inflow from design inflow during this period, which has been adjusted in the shortfall of 55.50 MU claimed by the Petitioner due to low inflows in comparison to the design inflows, shortfall of 6.44 MU in energy generation is due to various reasons such as unit outages, other constraint, increasing/ decreasing of reservoir level, etc. and the same has been accounted by the Petitioner under the head 'within control of the generating station' and has not been claimed by the Petitioner. Shortfall of 37.73 MU due to high silt/ silt flushing has been accounted by the Petitioner under the head 'beyond the control of the



generating station', which is included in total energy shortfall of 71.42 MU due to silt flushing.

32. Further, it is noticed that there were 7 days out of above 49 events, when spillage has occurred. After scrutiny of the outage data submitted by the Petitioner, it is observed that these days when spillage has occurred are the days when the inflows were more than the design discharge except on one day i.e. on 10.8.2017, when spillage was due to machine outages and the corresponding shortfall in energy generation is attributable to the Petitioner. As such, the Petitioner cannot be faulted with the excessive spillage or non-utilization of full potential of actual inflows due to inefficient operation or due to forced outages except for the loss of 6.44 MU due to various reasons such as unit outages, other constraint, increasing/ decreasing of reservoir level, etc., which the Petitioner has taken the responsibility by putting them under the list of reasons 'within control of the generating station'.

33. For the 118 instances during which the plant was under planned shutdown for carrying Annual Maintenance of various units during lean inflow period, the maximum possible generation from available inflows was 111.14 MU as against design energy of 124.69 MU and the actual generation was 109.47 MU. As such, out of maximum possible potential of 111.14 MU, petitioner was able to generate only to the extent of 109.47 MU and has owned the balance of shortfall of 1.67 MU in energy generation due to reasons such as other constraint, increasing/ decreasing of reservoir level, etc. and the same has been accounted by the Petitioner under the head 'within control of the generating station'. The shortfall of 13.55 MU during these 118 instances was solely attributable to less inflows which was not under the control of



the Petitioner and same is included in the shortfall of 55.50 MU claimed by the Petitioner due less inflows as indicated at paragraph 20(b) above. As such, it is noticed that the planned outage of machines during the lean months had affected the energy generation to the extent of (-)1.67 MU for which the Petitioner has taken the responsibility by putting them under the list of reasons 'within control of the generating station'.

34. For the remaining 44 instances during which the plant was under planned shutdown (for whole day on certain instances and partially for balance instances) due to various reasons such as runner inspection, balancing of machine to reduce excessive vibration, maintenance of excitation system, or rectification of XLPE cable and transformer fault, for removal of vegetation at Potyard, etc. there was total energy generation shortfall of 81.36 MU. It is noticed that out of this shortfall of 81.36 MU, there is shortfall of 6.68 MU during this period that is solely attributable to less inflows which was not under the control of the Petitioner and same is included in the shortfall of 55.50 MU claimed by the Petitioner due to less inflows as indicated at paragraph 20(b) above, 41.01 MU shortfall in energy generation is due to various reasons such as unit outages, increasing/ decreasing of reservoir level, etc. and the same has been accounted by the Petitioner under the head 'within control of the generating station' and has not been claimed by the Petitioner. Shortfall of 33.67 MU due to high silt/silt flushing has been accounted by the Petitioner under the head 'beyond the control of the generating station', which is included in total energy shortfall of 71.42 MU due to high silt/ silt flushing.



35. Further, it is noticed that there were 37 days out of above 44 events, when spillage has occurred. After scrutiny of the outage data submitted by the Petitioner, it is observed that the spillage was due to combined effect of inflows being more than the design discharge and also due to machine outages and high silt/ silt flushing. As such, the Petitioner cannot be faulted with the excessive spillage or non-utilization of full potential of actual inflows due to inefficient operation or due to outages except for the loss of 41.01 MU less generation due to various reasons such as unit outages, increasing/ decreasing of reservoir level, etc., for which the Petitioner has taken the responsibility by putting them under the list of reasons 'within control of the generating station'.

36. 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.

