CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 13/MP/2014

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member

Date of Hearing: 20.5.2014
Date of Order 08.3.2016

In the matter of

Petition under section 79(1) of the Electricity Act, 2003 read with Regulation 22 (6) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 for allowing recovery of Energy Charge shortfall during the period of 2009-14 as well as the modification of design energy for the succeeding years for calculation of ECR till the energy charge shortfall of the previous years has been made up for the Ranganadi hydro-electric plant, where actual energy generated by the station during a year is less than its approved design energy for reasons beyond the control of the generating company (NEEPCO).

And
In the matter of

North Eastern Electric Power Corporation Limited
Brookland Compound, Lower New Colony,
Shillong-793 003
Meghalaya **….Petitioner**

Vs

1. Chairman and Managing Director
Assam Power Distribution Company Ltd.
Bijulee Bhawan, Paltan Bazar,
Guwahati – 781001

2. Chairman and Managing Director
Meghalaya Energy Corporation Ltd.
Short Round Road, Lumjingshai,
Shillong – 793001

3.Additional General Manager (Commercial and System Operation)
Tripura State Electricity Corporation Ltd
Agartala Banamalipur,

Agartala – 799001

4.Engineer in Chief
Power and Electricity Department
Government of Mizoram,
Power House Complex,
Electric Veng, Aizawl – 796001

5. Chief Engineer (Power)
Electricity Department, Government of Manipur
Imphal Government of Manipur Keishampet,
Imphal – 795001

6. Chief Engineer (Power)
Department of Power, Government of Arunachal Pradesh
Government of Arunachal Pradesh,
Bidyut Bhawan, Itanagar – 791111

7. Chief Engineer (Power)
Department of Power, Government of Nagaland
Kohima – 797001

8. Member-Secretary
North Eastern Regional Power Committee
NERPC Complex, Dong Parmaw, Lapalang,
Shillong – 793006

9. General Manager
North Eastern Regional Load Despatch Centre
Dongtieh, Lower Nongrah, Lapalang,
Shillong – 793006 **…Respondents**

Following were present:

Shri Paresh Ch. Barman, NEEPCO
Shri Rana Bose, NEEPCO
Ms.Elizabeth Pyrbot, NEEPCO
Shri Vishwjit Medhi, NERLDC
Shri H.M.Sharma, APDCL

ORDER

The petitioner, North Eastern Electric Power Corporation Limited, has filed the present petition to allow recovery of energy charges shortfall during the period of 2009-14 and modification of design energy for the succeeding years for

calculation of ECR till the energy charge shortfall of the previous years have been made up for the Ranganadi Hydro Electric Plant.

2. Brief facts of the case leading to the filing of the present petition are as under:

(a) Ranganadi Hydro Electric Plant (3x135 MW) (hereinafter referred to as "generating station") located in Lower Subsansiri district in the State of Arunachal Pradesh is owned by the petitioner. Units I and II of the generating station were commissioned on 12.2.2002 and Unit- III on 12.4.2002.

(b) Central Electricity Authority vide its letter dated 30.1.2004 approved the design energy of the generating station as under:

Month	**Design Energy (MUs)**
April	125.49
May	120.11
June	122.17
July	247.42
August	224.97
September	156.31
October	111.19
November	81.09
December	88.22
January	79.03
February	68.76
March	84.90
Total	**1509.66**

(c) The generating station achieved the following actual generation, loss of generation vis-à-vis design energy and plant availability factor during the years 2009-10 to 2013-14:

Financial year	**Actual generation (MU)**	**Loss in generation vis-a-vis**	**Actual annual plant availability factor**

		D.E. (MU)	(%)
2009-10	1024.89	484.77	95
2010-11	1407.94	101.72	90
2011-12	979.98	529.68	94
2012-13	1239.91	269.75	95
2013-14(till Nov'13)	842.51	346.24	99

Annual D.E. = 1509.66 MU

(d) The above table shows that, though the actual annual plant availability factor achieved by the generating station in each year is much more than its Normative Annual Plant Availability Factor (NAPAF), which is 85%, actual generation is less than the design energy approved by CEA. The major factor attributable for the less generation is low rainfall, which is beyond the control of the petitioner. As per the report of India Meteorological Department, there was significantly less rainfall during 2009-10, 2010-11 and 2011-12 in Lower Subansiri District of Arunachal Pradesh.

(e) Regulation 22 (6) of the Central Electricity Regulatory (Terms and Conditions of Tariff) Regulations, 2009 (2009 Tariff Regulations) provides for treatment, which shall be applied on a rolling basis, in case the actual total energy generated by a hydro generating station during a year is less than the design energy for reasons beyond the control of the generating company. However, said regulation does not specify any clear procedure for calculation of modified design energy for a year for calculation of ECR till the energy charge shortfall the previous year has been made due to less generation for reasons not attributable to the generating company.

