

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No.550/MP/2020  
and  
Petition No.609/MP/2020**

**Coram:  
Shri I. S. Jha, Member  
Shri Arun Goyal, Member  
Shri Pravas Kumar Singh, Member**

**Date of Order: 26<sup>th</sup> May, 2023**

**Petition No.550/MP/2020**

**In the matter of**

Petition under Regulation 44(6), (7) & (8) of The Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for recovery of unrecovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station during the FY 2018-19 in respect of Nathpa Jhakri Hydro Power Station (NJHPS).

**And**

**In the matter of**

SJVN LTD.

(A Joint Venture of Govt. of India  
and Govt. of Himachal Pradesh),  
Shakti Sadan, Shanan, Shimla Limited

.....**Petitioner**

**Versus**

1. The Chairman,  
Punjab State Power Corporation Ltd (PSPCL),  
The Mall, Patiala-147 001 (Punjab).
  
2. Managing Director,  
Haryana Vidyut Prasaran Nigam Limited (DHBVNL &UHBVNL),  
Vidyut Sadan, Sector 6,  
Panchkula – 134009 (Haryana)
  
3. (i) Managing Director,  
Tata Power Delhi Distribution Limited,  
NDPL House, Hudson Lane,

Kingsway Camp  
New Delhi-110019

(ii) AVP (PMG),  
BSES Rajdhani Power Limited,  
2nd Floor, B-Bock, BSES Bhawan,  
Nehru Place, New Delhi-110019

(iii) Chief Executive Officer,  
BSES Yumuna Power Limited,  
3rd Floor, Shakti Kiran Building,  
Karkardooma Near Court Road,  
New Delhi-110092

4. (i) The Chairman & Managing Director,  
Jaipur Vidyut Vitaran Nigam Limited,  
Vidyut Bhawan, Janpath,  
Jyoti Nagar, Jaipur – 302005 (Rajasthan)

(ii) Managing Director,  
Ajmer Vidyut Vitaran Nigam Limited, .  
Vidyut Bhawan, Janpath,  
Jyoti Nagar, Jaipur – 302005 (Rajasthan)

(iii) Managing Director,  
Jodhpur Vidyut Vitaran Nigam Limited,  
Vidyut Bhawan, Janpath,  
Jyoti Nagar, Jaipur – 302005 (Rajasthan)

5. The Chairman & Managing Director,  
Himachal Pradesh State Electricity Board Limited, .  
Vidyut Bhawan, Kumar House,  
Shimla – 171004 (H.P.)

6. The Principal Secretary (Power),  
Power Development Department (PDD),  
Govt. of J&K, Civil Secretariat Building,  
Jammu -180001 (J&K)

7. The Secretary (Engineering),  
Engineering Deptt. 1st Floor,  
UT Secretariat, Sector 9-D,  
Chandigarh – 160009.

8. The Chairman & Managing Director,  
Uttar Pradesh Power Corporation Ltd. (UPPCL),  
Shakti Bhawan, 14 Ashok Marg,  
Lucknow – 226001 (U.P.)

9. Chairman & Managing Director,  
Uttaranchal Power Corporation Limited,  
Urja Bhawan, Kanwali Road,  
Dehradun-248001 (U.K.)

10. The Principal Secretary (MPP & Power),  
Govt. of Himachal Pradesh,  
H.P. Secretariat,  
Shimla-171002 (H.P.)

11. M.P. Power Management Company Limited,  
Shakti Bhawan, Rampur,  
Jabalpur- 482008

(M.P.)

.....**Respondents**

**Petition No.609/MP/2020**

**In the matter of**

Petition under Regulation 44(6), (7) & (8) of The Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for recovery of unrecovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station during the FY 2018-19 in respect of Rampur Hydro Power Station (RHPS).

**And**

**In the matter of**

SJVN Limited, .  
(A Joint Venture of Govt. of India)  
and Govt. of Himachal Pradesh),  
Shakti Sadan, Shanana, Shimla

.....**Petitioner**

**Versus**

1. The Chairman,  
Punjab State Power Corporation Ltd (PSPCL),  
The Mall, Patiala-147 001 (Punjab).
  
2. The Chief Engineer,  
Haryana Power Purchase Center,  
Vidyut Sadan, Sector 6,  
Panchkula – 134009 (Haryana)
  
3. (i) The Chairman & Managing Director,  
Jaipur Vidyut Vitaran Nigam Limited,  
Vidyut Bhawan, Janpath,  
Jyoti Nagar, Jaipur – 302005 (Rajasthan)
  
- (ii) Managing Director,  
Ajmer Vidyut Vitaran Nigam Limited,  
Vidyut Bhawan, Janpath,  
Jyoti Nagar, Jaipur – 302005 (Rajasthan)
  
- (iii) Managing Director  
Jodhpur Vidyut Vitaran Nigam Limited, .  
Vidyut Bhawan, Janpath,  
Jyoti Nagar, Jaipur – 302005 (Rajasthan)
  
4. The Chairman & Managing Director,  
Himachal Pradesh State Electricity Board Limited,  
Vidyut Bhawan, Kumar House,  
Shimla – 171004 (H.P.)
  
5. The Principal Secretary (Power),  
Power Development Department (PDD),  
Govt. of J&K, Civil Secretariat Building,  
Jammu -180001 (J&K)
  
6. The Secretary (Engineering),  
Engineering Department, . 1st Floor,  
UT Secretariat, Sector 9-D,  
Chandigarh – 160009.
  
7. The Chairman & Managing Director,  
Uttar Pradesh Power Corporation Ltd. (UPPCL),  
Shakti Bhawan, 14 Ashok Marg,  
Lucknow – 226001 (U.P.)

8. Chairman & Managing Director,  
Uttaranchal Power Corporation Limited,  
Urja Bhawan, Kanwali Road,  
Dehradun-248001 (U.K.)
9. The Principal Secretary (MPP & Power),  
Govt. of Himachal Pradesh,  
H.P. Secretariat, Shimla-171002 (H.P.)
10. M.P. Power Management Company Limited,  
Shakti Bhawan, Rampur,  
Jabalpur- 482008 (M.P.)

**Parties Present:**

Shri Vivek Singh, Advocate, SJVNL  
Shri Harish Kumar Sharma, SJVNL  
Shri Aman Katoch, SJVNL  
Shri Naveen Yadav, SJVNL  
Shri Anand K Ganesan, Advocate, PSPCL  
Shri Amal Nair, Advocate, PSPCL  
Ms. Sugandh Khanna, Advocate, PSPCL  
Ms. Kritika Khanna, Advocate, PSPCL  
Shri Sachin Dubey, Advocate, BYPL  
Shri Mohit K. Mudgal, Advocate, BYPL  
Ms. Megha Bajpeyi, BRPL  
Shri Shanti Swaroop Bhatti, Advocate, Deptt. of Energy  
Shri Balesh Kumar, Deptt. of Energy  
Shri Aditya Singh, Advocate, MPPMCL  
Shri Ravindra Khare, MPPMCL  
Shri Brajesh Kumar Saxena, UPPCL

**ORDER**

SJVN Ltd. (hereinafter to be referred as 'the Petitioner') has filed the present petition for recovery of unrecovered energy charges due to shortfall in energy generation for the reasons beyond the control of generating station during the FY 2018-19 in respect of Nathpa Jhakri Hydro Power Station (NJHPS) and Rampur Hydro Power Station (RHPS).