37. In view of the above deliberations, it is held that these 211 outages had impacted the energy generation to the extent of (-) 137.14 MU out of which loss of 88.02 MU was for the reasons (silt and low inflows) which were beyond the control of the Petitioner and for balance loss of 49.12 MU (including less generation due to unit outage, other constraint and due to increasing reservoir level), the Petitioner has taken the responsibility by putting them under the list of reasons within its control.



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

38. In view of above decisions, 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 956.05 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	1134.69 MU
2.	Energy shortfall due to less inflows (on net basis)	(-)55.50 MU
3.	Energy loss due to silt flushing	(-)71.42 MU
4.	Energy that could have been generated by utilizing available actual inflows $4=1+2+3$	1007.77 MU

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

		Based on actual available flow at 100% machine capacity
1.	Remaining Energy that could be generated after taking into account reasons beyond control	1007.77 MU
2.	Generation loss due to reasons within the control of Petitioner (on net basis)	(-)51.72 MU {(-)1.87 MU by managing the reservoir level, (-) 45.53 MU due to unit outages and (-) 4.32 MU due to Other constraint, etc.}
3.	Remaining Energy that could be generated $3=1+2$	956.05 MU

39. In view of the above calculations and the fact that actual generation of the generating station i.e. 956.05 MU is in agreement with the theoretical calculations, it is



held that the 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 (except to the extent of energy loss of 51.72 MU for which the petitioner has claimed responsibility and energy loss of 6.83 MU as deliberated at paragraph 18 above for which the adjustment has been made at paragraph 47) or excessive spillage.

40. Based on the above deliberations, the following table sums up the total energy shortfall, energy shortfall for the reasons beyond the control of the Petitioner and energy shortfall for reasons within the control of the Petitioner:

Sl.No.	Description	(MU)
1.	Design Energy	1134.69
2. Energy short fall for reasons beyond the control of the Petitioner		
2.1.	Energy loss due to silt flushing	(-) 71.42
2.2	Energy loss due to less inflows (on net basis)	(-) 55.50
3.	Sub-total	(-) 126.92
4.	Energy shortfall within the control of the Petitioner (Refer paragraph 20 above)	(-) 51.72 {15.52, (-)17.39, (-)45.53 & (-) 4.32}
5.	Total energy shortfall (3)+(4)	(-)178.64

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

Schedule* Energy (Ex-Bus) (MU)	Free* Energy (MU)	Net Energy Billed (MU)	ECR (Rs/Unit)	Annual Fixed Charges (crore)	Energy Charges to be recovered (crore)	Energy Charges actually recovered (crore)	Under recovery of Energy Charges (crore)
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
920.27	112.77	807.50	1.496	295.09	147.55	120.80	-26.75



42. Respondent BRPL has submitted that the generating station had an excess of 24 MU beyond scheduled energy and the Petitioner would have sold this energy in the market resulting in revenue to the power station (approx. Rs. 6.27 crore). In this regard, NHPC has stated that as per allocation letter issued by MoP, full power is allotted to different beneficiaries of the Generating station (except for free power to Home State). As such, the instant generating station has no free power to be sold in power exchange for recovery of additional revenue. In our view, the stated excess energy of 24 MU (beyond scheduled energy) being sold in market may not be a correct proposition as power whether sold to beneficiaries or in the market (even if permissible) is accounted for in scheduled energy and the power in excess of scheduled energy is energy reflected under DSM mechanism.

43. Further, Respondent BRPL in its additional reply dated 22.6.2020 has submitted that the generating station had an excess generation of 36.06 MU beyond scheduled energy and accordingly earned on this unscheduled generation, huge benefits 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 the 2014 DSM Regulations.

44. The Commission vide ROP of the hearing dated 18.6.2020 directed the Petitioner to submit the details of energy accounted in DSM. The Petitioner, in response to the ROP has submitted the details of energy accounted for in DSM vide affidavit dated 17.7.2020. Payment for energy under DSM is governed by provisions of the 2014 DSM Regulations. It has been submitted that 23.39 MU has been



accounted for in DSM and corresponding revenue earned from DSM is Rs. 592.85 lakh. In a similar case, vide order dated 10.02.2021 in Petition No. 330/MP/2018, the Commission held as under:

“45. ----- Regulation 31(6)(a) of the 2014 Tariff Regulations provides for recovery of energy charge shortfall corresponding to the energy which could not be generated for the reasons beyond the control of the Petitioner. There is no doubt that the energy accounted for in DSM is actual energy generated and also that the Petitioner has received payment for the same in terms of provisions of the 2014 DSM Regulations. Therefore, the energy that has been accounted for in DSM cannot be counted towards shortfall in energy in terms of Regulation 31(6)(a) of the 2014 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.

