**Before**

# UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

## Petition No. 22 of 2013

**In the matter of:**

Petition for review of the Commission's Order dated 06.05.2013 on Approval of Business Plan and Multi Year Tariff for UJVN Ltd. for First Control Period (FY 2013-14 to FY 2015-16).

**And**

**In the matter of:**

**UJVN Ltd.** **.....Petitioner**

**Versus**

**Uttarakhand Power Corporation Ltd.** **....Respondent**

**Coram**

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|---|---|
| **Shri Jag Mohan Lal** | **Chairman** |
| **Shri C.S. Sharma** | **Member** |
| **Shri K.P. Singh** | **Member** |

**Date of Hearing: July 30, 2013**
**Date of Order: September 03, 2013**

## ORDER

This Petition was filed by UJVN Ltd. (herein after referred to as "UJVNL" or "Petitioner") for review of the Commission's Order dated 06.05.2013 on Approval of Business Plan and Multi Year Tariff for UJVNL. for First Control Period (FY 2013-14 to FY 2015-16) under Section 94(1)(f) of the Electricity Act, 2003 (hereinafter referred to as "Act'') and Regulation 68 of Uttarakhand Electricity Regulatory Commission (Conduct of Business) Regulations, 2004 (hereinafter referred to as "UERC CBR'').

## 1. Background

**1.1** The Commission on the Petition filed by UJVNL seeking approval of the Business Plan and determination of Multi Year Tariff for the first Control Period from FY 2013-14 to FY 2015-16 had issued an Order dated May 6, 2013.

**1.2** The Petitioner filed a Review Petition on the grounds that there were certain errors apparent in the conclusions drawn on certain issues by the Commission. The Commission deciding to admit the Petition, held a hearing on July 30, 2013 in the matter wherein both the Petitioner as well as the Respondents were heard.

**1.3** The issues raised by the Petitioner in the Petition as well as in the additional submissions made, those made during the hearing and the submissions of the Respondent alongwith the analysis of the Commission are dealt in the subsequent Section.

## 2. Petitioner's submission, Respondent's response and Commission's Analysis and Ruling

### 2.1 Powers of Commission and Grounds for Review

**2.1.1** Before going into the merits of the Petition on various issues, the Commission first looks into the powers vested in it to review its Orders for taking a view on maintainability of the Petition. In this regard, reference is drawn to section 94(1)(f) of the Act which specifically empowers the Commission to undertake review, which can be exercised in the same manner as a Civil Court exercises such powers under section 114 and Order XLVII of the Code of Civil Procedure, 1908 (CPC). The powers available to the Commission in this connection have been defined in section 114 and Order 47 of the CPC. Under the said provisions, review of the Order is permitted on three specific grounds only, namely:

a. Discovery of new and important matter or evidence, which after the exercise of due diligence was not within the applicant's knowledge or could not be produced by him at the time of passing of the Order.

b. Mistake or error apparent on the face of the record; or

c. Any other sufficient reasons.

**2.1.2** The application for review has to be considered with great caution to necessarily fulfill one of the above requirements to be maintainable under law. On the discovery of new

evidence, the application should conclusively demonstrate that (1) such evidence was available and is of undoubted character; (2) that it was so material that its absence might cause miscarriage of justice; (3) that it could not be even with reasonable care and diligence brought forward at the time of proceedings/passing of Order. It is well settled that new evidence discovered, if any, must be one, relevant, and second, of such character that had it been given during earlier proceedings, it might possibly have altered the judgement.

**2.1.3** With regard to mistake or error apparent on the face of the record, the error should be apparent enough to be noticed and presented before the Court to take cognizance. However, if it is a case that the Petitioner was not able to properly explain a legal position at the time of proceedings, it does not make a ground for a review. With regard to any other sufficient reason, the courts have interpreted these words that such reasons should be at least analogous to those specified immediately above the Clause. The courts have interpreted this phrase on the facts and circumstances of each case.

**2.1.4** It is a well-settled law that a review of the Orders of the Court/Commission should be used sparingly after examining the facts placed before the Court. An erroneous view or erroneous judgement is not a ground for review, but if the judgement or order completely ignores a positive rule of law and the error is so patent that it admits of no doubt or dispute, such an error must be corrected in the review. A review is by no means an appeal in disguise whereby an erroneous decision is re-heard and corrected, but lies only for a patent error. A review can only lie if one of the grounds listed above is made out.

**2.1.5** With this background on legal provisions related to Review Petition, the Commission has examined the issues raised by the Petitioner to assess whether all or any of the issues raised by the Petitioner qualify for review.

### 2.2 Capital Cost of Maneri Bhali-II (MB-II)

**2.2.1** The Petitioner submitted that the Commission in its Order dated 06.05.2013 had considered the capital cost approved earlier as Rs. 1741.72 Crore and financing thereof as on Commercial Operation Date (COD) for determining the tariff for MB-II HEP for the first control period against its claim of Rs. 1958.13 Crore as approved by its Board of Directors.

The Petitioner submitted that the project was transferred to it from Irrigation Department during August 2008 to December 2008. The Petitioner mentioned that the Commission vide its letter dated 11.07.2012 had pointed out the deficiencies and the Petitioner was required to submit documentary evidences verifying the final time extensions granted. In this regard, the Petitioner submitted that the issue of granting final time extensions was legally examined and it was held that UJVN Ltd. was not the competent authority to grant the time extensions. Accordingly, the matter was put up before the 66th meeting of Board of Directors, UJVN Ltd. held on 12.3.2013. The Petitioner submitted that its Board of Directors had approved the capital cost of the project as Rs. 1958.13 Crore as on date of Commissioning and directed to take the matter with irrigation department at Principal Secretary (Energy) level for grant of time extensions by Irrigation Department, Uttarakhand and in case of refusal of Principal Secretary (ID), case may be processed for making UJVNL as a party in contract agreement with due legal consultations.

The Petitioner submitted that subsequently on its request the Principal Secretary (Energy) convened a meeting with Additional Secretary (Irrigation), HOD and other concerned officers of Irrigation department and the Petitioner Company to resolve the issue of time extensions in various work packages of MB-II Project. In the meeting it was decided that the Petitioner Company would send a proposal to GoU regarding transfer of the four main Contracts from Irrigation department to UJVN Ltd. After the Government approves the transfer, the Petitioner Company would carry out the duties associated with the contracts. The Petitioner submitted that the Resolution of the issue pertaining to granting final time extension in the case of four major contracts of MB-II HEP is under finalization and has requested the Commission to consider the capital cost of Rs.1958.13 as on the date of CoD based on the audited accounts and approval by its Board of Directors, till the final time extension of the said contracts are granted by the appropriate Authority. The Petitioner submitted that due to design and construction limitations, MB-II HEP has been generating lesser energy than the design energy, therefore, full recovery of AFC determined for MB-II, HEP is not possible.

**2.2.2** UPCL submitted that any upward revision of the capital cost of MB-II, would result in increase in AFC for the plant due to increase in capital related expenses forming part of AFC. Since, the Petitioner has not been able to submit the requisite data required by the Commission, hence any revision in the capital cost should be considered only during the truing up exercise as part of APR subject to data finalisation and submission.