2. The Petitioner has made the following prayers:

**Prayer in Petition No. 550/MP/2020 for NJHPS:**

- a) *To allow recovery of energy charges amounting to Rs. 16.73 Crore against the shortfall in saleable scheduled generation of 142.286 MU in FY 2018-19 in accordance with the provisions of Regulation 44(6), (7) and (8) of the 2019 Tariff Regulations for recovery of unrecovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station.*
- b) *To allow recovery of energy charges on account of revision in AFC of NJHPS after approval of Truing up petition for the period 2014-19.*
- c) *To pass such other and further order / orders as are deemed fit and proper in the facts and circumstances of the case.*

**Prayer in Petition No. 609/MP/2020 for RHPS:**

- a) *To allow recovery of energy charges amounting to Rs. 16.93 Crore against the shortfall in saleable scheduled generation of 78.431 MU in FY 2018-19 in accordance with the provisions of Regulation 44(6), (7) and (8) of the 2019 Tariff Regulations for recovery of unrecovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station.*
- b) *To allow recovery of energy charges on account of revision in AFC of RHPS after approval of Truing up petition for the period 2014-19.*
- c) *To pass such other and further order / orders as are deemed fit and proper in the facts and circumstances of the case.*

3. The present batch of Petitions has been submitted by the Petitioner for same and similar reliefs. Since the issues raised in these Petitions are identical, the pleadings related to Petition No. 550/MP/2020 are being captured for the purpose of analysis and decision in combined manner.

**Background in Petition No. 550/MP/2020:**

4. The petitioner is a generating company and is operating & maintaining 1500 MW (6x250 MW) Nathpa Jhakri Hydro-Electric Power Station (NJHPS) in the State of Himachal Pradesh. The Units of the generating station were declared fully commercially operative on 18.05.2004.

5. The power generated from NJHPS is being supplied to the various Bulk Power beneficiaries /Customers/Successor utilities in Northern Region i.e. Respondents herein as per the allocation order issued by MoP, Gol as well as Power Purchase Agreements (PPAs) signed with them.

6. The Commission has approved the Annual Fixed Charges (AFC) vide order dated. 19.07.2019 for FY 2018-19 as Rs 1345.42 Crore. The Annual Design Energy of 6612 MU for NJHPS was considered the period of 2014-19.

7. The AFC of NJHPS for FY 2018-19 has been revised by the Commission vide order dated 06.09.2021 in Petition No. 31/GT/2020 to Rs 1336.52 Crore after truing up for the period 2014-19.

#### **Submission of the Petitioner in Petition No.550/MP/2020**

The Petitioner has mainly submitted as under:

8. The Petitioner is operating & maintaining 1500 MW (6x250 MW) Nathpa Jhakri Hydro-Electric Power Station (NJHPS) in the State of Himachal Pradesh. The Units of the generating station were synchronized one by one and generating station was declared fully commercially operative on 18.05.2004.

9. The power generated from NJHPS is being supplied to the various Bulk Power beneficiaries /Customers/Successor utilities in Northern Region i.e. Respondents herein as per the allocation order issued by MoP, Gol as well as Power Purchase Agreements (PPAs) signed with them. Further, MoP vide letter no. 5/3/2018-0M dated 28.05.2018 has directed NRPC to allocate 40 MW power to Madhya Pradesh from unallocated pool of Northern Region. Thereafter, NRPC vide letter no. NRPC/OPR/103/02/2018/6105-6130 dated 01.06.2018 had issued revision in allocation of Power from Central generating stations in Northern Region, by which 0.18% power from the unallocated quota of power from NJHPS was allocated to

MPPMCL.

10. SJVN is filing this petition for recovery of short fall in energy charges due to shortfall in generation for FY 2018-19 in accordance with Regulation 44(6), (7) and (8) of CERC (Terms and Conditions of Tariff) Regulations, 2019 (herein after referred as '**2019 Tariff Regulations**'), as under:

**“Regulation 44**

(6) *In case the saleable scheduled energy (ex-bus) of a hydro generating station during a year is less than the saleable design energy (ex-bus) for reasons beyond the control of the generating station, the treatment shall be as per clause (7) of this Regulation, on an application filed by the generating company.*

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

*Provided that in case actual generation from a hydro generating station is less than the design energy for a continuous period of four years on account of hydrology factor, the generating station shall approach the Central Electricity Authority with relevant hydrology data for revision of design energy of the station.*

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

As per Regulation 44(6), (7) and (8) of the 2019 Tariff Regulations, any shortfall in the energy charges on account of saleable scheduled energy (ex-bus) being less than the Saleable Design Energy (ex-bus) during the tariff period 2014-19 which was beyond the control of the generating station and which could not be



recovered during the said tariff period, needs to be recovered in six equal monthly instalments.

11. CEA vide letter No.3/88/2009/HP&I (1)/286 dated 7th July, 2009 has approved the Annual Design Energy of NJHPS as 6612 MU. In consideration of CEA approval, CERC in its order dated 19.07.2019 in the petition no. 314/GT/2018 has considered the Annual Design Energy of NJHPS as 6612 MU for the period of 2014-19. The same Design Energy of NJHPS for the period 2018-19 is considered in this Petition.

12. MoP, Gol vide letter no. 13/12/2002-H-II dated 26.03.2003 has issued an allocation of power from NJHPS to the Northern Region beneficiaries. The following is stated in the allocation order:

- i) 12% free power on account of the distress caused to the State on account of submergence, dislocation of population and
- ii) 25% share (i.e. 330 MW) in the remaining 88%, corresponding to the State's agreed share of 25% in equity contribution to the project.
- iii) The unallocated quota (15% of power available after taking into account (i) & (ii) above) is to be distributed within the region or outside depending upon overall requirement from time to time.
- iv) 4.4% share (i.e. 37 MW) of the State in the remaining power available after taking into account (i) to (iii) above as per the allocation formula on 'Central Plan Assistance' and 'Energy Sale'.

13. The approved Annual Design Energy (DE) of NJHPS is 6612 MU and keeping in view the provision of 1.2% auxiliary Energy Consumption for underground hydro generating stations as per the Regulation 37 of 2014 Tariff Regulations (NJHPS, being an underground power house) and 12% Free Power to home state as per the

allocation order, the saleable energy works out to 5748.737 MU (6612 \*0.988\*.88).

14. The month wise breakup of Actual Generation at Generator Terminal, vis- a- vis Design Energy as approved by CERC is tabulated below:

<b>FY 2018-19</b>	<b>Design Energy (MU)</b>	<b>Actual Generation at GT (MU)</b>	<b>Energy shortfall (MU)</b>
April	353.030	280.782	-72.248
May	864.568	514.278	-350.290
June	985.800	1064.690	78.890
July	1060.200	1154.086	93.886
August	1060.200	949.224	-110.976
September	685.170	936.633	251.463
October	465.216	465.726	0.510
November	345.070	309.247	-35.823
December	219.067	239.334	20.267
January	195.367	205.120	9.753
February	147.328	174.160	26.832
March	230.803	213.845	-16.958
<b>Total</b>	<b>6612.000</b>	<b>6507.125</b>	<b>-104.695</b>

15. The actual generation at Generator terminal during 2018-19 is 6507.125 MU and Design Energy is 6612 MU. Thus, there is a total shortfall of 104.695 MU in generation during FY 2018-19 at generator terminal. The Detailed analysis for shortfall of generation beyond the control of generator is as under:

a) The net Shortfall of generation due to less inflow from Design Inflow (-), Excess inflow beyond Design Energy (+) as well as Shut down of plant due to High Silt/ Reservoir Flushing (-) for the period 2018-19.

