

**Central Electricity Regulatory Commission
New Delhi**

Petition No.139/MP/2018

Coram:

**Shri P. K. Pujari, Chairperson
Dr. M.K. Iyer, Member
Shri I.S. Jha, Member**

Date of Order: 16th September, 2019

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 2015-16 in respect of Dhauliganga 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, Patiala – 147001
2. Haryana Power Utilities
(DHBVNL & UHBVNL)
Shakti Bhawan, Sector VI,
Panchkula- 134019
3. Uttar Pradesh Power Corporation Ltd
Shakti Bhawan, 14, Ashoka Road,
Lucknow – 226001
4. Engineering Dept. 1st Floor,
UT Chandigarh, Sector-9 D,
Chandigarh-160009.

5. BSES Rajdhani Power Ltd.,
BSES Bhawan, Nehru Place,
New Delhi-110019.

6. BSES Yamuna Power Ltd.,
Shakti Kiran Building ,Karkadooma,
Delhi-110072

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

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

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

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

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

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

...Respondents

Parties present:

Shri Prashant Kaul, NHPC
Shri A.K. Pandey, NHPC
Shri V.N. Tripathi, NHPC
Shri Jitender Kumar, NHPC
Shri Piyush Kumar, NHPC
Ms. Seema Mishra, NHPC
Shri Dhanush C.K, NHPC
Shri R.B. Sharma, Advocate, BRPL
Shri Mohit Mudgal, Advocate, BYPL
Ms. Swapna Seshadri, Advocate, PSPCL

ORDER

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

(a) *Hon'ble Commission may kindly allow recovery of energy charges amounting to Rs 8.66 Crs in FY 2016-17 against the shortfall in generation of 32.54 MU in FY 2015-16 as per regulation 31(6)(a) of CERC Tariff Regulations, 2014 as explained in para- VIII & X of the petition.*

(b) *Hon'ble Commission is requested to allow modified design energy for FY 2016-17 so that the recovery of allowable energy charges is assured as explained in para-XI of the petition.*

(c) *To allow revision of energy bills for the period 2016-17 which were already raised to beneficiary 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 of the petition.*

(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:

$(\text{Energy charge rate in Rs/kWh}) \times \{\text{Scheduled energy (ex-bus) for the month in kWh}\} \times (100 - \text{FEHS})/100$

“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):

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

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 $100/(100 - \text{AUX})$.

“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 $\{\text{DE} \times (100 - \text{AUX}) \times (100 - \text{FEHS}) / 10000\}$ 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) The present petition has been filed in order to suitably modify the Energy Charge Rate (ECR) for FY 2016-17 for recovery of under recovered energy charges in FY 2015-16 due to short fall in generation as per Regulation 31(6) (a). The breakup of actual generation vis-à-vis Design Energy is tabulated below:

S.No. 1	Month 2	Design Energy (MU) 3	Actual energy at GT (MU) 4	Shortfall/ Excess 5=4-3	Actual PAF (%) 7
1	Apr-15	56.08	66.59	10.5134	65.23
2	May-15	91.26	130.16	38.897	82.24
3	Jun-15	144.33	151.92	7.5932	90.43
4	Jul-15	208.32	199.02	-9.3018	98.09
5	Aug-15	208.32	195.86	-12.4648	97.07
6	Sep-15	160.00	136.63	-23.367	99.72
7	Oct-15	94.40	67.79	-26.615	100.47
8	Nov-15	52.48	39.33	-13.1521	95.38
9	Dec-15	31.69	28.91	-2.7833	61.01
10	Jan-16	31.62	25.93	-5.6906	61.35
11	Feb-16	25.89	22.78	-3.1108	75.608
12	Mar-16	30.30	24.72	-5.584	81.45
Total		1134.69	1089.62	-45.07	

(b) The total shortfall in generation during 2015-16 is 45.07 MU. (1134.69 MU-1089.62 MU).