**2.2.3** The Commission in Para 4.3 of its Tariff Order dated May 06, 2013 had held as under:

*"...The Commission after going through the report of High-level Committee, asked additional clarifications on deficiencies observed through its letter no. UERC/6/TF/12-13/2012/606 dated July 11, 2012. Upon, non receipt of such information the Commission sent a reminder through its letter no. UERC/6/TF-160/11-12/2012/1143 dated November 27, 2012 asking UJVN Ltd. to submit the replies within 10 days from receipt of the letter. UJVN Ltd. till date has not submitted its reply to the queries sent on the deficiencies observed regarding Capital Cost of Maneri Bhali-II Project. The Commission is of the view that till the completed cost is approved by the Commission, it may not be appropriate to revise the Capital Cost of Maneri Bhali-II Project for the purpose of determination of tariff in this Order. Therefore, the Commission has not revised the Capital Cost for Maneri Bhali-II and for the purpose of tariff determination for first Control Period from FY 2013-14 to FY 2015-16, the Commission has considered the capital cost as approved by it in its Order dated April 4, 2012. Further, the Commission directs UJVN Ltd. to submit its replies to the above mentioned letter within one month from the date of issuance of this Order. The Commission after analysing the details submitted by UJVN Ltd. will approve the Capital Cost of Maneri Bhali-II separately and consider the impact of same while carrying out the truing up as a part of Annual Performance Review."*

Further, the Commission in Para 6.1.2.2.B. of its Tariff Order dated May 06, 2013 had held as under:

*"...With regard to DRB claim of Rs. 44.51 Crore, the Commission is of the view that as the final Capital Cost is yet to be approved by the Commission for reasons discussed in detail in above paragraphs and in Chapter 4 of this Tariff Order, there is no merit in re-determining the capital cost as on CoD at present and the Commission shall take a view on this issue while approving the Capital Cost of MB-II Project as on CoD after carrying out the prudence check of the Capital Cost of MB-II which is still pending on account of UJVN Ltd. not been able to submit its reply to the information/queries sought by the Commission in the matter discussed above.''*

The Commission in Para 6.2.2.2.B. of its Tariff Order dated May 06, 2013 had held as under:

*"The issues related to Capital Cost of MB-II generating station as on CoD have been discussed in detail in Chapter 4 and in Truing up section of this Chapter. The Commission for the reasons discussed in the above mentioned sections of this Order is of the view that*

*there is no merit in re-determining the capital cost as on CoD and shall take a view on this issue while approving the Capital Cost of MB-II Project as on CoD once the Commission completes its prudence check on Capital Cost determination of MB-II after submission of the relevant information/details by the Petitioner. The Commission at this stage has, therefore, considered the already approved capital cost of Rs. 1741.72 Crore and financing as on CoD, for determining the tariff of MB-II for first Control Period.''*

From the above reading, it is amply clear that the Petitioner did not submit the details/information required by the Commission for examining not only the costs but also the reasons for time and cost overruns in the project and accordingly, the Commission was of the view that till the completed cost is approved by the Commission, it may not be appropriate to revise the Capital Cost of Maneri Bhali-II Project for the purpose of determination of tariff in the Order dated 06.05.2013. The Commission directed UJVN Ltd. to submit the requisite information within one month from the date of issuance of the Order and the Commission after analysing the details submitted by UJVN Ltd. would approve the Capital Cost of Maneri Bhali-II separately and consider the impact of same while carrying out the truing up as a part of Annual Performance Review. For scrutinising the capital cost of MB-II Project, the Commission has appointed an Expert Consultant. Based on the report of the Expert Consultant the Commission would finalise the capital cost of the MB-II project as on CoD.

Hence, the grounds urged by the Petitioner for seeking revision of the capital cost do not fall under the purview of review and hence, review is not maintainable for this issue.

### 2.3 WPI and CPI indices

**2.3.1** The Petitioner has submitted that the Commission in its "MYT Order" has considered inflation rate based on the Wholesale Price Index (WPI) and Consumer Price Index (CPI) indices for estimating the O&M Expenses for the Control Period.

In this regard, the Petitioner submitted that based on data of WPI and CPI, the inflation factor works out different than that considered by the Commission which has resulted in to an error from the face of the record and, therefore, the Petitioner has requested the Commission to review its decision on this ground and revise the O&M Expenses and tariffs for the first Control Period from FY 2013-14 to FY 2015-16 for Old Nine Generating Stations and Maneri Bhali-II.

**2.3.2** UPCL submitted that since the WPI and CPI inflation has to be considered based on the average increase for the immediately preceding three years and since the MYT Petition were filed before the Commission before the end of Financial Year 2012-13, hence, the increase in inflation for the years of FY 2009-10 to FY 2011-12 should only be considered.

**2.3.3** UERC (Terms and Conditions for Determination of Tariff) Regulations, 2011 specifies that CPI and WPI inflation would be the average increase for immediately preceding three years. Further, year has been defined as financial year ending on 31st March and Current Year has been defined as the year in which the petition for determination of tariff is filed and Previous Year has been defined as the year immediately preceding the current year.

Since the tariff Petition was filed in FY 2012-13 and, accordingly, for calculation of inflation factor, the CPI and WPI data prior to FY 2012-13 and not upto FY 2012-13 should have been considered. Moreover, the escalation factor is subject to true up and the same will be considered during the APR. There is, thus, no error apparent and review on this count is not maintainable.

**2.4 Repair and Maintenance expenses**

**2.4.1** The Petitioner submitted that the Commission did not consider the expenses related to actual R&M expenses for F.Y. 2007-08 to F.Y. 2011-12 in its MYT Order. The Petitioner also submitted that the Commission in the "MYT Order" had recognised the fact that the K-Factor determined in the said Order is liable to change on account of the report of the Expert Consultant. The Petitioner further submitted that the expenses incurred by the Petitioner are genuine and legitimate and the finding of the Expert Consultant would either result into shifting of the R&M expenses to capital expenditure or to be retained as part of revenue expenditure.

The Petitioner submitted that considering the fact that the Expert Consultant was examining only the nature of expenses, any disallowance of the said genuine and legitimate expenses leads to financial implication on the Petitioner. Non-consideration of such expenses either as part of R&M expenses or as part of the capital expenditure and in turn dis-allowance of capital expenditure related expenses thereon, has resulted in error apparent on the face of record and, therefore, the Petitioner requested the Commission to either consider the balance expenses as R&M expenses or consider the same as part of capital expenditure and allow the relevant capital expenditure related expenses for each year of the Control Period and revise the tariff of all Generation Stations.

**2.4.2** UPCL submitted that the concern of the Petitioner Company has been addressed by the Commission in Para 6.2.2.9 of its Order dated May 06, 2013. It has submitted that the Commission has not disallowed any R&M expenses and has kept the same pending subject to final truing up. Any inefficiency of the Petitioner or the wrong booking should not be allowed as pass through as it would result in increased AFC which would result in additional burden on UPCL.

**2.4.3** In this regard, the Commission in Para 4.3 of its Order dated May 06, 2013 has held as under:

> *"...However, in the absence of complete & timely information provided, despite numerous opportunities provided to the Petitioner company, the Commission at present has decided not to carry out the truing up of R&M expense for FY 2008-09 to FY 2010-11 in this proceeding and accordingly the Commission has considered the R&M expenses as had been approved in its previous Orders. However, it is brought to the notice of the Petitioner that the exercise of examination of R&M expenses is not closed by the Commission as the Expert Consultant in its interim report has submitted that based on the details submitted by the Petitioner it has observed that certain expenses of capital nature have been booked under R&M expenses which has been discussed in Chapter 6 of this Order. The Commission would take a final view on the same when complete information is submitted by the Petitioner in this regard. The Petitioner is directed to submit the details as sought by the Commission within one month from the date of issue of this Order. The impact of true up on this account and related impact on the capital related expenses based on the final Report of the Expert Consultant will be carried out by the Commission during the final truing up of R&M expenses in the first APR petition for first Control Period."*
>
> *"...Regulation 16(2) of UERC Tariff Regulations, 2004 stipulates as follows:*
>
> *" Subject to the provision of sub-regulation (s) of this regulation, the capital expenditure of following nature actually incurred after the cut-off date may be admitted by the Commission subject to the prudence check:*
>
> *(i) Deferred liabilities relating to works/services within the original scope of work.*
>
> *(ii) Liabilities to meet award of arbitration or in compliance of the order or decree of a court,*
>
> *(iii) On account of change in law, and*
>
> *(iv) Any additional works/service which has become necessary for efficient and successful operation of plant but not included in the original capital cost."*

*The Commission is of the view that any additional capitalisation after cut-off date can be permitted only in case it is substantiated that such expenses have been incurred under one of the above provisions of Regulation 16(2) of the UERC Tariff Regulations, 2004. The Petitioner has claimed additional capitalisation of Rs. 18.58 Crore and Rs. 20.33 Crore for Chilla and MB-I generating stations respectively in FY 2010-11 which is a substantial amount considering the amount claimed as additional capitalisation in previous years. The Petitioner in its Petition has not submitted the details of additional capitalisation, although the Petitioner has submitted that it had incurred the expenses as they were necessary for efficient and successful operation of plant but not included in the original capital cost.*