<b>Shortfall due to reasons beyond the control of petitioner</b>	
Energy shortfall due to less inflow from design inflow	-534.415 MU
Energy generated due to excess inflow from design inflow	653.474 MU
High Silt/Silt Flushing	-223.754 MU
<b>Total</b>	<b>-104.695 MU</b>

b) During April, 2018 & May, 2018, the generation was significantly less (422.5378 MU) than the Design Energy of the project due to less inflow. Also, in these months, the generation was significantly less than the average generation of previous years due to less inflow. The details of average generation and average discharge during the last three years has been submitted.

c) During FY 2018-19, there is no reduction in generation due to Forced Outage. The details of Forced Outage along with copy of reports sent to CEA on monthly basis regarding Outage is submitted.

d) The reduction in generation of 223.754 MU during the month of July 2018 and August 2018 due to silt flushing and high silt in the river is noticeably high as compared to previous years. Further, the details of outages due to High Silt/ Silt flushing during the last five years is as under:

S No	Description	2014-15	2015-16	2016-17	2017-18	2018-19
1(a)	Shut down due to Reservoir flushing ( No. of days)	0.81	Nil	Nil	Nil	1.26
1(b)	Shut down due to High Silt ( No. of days)	0.92	5.64	5.78	4.88	6.26
	<b>Shut down due to Reservoir flushing &amp; High Silt ( No. of days)</b>	<b>1.73</b>	<b>5.64</b>	<b>5.78</b>	<b>4.88</b>	<b>7.52</b>

It can be inferred from the above table that Unit (s) of NJHPS under Shut down due to High Silt as well reservoir flushing during 2018-19 was highest in comparison to the previous years.

- e) SJVN vide letters dated 05.09.2019 and 13.05.20 has requested CWC to provide the actual inflow/discharge data of river Satluj at Nathpa Dam site. However, no information has been received so far.
- f) As per Chapter 34 (Rain fall) available at website of Ministry of Statistics and Programme Implementation ([www.mospi.nic.in](http://www.mospi.nic.in)), following is noted:

*“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.*

Further, the rainfall data of the year 2014-15 to 2018-19 as published at India Meteorological Department (IMD) for Kinnaur distt.in Himachal Pradesh, which is upstream of NJHPS. *The rain fall data available on IMD website indicates that there is low rainfall in comparison to long period averages for the period from April 2018 to December 2018 except for the month of October, 2018.*

16. In the recent order of CERC in Karcham Wangtoo in Petition no. 184/MP/2019 dated 4.2.2020, following is stated:

9. The Petitioner vide its affidavit dated 12.9.2019 has submitted the information as sought above. With regard to information regarding para (b) above, the Petitioner has submitted as under:

b) Inflow of water in river Satluj is majorly dependent on the snowfall in its catchment area. The total catchment area of the Satluj above the Bhakra dam site is about 56875 sq. km. and above the Karcham dam is about 48755 sq. km. Snow catchment area of river Satluj is 38760 sq.km, which is about 80% of its total catchment area above Karcham dam. In this regard, it may be noted that the year 2017-18 had very meager snow fall in Beas as well as Satluj snow catchment area as compared to earlier years. Accordingly monthly report of Bhakra Beas Management Board for the month of March“2019 on “Operation and Maintenance of RTDSS for Operational Management of Reservoirs of BBMB” (Annexure C), to substantiates the above claim. Relevant para from said report is reproduced as under:

“2. Snow accumulation report

Summary of Snow Accumulation in Satluj and Beas Catchment in terms of Volume (MCM):

	Area	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)
Catchment	Sq. Km	Till 3/31/14	Till 3/31/15	Till 3/31/16	Till 3/31/17	Till 3/31/18	Till 3/31/19	Till 4/30/19	Till 5/31/19
Beas	12603	1767	1841	1162	1367	789	2706	1460	1041
Satluj	53611	5765	7966	4199	5533	<b>2444</b>	11488	9050	6950

*From the above it can be seen that snowfall during 2017-18 was lowest among 6 years which after snowmelt, serves as water inflow in succeeding year, for the rivers Beas and Satluj and therefore FY 2018-19 had low inflows in river Satluj as compared to earlier years.”*

17. NJHPS is in the downstream of Karcham Wangtoo HEP (KWHEP) and utilised the water released by their Dam. It is therefore submitted that adverse conditions as faced by KWHEP would also be applicable to NJHPS. The year 2017-18 had very meagre snowfall in Satluj Catchment area as compared to earlier years and it was lowest in past 6 years. As a result, during FY 2018-19, river Satluj had low inflows as compared to the previous years. The same can be substantiated from the report for the month of May 2019 on “Operation and Maintenance of RTDSS for

Operational Management of Reservoirs of BBMB”.

18. The Energy billing to the beneficiaries are made on the basis of Scheduled generation of the project mentioned in Regional Energy Account (REA) for the respective year in accordance with 2014 Tariff Regulations. The copy of Energy billing for FY 2018-19 as well as REA issued by NRPC is submitted.

19. Deviation Settlement Account (DSM) of NJHPS for FY 2018-19 is prepared based on DSM account issued by NRPC on weekly basis and as uploaded on NRPC website considering the differential of Actual Energy (Ex-bus) vis-à-vis Scheduled Energy (Ex-bus), as under:

S. No.	DATE	Gross Generation (MU)	Ex Bus Generation as per DSM account (MU)	Schedule Energy as per DSM (MU)	Free Power as per REA (MU)	DSM (MU)
	1	2	3	4	5	6=3-4
1	Apr-18	280.782	278.595	274.356	33.431	4.239
2	May-18	514.278	510.445	499.088	61.253	11.357
3	Jun-18	1064.690	1056.659	1047.355	126.799	9.304
4	Jul-18	1154.086	1145.650	1142.285	137.478	3.365
5	Aug-18	949.224	942.285	938.493	113.074	3.791
6	Sep-18	936.633	929.947	913.828	111.594	16.119
7	Oct-18	465.726	462.336	456.077	55.480	6.259
8	Nov-18	309.247	306.999	300.515	36.840	6.484
9	Dec-18	239.334	237.549	233.749	28.506	3.800
10	Jan-19	205.120	203.631	202.949	24.436	0.683
11	Feb-19	174.160	172.910	172.227	20.749	0.683
12	Mar-19	213.845	212.293	212.359	25.475	-0.065
<b>Total</b>		<b>6507.125</b>	<b>6459.299</b>	<b>6393.280</b>	<b>775.116</b>	<b>66.018</b>

20. The relevant proviso of 2014 Tariff Regulations is reproduced here as under:

“3. Definitions and Interpretations.

(3) *'Auxiliary Energy Consumption' or 'AUX' in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipment of the generating station, such as the equipment being used for the purpose of operating plant and machinery including switchyard of the generating station and the transformer losses within the generating station, expressed as a percentage of the sum of gross energy generated at the generator terminals of all the units of the generating station:*

*Provided that auxiliary energy consumption shall not include energy consumed for supply of power to housing colony and other facilities at the generating station and the power consumed for construction works at the generating station;”*

In consideration of aforesaid Regulation, details of auxiliary consumption of NJHPS has been prepared for FY 2018-19 and is submitted.

21. The details/ calculation of Shortfall in saleable scheduled energy (ex-bus) against the saleable design energy (ex-bus) during FY 2018-19 is tabulated below:

S. No.	Description		As per Design Energy	Claimed by SJVN
1	Design Energy/ Gross generation at generator terminal (MU) (A)		6612	6507.125
2	Auxiliary Energy consumption (AEC)	(MU) (B=A*AEC)	79.344	59.54
		%	1.20%	0.915%
3	Saleable energy at ex-bus (MU)	(D=A-B)	6532.6 6	6447.585
4	DSM/ UI on account of grid requirement (MU)	(E)	-	66.018
5	Free power to GoHP @12% of saleable energy (FEHS)	(F)	783.91 9	775.116
6	Net Saleable energy	(G=D-E-F)	5748.7 4	5606.451
<b>Shortfall of Net Saleable Energy with respect to Saleable Design Energy</b>				<b>142.286</b>

22. In view of above, there is a total shortfall of 142.286 MU in generation for FY 2018-19. The reasons for shortfall of generation are due to less inflow than the design inflow and high silt/ reservoir flushing. Generation shortfall of 142.286 MU due to reasons beyond control of the petitioner needs to be allowed to be recovered during FY 2018-19.