46. 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.”*

45. The above extract of the order is applicable in the present case also. In the instant case, the Petitioner has been able to generate revenue to the tune of Rs. 592.85 lakh for the energy accounted for in DSM i.e 23.39 MU. On the other hand, if this DSM energy would have been scheduled, the scheduled energy would have increased to 943.66 MU (920.27+23.39) and the energy charge shortfall of the generating station would have reduced in comparison to the claimed energy charge shortfall of Rs. 26.75 crore. The following table captures the reduction in energy



charge shortfall after adding the energy accounted for in DSM in the actually scheduled energy:

	Schedule Energy (Ex-Bus) (MU)	Free Energy (MU)	Net Energy Billed (MU)	ECR (₹/Unit)	Allowed Energy Charges (crore)	Energy Charges actually recovered (crore)	Energy charge shortfall (crore)
	1	2	3=1-2	4	5	6=3x4/10	7=5-6
As claimed by the Petitioner based on actually scheduled energy	920.27	112.77 (As per Regional Energy Account)	807.50	1.496	147.55	120.80	26.75
As modified by adding the DSM energy in the actually scheduled energy	943.66 (920.27+23.39)	113.24 (12% free energy)	830.42	1.496	147.55	124.23	23.32

46. From the above table, it is concluded that, the energy charges recoverable for the DSM energy would have been Rs.3.43 crore (124.23-120.80) as against Rs.5.93 crore recovered by the generator from the DSM pool.

47. In terms of above decision at paragraph 45, since the energy charge amount that would have been paid by the beneficiaries had the energy of 23.39 MU i.e equal to the DSM energy been scheduled to beneficiaries (Rs.3.43 crore) is on lower side as compared to revenue earned from the DSM pool (Rs.5.93 crore), the actual shortfall of Rs.26.75 crore is reduced by the lower of the two, which amounts to Rs.23.32 crore (26.75-3.43). Accordingly, the amount to be recovered in the FY 2018-19 due to shortfall in energy generation from the Design Energy during 2016-17 works out as follows:



Sl. No.	Description		
1	Total Shortfall in generation during FY 2016-17 (MU)	A	178.64
2	Total under recovery of energy charges during FY 2016-17 (₹ crore)	B	26.75
3	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	23.32 (26.75-3.43)
4	Shortfall in generation due to reasons beyond control (MU)	D	126.92
5	Shortfall in energy charges to be recovered during FY 2018-19 (₹ crore)	$E=D*C/A$	16.57
6	Adjustment in energy charge shortfall due to loss of 6.83 MU at generator terminal (paragraph 18) $6.83 \times (1-.012) \times (1-0.12) \times 1.496 / 10$ (₹ crore)	F	0.89
7	Total under-recovery of energy charges after adjusting energy loss of 6.83 MU (₹ crore)	$G = E-F$	15.68

48. Accordingly, in terms of Regulation 31(6)(b) of the 2014 Tariff Regulations, the design energy for the year 2018-19 shall be modified to 974.36 MU (A1+A2-DE) considering the actual generation (A1) of 956.05 MU during FY 2016-17, actual generation (A2) of 1153 MU during FY 2017-18 and Design Energy (DE) of 1124.69 MU, till the energy charge shortfall of Rs.15.68 crore for FY 2016-17 is recovered by the Petitioner based on the modified ECR of Rs.1.415/kWh as calculated by the Petitioner at paragraph 4(j). After recovery of the shortfall of Rs.15.68 crore, the normal ECR of Rs.1.215/kWh shall be applicable for the balance period of 2018-19. 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.

49. Petition No. 329/MP/2018 is disposed of in terms of above.

Sd/
(Arun Goyal)
Member

Sd/
(I S Jha)
Member

Sd/
(P. K. Pujari)
Chairperson