*The Commission is, therefore, of the view that in the absence of complete details of expenses incurred and works/services procured therefrom out of additional capitalisation indicated for FY 2008-09 to FY 2010-11 alongwith the justification in view of the Tariff Regulations, 2004, prudence of such expenditure cannot be examined and hence, final truing up of additional capitalisation for these years cannot be carried out. This is all the more necessary considering the amount of capital expenditure proposed to be incurred by the Petitioner under RMU measures for these 9 old generating stations. However, for the current proceedings the Commission is provisionally accepting the additional capitalisation as submitted by the Petitioner for FY 2008-09 to FY 2010-11. The Commission on receipt of satisfactory information shall carry out the final truing up of additional capitalisation for FY 2008-09 to FY 2010-11alongwith such other additions to additional capitalisation as may be determined by the Expert Consultant on scrutiny of R&M expenses as the expenses of capital nature booked under repairs and maintenance expenses."*

The Commission in Para 6.1.2.7.3 of the Order dated May 06, 2013 also held that:

*"Hence, it is evident from the above that the Petitioner has not submitted the complete details/information of the expenses incurred during FY 2008-09 to FY 2010-11. Further, as detailed in Chapter 4 the Commission has given numerous opportunities to the Petitioner for submitting the complete details, however, the Petitioner did not submit the complete details. One option in this case would be to consider only those R&M expense for which details have been submitted by the Petitioner but this would impact the finances of the Petitioner Company adversely. As can be seen from the Table above, the Petitioner had claimed a total expense of Rs. 127.72 Crore for the three years, however, the details furnished by it are of Rs. 105.37 Crore. It has also been observed that for some stations such as Khodri (FY 2008-09, FY 2009-10 and FY 2010-11), Kulhal (FY 2008-09), Chibro (FY 2009-10), Chilla (FY 2009-10 and FY 2010-11), Khatima (FY 2010-11) the Petitioner has submitted the details of R&M*

*Expenses which are more than the R&M Expenses as claimed by the Petitioner based on the Audited Accounts.*

*Hence, at this stage it would not be appropriate to carry out the truing up of R&M expenses for these three years. Accordingly, the Commission in this Order has considered the R&M expenses as had been approved by the Commission in its previous orders for respective years. The Commission would take a final view on the same when complete information is submitted by the Petitioner. The impact of true up on this account and related impact on the capital related expenses, based on the final Report of the Expert Consultant will be considered by the Commission during the final truing up of R&M expenses in the Petition for the next year of the Control Period."*

Thus, the contention of the Petitioner that it has incurred expenditure and hence, the same should be allowed either as revenue or capital expenditure cannot be sustained being inconsistent with the Regulations. Any expenditure incurred by the Petitioner will have to undergo the test of prudence as has been held by the Commission in its Order dated May 06, 2013. The truing up of R&M expenses was delayed as the Petitioner did not submit the required information in time and accordingly, the Commission had to defer the truing up of R&M expenses and additional capitalisation. However, the Commission held that the exercise of examination of R&M expenses was not closed by the Commission and that it would take a final view on the same when complete information was submitted by UJVN Ltd. in this regard. The Commission in its Tariff Order had held that the impact of true up on this account and related impact on the capital related expenses based on the final Report of the Expert Consultant would be carried out during the final truing up of R&M expenses in the first APR petition for first Control Period.

Hence, this issue also does not qualify for review.

**2.5 Administration & General Expenses**

**2.5.1** The Petitioner submitted that the Commission did not consider the Regulatory Fee of Rs. 10 Lakh per Station in its "MYT Order". The Petitioner also submitted that any expenses which are prudent and being recognised to be incurred in future needs to be allowed as part of the ARR itself and truing up needs to be carried out based on the actuals. The Commission in its "MYT Order" has merely recognised such expenses pertaining to Regulatory fee and not allowed the same to be considered as part of A&G expenses for future periods.

The Petitioner submitted that non allowance of the Regulatory fee of Rs. 10 Lakh per Generating Station, has resulted in an error apparent from the face of record and, therefore, has requested the Commission to allow the Regulatory Fee of Rs. 10 Lakh per Station as a part of the A&G expenses for each year of the Control Period and revise the tariff of all Generation Stations.

**2.5.2** The Commission in Para 6.2.2.10 of its Order dated 06.05.2013 has held as under:

> *"The Commission has observed that the A&G Expenses for past years include* ***Regulatory fees of Rs. 10 Lakh for each station.*** *As the regulatory fee should not be escalated, therefore, while estimating the A&G Expenses for first Control Period,* ***the Commission has reduced the above mentioned amount,*** *and the same shall be allowed as per actual at the time of Annual Performance Review or final truing up."*

The Commission recognises that any prudent expenditure incurred by the Petitioner needs to be allowed to be recovered from the beneficiaries. The Commission, therefore, held in the Order dated May 06, 2013 that the Regulatory fee would be allowed as per actual at the time of Annual Performance Review or final truing up. The Commission, therefore, advises the Petitioner to claim the same at the same during the APR or final truing up. As mentioned in para 2.1.4 a review cannot be an appeal in disguise. Accordingly, this issue does not meet the grounds for review.

**2.6 Weighted Average Interest Rate**:

**2.6.1** The Petitioner submitted that the Commission in its "MYT Order" has computed the weighted average interest rate based on the outstanding APDP loans and PFC loans as admitted by the Commission up to 31 March, 2013 for 9 LHP as well as MB-II HEP, which works out to be 11.59%. The Petitioner submitted that the Commission has computed the weighted average interest rate based on the outstanding loans as admitted by it, however, Regulation 28 of UERC (Terms and Conditions for Determination of Tariff) Regulations, 2011 requires the Commission to consider the actual loan portfolio as against the admitted loan portfolio for computation of interest expenses.

The Petitioner submitted that in accordance with the Regulations the weighted average interest rate needs to be computed on the basis of the actual loan portfolio of MB-II project at the beginning of each year. The Petitioner has worked out the actual

interest rate as on March 31, 2013 as 11.89% against 11.59% considered by the Commission.

**2.6.2** Regulation 28(5) of UERC (Terms and Conditions for Determination of Tariff) Regulations, 2011 specifies as under:

> *"The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the project:"*

The Commission in Para 6.2.2.6 of its Order dated May 06, 2013 has held as under:

> *"With regard to the interest rate for first Control Period, only normative loans are outstanding for most of the stations and only small amount of APDP loans for Chibro, Khodri and Chilla LHPs and PFC loan for MB-II is outstanding. The Commission, in accordance with UERC Tariff Regulations, 2011 has computed the weighted average interest rate based on the outstanding APDP loans and PFC loans as admitted by the Commission up to 31 March, 2013. The interest rate based on the above works out to 11.59%. Thus, the Commission has considered the interest rate of 11.59% for computing the interest expenses for 9 LHP as well as MB-II station."*

It is well recognised that capital cost of MB-II project is still provisional and there is cost over run in the project mainly due to increase in IDC of the project due to delay in commissioning of the project. Because of this delay, the Petitioner Company not only had to bear the burden of additional IDC but also had to forego the benefit of AG&SP subsidy available to it leading to payment of interest at increased rates for all time during the tenancy of the loans. For the increased cost of the project the Petitioner had to resort to additional borrowings from PFC which have not been accepted by the Commission pending approval of final cost of MB-II project. Accordingly, the Commission has only considered the loans admitted by it. The Commission is examining the issue and has appointed a consultant for the purpose. The Commission would revisit this issue during the APR/truing up subject to the condition that the Petitioner provides timely details/information sought by the Consultant for finalising the capital cost of the MB-II project.

Hence, at present the Commission finds no reason to revisit the issue as the same do not qualify for review.

**2.7 Repayment considered for Interest Expenses for Maneri Bhali-II:**

**2.7.1** The Petitioner submitted that the Commission has considered the repayment of loans for each year of the control period equal to the depreciation allowed for that year. The Petitioner also submitted that the Commission in its Tariff Order for FY 2012-13 admitted the total gross loan of Rs. 1200 Crore for MB-II project and had, accordingly, approved the yearly repayment of Rs. 120 Crore considering the loan tenure of 10 years and by allowing the advance against depreciation, guaranteed Return on Equity had been allowed on the equity admitted by the Commission.