23. SJVN filed the petition (No. 314/GT/2018) for approval of generation tariff of NJHPS for the period 2014-19. Commission vide its order dated 19.07.2019 in Petition no. 314/GT/2018 has approved the Generation Tariff of NJHPS for the period 2014-19.

24. Energy bills were raised to all the beneficiaries for the energy generated from the NJHPS on the basis of Annual Fixed Charges allowed by the Commission in its tariff order dated 19.07.2019 in petition no. 314/GT/2018. However, CERC vide order dated 06.09.2021 in petition no. 31/GT/2020 has approved the revision of Generation Tariff of Nathpa Jhakri Hydro Power Station (1500 MW) for the period 2014-19 i.e. Truing-up of tariff determined by the Commission's order dated 19.07.2019 in Petition No. 314/GT/2018. Consequently, the AFC of NJHPS for FY: 2018-19 has been revised to Rs 1336.52 Crore and based on aforesaid revised AFC the shortfall in Energy charge claimed by the Petitioner is detailed as under:

<b>Annual Fixed Charges as approved by CERC and in accordance with 2014 Tariff Regulations (Cr.)</b>	<b>Energy Charges to be recovered as per 2014 Tariff Regulations (Cr.)</b>	<b>Ex-bus Saleable Design Energy (MU)</b>	<b>ECR (Rs/ Unit)</b>	<b>Shortfall of Net Saleable Energy with respect to Saleable Design Energy (MU)</b>	<b>Under recovery of Energy Charges (Cr.)</b>
a	$b = a/2$	$c = DE * 0.988 * 0.88$	$d = b * 10/c$	e	$f = e * d$
<b>1336.52</b>	<b>668.26</b>	<b>5748.74</b>	<b>1.162</b>	<b>142.29</b>	<b>16.53</b>



25. In view of above, it is prayed that the Commission may please allow recovery of Energy charges amounting to Rs. 16.533 Crore against the shortfall in saleable scheduled generation of 142.286 MU in FY 2018-19 in accordance with the provisions of Regulation 44(6), (7) and (8) of the 2019 Tariff Regulations for recovery of unrecovered Energy charges due to shortfall in energy Generation for reasons beyond the control of generating station.

**Submission in Petition No.609/MP/2020**

26. The petitioner SJVN is operating & maintaining 412 MW (6x68.67 MW) Rampur Hydro-Electric Power Station (RHPS) in the State of Himachal Pradesh. The Units of the generating station were synchronized one by one and declared fully commercially operative on 16.12.2014.

27. The power generated from RHPS is being supplied to the various Bulk Power beneficiaries /Customers/Successor utilities in Northern Region i.e. Respondents herein as per the allocation order issued by MoP, GoI as well as Power Purchase Agreements (PPAs) signed with them. Further, MoP vide letter no. 5/3/2018-0M dated 28.05.2018 has directed NRPC to allocate 40 MW power to Madhya Pradesh from unallocated pool of Northern Region. Thereafter, NRPC has issued various revision in allocation of Power from Central generating stations in Northern Region, by which power from the unallocated quota of power from RHPS was allocated to M/s MPPMCL. At present 0.15% of power from the unallocated quota of power from RHPS was allocated to M/s MPPMCL.

28. RHPS is designed in such a way that it is tail race extension of its upstream project i.e. NJHPS and is operative only in tandem with the diurnal storage of NJHPS. Water coming out from the tail race of NJHPS is diverted in Rampur intake through TRT Pond. There is no balancing reservoir in between the two facilities and

is having a small storage in the Jhakri tail Race pond, from where the water enters the Head Race Tunnel of Rampur. Further, the upstream project (NJHPS) shall be operated as master project, whereas the downstream project (RHPS) shall be operated as a slave project. As soon as tripping/outage of NJHPS machine is detected, immediate command is generated to trip the machine of RHPS to avoid the entry of air in the HRT of RHPS.

29. Based on similar submission as detailed for Petition no. 550/MP/2020, the Petitioner with regard to RHPS has claimed as under:

- i. The details/ calculation of Shortfall in saleable scheduled energy (exbus) against the saleable design energy (ex-bus) during FY 2018-19 is tabulated below:

S. No.	Description		As per Design Energy	Claimed by SJVN
1	Design Energy/ Gross generation at generator terminal (MU) (A)		1878.08	1828.761
2	Auxiliary Energy consumption (AEC)	(MU) (B=A*AEC)	18.781	18.288
		%	1	1
3	Saleable energy at ex-bus (MU)	(D=A-B)	1859.299	1810.473
4	DSM/ UI on account of grid requirement (MU)	(E )	-	48.988
5	Free power to GoHP @12% of saleable energy (FEHS) (MU)	(F)	241.709	228.993
6	Less Generation on account of Forced Outages (MU)	(G)	-	6.667
7	Net Saleable energy (MU)	(H=D-E-F+G)	1617.590	1539.346
<b>Shortfall of Net Saleable Energy with respect to Saleable Design Energy (MU)</b>				<b>78.431</b>

ii. The Petitioner vide its affidavit dated 19.9.2022 filed in reply to the RoP dated 5.8.2022, has submitted that the shortfall of energy charges has been calculated based on the AFC of RHPS approved by Commission in order dated 26.06.2019 of Petition no 315/GT/2018 filed for approval of generation tariff of RHPS for the period 2014-19. Further, Commission vide order dated 04.06.2021 in Petition no. 29/GT/2020 has approved the revision of Generation Tariff of Rampur Hydro Power Station (412 MW) for the period 2014-19 i.e. truing-up of tariff determined by the Commission's order dated 26.06.2019 in Petition No. 315/GT/2018. Thereafter, SJVN has filed the Review Petition no. 22/RP/2021 for Review of aforesaid order dated 04.06.2021 and the Commission vide order dated 25.05.2022 in Petition no. 22/RP/2021 has again revised the AFC of RHPS for FY: 2018-19 to Rs 741.64 Cr and based on said revised AFC the shortfall in Energy charge is detailed as under:

<b>Annual Charges as approved by CERC in accordance with 2014 Regulations (Cr.)</b>	<b>Fixed as by in Tariff (Cr.)</b>	<b>Energy Charges to be recovered as per 2014 Tariff Regulations (Cr.)</b>	<b>Ex-bus Saleable Design Energy (MU)</b>	<b>ECR (Rs/Unit)</b>	<b>Shortfall of Net Saleable Energy with respect to Saleable Design Energy (MU)</b>	<b>Under recovery of Energy Charges (Cr.)</b>
a	b= a/2	c = DE*0.99* 0.87	d=b*10/c	e	f= e*d	
<b>741.64</b>	<b>370.82</b>	<b>1617.59</b>	<b>2.292</b>	<b>78.43</b>	<b>17.98</b>	

iii. In view of above, it is prayed that the Commission may please allow recovery of Energy charges amounting to Rs. 17.98 Crore against the shortfall in saleable scheduled generation of 78.43 MU in FY 2018-19 in accordance with the provisions of Regulation 44(6), (7) and (8) of the 2019 Tariff Regulations

for recovery of unrecovered Energy charges due to shortfall in energy Generation for reasons beyond the control of generating station.