(f) The petitioner has submitted the year-wise generation loss due to system constraint and machine outage has been worked out as under:

Financial year	Generation loss due to system constraint (MU)	Generation loss due to machine outage (MU)
2009-10	0.2745	9.5310
2010-11	12.4625	33.4800
2011-12	4.6863	0.00

(g) The petitioner has worked out the actual year-wise shortfall in energy generation on account of low rainfall as under:

(Fig. in MUs)

Particulars	2009-10	2010-11	2011-12
Actual generation	1024.886	1407.942	979.985
Gross generation loss w.r.t. design energy	484.77	101.72	529.68
Less: Loss due to system constraint	0.2745	12.4625	4.6863
Less: Loss due to machine outage	9.5310	33.4800	0.00
Net generation loss due to low rainfall	**474.97 MU**	**55.77 MU**	**525.0 MU**

(h)There has been net generation loss (as mentioned in para-6 above), on account of water non-availability due to low rainfall. The energy charge shortfall during the respective years in terms of the Regulation 22 (6) (i) is as under:

year	Net generation loss due to low rainfall (MU)	Annual Fixed Charge for the year (Rs. in lakh)	Energy Charge Rate (Rs./kwh)	Energy charge loss (Rs. in crore)
2009-10	474.9685	30735.89	1.168	55.50
2010-11	55.7755	30804.58	1.171	6.53
2011-12	524.9987	30483.47	1.159	60.84
Total (2009-10 to 2011-12)	**1055.7427**			**122.87**

(i) The petitioner has submitted the calculated modified design energy ECR in subsequent year(s) till energy charge loss of previous year(s) as under:

year	Actual Generation during the previous year (MU)	Generation loss during the previous year attributed to NEEPCO (MUs)	Modified Design energy till the previous year loss is made up (MUs)
	(A)	(B)	(c)=(A+B)
2010-11	1024.886	9.8055	1034.6915
2011-12	1407.942	45.9425	1453.8845
2012-13	979.985	4.6863	984.6713

(j) Number of discussions were held on the 2009 Tariff Regulations in various meetings of Commercial Co-ordination Committee (CC) of NERPC. In the 14th CC meeting held on 12.11.2010 it was decided that the State of Assam and Tripura will verify the petitioner`s claim. However, no verification has been made by them. In the 18th CC meeting held on 14.3.2012, it was decided that in absence of any clear cut guidance on the said issue, NERPC will take up the matter with the Commission for clarification. Subsequently, in the 19th CC meeting held on 26.3.2013, the Committee advised the petitioner to file petition before the Commission in this regard.

3. Against the above background, the petitioner has made the following prayers:

"(a) Consider the instant application and allow the petitioner to bill and recover the Energy Charge shortfall amounting to Rs. 122.87 crore for the financial years 2009-10, 2010-11 and 2011-12 for reasons beyond the control of NEEPCO in terms with the Regulation 22 (6) (1) of the Tariff Regulations, 2009;

(b) Approve the 'Modified Design Energy' calculated by NEEPCO for the financial year 2010-11, 2011-12 and 2012-13 for the purpose of calculating Energy Charge Rates till the recovery of energy charge shortfall due to less generation during 2009-10, 2010-11 and 2011-12 respectively for the reasons beyond the control of NEEPCO.

(c) Allow to apply similar methodology for recovery of energy charge shortfall for less generation during the financial years 2012-13 we well as during 2013-14 (if any) due to reasons beyond the control of NEEPCO (generator).

(d) Pass any such further order or orders as the Hon`ble Commission may deem just and proper in the circumstances of the case."

4. The petition was admitted on 18.3.2014 and notice was issued to the respondents to file their replies. The petitioner was directed to file the following information /clarification:

(a) Figure of "generation loss due to system constraints" and "generation loss due to machine outages" vetted by NERLDC

(b) Clarification to the effect that why the figures of AFC for the period 2009-12 used for calculating the shortfall are at variance from AFC approved by the Commission in Petition No. 296/2009.

5. The petitioner, vide its affidavit dated 15.4.2014, has submitted the information called for.

6. Assam Power Distribution Company Limited (APDCL), vide its reply dated 11.4.2014, has submitted as under:

(a) Originally Design Energy (DE) of RHEP was approved as under:

Month	DE in MU	Month	DE in MU
April	**63**	Oct	174
May	253	Nov	79
June	243	Dec	63
July	301	Jan	49
August	276	Feb	54
Sept	264	March	55
Total Annual Design Energy			**1874 MU**

(b) Central Electricity Authority has already reduced the design energy of Ranganadi HEP from 1874 MUs to 1509.69 MUs after taking into consideration all the parameters and study of water availability data for the period of 23 years based on the petitioner`s letter dated 13.9.2002.