The Petitioner placed its reliance on the MYT Regulations, 2011 and submitted that it has safeguarded the return on the equity invested in the Project by way of allowing the return of 15.5% on the equity admitted for the project. The Petitioner submitted that all the provisions of the MYT Regulations need to be read in the manner that is conjoint and harmonious with the spirit of Regulations. Considering the fact that the Commission has disallowed the repayments of loans to the tune of Rs. 54 Crore on MB-II project by merely relying on the only one provision of the Regulations has resulted in to financial crisis to the Petitioner, which will have to be met from Return on Equity and would result in lesser equity infusion by the Petitioner in the future years and the same cannot be the intent of the Commission.

The Petitioner has also relied upon Regulation 23(8) of the MYT Regulations, 2011 and has submitted that disallowing of repayment to the extent of Rs. 54 Crore has resulted in to restructuring of the capital and affecting the tariff adversely of the Petitioner.

The Petitioner has submitted that such disallowance of the repayment has resulted in to error apparent on the face of record as the Petitioner has the actual obligation of repayment and only other option available before it is to utilise the Return on Equity.

**2.7.2** UPCL submitted that Regulation 28(3) should be followed for considering the repayment for each year of the control period equal to the depreciation allowed.

**2.7.3** Regulation 28(3) of the MYT Regulations specifies as under:

*"The repayment for each year of the Control Period shall be deemed to be equal to the depreciation allowed for that year."*

This was the deviation in MYT Regulations from the tariff Regulations, 2004. The Commission had in its Order dated May 06, 2013 had considered repayment of loans in

accordance with the Regulations. Thus, there is no apparent error in the same. The Petitioner has now sought review of the provisions of the Regulation through its Review Petition which cannot be permitted. Further, there is no rationale of the Petitioner's submission that the deficit repayment will have to be met from Return on Equity and would result in lesser equity infusion by the Petitioner in the future years. Even under the MYT Regulation, 2011, the Petitioner would be entitled to 70% of the cost of the project by way of depreciation in the first 12 years against 10 years provided in the Regulations, 2004. Comparatively, there is a marginal difference of about 1.20% in the rate of depreciation in the two set of Regulations. Even if the Petitioner utilises its RoE for meeting the shortfall in repayment, it will recover the same in a short span of time, i.e. within 12 years.

Further, it is also noted that the Commission while computing interest on loans has considered the amount of depreciation as repayment against actual repayment which as per Petitioner's own submissions is lower than the actual repayments, thus, in effect higher interest has been allowed to the Petitioner compared to the situation when the loans would have been reduced by actual repayments. Thus, the Petitioner can also leverage this additional interest allowed towards meeting the balance repayments by resorting to external financing or getting the loans from PFC restructured.

Thus, contrary to the Petitioner's claim, restructuring of loans would in no manner affect the tariff adversely of the Petitioner as the same has already been factored. Thus, there is no merit in the contention of the Petitioner and hence, the same is also rejected.

## 2.8 Design Energy and Saleable Primary Energy of Chilla and MB-I:

**2.8.1** The Petitioner has submitted that the Commission in Para 6.2.1.1 of its Order dated May 06, 2013 has considered the Design Energy for Maneri Bhali –I HEP as 671.29 MU in place of 395.00 MU and for Chilla HEP as 395.00 MU in place of 671.29 MU which is an error apparent on the face of records and has thus requested the Commission to re-visit the Design Energy for these two Generating Stations accordingly.

**2.8.2** This issue has to be viewed in continuation of Table 5.1 and Table 6.7 where the primary energy and saleable primary energy has been approved and utilised for the purpose of recovery of AFC. There has been a typographical error in Table 6.37 of Para 6.2.1.1 and numbers for Maneri Bhali-I and Chilla have got juxtaposed, however, these incorrect numbers have not been utilised elsewhere. The Commission orders that the

design energy, auxiliary consumption and saleable primary energy of Chilla in Table 6.37 be read as 671.29 MU, 6.71 MU and 664.58 MU respectively and that of Maneri Bhali-I be read as 395 MU, 2.77 MU and 392.24 MU respectively.

## 2.9 Capital Expenditure and Capitalisation Plan for upcoming projects

**2.9.1** The Petitioner has submitted that the Commission has noted the Capital expenditure and capitalisation plan filed by it for upcoming projects for capacity addition of around 3276 MW for meeting the growing energy requirement of the State and has advised the Petitioner to stick to the plan submitted. However, the Commission has mentioned in the order that while approving the Business Plan it has not scrutinized the proposed capital expenditure and capitalisation estimated for the upcoming new Stations and has provided that it shall look into such details for the upcoming stations upon submission of separate proposal filed by the Petitioner for each station. The Petitioner submitted that requisite project details along with DPRs were filed before the Commission for its consideration and that it would comply with the directives of the Commission and would provide the duly audited project costs in the petition for tariff determination.

However, the Petitioner has requested the Commission to take into cognizance the present status of the projects and provide in principle approval of the proposed projects as per the provisions of UERC Tariff Regulations 2011 which is also the practice followed by CERC before the projects are taken for development by the Central Sector Generating Companies. The Petitioner has also submitted that the in principle approval would enable it to take up these projects for development without the regulatory risk of disapproval of the cost incurred on developing these projects as the lead time for developing a hydro project is significant and in principle approval now would enable the Petitioner to take up these projects for development.

**2.9.2** The UERC (Terms and Conditions for Determination of Tariff) Regulations, 2011 does not require in-principle approval by the Commission of the new projects of generating companies. However, the Commission in Para 5.1.1 of its Order dated May 06, 2013 has held as under:

*"…The Commission appreciates that UJVN Ltd. is planning for capacity addition of around 3276 MW, which will help in catering the growing energy requirement of the State. The Commission expects UJVN Ltd. to stick to its capacity addition plan as submitted in its Business Plan Petition and endeavour to prepare commissioning of these plans. However, the Commission at this stage while approving the Business Plan for the first Control Period has*

*not scrutinised the capital expenditure and capitalisation estimated for the upcoming new Stations. The Commission shall look into such details for the upcoming stations upon submission of separate proposal filed by UJVN Ltd. for each station. The Commission based on the separate proposal filed by the Petitioner for each new generating station shall approve the capital cost."*

Seeking in-principle approval of the new projects cannot be allowed in Tariff Petition and in no way is permissible by way of Review Petition. The Petitioner is advised to prepare separate proposal for each new generating station and submit the same before the Commission for approval. The Commission would however like to caution the Petitioner that in-principle approval granted by the Commission can in no way assure that all the expenditure incurred by it would be considered by the Commission. Any expenditure incurred would have to undergo the test of prudency before the same can be allowed to be recovered through tariffs.

**2.10 Capital Expenditure and Capitalisation Plan for existing projects**

**2.10.1** The Petitioner submitted that the Commission has not scrutinized the capital expenditure and capitalisation proposed for the existing projects and has advised it to make separate proposal alongwith the APR petition before the Commission with a Detailed Project Report giving complete scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost including foreign exchange component, if any, record of consultation with beneficiaries and other relevant information.

The Petitioner requested the Commission to consider the capital expenditure and its capitalization during the control period. The Petitioner submitted that it had submitted the DPRs and other information desired by the Commission which contains all the information indicated in the order for approving these costs. The Petitioner also submitted that in the absence of a specific order of the Commission admitting the proposed capital expenditure, it would run the risk of either the entire project cost or the part of the cost incurred getting disallowed. The Petitioner has thus, requested the Commission to grant in-principle approval of the proposed capital expenditure plan and consider its impact in the ARR and tariff for the control period.

**2.10.2** Regulation 25(1) of UERC (Terms and Conditions for Determination of Tariff) Regulations, 2011 specifies as under:

*"The generating company or the transmission company, as the case may be, for meeting the expenditure on renovation and modernization (R&M) for the purpose of extension of life beyond the useful life of the generating station or a unit thereof or the transmission system, shall make an application before the Commission for approval of the proposal with a Detailed Project Report giving complete scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost including foreign exchange component, if any, record of consultation with beneficiaries and any other information considered to be relevant by the generating company or the transmission company…"*

Accordingly, the Commission in Para 5.1.2 of its Order dated May 06, 2013 has held as under:

*"…The Commission has noted the submissions of Petitioner however, the Commission at this stage while approving the Business Plan for the first Control Period has not scrutinized the capital expenditure and capitalisation estimated for the Renovation, Modernization and Up-rating (RMU) as submitted by the Petitioner. Further, as discussed in Chapter 4 of this Order, Petitioner is required to make separate proposal alongwith the APR petition before the Commission with a Detailed Project Report giving complete scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost including foreign exchange component, if any, record of consultation with beneficiaries and other relevant information. The Commission based on the above and on the basis of prudent actual capital expenditure incurred shall consider the additional capitalisation for each year of the first Control Period during Annual Performance Review to be carried out for each year of the Control Period."*

The Petitioner has envisaged Renovation and Modernisation of almost all the generating stations. Hence, in terms of the Regulations, the Petitioner is required to make an application before the Commission for approval of the proposal with a Detailed Project Report in accordance with the Regulations. Seeking in-principle approval of the Renovation and Modernisation cannot be permissible by way of Review Petition. The Petitioner is advised to prepare separate proposal in accordance with the Regulations for each station and submit the same before the Commission for approval.