### **Replies and Rejoinders**

#### **Reply of PSPCL, Respondent No. 1**

30. The Respondent PSPCL in its reply has mainly submitted as under:

a) Quantification of shortfall in saleable energy (ex-bus) against the saleable design energy (ex-bus) during FY 2018-19 by the Petitioner is not correct. As per the petition, the gross generation of was 6507.125 MUs, the ex-bus generation was 6459.2999 MUs and the schedule was even lesser i.e. 6393.280 MUs. Therefore, by supplying 6393.280 MUs, the Petitioner has recovered its generation costs.

b) The Petitioner has earned revenue by selling 66.018 MUs of energy under the DSM Mechanism. Therefore, to that extent, there can be no question of claiming the shortfall from the beneficiaries. This quantum should be adjusted against the claimed shortfall as considered by the CERC in Order dated 09/02/2021 in Petition No. 328/MP/2018

c) With respect to the loss on account of silt flushing, the Petitioner ought to have planned for such circumstances. Silt flushing is a foreseeable event which keeps on happening with hydro power projects and it cannot be considered as being beyond the control of the Petitioner. Therefore, the Petitioner ought not to be given any relief on account of reservoir flushing and high silt. The data submitted by the Petitioner has discrepancies and contradictions and do not support its case.

d) In regard to second reason i.e. less inflow as compared to design

inflow, the Petitioner submitted that the actual inflow of water cannot always be the same as the design inflow. On some dates, the actual inflow is more than the design inflow which is to be used by the generator for electricity generation instead of spilling the water. This would compensate for the less generation on dates when the actual inflow of water is less than the design inflow.

e) Petitioner has calculated the "Free power to GoHP @12% of saleable energy (FEHS)" as 775.116 MUs however 12 % of saleable energy comes to 773.710 MUs. Consequentially the alleged shortfall would be 140.883 MUs and not 142.286 MUs and so the corresponding alleged under-recovered energy charges would be Rs. 16.57 Crore and not Rs. 16.73 Crore as claimed by the Petitioner.

### **Rejoinder of the Petitioner to the Reply of PSPCL**

31. The Petitioner in its rejoinder to above reply of PSPCL has submitted as under:

- a) As per Regulation 44(6), (7) and (8) of the Tariff Regulations, 2019, under which the petitioner has filed the instant petition deals specifically with Schedule energy and calculated shortfall on account of Schedule Energy not on the gross energy of Ex-bus energy.
- b) The treatment of energy generated under DSM Regulations in the present petition may be done as considered by the CERC in its order dated 04.02.2020 in Petition no. 184/MP/2019.
- c) NJHPS utilises discharge of river Satluj, in which silt content is very high. During the monsoon season, the water inflow is very high in the river

and so the silt content. The petitioner operates, NJHPS upto permissible limit of silt content in river Satluj i.e. within 4000 PPM, above which the petitioner has no choice but to shut down the plant, irrespective of discharge to protect the underwater parts of Power House Units. During heavy silt flow, as per the protocol agreed among KWHEP, NJHPS and NRLDC, the units are to be shut down at some point of time during the period of high silt. However, when reduction in the silt level is observed, the generation is restarted in NJHPS as per the protocol signed.

d) NJHPS is a “Run-of-River project with small pondage” i.e. a peaking project. The water storage in the Dam of NJHPS is only sufficient for 3 hours of peaking a day during lean/winter period. NJHPS cannot store water in high flow seasons to use the same during the low flow seasons like Storage type Hydro Power Plants. Hence, water spillage is bound to occur beyond the maximum usable inflow, to generate energy corresponding to the installed capacity including overload capacity. Further, during the year 2017-18, there was meagre snowfall in Satluj Catchment area as compared to earlier years and it was lowest in past 6 years. As a result, during FY 2018-19, river Satluj had low inflows as compared to its design inflow and previous years inflow. The same can be substantiated from the report for the month of May 2019 on “Operation and Maintenance of RTDSS for Operational Management of Reservoirs of BBMB”.

e) For the calculation of shortfall of Net Saleable Energy with respect to Saleable Design Energy, the “Free power to GoHP” has been considered as 775.116 MU, which is actual free energy supplied to GoHP based on the REA issued by NRPC in place of calculating 12 % of saleable schedule

energy.

### **Reply of Respondent No.3 (ii), (BRPL)**

32. The Respondent BRPL in its reply has mainly submitted as under:

a) The information and details filed by the Petitioner have not been vetted by any independent authority. The details about the spillage from the Dam have not been furnished but the monthly discharges have been furnished and the shortfall analysis has been carried out and based on this information, only Details of inflows furnished by the Petitioner would show that there were huge inflows during the months of June-2018, July-2018, August-2018, September-2018 and October-2018 and the large inflows during monsoon season have not been managed properly to fill the reservoir during monsoon season and utilized the water resources in the reservoirs during non-monsoon season.

b) Declaration of schedule on daily basis is within the domain of the Inter-state Generating Station (ISGS) and this declaration have been kept low deliberately during the months of June-2018, July-2018, August-2018, September-2018 and October-2018 which needs upward revision. This is colossal waste of 'National Power Resources' which was available to the Petitioner free of cost. It is also incumbent on ISGS to declare the plant capabilities faithfully, i.e., according to their best assessment Regulation 6.4(18) of the Grid Code and over/under declaration of plant capability and thus make money either as undue capacity charge or the charge for deviations is not permissible. In the light of all these regulatory provisions, the conduct of the Petitioner whether or not the 'Scheduled Declaration' by the ISGS was in accordance with the provisions of Regulation 6.4(18) of the Grid Code.

### **Rejoinder of the Petitioner to the Reply of BRPL**

33. The Petitioner in its rejoinder to above reply of BRPL has submitted as under:
- a) NJHPS is a “Run-of-River power station with small pondage” i.e. a peaking power station. The water storage in the Dam of NJHPS is only sufficient for 3 hrs peaking a day during lean/winter period. NJHPS cannot store water in high flow seasons to use the same during the low flow seasons like Storage type Hydro Power Plants. Hence, water spillage is bound to occur beyond the maximum usable inflow, to generate energy corresponding to the installed capacity including overload capacity. To utilize the available discharge to maximum potential, petitioner has operated its power station NJHPS even at overload capacity.
  - b) As per CERC Tariff Regulations, 2019, the revision in design energy as desired by the respondent is not possible by analyzing the hydrological data for one year only. Hence, the contention of the Respondent regarding upward revision of design energy is baseless.

### **Reply of Respondent No.4, Discoms of Rajasthan (RUVNL)**

34. The Respondent No. 4 has mainly submitted as under:
- a) As per data given by the petitioner, there was no forced outage due to high silt or reservoir flushing in the period 2018-19. This averment of petitioner contradicts the claim of the petitioner and when there is no forced outage then how the petitioner can claim recovery of unrecovered energy charges due to shortfall in energy generation on this ground.



b) Reasons given by the petitioner for less generation do not look reasonable and does not support claim of petitioner. For example, from 01.10.2018 to 07.10.2018, it is showing excess inflow and suddenly on 08 Oct to 10 Oct 2018, it is showing less inflow. Similarly, from 11 Oct 2018 to 14 Oct 2018 again showing excess inflow and on 15 Oct less inflow and on 16 October & 17 October again showing excess inflow. All these data show that entry has been made randomly and there is no pattern in flow which can clearly shows the less flow or excess flow in river.