(c) 2009 Tariff Regulations clearly provides that the relevant provision of change of ECR would be applicable for reasons beyond the control of the generating station. The matter was extensively discussed earlier at NERPC

level. After detailed deliberations on the basis of records and documents submitted by the petitioner, NERPC forum did not find reasons to admit the claim of the petitioner. Therefore, NERPC referred the matter to CEA and the Commission. APDCL is of the opinion that shortfall in energy generation was not beyond the control of the petitioner.

(d) During the course of deliberations in NERPC forum, the petitioner furnished certain information such as actual generation against monthly, Design Energy (DE), average Reservoir Water Level (RWL), generation loss due to machine outage for reasons attributable to the petitioner, average water inflow, etc. of all the generating stations including RHEP. However, RWL of RHEP (and all other generating stations) for those period were always above the Minimum Draw Down Level (MDDL) of respective stations. The petitioner could not exhaust the water level in any month to the MDDL level of reservoir. Had the petitioner been able to utilize the water to the extent possible then only its claim of under generation for reasons beyond its control would have attained ground for consideration by the Commission. Three factors, namely availability of machines, availability of water and availability of manpower are attributable to achieve target generation of a hydro machine. Out of these three factors, only the water availability is the factor beyond the control of the petitioner and other two factors, namely machine availability and man power are attributable to the petitioner.

(e) Lower Subansiri district is not the only catchment area feeding water to the RHEP reservoir. There is another district, namely Papem Pura district which also feeds water to RHEP reservoir.

(f) The information of water inflow submitted under Annexure-IV of the petition is as per records of the petitioner and not supported by any other documents authenticated by a neutral third party.

(g) Plant Availability Factor of a month (PAFM) or the year (PAFY) does not depict the true picture of possible level of generation. If the Declared Capacity (DC) is maintained only for three hours, then DC is considered for calculation of PAFM/ PAFY even the rest period of the day the machine remains idle or off. Therefore, the possibility of energy generation to the extent of optimum utilization of water cannot be compared with the PAFM.

7. The petitioner, vide its rejoinder dated 8.5.2014 to the reply of APDCL, has submitted as under:

(a) Since, the Design Energy of the generating station was fixed at 1509.66 MU by the appropriate competent authority more than 10 years back, therefore, it is not appropriate to raise this issue at this stage.

(b) The present petition has been filed in terms of the provisions of Regulation 22 (6) of 2009 Tariff Regulations. However, APDCL`s contention that the NERPC forum referred the matter to the Commission and CEA, as it did not find merit in the petitioner's claim, is not correct. NERPC had referred the matter to CEA due to non-cooperation by APDCL in the matter.

(c) APDCL`s contention that the petitioner has failed to utilize reservoir water upto MDDL, does not have any merit since the figures referred by the petitioner are only the monthly average reservoir levels. Ranganadi HEP is a run-of-the river scheme where the generation is dependent on the inflow and RWL is not a relevant factor.

(e) It is admitted that Lower Subansiri District may not be the only catchment area for the RHEP reservoir. However, due to low rainfall in this district, being a part of the overall catchment, does adversely affect the inflow to the reservoir and this has been overlooked by APDCL.

(f) APDCL`s contention that the water inflow data submitted by the petitioner is not authenticated by a neutral third party, is not tenable as there is no such mechanism available under the current Regulations. The petitioner's claim of low water inflow is well supported by the Indian Meteorological Department's data indicating low rainfall upto the extent of 100 % below the long period average rainfall in the area during the period in question. The IMD's data has been placed on record as Annexure-IV

(g) With regard to APDCL`s contention that PAFM / PAFY is not a true depiction of the possible level of generation is self contradictory since the only reason for low generation despite high PAFM / PAFY can be inadequate inflow.

Analysis and Decision:

8. We have considered the submissions of the petitioner and the respondent and perused documents on record. The petitioner has filed the present petition to

allow it to bill and recover the energy charge shortfall for the financial years 2009-10 to 2011-12 in terms of Regulation 22 (6) of the 2009 Tariff Regulations and approve the modified design energy calculated by NEEPCO for the purpose of calculating energy charge rates till the recovery of energy charge shortfall due less generation during 2009-10 t0 2011-12.