(c) Out of the total shortfall of 45.07 MU, shortfall of 32.54 MU was beyond the control of Petitioner and balance shortfall of 12.53 MU was within the control of the petitioner. Hence as per Regulation 31(6) (a), the shortfall of 32.54 MU needs to be recovered by the petitioner during FY 2016-17. The details of the shortfall and reasons for the shortfall are as under:

A. Shortfall due to reasons beyond the control of petitioner	
Energy loss due to reservoir flushing	-15.19 MU
Energy loss due to high silt	-16.86 MU
Energy loss due to transmission constraints	-0.49 MU
Total (A)	-32.54 MU

B. Shortfall due to reasons within the control of petitioner	
Energy generated by depleting reservoir (grid requirements)	21.72 MU
Less generation for increasing reservoir (grid requirements)	-24.17 MU
Unit outage	-5.12 MU
Other constraints (Partial load/ ramping up, down during peaking)	-4.96 MU
Total (B)	-12.53 MU
Grand total (A+B)	-45.07 MU

(d) The present submission for recovery of energy charges for the FY 2015-16 is based on the energy charge allowed for the FY 2015-16 vide order dated 24.02.2016 in petition no. 230/GT/2014 and is detailed as under:

Schedule Energy (Ex-Bus) (MU)	Free Energy (MU)	Net Energy Billed (MU)	ECR (Rs/Unit)	Annual Fixed Charges (Crs)	Energy Charges to be recovered (Crs)	Energy Charges actually recovered (Crs)	Under recovery of Energy (Crs)
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
1034.80	129.04	905.76	1.488	293.53	146.76	134.78	-11.99

(e) As out of the total loss of 45.07 MU, the loss of 12.53 MU was within the control of the petitioner, hence, shortfall of energy charges amounting to Rs. 8.66 Crs corresponding to 32.54 MU only may be allowed, which was due to reasons beyond the control of the petitioner. Details are as under:

Total Shortfall in generation during FY 2015-16	A	45.07 MU
Total under recovery of energy charges during FY 2015-16	B	11.99 Crs
Shortfall in generation due to reasons beyond control	D	32.54 MU
Shortfall in energy charges to be recovered during FY 2016-17	E=D*B/A	8.66 Crs

(f) Under prevailing mechanism of Regulation 31(6), petitioner is not in position to recover the shortfall allowed by CERC. For example in case of order dated 17.04.2017 in petition no. 251/MP/2015 for Chamera-III Power station for FY 2014-15, the petitioner could only recover Rs. 14.92 Crs. against allowed recovery of Rs. 19.04 Crs. The above situation is applicable in the instant case also.

(g) Further, CEA and CWC were requested to certify the actual inflow data

but vide letter dated 31.01.2017 they have expressed inability to certify the inflow series on year to year basis as under:

“The hydrological uncertainties on year to year basis are part of the planning process which can be assessed from the departure of the annual rainfall from the normal. Further the consistency of inflow series of the project can be carried out using relevant hydro-meteorological data for longer period such as more than 5 years. In view of the above it may not be possible to certify the inflow series as requested vide above referred letter.”

5. The matter was last heard on 2.5.2019 and the Commission after hearing the parties admitted the petition and directed to submit additional information as under:

- (a) Documents to validate the energy loss due to transmission constraints and reservoir flushing.
- (b) Rainfall data reported by IMD for the district in which plant is located and other adjoining districts to correlate low inflows.
- (c) Any other relevant documents to justify the claims in Petition.

6. In compliance with the above directions, the petitioner has submitted the additional information vide affidavit dated 17.6.2019 and has served the copies of the same to the respondents. The respondent UPPCL, PSPCL and BRPL have filed their replies and the petitioner has submitted its rejoinders to the said replies.