### **Rejoinder of the Petitioner to the Reply of Discoms of Rajasthan**

35. The Petitioner in its rejoinder to above reply of the Rajasthan Discom has submitted as under:

a) There is no reduction in generation due to forced outages. The details of Forced Outage along with copy of outage reports sent to CEA on monthly basis has already been submitted in the original petition. The respondent has wrongly interpreted the forced outages and outages due to high silt & reservoir flushing as same.

b) Rainfall data of the year 2014-15 to 2018-19, as published at India Meteorological Department (IMD) for Kinnaur distt.in Himachal Pradesh, which is catchment area upstream of NJHPS, has submitted in the original petition. The rain fall data available on IMD website indicates that there is low rainfall in comparison to long period averages for the period from April 2018 to December 2018 except for the month of October, 2018.In the order of Karcham Wangtoo in Petition no. 184/MP/2019 published by the CERC on 4.2.2020, following is stated:

c) "9. The Petitioner vide its affidavit dated 12.9.2019 has submitted the

information as sought above. With regard to information regarding para (b) above, the Petitioner has submitted as under:

“ .....

c) *Inflow of water in river Satluj is majorly dependent on the snowfall in its catchment area. The total catchment area of the Satluj above the Bhakra dam site is about 56875 sq. km. and above the Karcham dam is about 48755 sq. km. Snow catchment area of river Satluj is 38760 sq.km, which is about 80% of its total catchment area above Karcham dam. In this regard, it may be noted that the year 2017-18 had very meager snow fall in Beas as well as Satluj snow catchment area as compared to earlier years. Accordingly monthly report of Bhakhra Beas Management Board for the month of March 2019 on “Operation and Maintenance of RTDSS for Operational Management of Reservoirs of BBMB” (Annexure C), to substantiates the above claim. Relevant para from said report is reproduced as under:*

**“2. Snow accumulation report**

*Summary of Snow Accumulation in Satluj and Beas Catchment in terms of Volume (MCM):*

	Area	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)	SWE (MCM)
Catchment	Sq. Km	Till 3/31/14	Till 3/31/15	Till 3/31/16	Till 3/31/17	Till 3/31/18	Till 3/31/19	Till 4/30/19	Till 5/31/19
Beas	12603	1767	1841	1162	1367	789	2706	1460	1041
Satluj	53611	5765	7966	4199	5533	<b>2444</b>	11488	9050	6950

*From the above it can be seen that snowfall during 2017-18 was lowest among 6 years which after snowmelt, serves as water inflow in succeeding year, for the rivers Beas and Satluj and therefore FY 2018-19 had low inflows in river Satluj as compared to earlier years.”*

**Reply of Respondent No. 8 (UPPCL)**

36. The Respondent UPPCL in its reply has mainly submitted as under:

a) The claim of the Petitioner for shortfall in energy and commensurate

recovery of energy charges for the year 2018-19 is not correct and is on the higher side. Actual shortfall in generation is 104.695 MU in the year 2018-19 instead of claim of 142.286 MU and unrecovered energy charges would accordingly be Rs. 4.496 Crs, instead of the claim of Rs. 16.63 Crs. Revised shortfall of net saleable energy and shortfall in recovery of energy charges as per UPPCL is as below:

<b>Net EC recoverable for Reasons Beyond Control for 2018-19</b>				
	<b>Particular</b>	<b>Code</b>	<b>Unit</b>	<b>Value</b>
	<i>Claim of Short fall in Energy (in additional submission)</i>		<i>MU</i>	<i>142.286</i>
	<i>Claim made by the Petitioner in the Petition (in additional submission)</i>		<i>Rs. Cr.</i>	<i>16.5336</i>
	1-Generation that could be made and shortfall in energy			
	Design Energy	A	MU	6611.740
	<u>Gen loss due to reasons beyond control</u>			
	Due to silt flushing	B	MU	-223.754
	Due to less Flow	C	MU	-534.415
	Total Loss due to reasons beyond control (D=B+C)	D	MU	-758.169
	Possible gen. (E=A+D))	E	MU	5853.571
	<u>Loss due to reasons within control (G)</u>	G	MU	0
	Total Gen. Loss/shortfall (H=D+G)	H	MU	-758.169
	Gen. which could be made by Gen. Station (I=A+H)	I	MU	5853.571
	Excess gen. due to excess flow	J	MU	653.474
	Total Gen made. (K=I+J)	K	MU	6507.045
	Sch. Energy Ex-bus as per REA of NRPC	L	MU	6393.28
	Generation loss at Gen Terminal (M=K-L)	M	MU	113.765
	Net Short fall in design energy (N=A-K)	N	MU	104.695

	DSM Energy(O)	O	MU	66.018
	2-Calculation of recoverable energy charges			
	AFC for 2018-19 determined in Order dt. 6.09.2021	P	Rs. Cr.	1336.522
	Energy Charges(Q=P/2)	Q	Rs. Cr.	668.261
	Ex-bus saleable Design Energy	R	MU	5748.737
	Energy Charge Rate(S=Q*10/R)	S	Rs./KWh	1.162
	Under recovered Energy Charge for 104.695 MU (T=N*S/10)	T	Rs. Cr.	12.170
	Energy Charge adjustable with revenue of DSM energy (U=O*S/10)	U	Rs. Cr.	7.674
	Net under recovered Energy Charge after discounting cost of DSM energy (V=T-U)	V	Rs. Cr.	4.496

### **Rejoinder of the Petitioner to the Reply of UPPCL**

37. The instant Petition deals with Schedule energy and calculated shortfall on account of Schedule Energy and not on account of gross energy or Ex- bus energy.

### **Reply of Respondent No. 11 (MPPMCL)**

38. The Respondent MPPMCL in its reply has mainly submitted as under:

a) Before filing the instant petition under Provision 44(7) & (8) of Tariff Regulations 2019, the Petitioner was to ensure that power plant could not achieve generation up to design energy for a continuous period of four years during the Tariff period 2014-19 and also Petitioner was to approach the Central Electricity Authority with relevant hydrology data for revision of design energy of station. The Petitioner has not provided the data relating to last four years design energy and therefore could not comply with the mandatory provision 44(7) of the Tariff Regulation 2019.

b) As per provision 44(8) of Tariff Regulations, 2019, it is necessary for claiming shortfall in energy charges by the Petitioner that the energy charges

earned on account of saleable scheduled energy during the whole tariff period 2014-19 should be less than the charges admissible on the basis of saleable design energy which was beyond the control of the generating stations and could not be recovered during the said tariff period i.e. 2014-19. It is pertinent to mention that petitioner does not provide the data of earned energy charges during the tariff period 2014-19 i.e. for 5 years which is essential for calculating amount of shortfall of energy during tariff period.

c) Petitioner has not submitted the certified copy of account of water availability of the last 5 years from appropriate authority for power generation at NJHPS.

#### **Rejoinder of the Petitioner to the Reply MPPMCL**

39. The Petitioner in its rejoinder to above replies of MPPMCL has submitted as under:

a) Generating station is required to approach the CEA for revision of Design Energy if the generated energy during the years are less than the design energy for a continuous period of four years on account of hydrology factor. However, in the instant petition as the saleable scheduled energy of NJHPS is less than the Saleable Design Energy (ex-bus) during FY: 2018-19 only. SJVN had no opportunity to file an application/petition for the same before CERC during 2014-19. Hence, SJVN has filed petition during the tariff period 2019-24 as per applicable Tariff Regulations, 2019.

b) The details of outages due to high silt in river Satluj extracted from the NRLDC website is provided in support of the claim.

c) Petitioner has filed the petition in line with CERC's order dated 04.02.2020 in Petition no. 184/MP/2019 for recovery of unrecovered energy charges due to shortfall in energy generation for reasons beyond the control

of generating station during the FY 2018-19 in respect of Karcham Wangtoo HEP.

**Hearing dated 15.11.2021 for Petition no. 550/MP/2020**

40. The Petition was admitted during hearing held on 22.4.2022 and the Commission directed the Petitioner to file the following information:

- (a) Design Energy calculation (in MS Excel) approved by CEA;
- (b) Provision of reservoir/silt flushing in DPR while designing the project clearly indicating permissible limit of the same, if any;
- (c) Planned/forced machine outage data certified by CEA/NRLDC and its correlation with generation data vis-a-vis available average inflows during the period of such outages;
- (d) Calculation of daily maximum possible generation during the financial year 2018-19 purely based on available inflows for generation (in MS Excel);
- (e) Daily generation report for the days for which energy shortfall has been claimed due to planned/ forced outages, reservoir silt flushing, etc., as applicable;
- (f) 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;
- (g) Supporting document indicating permission for release of mandatory discharges of 8.10 cumec based on which calculation has been made in the Petition;
- (h) Certified spillage data and its correlation with generation; and
- (i) Any other relevant information/ document to justify the claims in Petition;

## **Hearing dated 5.8.2022 for Petition no. 550/MP/2020**

41. The Petition was admitted during hearing held on 22.4.2022. The Commission had directed the Petitioner to file the following information:

(a) Design Energy calculation (in MS excel) as approved by CEA and its correlation with actual flow.