9. The issue for our consideration is whether the low generation was attributable to the factors beyond the control of the petitioner, namely lower inflows in comparison to design year, stoppage of plant due to law and order problems, force majeure, etc.

10. Regulation 22 (6) of the 2009 Tariff Regulations provides as under:

> "22 (6) (i). in case the energy shortfall occurs within ten years from the date of commercial operation of a generating station, the Energy charge rate (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 Design Energy 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;
>
> (ii) in case the energy shortfall occurs after ten years from the date of commercial operation of a generating station, the following shall apply:
>
> 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 this Regulation for calculation 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.
>
> (iii) Actual energy generated (e.g. A1, A2) shall be arrived at by multiplying the net metered energy sent out from the station by 100/ (100-AUX)."

As per the above provisions, in case the energy shortfall has occurred within ten years from the date of commercial operation of the instant generating station, the energy charge rate for the year following the year of energy shortfall shall be

computed based on the formula prescribed in clause (5) with the modification that the design energy for the year shall be considered as equal to the actual energy generated during the year of shortfall, till the energy charge shortfall of the previous year has been made up, after which normal ECR shall be applicable

11. APDPCL has contended that after detailed discussion in NERPC forum, NERPC did not find any reason to admit the claim of the petitioner. Therefore, short fall in energy generation was not beyond the control of the petitioner. According to the petitioner, the above contention of APDPCL is not true as NERPC was constrained to consider referring the matter to CEA/CERC owing to non-cooperation by APDPCL in the matter and not because NERPC did not find any merit in NEEPCO's claim as falsely alleged by APDPCL. It is noted that number of discussions were held in various meetings of Commercial Co-ordination Committee (CCC) of NERPC and in the 19th CCC meeting held on 26.3.2013, the petitioner was advised to approach the Commission in this regard. Accordingly, the petitioner has filed the present petition.

12. With regard to inflow data submitted by the petitioner, APDCL has submitted that the same is not supported by any authenticated neutral third party. In this regard, the petitioner has placed on record the data sheet of District Rainfall (lower Subansiri) during 2008 to 2012 from Hyrdomet Department of Indian Meteorological Deptt which has been verified from the website of the Indian Meteorological Department, Shillong. As per CWC`s letter dated 10.8.2015 the inflows during the years 2009-10 to 2011-12 were on lower side in comparison to previous years. It is noted that the though the average water inflows have not been certified by any third party, the low rain fall leading to lower inflows is well supported by the data of

Indian Meteorological Department. Perusal of the data indicated in CWC`s letter dated 10.8.2015 also reveals that inflows during the years 2009-10 to 2011-12 were on lower side in comparison to previous years.

13. APDCL has contended that from the Reservoir Water Level (RWL) data submitted by the petitioner at NERLDC level, it can be observed that the petitioner could not exhaust the water level in any month to the MDDL level of reservoir. APDCL has stressed that had the petitioner been able to utilize the water to extent possible then only its claim of under generation for reasons beyond its control would have attained ground for consideration of the Commission. *Per contra* the petitioner has submitted that the contention of ADPCL does not have any merit since the figures referred by APDCL are only the monthly average reservoir levels and Ranganadi HEP is a run-of-the river scheme where the generation is dependent on the inflow. The petitioner has submitted that RWL level on daily and monthly basis is approximately midway between FRL and MDDL which is also the case during the period under consideration and as such the average RWL level does not indicate that the petitioner was not able to utilize the coming inflows. Therefore, the issue raised by APDCL is not relevant to the case.

14. The petitioner was directed to submit the figures of "Generation loss due to system constraints" and "Generation loss due to machines outages" vetted by NERLDC to ensure that the lower generation was not due to prolonged machine outages during the years 2009-10 to 2011-12. The petitioner vide its affidavit dated 15.4.2014 has placed on record the information called. NERLDC vide its letter dated 10.4.2014 has submitted the data with regard to the generation loss due to system constraints and has also verified the machine outage data submitted by the

petitioner. Perusal of the data submitted by the petitioner and NERLDC reveals that apart from "generation loss due to system constraints' and "generation loss due to machine outages", the major reason for lower generation during the period 2009-12, was lower inflows which cannot be attributed to the petitioner. The petitioner, while arriving at the extent of loss suffered by way of non-recovery of energy charges, has already factored in the "generation loss due to system constraints' and "generation loss due to machine outages" under the head generation loss attributable to the petitioner. In view of the above, the petitioner's case for short fall appears to be justified. However, petitioner has wrongly calculated its under-recovery and modified design energy. Accordingly, under-recovery and modified design energy are re-calculated as under:

Design energy (MUs) (a)	1509.69[$]			Total
Normative auxiliary energy consumption (b)	1%			
Ex-bus design energy considering normative auxiliary energy consumption (MUs) (c)=(a)*{100%-(b)}	1494.593			
Free energy to home state(MUs) (d)	12%			
Ex-bus saleable design energy (MUs) (e)=(c)*{100%-(d)}	1315.242			
	2009-10	**2010-11**	**2011-12**	
Saleable scheduled energy (MUs) as per petition (f)	896.870	1231.842	853.590	
Actual ex- bus generation as per petition and verified from annual reports(MUs) (g)	1024.886	1407.942	979.985	
AFC as per order dated 28.09.2015 in petition no. 457/GT/2014 (Rs. in lakh) (h)	30737.48	30806.61	30501.00	
Max. Energy Charge recoverable (Rs. in lakh) (i)=(h)/2	15368.74	15403.31	15250.50	**46022.55**
Energy charge rate (Rs. in kWh) (j)= (i)/(e)	1.169	1.171	1.160	
Energy charge recovered as per petition (Rs. in lakh) (k)	10479.68	14425.91	9892.14	**34797.73**

short fall in energy charges (Rs. in lakh) (l)=(i)-(k)	4889.06	977.40	5358.36	**11224.82**
Short fall in ex-bus energy attributable to petitioner (MUs) (m)	9.806	45.943	4.686	**60.435**
Short fall in ex-bus saleable energy attributable to petitioner (MUs) (n)=m*(100%-12%)	8.629	40.430	4.124	**53.183**
Short fall in money terms attributable to petitioner. (Rs. in lakh) (o)=(j)*(n)*10	100.87	473.44	47.84	**622.15**
Recoverable due to less inflow (Rs. in lakh) (p)=(l)-(o)	4788.19	503.96	5310.52	**10602.67**

15. Modified Design Energy till the previous year loss is made out, is re-calculated as under:

year	**Actual ex-bus generation during the previous year (MUs)**	**Ex-bus generation loss during the previous year attributable to NEEPCO (MUs)**	**Modified Ex-bus Generation during the previous year (MUs)**	**Modified Design energy for the calculation of ECR till the previous year loss is made up (MUs)**
	(A)	(B)	(c)=(A+B)	(d)= (C)/(100%-1%)
2010-11	1024.886	9.806	1034.692	1045.143
2011-12	1407.942	45.943	1453.885	1468.571
2012-13	979.985	4.686	984.671	994.617

16. Having considered that lower generation during the period 2009-12 is not attributable to the petitioner, we allow the modified design energy as indicated in column (d) of the above table for the calculation of Energy charge rates (ECR) for the years following the years of energy shortfall, based on the formula specified in clause (5) of Regulation 22 of the 2009 Tariff Regulations with the modification that the Design Energy 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. Accordingly, the following modified ECRs for the years 2010-11, 2011-12 and 2012-13 shall be applicable till the energy charge short fall of previous year is recovered:

year	Modified Design energy for the calculation of till the previous year loss is made up (MU) (a)	AFC as per order dated 28.9.2015 in petition no. 457/GT/2014 (Rs. in lakh) (b)	Modified ECR till previous year shortfall is recovered (Rs./kwh) (c)=(b)/(20*a*0.99*0.88)
2010-11	1045.143	30806.61	1.692
2011-12	1468.571	30501.00	1.192
2012-13	994.617	30819.36	1.778

17. In view of the above decision, the prayers of the petitioner are disposed of as under:

(a) With regard to the petitioner`s first and second prayers to allow it to bill and recover the energy charge short fall amounting to Rs. 122.87 crore for the years 2009-10 to 2011-12 and approve the modified design energy, the petitioner is allowed to revise the billing of energy charges for the years 2010-11, 2011-12 and 2012-13, based on the above modified design energy/ECRs till the loss of previous years amounting to Rs. 4788.19 lakh, Rs. 503.96 lakh and Rs. 5310.52 lakh totalling to Rs. 10602.67 lakh is recovered subject to re-conciliation of data related to Saleable scheduled energy (MUs) and energy charge recovered during the years 2009-10, 2010-11 and 2011-12, between the beneficiaries and the petitioner.

(b) With regard to the petitioner`s third prayer to allow the petitioner to apply similar methodology for recovery of energy charge shortfall for less generation during 2012-13 and 2013-14, reasons beyond the control of the

petitioner, it is clarified that in case any dispute arises during the said period mentioned, the petitioner is granted liberty to approach the Commission for resolution of dispute in accordance with law.

18. The petition is disposed of in terms of the above.

Sd/-	**sd/-**	**sd/-**
(A.S. Bakshi)	**(A. K. Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Chairperson**