The Commission would however like to caution the Petitioner that in-principle approval granted by the Commission can in no way assure that all the expenditure incurred by it would be considered by the Commission. Any expenditure incurred would have to undergo the test of prudency before the same can be allowed to be recovered through tariffs.

## 2.11 Design Energy

**2.11.1** The Petitioner submitted that due to non-availability of reliable information on the design energy for nine old generating stations (i.e. except Maneri Bhali-II HEP), the Commission in its previous Orders had considered the lower of 15 years' average annual generation or the plant-wise Design Energy (as mutually agreed between UPJVNL and UPPCL) as the projected primary energy generation of these generating stations for tariff purposes.

The Petitioner submitted that in the Business Plan Petition, it had proposed the revised computation of the Design Energy of its LHPs based on the actual generation and water discharge data of past years varying from 10 to 20 years depending upon the availability of reliable data with it and the Commission has observed that the Design Energy for most of the Stations as proposed by the Petitioner was lower than the earlier considered Primary Energy and the Commission in the absence of any reasonable basis for assessing the design energy, had provisionally retained the primary energy as approved for 9 LHPs in its previous Tariff Orders as design energy for the control period.

The Petitioner submitted that it had submitted all the reliable information that was available with it and also that the original DPR is not available with it, however in compliance of the order of the Commission, the Petitioner is contacting Uttarakhand/ UP Irrigation Department to share the DPRs if they are available with them and would submit the DPR as it becomes available. However, till such time, the Commission was requested to rely upon the information submitted by it.

The Petitioner also submitted that the Design Energy values computed by the Commission are not in accordance with the definition of Design Energy provided in the UERC Tariff Regulations, 2011and are on the higher side (as 50% probability of occurrence, i.e. average values have been considered as compared to values with 90% probability of occurrence). Consequently, the Petitioner loses chance to earn secondary energy charges.

The Petitioner has also requested the Commission to suggest an alternate methodology for computation of Design Energy in case DPRs do not become available. In the opinion of the Petitioner alternate method 2 as detailed in the Business Plan submitted, for computation of Design Energy may be accepted as it shall be deprived of the opportunity to earn secondary energy charges, in case the Commission considers higher Design Energy.

**2.11.2** Regulation 3(25) of UERC (Terms and Conditions for Determination of Tariff) Regulations, 2011 specifies as under:

*"Design Energy" means the quantum of energy which can be generated in a 90% dependable year with 95% installed capacity of the hydro generating station."*

For example, if a span of 50 consecutive years is taken into account, after excluding the 4 worst years, water availability in the 5th worst year (or 46$^{th}$ best year) is called the water availability in 90% dependable year. Electricity that can be generated at this availability of water with 95% capacity of machines is the Design Energy of the plant. This definition ensures that in 50 consecutive years, for 46 years availability of water for the plant will be equal to or more than this quantity. Therefore, if the generating company maintains its machines and is able to ensure their availability to the extent of 95%, it should be able to generate energy equal to or more than the Design Energy for these 46 years and only in the remaining 4 years generation is likely to be less than the Design Energy. The concept of Design Energy, thus, adequately takes care of both factors responsible for generation i.e., variations in water availability which is out of control of the generating company and the machine efficiency & availability, which depends on the efficiency of the generating company. Since fluctuations in water availability have already been factored in, no change in Design Energy from year to year is warranted due to variations in water availability, which is inherent and inevitable. For 90% of the time, if the actual generation is less than the Design Energy it would be on account of inefficiency or non-availability of machines. This could be on account of improper and inadequate maintenance or on account of degeneration over a period of time. The Commission finds that the concept and definition of Design Energy itself are sound and logical and feels that the same need not be diluted or tampered with. If genuine problem exists on account of degeneration of machines in some generating plant, as has been claimed, the right thing to do is to review and revise such plant's capacity.

Normally for a 90% dependable year, data size has to be large, considerably of 40-50 years and not 10-20 years as submitted by the Petitioner. Further, the design energy is envisaged when the project is conceptualised and is not revised each year. The 9 LHPs of the Petitioner company are over 30-40 years old and reasons for reduction in their generation even below the original design energy should be looked into and corrective actions should have been taken. Instead the Petitioner merely to seek the benefit of secondary energy intends to get its design energy reduced. Energy generated upto the level of plant's Design Energy in a year is called Primary Energy and energy generated in excess of the Design Energy has been defined as Secondary Energy. As stated above as long as maintenance of the machines is ensured, in a span of 50 years, for as many as 46 years water availability will be sufficient to enable generation which will be equal to, or more than the Design Energy. In other words, during this period for most of the time the plant would be generating not only the Design Energy but also some Secondary Energy. Secondary Energy charges are meant to reward the generator for higher generation. The Petition seeks lowering of Design Energy of these plants, and thereby the threshold level for computing Secondary Energy generation. Lowering the threshold level for computing Secondary Energy generation would result in first inflating and exaggerating generator's performance and then rewarding it through Secondary Energy charges and that too at inflated rates. Downward revision of Design Energy for any plant should, therefore, not be done casually based on subjective reasoning, but for irrefutable and convincing reasons supported by hard facts.

Further, the Commission is unable to accept the claims of the Petitioner to re-calculate the design energy in light of the fact that original design energy is not available for the 9 LHPs unless the Petitioner comes with the convincing reasons to revise the same. This is all the more essential as the projects are undergoing Renovation and Modernisation and the Petitioner has itself projected increase in generation after the R&M works. Accordingly, in the absence of any reasonable basis for assessing the design energy, the Commission has provisionally retained the primary energy as approved for 9 LHPs in Tariff Order dated April 04, 2012 as design energy for the control period. UJVNL Ltd. has also been directed to arrange the Detailed Project Report for each of its hydro generating stations and submit the same to the Commission alongwith first Annual Performance Review (APR) Petition for the Control Period. The Commission based on analysis of DPR and further data submitted by UJVN Ltd. may revise the Design Energy for 9 LHPs in its Order on first APR Petition of UJVN Ltd.

Hence, this also does not qualify for review.

### 2.12 Normative Annual Plant Availability Factor (NAPAF)

Based on the proposals of UJVN ltd. submitted for fixation of NAPAF under two different approaches in the Business Plan Petition, the Commission in its Tariff Order on approval of Business Plan and Multi Year Tariff Order dated 06.05.2013 for UJVN Ltd., for the control period FY 2013-14 to FY 2015-16 had provisionally considered the NAPAF as 85% for Storage and Pondage based Generating Stations in accordance with the Regulation 51 of UERC Tariff Regulations 2011. For RoR Plants, the Commission in absence of past 20 years 10 day daily discharge data and original DPR, provisionally approved the NAPAF as minimum of the NAPAF proposed by UJVN Ltd., under two approaches. Among these RoR Plants, the Commission provisionally approved the NAPAF for Kulhal, Dhalipur & Dhakrani as minimum of the NAPAF submitted under the two approaches for these three Stations as 77%.

The Commission had approved the Normative Annual Plant Availability Factor (NAPAF) of UJVN Ltd.'s large HEPs as mentioned below:

| Station | NAPAF |
|---|---|
| Chibro | 85% |
| Khodri | 85% |
| Maneri Bhali-I | 85% |
| Maneri Bhali-II | 85% |
| Ramganga | 85% |
| Dhakrani | 77% |
| Dhalipur | 77% |
| Kulhal | 77% |
| Chilla | 76% |
| Khatima | 78% |

Further, the Commission in para 5.2.2 of the Tariff Order dated 06.05.2013 has held that: "... the Commission based on analysis of DPR and further data, if any, submitted by UJVN Ltd. may revise the NAPAF for 9 LHPs in its Order on first APR Petition of UJVN Ltd.".