Reply of UPPCL, Respondent No. 8

7. In response to the Petitioner's claim, the respondent UPPCL vide its affidavit dated 25.05.2018 has submitted as under:

- (a) The compensation on account of shortfall has to be on rolling basis, i.e. energy charges for 2016-17 = (Energy charges for 2016-17 – Loss in energy charges in 2016-17) + Loss in 2015-16. Therefore loss in energy charges in 2015-16 is to be carried forward to be compensated in 2016-17.
- (b) If the Petitioner claims compensation by way of electricity charges in the following year, it will amount to the loss to the beneficiaries as they will bear the burden of incentive in Capacity Charges in case of high generation and bear the loss in Energy Charges when the inflow is low. In other words, the Petitioner gets incentive in Capacity Charges when PAF is more than NAPAF and is

compensated for the loss in Energy Charges when the generation is below the Design Energy.

- (c) The case of Tehri HEP has been highlighted where the prayer of THDC 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 vide order dated 11.12.2013 in petition no. 220/MP/2011.
- (d) The respondent has also asked for clarification on the method and reasons for classification of controllable and uncontrollable factors and why silt flushing has been considered as uncontrollable factor.

Rejoinder of the Petitioner to reply of UPPCL

8. In response to the reply of the Respondent UPPCL, NHPC vide its affidavit dated 20.08.2018 has submitted as under:

- (a) The claim of the Respondent that recovery of shortfall in Energy charges must be done in the years when the actual generation is greater than Design Energy rather than carrying it forward to the next years is not in accordance with the provisions of Regulation 31(6) of the 2014 Tariff Regulations.
- (b) The claim of the Respondent to take into consideration the case of Tehri HEP in this case is irrelevant as the case of Tehri HEP was for relaxation of NAPAF whereas the present petition is for recovery of shortfall of energy charges.

Reply of Respondent No. 5, BSES Rajdhani Power Limited (BRPL)

9. The respondent BRPL vide its affidavit dated 07.01.2019 has submitted as under:

- (a) 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.
- (b) Perusal of Annexure-II of the petition related to the analysis on daily flows shows that the data is of the Petitioner and has not been vetted by an independent agency. This Annexure also shows that during the months of June to August 2015, there have been huge spillage which has not been managed and if this

spillage had been managed properly, it would have resulted in the generation of $6.72 \times 123 = 524.16$ MU as against the actual generation of 477.9779 MU achieved by the Petitioner during this period. The entire shortfall of 32.54 MU claimed is attributable to mismanagement of the reservoir capacity during the monsoon season.

- (c) Thus, Petitioner has under-estimated the energy loss which is within its control and also has not been able to optimize generation during the months of June 2015 to August 2015 when there has been huge spillage. Details such as Max. 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. Accordingly, the request of the Petitioner for recovery on account of shortfall as compared to Design Energy is liable to be rejected by the Commission.
- (d) The generating station had an excess of 41.74 MUs beyond scheduled energy (which includes free energy). Petitioner NHPC would have sold this energy in the market resulting in revenue to the power station and this comes out to be approx Rs. 11.52 Cr as computed in table below:

MUs generated	A	1089.62
Normative Aux	B	1.20%
MUs generated Net of Aux	$C=A*(100\%-B)$	1076.54
MUs scheduled by station	D	1034.8
Un scheduled (MUs) by the station	$E=C-D$	41.74
IEX prices of Northern region for FY 15-16	F	2.76
Amount recovered for Unscheduled energy (RsCrS)	$G=E*F/10$	11.52

- (e) The respondent BRPL has submitted that by selling unscheduled energy, the Petitioner has already recovered the amount which they are claiming as a loss due to shortfall.
- (f) Besides the certification of the inflow series, the petitioner is also required to obtain certification from the regional statutory bodies (i.e. NRPC and NRLDC) in the Northern region that the shortfall as claimed is not on account of factors

within the control of the Petitioner. However, it is noted from the petition that NRPC and NRLDC have not even been included as respondents in the petition.