(b) The day wise maximum possible generation based on actual inflow available, actual generation, shortfall in generation on account of factors attributable to Petitioner, shortfall in generation on account of factors not attributable to petitioner along with remarks, duration of planned outage, duration of forced outage, energy accounted for DSM and the revenue earned from DSM for such energy during 2018-19.

(c) The year wise actual total energy generated from 2014-15 to 2017-18.

42. The Petitioner, vide its affidavit dated 24.5.2021 and 15.9.2022, has submitted above information.

43. As discussed earlier, we have dealt the issues in Petition no. 550/MP/2020 in detail and applying same methodology decided in the Petition no. 609/MP/2020. Based on information on record, we now deal with the prayer of the Petitioner in the following paragraphs.

### **Analysis and Decision (550/MP/2020)**

44. The Design Energy of the generating station is 6611.74 MU which is measured at generator terminal (GT). The saleable design energy at ex-bus is 5748.74 MU ( $6612 \times 0.988 \times .88$ ) after accounting 1.2% of normative auxiliary energy consumption and 12% Free Power to Home State (FEHS). The actual/ gross generation at generator terminal during 2018-19 is 6507.12 MU. The Petitioner in its submission dated 24.5.2021 has calculated the net saleable energy as 5626.37 MU

after accounting 0.73% auxiliary energy consumption (excluding aux pertaining to Dam and other areas of generating station) and 12% free power to home state and 66.018 MU under DSM. Accordingly, the Petitioner has indicated shortfall of 122.36 MU. However, the petitioner has claimed shortfall of 142.286 MU in net saleable energy with respect to saleable design energy considering 0.92% auxiliary energy consumption (including aux pertaining to Dam and other areas of generating station) and 12% free power to home state and 66.018 MU under DSM. Since, the shortfall of 142.29 MU claimed by the Petitioner is based on the Auxiliary Energy consumption of 0.92% which is less than the normative Auxiliary Energy consumption of 1.2%. Accordingly, we have considered the shortfall of 142.29 MU for further calculations.

45. The details of the same is under:

S. No.	Description		As per Design Energy	Daily generation based on Aux of complete power station
1	Design Energy/ Gross generation at generator terminal (MU) (A)		6612.00	6507.13
2	Auxiliary Energy consumption (AEC)	(MU) (B=A*AEC)	79.34	59.54
		%	1.2%	0.92%
3	Saleable energy at ex-bus (MU)	(D=A-B)	6532.66	6447.58
4	DSM/ UI on account of grid requirement (MU)	(E)	0.00	66.02
5	Free power to GoHP @12% of saleable energy (FEHS)	(F)	783.92	775.12
6	Net Saleable energy	(G=D-E-F)	5748.74	5606.45
<b>Shortfall of Net Saleable Energy with respect to Saleable Design Energy</b>				<b>142.29</b>



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

- (i) Low inflows in comparison to the design inflows associated with design year.
- (ii) Prolonged planned/ forced outage of machines.
- (iii) Inefficient operation of the plant / Non-utilization of maximum power potential of actual inflows.

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

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

48. With regard to energy shortfall due to less inflow from design inflow, the Petitioner has submitted that NJHPS is in the downstream of Karcham Wangtoo HEP (KWHEP) and utilise the water released by their Dam. In adverse conditions as faced by KWHEP would also be applicable to NJHPS. The year 2017-18 had very meagre snowfall in Satluj Catchment area as compared to earlier years and it was lowest in past 6 years. As a result, during FY 2018-19, river Satluj had low inflows as compared to the previous years. The same can be substantiated from the report for the month of May 2019 on "Operation and Maintenance of RTDSS for Operational Management of Reservoirs of BBMB".

49. The Petitioner vide RoP of the hearing dated 22.04.2021 has submitted that the planned shutdown for NJHPS due to sedimentation management (both Order in Petition No.550/MP/2020 & 609/MP/2020

shutdowns due to high silt and silt flushing) was not considered during the design energy calculation in DPR stage/TEC. Further, NJHPS utilises discharge of river Satluj, in which silt content is very high. During the monsoon season, water inflow is very high in the river and so the silt content. As per the protocol agreed among Karcham Wangtoo Hydro Electric Project (KWHEP), NJHPS/RHPS, NRPC and NRLDC, the Petitioner operates NJHPS upto permissible limit of silt content in river Satluj i.e. within 4000 PPM, above which the petitioner has no choice but to shut down the plant in co-ordination with upstream and downstream Power Station, irrespective of discharge to protect the underwater parts of Power House Units.

50. The matter has been examined, it is noticed that the Commission has already dealt the issue of silt and low inflows in the river Satluj during the year 2018-19 vide order dated 4.2.2020 in Petition No. 184/MP/2019 for KWHEP, which is an upstream project to NJHPS. The relevant extract of the said order dated 4.2.2020 is reproduced as under:

*“45. In view of the above deliberations, we are of the view that petitioner has been able to utilize the full potential of actual inflows available for energy generation. However, shortfall with respect to design energy has occurred due to less inflows, plant stoppage for high silt/ silt flushing, unit outages and excess generation on overall basis due to management of reservoir level.*

*46. Commission is of the view that out of the above reasons, energy lost due to less inflows and plant stoppage due to high silt/ silt flushing are not within the control of the petitioner. The energy lost due to unit outages is not beyond the control of the petitioner and petitioner cannot be compensated for the same. Further, the additional energy generated due to management of reservoir level was also within the control of the petitioner. As such, the same shall be a considered part of the maximum possible generation at the generator terminal.”*

51. In view of the above and considering the fact that the instant generating station is located in the downstream of KWHEP and Commission has already

considered that there were less inflow and high silt in Satluj river during FY 2018-19 vide order dated 4.2.2020 in the Petition No. 184/MP/2019, we are of the view that shortfall with respect to design energy has occurred due to less inflows (for RHPS) and plant stoppage for high silt/ silt flushing in both the generating station.

### **Prolonged planned/ forced outage of machines**

52. 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 technical validation letter dated 5.8.2022 had directed the Petitioner to furnish the planned and forced outage data for the year 2018-19 along with its correlation with energy generation. The Petitioner in its response to RoP of the hearing dated 22.4.2021 has submitted that the energy shortfall due to Planned/ forced outages has not been claimed by the petitioner. Further, the Petitioner vide affidavit dated 14.9.2022 has submitted that there have been 59 instances of planned outages (42 instances) and forced outages (17) during the year 2018-19. During the months of November 2018, December 2018 and January 2019 the plant was under planned shutdown. The same is also available in the report of CEA on "Review of performance of hydro power stations 2018-19" as submitted by the Petitioner.

53. With regard to 42 instances of planned outages, the petitioner has submitted that *'the Annual Planned Maintenance (Planned Outages) of unit (s) are carried out during the lean season, when water inflow is very less as compared to Designed inflow. The balance units (which are not under annual planned maintenance) were operated to use the actual inflow available and no water was spilled from Nathpa*

*Dam other than the Mandatory Discharge'*. The same has been verified. It is noticed that during the above planned outage period there is no shortfall in energy generation as compared to design energy for the period. The same is in order.

54. With regard to 17 instances of forced outages, the petitioner has submitted various reasons such as high Stator winding temperature, cooling water system problem, transmission line constraint, stator earth fault, needle problem, leakage in secondary cooling system at UGB, switchyard bus protection trip, etc. However, it is noticed that during the above events of forced outages, the Petitioner was able to generate more than design energy for the period due high inflows. As such, the Petitioner has not claimed shortfall due to above outages. Accordingly, we have also not considered any shortfall in energy generation due to forced outages.