The Commission had approved the NAPAF as proposed by the Petitioner in its Business Plan and had already provided the Petitioner the opportunity to get its NAPAF revised in the APR proceedings. Hence, the issue of revision/ redetermination of the NAPAF at this stage does not qualify for review as there is no error apparent and moreover, no new fact has been produced by the Petitioner.

However, the Petitioner submitted that since the NAPAF was fixed on the higher side by the Commission as compared to the actual plant availability achievable by its plants, there is substantial under recovery of its capacity charges. Further, the Petitioner also submitted that the under recovery of capacity charges was adversely affecting its cash flow, resulting in affecting the regular O&M of the plants.

The Commission in its Order dated 06.05.2013 had provisionally fixed the NAPAF for the plants under the control of Petitioner and had held that the same shall be reviewed during the Annual Performance Review (APR). However, in order to obviate the Petitioner from the financial difficulties faced by it and for averting the scarcity of funds for maintenance of the Petitioner's HEPs, the Commission decides to prepone the determination of NAPAF from APR and decides to re-determine the NAPAF of the 10 large hydro plants of the Petitioner even though their request is not within the ambit of review. Perusal of the data on past years NAPAF has also revealed that NAPAF proposed by the Petitioner in original petition were substantially higher than those achieved by it in any of the last 5 years. Apparently, Petitioner did not comprehend the financial implications of proposing higher NAPAF.

### 2.12.1 Petitioner's Submission

With regard to the fixation/re-determination of NAPAF, the Petitioner has submitted that:

"*The Hon'ble Commission has considered few stations of Review Petitioner as ROR generating stations with pondage and their NAPAF has been fixed at 85% in accordance with Regulation 51 of Hon'ble UERC Tariff Regulations, 2011. For purely ROR type plant, the Hon'ble Commission has provisionally determined NAPAF on the basis of submission of Review Petitioner. Regulation 51, of Hon'ble UERC Tariff Regulations, 2011 for ROR type plant specifies that NAPAF for purely ROR type generation stations shall be determined on the basis of 10 day design energy data, moderated by past experience where available/relevant.*

*The Hon'ble Commission has directed Review Petitioner to submit the Detailed Project Report (DPR) for each of its Hydro Generating Stations so that the NAPAF can be considered on the basis of DPR readings and the referred regulation. The Hon'ble Commission has proposed to revisit these norms on the basis of these submissions at the time of Annual Performance Review.*

*The Hon'ble Commission, in absence of past 20 years 10 day daily discharge data and*

*original DPR decided to provisionally approve NAPAF for ROR type plants as the minimum NAPAF submitted by Review Petitioner under two approaches. NAPAF for Kulhal, Dhalipur and Dhakrani was considered same as these are fed from a common water channel. Therefore, the Hon'ble Commission has provisionally approved the NAPAF of 77% for Kulhal, Dhalipur and Dhakrani which is the minimum of the NAPAF submitted under the two approaches for these three stations. As regard Khatima and Chilla LHPs, the Hon'ble Commission has approved NAPAF of 78% and 76 % which is the minimum NAPAF under the two approaches as submitted by Review Petitioner for each station. For Chibro, Khodri, Maneri Bhali-I , Maneri Bhali-II and Ramganga LHPs, the NAPAF has been determined as 85%.*

*The Hon'ble Commission did not consider the revised NAPAF calculation submitted in the Petition vide letter no. 2139/MD/UJVNL/U-6 dated 08.04.2013 by Review Petitioner on the grounds that it has been submitted after Public Hearing. The Hon'ble Commission is requested to approve NAPAF as submitted vide the above Petition.*

*The Hon'ble Commission is requested to re-consider its approach for determination of NAPAF. The regulations provide for consideration of operational situations and constraints faced by the Power Station while determining norms. As per the power requirement of the state, power stations of Review Petitioner are operated as base load power stations & not exactly as peaking power stations, as per the instructions of SLDC. Also, due to very long operational period, the efficiencies of the machines have reduced. Also, most of the power stations are not able to operate at their installed capacities and are operating on restricted capacities. For survival of Review Petitioner, the NAPAF needs to be revised as submitted to the Hon'ble Commission in the petition dated 8/4/13. Review Petitioner is supporting the power system by running its Plants on base load.*

*Review Petitioner had proposed norms for NAPAF based on revised calculations for all LHPs. The calculations and their underlying assumptions were submitted to the Hon'ble Commission vide our Additional Submission letter no. 2139/MD/UJVNL/U-6 dated 08.04.2013. The submission was made much in advance of the tariff order date. Review Petitioner had requested the Hon'ble Commission to consider these calculations. However, the Hon'ble Commission did not consider the submission on the ground that it was made after the Public hearing. In this context Review Petitioner would like to submit that on grounds of fairness, natural justice and the financial implication of the order on the financial health of Review Petitioner, the submission of Review Petitioner may kindly be considered. Further during the TVS which were held after the public hearing Review Petitioner*

*submitted the information desired by the Hon'ble Commission and the same was subsequently considered by the Hon'ble Commission in the order. There are no specific provisions either in the Conduct of Business Regulations or MYT Regulations 2011 of the Hon'ble Commission which prohibit the consideration of submission made after the public hearing particularly when the submission is of considerable importance.*

*The values of NAPAF submitted vide this Additional Submission were based on 10-daily inflows as per the Method –I submitted in the Business Plan. The earlier values of NAPAF proposed by Review Petitioner in the Business Plan were basically Plant Availability values irrespective of the availability of water.*

*Review Petitioner requests Hon'ble Commission to kindly consider the values of NAPAF submitted vide Additional Submission dated 08.04.2013. Also, separate mechanism for recovery of Capacity Charges (CC) for Ramganga Power Station may be provided as Power generation from Ramganga Power Station depends upon the water release from Ramganga Dam as per directions of UP Irrigation Department. As such, Capacity Charges for Ramganga Power Station will not be recovered in a judicious way.*

*Also, since RMU of Khatima Power Station is under progress and one unit shall be under outage during the entire control period, so NAPAF for Khatima Power Station may kindly be taken as its 2/3 rd value for calculation of Capacity Charges.*

*Also, vide letter no. 2301/MD/UJVNL/U-6 dated 15.04.2013, Review Petitioner had submitted that the NAPAF computed in the Business Plan petition dated 24.01.2013 is based on machine availability whereas the submission made on dated 08.04.2013 is based on water availability.*

*It is further kindly requested to Hon'ble Commission to consider revised computations as submitted on dated 08.04.2013 as determination of normative availability is being done for the first time and recovery of fixed cost would depend on the achievement of the normative availability.*

*It is also to kindly submit that the concept of NAPAF is being introduced to Review Petitioner for the first time and as such the Hon'ble Commission is very kindly requested to take a lenient view for Review Petitioner for the fixation of NAPAF.*

*Since the NAPAF determination is provisional, the Hon'ble Commission is also requested to make provisions for recovery of entire approved AFC of Review Petitioner so that there is no financial loss to Review Petitioner.*

*Review Petitioner requests Hon'ble Commission that the revised NAPAF calculation*

*submitted in the Petition vide letter no. 2139/MD/UJVNL/U-6 dated 08.04.2013 which are mentioned below, may kindly be considered and approved by Hon'ble Commission.*

| ***Sl. No.*** | ***Name of the Plant*** | ***NAPAF calculated as per 90% dependable year*** |
|---|---|---|
| *1.* | *MB-I* | *50%* |
| *2.* | *Chibro* | *29%* |
| *3.* | *Dhakrani* | *44%* |
| *4.* | *Dhalipur* | *45%* |
| *5.* | *Khodri* | *30%* |
| *6.* | *Kulhal* | *49%* |
| *7.* | *Chilla* | *65%* |
| *8.* | *Khatima* | *67% (44% in view of RMU)* |
| *9.* | *Ramganga* | * |
| *10.* | *MB-II* | *59%* |

** Note: For computation of NAPAF for Ramganga, UJVN Ltd. has provided the principle in the Business Plan. The MYT Regulations 2011 do not prescribe any Principle for computation of NAPAF for such type of Hydro Generating Plant.*

Further, the Petitioner vide its letter No. 4619/MD/UJVNL dated 29.07.2013 made a submission requesting the Commission to revise the NAPAF proposed in its Review Petition and approve the NAPAF of its Large Hydro Plants as follows:

| **Sl. No.** | **Name of Plant** | **Proposed PAF** |
|---|---|---|
| 1 | Chibro | 59% |
| 2 | Khodri | 52% |
| 3 | MB-I | 68% |
| 4 | MB-II | 52% |
| 5 | Ramganga | 19% |
| 6 | Dhakrani | 42% |
| 7 | Dhalipur | 41% |
| 8 | Kulhal | 47% |
| 9 | Chilla | 59% |
| 10 | Khatima | 28% |

For its Storage and Pondage type plants, the Petitioner cited provisions of UERC Tariff Regulations, 2011 and proposed the revised value of NAPAF under operational constraints elaborated in the submission/enclosures.