Rejoinder of NHPC to reply of BRPL

10. In response to the reply of respondent BRPL, NHPC vide its affidavit dated 12.02.2019 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 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 2015-16, the total shortfall in generation was 45.07 MU and loss of energy charges was Rs. 11.99 crore. The Regulation 31(6)(a), 31(6)(b) & 31(6)(c) of the 2014 Tariff Regulations lays down the methodology for recovery of shortfall in case of generating station that has life of more or less than 10 years. In view of above, the comments of respondent are not in order and hence should not be considered.
- (b) The understanding of the Respondent (BRPL) on recovery mechanism defined in clause 31(6) is not correct. There is no case of double benefit under this recovery mechanism. In fact, the Petitioner is recovering loss of energy charges of FY 2015-16 in next financial year i.e. FY 2016-17. The modification in Design Energy of FY 2016-17 for recovery of losses in FY 2015-16 is as per procedure defined in regulation 31(6).
- (c) 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.
- (d) 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 declined to certify daily discharge data due to non-availability of discharge gauge at specific location.
- (e) The respondent 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. Similarly in case of high siltation during monsoon season, the flushing of silt is necessary to maintain the pondage capacity of reservoir. In this process reservoir level is depleted after silt flushing process and the level is again maintained. In this process generation losses are their which is beyond the control of generating station.
 - iii. Tripping of transmission line and loss of generation is also beyond control of generating station. Hence comment submitted by the respondent is not in order and not acceptable.
- (f) As per allocation letter issue by MoP full power is allotted to different beneficiaries of Dhauliganga Power Station except 12% free power to home State. In view of above, Dhauliganga Power Station has no free power to be sold under market/exchange for recovery of additional revenue. The indicated generation (ex-bus) of 41.74 MU is unscheduled energy generated as per grid requirement under CERC (Deviation Settlement Mechanism and Related Matter) Regulation, 2014.
- (g) 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, therefore, are not made respondent in the instant petition.
- (h) 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.
- (i) 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.

Reply of PSPCL, Respondent No. 1

11. The Respondent No. 1, PSPCL vide its affidavit dated 13.04.2019 has submitted as under:

(a) The Petitioner has claimed for recovery on account of shortfall in generation for 32.54 MU while stating that the same is on account of reasons which were beyond the control of the Petitioner. However, the Petitioner has not provided any details as to what were the reasons which were beyond the control of the Petitioner. Reasons given by the Petitioner for shortfall in generation such as silt flushing and less inflow from design inflow are vague. The Petitioner has not produced any documentary evidence for any of the aspects raised by it.

(b) With respect to the loss on account of silt flushing, it is submitted that as a hydropower generator, the Petitioner ought to have planned for such circumstances. Silt flushing is a foreseeable event which keeps on happening with hydropower projects and it cannot be considered as being beyond the control of the Petitioner. The Petitioner being a hydropower generator should know how to make arrangements in such circumstances. Therefore, the Petitioner ought not to be given any relief on account of reservoir flushing and high silt.

(c) 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. As regards less inflow, this is a common event for a hydropower generator and, therefore, it is not something that the Petitioner could not have foreseen at the time of designing the project.

(d) The Petitioner has placed on record the letter dated 23.01.2017 of the Central Water Commission ("CWC"), [Pages 91-92 of pleadings], 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 is the letter dated 23.01.2017 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.

12. The Respondent vide affidavit dated 13.8.2019 in its rejoinder has reiterated its contention that the reasons for shortfall in generation of 32.54MU are beyond the control of petitioner and details of same have already been provided in petition. The Petitioner has further submitted that silt flushing is a seasonal requirement in hydro power station during monsoon season. Requirement of silt flushing depends on silt content in the water and it cannot be ascertained.