**Inefficient operation of the plant /non-utilization of maximum power potential of actual inflows**

55. In order to assess maximum possible annual generation with available actual inflows as submitted by the Petitioner, calculations have been made based on the design parameters such as plant capacity of 1500 MW, design head of 435.35 M, overall efficiency of 93.8% and available daily actual inflows have been considered in line with the values used to arrive at the Design Energy. Based on above, and by utilising 100% machine capability, maximum possible generation should have been 6550.37 MU. However, the Petitioner in its calculations has assessed the same to be 6509.04 MU. The difference is due to the fact that we have calculated the above maximum possible generation purely based on inflows, whereas the petitioner has considered the impact of silt alongwith the inflows. The figure of 6550.37 MU as calculated, being on higher side, is being adopted for further analysis.

56. Based on the above calculations and after accounting for the reasons of shortfalls which were beyond the control of the Petitioner and the reasons which the Petitioner has attributed to itself, following has been worked out to assess the possible generation at generator terminal against the actual generation of 6507.12 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. 1500 MW	6550.37 MU
2.	Energy lost due to plant stoppage due to Silt	193.20*(MU)
3.	Remaining Energy that could be generated (1-2)	<b>6357.17 (MU)</b>

\* In our view the stoppage and the consequent loss of energy to prevent the damage due to high silt level is beyond the control of the generator. Further, considering the fact that the calculation of Design Energy of the plant based on the hydrological series does not consider the energy lost due to stoppage of plant due to high silt levels, we are of the view that the generator needs to be compensated for that.

57. In view of the above calculations and the fact that actual generation of the generating station was 6507.12 MU which is much higher than the theoretical calculations, it is held that Petitioner has been able to generate more according to the actual inflows after accounting for the reasons under its control such as reservoir level, overload operations, etc. and reasons beyond its control such as high silt, reservoir flushing, etc. 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 the incidence of high silt and reservoir flushing. With regard to RHPS, being operating in tandem with NJHPS, lower generation in comparison to

Design Energy was due to reasons not under the control of the petitioner i.e. energy lost due plant stoppage during incidence of high silt and reservoir flushing for NJHPS Dam and less inflows and due to forced outages, which Petitioner has considered under its control.

58. In light of above deliberations, the Commission is of the view that the Petitioner is entitled to be compensated to the extent of energy shortfall occurred due to reasons which were not under the control of the Petitioner.

59. The Commission vide ROP of the hearing dated 22.4.2021 and 5.8.2022, had directed the Petitioner to submit the 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 details of energy accounted for DSM during 2018-19. The Petitioner, vide affidavits dated 15.9.2022 & 24.5.2021, has submitted the details of energy accounted for in DSM. Beneficiaries UPCL and PSPCL have also submitted that shortfall in energy charge may be decided by the Commission after considering the energy accounted for in DSM. Payment for energy under DSM is governed by provisions of the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 (hereinafter referred to as "the 2014 DSM Regulations"). It has been submitted by the Petitioner that 66.02 MU has been accounted for in DSM and corresponding revenue earned from DSM is Rs. 25.14 crore. Regulation 44(6), (7) and (8) of the 2019 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 in DSM is actual energy generated and also that the Petitioner has received payment for the same in terms of the provisions of 2014

DSM Regulations. Therefore, energy that has been accounted in DSM, cannot be counted towards shortfall in energy in terms of Regulation 44 (6), (7) and (8) of the 2019 Tariff Regulations and, therefore, corresponding energy charge cannot be recovered in terms of that regulation. Thus, energy accounted in DSM needs to be appropriately accounted for while deciding the quantum of shortfall under provisions of Regulation 44 (6), (7) and (8) of the 2019 Tariff Regulations.

60. In terms of Regulation 44(7) of the 2019 Tariff Regulations, shortfall in energy charges in comparison to fifty percent of the annual fixed cost has to be allowed. However, considering the interest of the beneficiaries, it would be prudent to calculate the energy charge shortfall by accounting energy under DSM in the financial year (for which shortfall is claimed).

61. In this case, the Petitioner has been able to generate revenue of Rs. 25.14 crore for the energy accounted in DSM i.e. 66.02 MU for FY 2018-19. On the other hand, if this energy (66.02 MU) would have been scheduled to the beneficiaries, scheduled energy would have increased and the energy charge shortfall of the generating station would have reduced to 76.27 MU(142.29 MU-66.02 MU) in comparison to the claimed shortfall in energy of 142.29 MU. The following table captures the reduction in energy charge shortfall after deducting the energy accounted for in DSM from claimed energy shortfall:

	<b>Allowed Energy Charges (Rs. crore)</b>	<b>Ex-bus Saleable Design Energy (MU)</b>	<b>Saleable Schedule Energy (MU)</b>	<b>ECR (Rs./ Unit)</b>	<b>Energy shortfall (MU)</b>	<b>Energy charge shortfall (Rs. crore)</b>
	1	2	3	4	5=2-3	6=4*5/10
Revised claim by the petitioner based on Order dated 6.9.2021 in Petition No.31/GT/2020)	668.26	5748.74	5606.45	1.162	142.29	16.53

Claim modified deducting the energy accounted for in DSM from claimed energy shortfall	668.26	5748.7	5672.5	1.162	76.268	8.86
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62. Accordingly, in terms of Regulation 44(7) of the 2019 Tariff Regulations, we allow the energy charge shortfall after accounting energy under DSM for Rs. 8.86 crore for NJHP (Petition No. 550/MP/2020) for the period 2018-19.

63. Based on the similar analysis in Petition no. 550/MP/2020, we have calculated the shortfall for RHPS (petition no. 609/MP/2020). The following table captures the reduction in energy charge shortfall after adding the energy accounted for in DSM in the actually scheduled energy:

	Allowed Energy Charges (Rs. crore)	Ex-bus Saleable Design Energy (MU)	Saleable Schedule Energy (MU)	ECR (Rs./Unit)	Energy shortfall (MU)	Energy charge shortfall (Rs. crore)
	1	2	3	4	5=2-3	6=4*5/10
Revised claim by the petitioner based on Order dated 25.5.2022 in Petition No.22/RP/2021)	370.82	1617.60	1539.34	2.292	78.26	17.98
Claim modified deducting the energy accounted for in DSM from claimed energy shortfall	370.82	1617.60	1588.328	2.292	29.27	6.71

64. Accordingly, in terms of Regulation 44(7) of the 2019 Tariff Regulations, we allow the energy charge shortfall after accounting energy under DSM for Rs. 6.71 crore for RHPS (Petition No. 609/MP/2020) for the period 2018-19.

65. In view of the above deliberations, the Commission is of the view that the Petitioner is entitled for recovery of the corresponding energy charge shortfall as given below:



	<b>Energy Charge shortfall claimed by the petitioner (Rs. crore)</b>	<b>Energy charges allowed to be recovered (Rs. crore)</b>
Petition No. 550/MP/2020	16.53	8.86
Petition No. 609/MP/2020	17.98	6.71

66. Accordingly, in terms of Regulation 44(7) of the 2019 Tariff Regulations, we allow the energy charge shortfall of Rs. 8.86 crore in case of Petition No. 550/MP/2020 and of Rs. 6.71 crore in case of Petition No. 609/MP/2020, after accounting energy under DSM, for the period 2018-19. Hence, energy charge shortfall of Rs. 8.86 crore and Rs. 6.71 crore for Petition No. 550/MP/2020 and Petition No. 609/MP/2020, respectively shall be recovered by the Petitioner in six equal interest free monthly installments starting within three months from the date of the order issued by the Commission.

67. Petition No. 550/MP/2020 and Petition No. 609/MP/2020 are disposed of in terms of above.

Sd/-  
**(Pravas Kumar Singh)**  
Member

Sd/-  
**(Arun Goyal)**  
Member

Sd/-  
**(I. S. Jha)**  
Member