For its Run of River (RoR) type plants, the Petitioner submitted the detailed methodology for computation of NAPAF, which has been derived for its Large Power Stations on the basis of 10 daily discharge data of 90% dependable year on the data-size ranging from 10 years to 18 years.

In its submission, the Petitioner has submitted that the NAPAF set by UERC is on the higher side than the actual PAF achievable by these plants. Since the fixed cost recovery of the plants is dependent on PAF achieved by these plants and NAPAF fixed by the Commission is significantly higher than the PAF that can actually be achieved by the plants, it is resulting in significant under recovery of fixed charges. This under recovery of fixed charges is affecting the cash flow of the Petitioner adversely and is undermining its financial position. Further, the Petitioner submitted that due to these reasons it would not be able to undertake regular O&M and invest in new plants which will adversely affect the Power Sector of the State.

The Petitioner, in support of its above submission has submitted a table showing Plant-wise recovery of the AFC with achievable NAPAF w. r. t. the Approved NAPAF as follows:

| Sr. No. | Plant | AFC allowed by the Commission (Rs. in Crores) | 50% of recovery of AFC through Capacity Charges (Rs. in Crores) | NAPAF approved by the Commission in Tariff Order dated 06.05.2013 | Achievable NAPAF | Recoverable AFC on the basis of NAPAF approved by the Commission |
|---|---|---|---|---|---|---|
| 1 | Chibro | 43.28 | 21.64 | 85% | 59% | 69.41% |
| 2 | Khodri | 25.85 | 12.925 | 85% | 52% | 61.18% |
| 3 | MB-I | 40.42 | 20.21 | 85% | 68% | 80% |
| 4 | MB-II | 219.3 | 109.65 | 85% | 52% | 61.18% |
| 5 | Ramganga | 23.63 | 11.815 | 85% | 19% | 22.35% |
| 6 | Dhakrani | 10.64 | 5.32 | 77% | 42% | 54.55% |
| 7 | Dhalipur | 16.06 | 8.03 | 77% | 41% | 53.25% |
| 8 | Kulhal | 9.77 | 4.885 | 77% | 47% | 61.04% |
| 9 | Chilla | 44.03 | 22.015 | 76% | 59% | 77.63% |
| 10 | Khatima | 12.13 | 6.065 | 78% | 28% | 35.90% |

The Petitioner has submitted that the impact of NAPAF has a significant role on the recovery of its fixed cost and therefore, requested the Commission to take a holistic sector view and provide for the recovery of its entire approved AFC.

Further, the Petitioner made a submission under affidavit vide its letter No. 4768/MD/UJVNL/U-6 dated 06.08.2013 giving the details pertaining to calculation of Plant Availability Factor per Month (PAFM) alongwith average annual PAF for the F.Y. 2008-09 to F.Y. 2012-13 for its 10 LHPs.

### 2.12.2 Respondent's (UPCL) Submission

The Commission sent the submissions of the Petitioner to UPCL for its comments and UPCL submitted that it agreed with the submission of UJVN Ltd. that it was unable to recover the annual fixed cost pertaining to capacity charges owing to fixation of NAPAF on the higher side. UPCL also submitted that any revision if required to be done in NAPAF based on the revised submission of UJVN Ltd. should be only done in the manner that UJVN Ltd. is able to recover its cost in case of maintaining a healthy PAFM and penalized for poor PAFM. UPCL also submitted that from the submission made by UJVN Ltd. it can be interpreted that it has provided reasons for non-availability of plants, however, it is not clear as to why the revised NAPAF has been calculated by it from normative PAF of 85% for storage and pondage type of plants and not from 100% when all the factors for the outage has been considered. UPCL requested the Commission to consider this aspect while determining the revised NAPAF for the plants.

### 2.12.3 Commission's Approach and Analysis

As per UERC Tariff Regulations, 2011, Plant Availability Factor (PAF) in relation to a generating station for any period means the average of daily Declared Capacities (DC) for all the days during that period expressed as a percentage of the installed capacity in MW reduced by normative auxiliary energy consumption.

Where, declared capacity (DC) in relation to a generating station means the capability to deliver ex-bus electricity in MW declared by such generating stations in relation to any time block of the day or whole of the day, duly taking into account the availability of fuel and water and subject to further qualification in the relevant Regulation.

Further, NAPAF in relation to a Hydro Generating Station means the availability factor specified in Regulation 51(1).

As per Regulation 51 (1) of UERC (Terms and Conditions of Determination of Tariff) Regulations, 2011, the norms of operation for Hydro generating stations w.r.t. NAPAF are as follows:

***"51. NORMS OF OPERATION FOR HYDRO GENERATING STATION***

*The norms of operation given hereunder shall apply:*

**(1)** *Normative Plant Availability Factor (NAPAF)*

| ***Particulars*** | ***Normative Plant Availability Factor*** |
|---|---|
| *Storage and Pondage type plants with head variation between Full Reservoir Level (FRL) and Minimum Draw Down Level (MDDL) of up to 8%, and where plant availability is not affected by silt* | *90%* |
| *Storage and Pondage type plants with head variation between FRL and MDDL of more than 8%, where plant availability is not affected by silt* | *Plant-specific allowance to be provided in NAPAF for reduction in MW output capability as reservoir level falls over the months. As a general guideline the allowance on this account in terms of a multiplying factor may be worked out from the projection of annual average of net head, applying the formula:*<br>*(Average head / Rated head) + 0.02*<br>*Alternatively in case of a difficulty in making such projection, the multiplying factor may be determined as:*<br>*(Head at MDDL/Rated head) x 0.5 + 0.52* |
| *Pondage type plants where plant availability is significantly affected by silt* | *85%* |
| *Run-of-river type plants* | *To be determined plant-wise, based on 10-day design energy data, moderated by past experience where available /relevant* |

*A further allowance may be made by the Commission in NAPAF determination under special circumstances, e.g., abnormal site problem or other operating conditions, and known plant conditions.*

*Provided that in case of new hydro generating station the developer shall have the option of approaching the Commission in advance for fixation of NAPAF based on the principles enumerated in the table above.*

*Provided further that Generating Companies shall submit plant wise NAPAF alongwith the detailed calculations and reasons thereof as per the guidelines for calculation of NAPAF as laid down in Appendix - III to these Regulations, for seeking approval of the Commission."*

Relaxation in calculation of NAPAF provided in Regulation 51(1) of UERC Tariff Regulations, 2011, specifies further allowances which can be allowed by the Commission in determination of NAPAF under special circumstances, e.g., abnormal site condition or other operating conditions, and known plant conditions.