Analysis and Decision

13. It is noticed that the Petitioner has claimed energy shortfall for the year 2015-16 under Regulation 31(6)(a) of the 2014 Tariff Regulations which is applicable for the energy shortfall within 10 years from the date of commercial operation. COD of the generating station is 1.11.2005 accordingly; the generating station completed 10 years on 31.10.2015. As per Regulation 3(68), related to Definition and Interpretation in the 2014 Tariff Regulations, "Year" means a financial year. Since the 10th year after COD of the generating station is ending on 31.3.2016, we have considered the claim of the Petitioner within 10 years under 31(6)(a) of the 2014 Tariff Regulations.

14. The Design Energy of the instant generating station is 1134.69 MU. During the FY 2015-16, there was a shortfall of 45.07 MU in generation from the instant generating station. Of this shortfall, the Petitioner has claimed that 32.54 MU was beyond its control while balance of 12.53 MU has not been claimed by the Petitioner. The Petitioner has invoked provisions of Regulation 31(6) (a) of the 2014 Tariff Regulations to claim relief for the shortfall of 32.54 MU.

15. The break-up of unclaimed loss (12.53 MU) by the Petitioner is as under:

- (a) Additional energy generated by depleting reservoir (grid requirements): 21.72 MU
- (b) Shortfall in generation for increasing reservoir (grid requirements): (-) 24.17 MU
- (c) Shortfall in generation due to unit outage: (-) 5.12 MU
- (d) Shortfall in generation due to Other constraints (Partial load/ ramping up, down during peaking): (-) 4.96 MU

16. The break-up of claimed loss (32.54 MU) by the Petitioner on account of uncontrollable factors is as under:

- (a) Energy shortfall due to reservoir flushing: (-) 15.19 MU
- (b) Energy shortfall due to high silt: (-) 16.86 MU
- (c) Energy shortfall due to transmission constraints: (-) 0.49 MU

17. 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. Another suggestion of the Respondent, UPPCL as regards considering the instant petition on basis of our order dated 11.12.2013 in Petition no. 220/MP/2011, is not relevant in the present case as that order 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)(a) of the 2014 Tariff Regulations.

18. Respondents have raised the issue that recoument 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 benefits and claimed that relief is covered under provisions of the 2014 Tariff

Regulations. In our view, the Respondents have in effect challenged the provisions of the Regulations and the same is not permitted through this Petition.

19. Respondent BRPL vide affidavit dated 7.1.2019 has pointed out that the Petitioner has not been able to utilise the full potential of the inflows, especially during June, 2015 to August, 2015 as there was lot of spillage as observed from the 365 days data as submitted by the Petitioner in the main petition. In our view, this proposition is misconceived since the capacity of the reservoir is limited and in the instant case, as per technical parameters whenever the inflows are more than the design inflow i.e. 107 cumecs, spillage is bound to occur. The full potential of the incoming flows (if less than 107 cumecs) need to be utilized by the generating station without spillage.

20. From the scrutiny of the 365 days data as submitted by the Petitioner, we observe that the spillage has occurred during the months of June, July and August, 2015 only on the days where the available inflows was more than the design inflow. Therefore, we do not agree to the contention of the Respondents 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. From the data furnished by the petitioner it is seen that the spillage happened on the 7th, 13th, 14th, 15th & 20th of June 2015. After 23rd June 2015, it continued for around two months up to 23rd August 2015. These being peak months due to rain, the available inflow were much higher than the design inflow.

21. Some of the Respondents have submitted that the data submitted by the Petitioner has not been verified by any independent agency. In order to satisfy ourselves, 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 available actual inflows.

22. 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 machine.
- 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 the above in respect of the present claim of the Petitioner.

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

23. In the instant case, the maximum energy which can be generated by using 100% machine capacity and actual inflows provided by the petitioner comes out to around 1129 MUs. However, petitioner has assessed this potential as 1135.99 MUs. As such, in comparison to design energy of 1134.69 MUs, it is construed that lower generation than the design energy is not attributable to low inflows in comparison to design inflows.

(ii) Energy loss due to prolonged planned/ forced outage of machines

24. In order to ascertain whether prolonged planned/forced/outage of machine affected energy generation by non-utilization of available water flow, the Commission, vide technical validation letter dated 29.11.2018, had directed the Petitioner to furnish the planned and forced outage data for the year 2015-16 along with its correlation with energy generation. In response, the Petitioner vide affidavit dated 14.1.2019 has submitted the details of forced outages and planned outages during the year 2015-16. We note that the outages as reported by the Petitioner, pertains to the whole year starting from April, 2015 to March, 2016. Moreover, Unit-I for the period 24.11.2015 to 15.12.2015, Unit-II for the periods 28.1.2016 to 16.2.2016, Unit-III for the period 18.12.2015 to 26.1.2016 and Unit-IV for the period 9.1.2016 to 24.6.2016 were under

Annual Maintenance. There were a number of instances when units were out due to electrical fault, control systems problem, stator earth fault, generator protection, MIV control problem, turbine shaft seal leak, line breaker over current etc. Most of the planned outages have been carried out during the lean season as the capacity of the available machines was enough to take care of the inflows during these lean months. Overall, it is observed that design energy for the days under the list of planned and forced outages is 458.08 MUs and actual generation is 467.09 MUs, against the maximum possible generation of 494.44 due to actual inflows. Thus, there is no energy shortfall as compared to design energy. However, there is a shortfall of 27.34 MUs with respect to maximum possible generation for these days based on actual inflows. This shortfall has been put by the petitioner under the list of “energy shortfall due to reasons within the control of the Petitioner”. The Petitioner has not claimed the energy charges corresponding to the energy shortfall of 27.34 MUs during the days of planned and forced outages.

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

25. Maximum possible annual generation with available actual inflows as submitted by the Petitioner, has been assessed. These assessments indicate that with the available actual inflows, maximum possible generation utilising 100% machine capability should have been 1128.83 MU. For this purpose, the plant capacity of 280 MW, design head of 297 M, overall efficiency of 89.815 % and design flow of 107 cumecs have been considered. However, the Petitioner in its estimates has assessed the same to be 1135.99 MU. Since, 1135.99 MU (as considered by the Petitioner) is more than 1128.832 MU (as assessed by us) the figure of 1135.99 MUs is being adopted for further analysis.

Energy shortfall due to reasons within control of the petitioner:

26. Overall, for the whole year, the unclaimed energy shortfall is 12.53 MUs which includes 21.72 MU of additional energy by depleting reservoir, shortfall of 24.17 MU for increasing reservoir level to meet the requirement of the grid, shortfall of 5.12 due to unit outages and shortfall of 4.96 MU of energy due to other constraints like partial loading and ramping up & ramping down during peaking. However, it is observed that the Petitioner has put these shortfalls under the list of “energy shortfall due to reasons within the control of the petitioner”. Since, the Petitioner is not claiming the energy shortfall of 12.53 MU on account of above reasons, we do not find any need to deal with.

Energy shortfall due to reasons beyond the control of the generating station:

27. For the remaining energy shortfall of 32.54 MUs claimed by the petitioner, the shortfall of 15.19 MU has been attributed to reservoir flushing, 16.86 MU to high silt and 0.49 MU to transmission constraints. The Commission vide ROP of the hearing dated 2.5.2019 directed the Petitioner to furnish the documents to validate the energy loss due to transmission constraints and reservoir flushing. The Petitioner vide affidavit dated 17.6.2019 has submitted the details of transmission constraints and reservoir flushing.

28. The Petitioner with respect to the transmission constraints has submitted that on 13.6.2015, it could not generate 0.314 MUs in spite of water availability in reservoir. Further, the Petitioner has submitted that on 3.7.2015, there was a shortfall of 0.18 MUs due to miscellaneous outage. From the perusal of the documents submitted by the Petitioner i.e. Daily Generation Report for the above two dates, it is observed that the units of the generating station were under Miscellaneous Outage for few hours {2 hrs. 25 min. (machine hours)} on 13.6.2015 due to over frequency and the spillage was done for maintaining reservoir level because of outages of units. Further, the units of the generating stations were under miscellaneous outages & forced outages for few hours {3

hrs. 50 minutes (machine hours)} on 3.7.2015 due to line and grid constraint. From the data of declared capacity and injection schedule from NRLDC website for 13.6.2015 & 3.7.2015, it is observed that there is variation in the injection schedule of the generating station. Hence, we hold that the total energy shortfall of 0.49 MU on 13.6.2015 and 3.7.2015 due to transmission constraints was beyond control of the Petitioner and the corresponding energy charge shortfall is allowed to be recovered by the Petitioner.

29. With respect to the energy shortfall of 15.19 MUs due to reservoir flushing, it is observed that, on 7.6.2015, 8.6.2015, 1.8.2015 and 22.8.2015 all the unit of the generating station were under miscellaneous outage for some period for Reservoir Silt Flushing. There was an energy shortfall of 2.69 MU, 0.58 MU, 5.42 MU and 5.64 MU on 7.6.2015, 8.6.2015, 1.8.2015 and 22.8.2015 respectively. From the declared capacity and injection schedule data, it is observed that on 7.6.2015, the Petitioner has not declared any capacity for the period from 7:00 hrs to 24:00 hrs. The status quo has been maintained up to 04:00 hrs of 8.6.2015. Further, from the perusal of the declared capacities and injection schedule, it is observed that there is no declaration of any capacity from 00:00 hrs to 19:00 hrs on 1.8.2015 and 22.8.2015. Based on the above discussions, it is established that there is an energy shortfall due to reservoir flushing. The total energy shortfall of these four days due to reservoir flushing works out to 14.32 MU, which is less than the claim of 15.19 MU. Accordingly, only 14.32 MU of energy shortfall due to reservoir flushing is allowed to be recovered by the petitioner.

30. Regarding energy shortfall of 16.86 MU due to high silt, the Petitioner in affidavit dated 17.6.2019 has not submitted the details of the energy shortfall separately. However, from the perusal of the documents submitted by the Petitioner it is observed that on 26.6.2015, 27.6.2015, 11.7.2015 and 12.7.2015, there is an energy shortfall of

6.04 MU, 4.38 MU, 2.41 MU and 3.54 MU respectively due to high silt. From the perusal of the declared capacities and injection schedule, it is observed that on 26.6.2015, the Petitioner has given 100% DC from 00:00 hrs to 01:45 hrs and there is no declaration of any capacity from 01:45 hrs to 24:00 hrs. Further, there is no DC given by the petitioner on 27.6.2015 from 00:00 hrs to 17:15 hrs. On 11.7.2015, the Petitioner has not given any DC for the period from 15:00 hrs to 24:00 hrs and the status quo was maintained up to 16:45 hrs of 12.7.2015. From the calculations as submitted by the Petitioner, it is observed that there is a total energy shortfall of 16.37 MU as against the claim of 16.86 MU on these four days due to high silt. Accordingly, 16.37 MUs of energy shortfall due to high silt is allowed.

31. Based on the above, following has been assessed as the possible generation at generator terminal against the actual generation of 1089.62 MU.

a) Possible generation at generator terminal after accounting for the reasons beyond the control of the petitioner:

1.	Energy that could have been generated by utilizing available actual inflows and 100% machine capacity i.e. 280 MW	1135.99 MU
2.	Energy lost due to reservoir flushing.	14.32* (MU)
3.	Energy lost due to high silt	16.37** (MU)
4.	Energy lost due to transmission constraints	0.49 (MU)
5.	Remaining Energy that could be generated (1-2-3-4)	1104.81 (MU)

* against a claim of 15.19 MUs, the difference has been shifted to the reasons within the control of the petitioner.

** against a claim of 16.86 MUs, the difference has been shifted to the reasons within the control of the petitioner

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

Sl. No		Based on actual available flow at 100% machine capacity
1.	Remaining Energy that could be generated after taking into account reasons beyond control (MU)	1104.81
2.	Energy loss due to Unit outages (MU)	5.12
3.	Energy loss due to Grid requirements (MU)	2.45
4.	Other constraints (Partial ramping up/ down during peaking) (MU)	4.96

5.	Difference shifted from reasons beyond the control to the reasons within the control of the Petitioner	1.36
	Remaining Energy that could be generated (MU) (1-2-3-4-5)	1090.92

32. In view of the fact that actual generation of the station of 1089.62 MU is very close to the theoretical calculations of 1090.92 MU, it is held that Petitioner has been able to generate according to the actual inflows after accounting for the reasons under its control and reasons beyond its control. Accordingly, the Petitioner cannot be faulted with inefficient operation of the plant and non-utilization of maximum power potential of actual inflows or excessive spillage. In our view, lower generation in comparison to Design Energy was due to reasons not under the control of the petitioner i.e. energy lost due to plant stoppage, during incidence of high silt, reservoir flushing, transmission constraints etc. and other stated reasons i.e. energy loss due to 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.

33. The Petitioner has claimed the energy shortfall of 32.54 MU beyond its control. However, out of this shortfall of 32.54 MU, shortfall of 1.36 MU has been shifted to the reasons within the control of the petitioner, as discussed above. Further, as compared to theoretical calculation of 1090.92 MUs i.e the maximum possible generation at generator terminal, the actual generation is 1089.62 MU i.e. 1.3 MU less. As such, energy shortfall for the reasons beyond the control of the petitioner has been worked out as 29.88 MU (32.54-1.36-1.3).

34. Respondent BRPL has submitted that the generating station had an excess of 41.74 MU beyond scheduled energy which also includes the free energy and Petitioner NHPC would have sold this energy in the market resulting in revenue to the power station

(approx. Rs 11.52 crore). In our view, the stated energy of 41.74 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 13 different beneficiaries of Dhauliganga Power Station (except 12 % free power to Home State). Thus, Dhauliganga Power Station has no free power to be sold in power exchange for recovery of additional revenue. This energy generated above the scheduled energy is accounted for in the DSM and is governed by provisions of DSM Regulations, 2014.

35. In view of the above deliberations, energy charge shortfall amount is worked out as follows:

Schedule Energy 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 (crore)
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
1034.80	129.04	905.76	1.488	293.53	146.76	134.78	-11.99

36. Therefore, the amount to be recovered in the FY 2016-17 due to shortfall in energy generation from the Design Energy during 2015-16 works out as follows:

Total Shortfall in generation during FY 2015-16	A	45.07 MU
Total under recovery of energy charges during FY 2015-16 (Rs.)	B	11.99
Shortfall in generation due to reasons beyond control	C	29.88 MU
Shortfall in energy charges to be recovered during FY 2017-18	D=C*B/A	Rs 7.95 crore

37. Accordingly, in terms of Regulation 31(6)(a) and 31(6)(c) of the 2014 Tariff Regulations, we decide that the Design Energy for the year 2016-17 is **1089.62** MU, till the energy charge shortfall of Rs. 7.95 Crore for the period 2015-16 is made up by the petitioner by revision of energy bills for the period 2016-17. Further, the difference in energy charge shortfall to be recovered for the year 2015-16 which may arise after the

true-up of tariff for the period 2014-19 shall be recovered directly by the generating station from beneficiaries through supplementary bills after true-up.

38. Petition No. 139/MP/2018 is disposed of in terms of above.

Sd/-
(I. S. Jha)
Member

Sd/-
(Dr.M.K.Iyer)
Member

Sd/-
(P.K. Pujari)
Chairperson