Further, as per proviso 2 of above Regulations the Petitioner has submitted plant-wise NAPAF, alongwith the detailed calculations and reasons thereof as per the guidelines for calculation of NAPAF as laid down in Appendix-III to the Regulations for seeking approval of the Commission. The guidelines for determination of NAPAF as stipulated in Appendix-III is being reproduced hereunder:

***"Appendix - III***

***Guidelines for Determination of Normative Annual Plant Availability Factor (NAPAF) of various Hydro Generating Stations***

*[Refer to second proviso to Regulation 51(1)]*

*Normative Annual Plant Availability Factor (NAPAF) of various Hydro Generating Stations shall be determined based on following criteria /guidelines:*

*(i) Storage and pondage type plants with head variation between Full Reservoir Level (FRL) and Minimum Draw Down Level (MDDL) of up to 8% and where plant availability is not affected by silt : 90%*

*(ii) In case of Storage and pondage type plants with head variation between Full Reservoir Level and Minimum Draw Down Level of more than 8% and where plant availability is not affected by silt, the month wise peaking capability as provided by the project authorities in the DPR (approved by CEA or the State Govt.), shall form basis of fixation of NAPAF.*

*This has been explained with the following example,*

*Installed capacity: 4x250 MW*

| ***Month*** | ***Expected Avg. of daily 3-hour peaking capacity*** |
|---|---|
| *April* | *701* |
| *May* | *448* |
| *June* | *133* |
| *July* | *497* |
| *August* | *544* |
| *September* | *990* |
| *October* | *1000* |
| *November* | *1000* |
| *December* | *1000* |
| *January* | *1000* |
| *February* | *1000* |
| *March* | *693* |

*Weighted average of expected daily peaking capability= 790 MW*

*Peaking capacity is based on the assumption that one unit shall be under annual maintenance during month of May, July, February and March.*

*Considering 2% allowance on plant capacity on account of forced outages during the year, expected average peaking capacity= 770 MW*

*Thus, NAPAF= 770/1000= 77%*

*Pondage type plants where plant availability is significantly affected by silt, a margin of 5% has been allowed and NAPAF shall be 85%*

*(iii) In case of purely Run-of-river type plants, NAPAF shall be determined plant wise, based on its 90% dependable 10-daily inflows pattern as approved in the DPR of the project.*

*(iv) A further allowance may be made by the Commission while determining the NAPAF under special circumstances i.e. abnormal silt problem or other operating conditions and known plant limitations.*

*(v) When head variation between FRL and MDDL is more than 8%, following multiplying factors shall be applied:*

*Multiplying factor for head variation = (Head at MDDL/Rated Head) x 0.5+ 0.52"*

For the determination of the NAPAF of the Petitioner's generating stations for FY 2013-14 to 2015-16, the Commission would take a realistic view considering the submission of both the Petitioner and the Respondent in accordance with provisions in UERC Tariff Regulations, 2011, the Statement of Reasons thereon and actual operating conditions.

While fixing NAPAF for Central Sector Power Plants, CERC has also considered the actual operating condition and constraints of power stations individually. Based on the practical difficulties and known operational constraints of the Central Generating Stations, CERC has made an allowance while determining the NAPAF for the individual stations and fixed the same for pondage and storage type stations which varies from 69% to 90% and for RoR stations NAPAF of 60% in case of Salal and Uri stations and 55% for Tanakpur station. List of some of NHPC/NEEPCO stations alongwith NAPAF approved by CERC are presented below:

| Name of NHPC/NEEPCO | Type of Plant | NAPAF Approved |
|---|---|---|

| Power Station | | by CERC |
|---|---|---|
| Uri | RoR | 60% |
| Salal | RoR | 60% |
| Tanakpur | RoR | 55% |
| Chamera-I | Pondage | 90% |
| Loktak | Storage | 85% |
| Kopili | Pondage | 79% |
| Khandong | Pondage | 69% |
| Doyang | Pondage | 73% |

The Commission takes cognisance of para 33 of CERC (Terms and Conditions of Tariff) Regulations, 2009, Statement of Objects and Reasons, wherein the NAPAF of Central sector Power Stations has been determined based on past performance, constraints in operation of power stations. Accordingly while approving NAPAF for UJVN Ltd. Station, the Commission has adopted approach similar to CERC and considered the actual operating conditions, constraints of the power stations individually and the past performance of the stations while fixing NAPAFs of the Petitioner's large power stations.

UPCL in its response has submitted that if any relaxation/concession in NAPAF has to be allowed, the original NAPAF should be taken as 100% and should be reduced by the relaxation/concession deemed fit by the Commission. In this regard, the Commission would like to draw the attention to Regulation 51(1) of UERC Tariff Regulations, 2011, where for pondage type plants NAPAF is taken as 85% or 90% depending on whether the plant is affected by silt or not & any allowances based on special circumstances is considered on the same. The contention of Respondent is totally frivolous as every generating plant has to undergo annual maintenance and faces scheduled and unscheduled outages. The provisions in the regulations in the regulations take these into account. Hence, in light of the same, the contention of UPCL does not hold merit.

Based on submissions of the Petitioner, plant-wise detailed scrutiny has been carried out and the analysis is as follows:

### 2.12.3.1 CHIBRO HEP (4x60 MW)

2.12.3.1.1 It has been submitted by the Petitioner that:

(a) Chibro HEP has an FRL of 644.75 m, MDDL of 638.00 m, TWL of 518.5 m and a rated head of 110 m.

(b) According to the approvals regarding discharges through Flushing conduits and Head Race Tunnel from Ichari Dam the salient features are as under:

(i) The intake capacity of Ichari Dam as per design is 250 cumecs and out of this a maximum discharge, which can be passed through three flushing conduits is 75 cumecs (3x25 cumecs). Accordingly, during monsoon period, a tunnel discharge of 225 cumecs is to be passed into H.R.T. and total 25 cumecs through flushing conduits i.e. approximately 8 cumecs through each, when the silt load is upto 1500 ppm. As a further safety measure, each flushing conduits shall be operated by rotation to its full capacity of 25 cumecs for at least 30 minutes every day. At that time the total flushing discharge through flushing condition would be about 41 cumecs (25+8+8 cumecs) and remaining discharge of 209 cumecs, shall be passed into HRT, for a total period of 90 minutes, in a day.

(ii) When the PPM are more than 1500 and upto 2000, the rotational operation time to full capacity of each flushing conduit (25 cumecs) shall be increased from 30 minutes to 60 minutes, in two spells of 30 minutes each. At that time the total flushing discharge through flushing conduits shall be 41 cumecs (25+8+8 cumecs) and remaining discharge of 209 cumecs shall be passed into H.R.T., for a total period of 180 minutes in a day.

(iii) When the PPM are more than 2000 and upto 3000, the rotational operation time to full capacity of each flushing conduit (25 cumecs) shall be increased from 60 minutes to 90 minutes, in three spells of 30 minutes each. At that time the total flushing discharge through flushing conduits shall be 59 cumecs (25+17+17 cumecs) and remaining discharge of 191 cumecs shall be into HRT, for a total period of 270 minutes, in a day. Normally each flushing conduit shall be run for full discharge of 25 cumecs for 90 minutes in a day.

**Note :** However, during this period of operation, as per para (i), (ii) and (iii) above, if flushing discharge falls through any conduit, indicating partial choking, then immediate steps will be taken to operate the flushing conduits to full capacity (25 cumecs) passing a total discharge of 75 cumecs through all the three flushing conduits and remaining 175 cumecs into HRT. Specially during monsoon and at higher silt loads coming in river, a close and alert vigil shall be done to watch any reduction in flushing discharge. If any abnormality is detected,

immediate steps / orders of Assistant Engineer / Executive Engineer shall be sought.

(iv) When the PPM are less than 3000 and river discharge upto 1415 cumecs (49,970 cusecs), all the three flushing conduits shall remain fully open, discharge about 75 cumecs and remaining discharge equal or less than 175 cumecs into HRT, keeping other operational constraints in view.

(v) When the PPM are more than 3000 or the river discharge exceeds 1415 cumecs, the Power House shall be closed and all the Intake gates & Flushing Conduit gates shall be closed and the entire discharge will be passed over the spillways.

(vi) During Monsoon or Non-monsoon period, when river discharge is upto 225 Cumecs, the flushing conduits may be kept closed, but flushing of hoppers through flushing conduits shall be done weekly or at short intervals, for at least 15 minutes, if found necessary depending upon silt load.

(vii) Reservoir levels shall be maintained as below, for different river discharges.

| **River Discharges** | **Reservoir Levels** |
|---|---|
| Upto 250 Cumecs | 644.75 M. |
| 250-300 Cumecs | 644.00 M. |
| 300-400 Cumecs | 643.50 M. |
| 400-600 Cumecs | 643.00 M. |
| 600-700 Cumecs | 642.50 M. |
| 700-900 Cumecs | 641.50 M. |
| 900-1400 Cumecs | 640.00 M. |

(c) The Petitioner also submitted that as agreed between it and Irrigation Deptt., the water carrying capacity of the tunnel was restricted to 200 cumecs for safety of tunnel (copy enclosed as Annexure-2), as a result of which the load is restricted up to 185 MW only i.e. 77.08 % of the installed capacity.

(d) The Petitioner mentioned that efforts were made to harness higher potential of Tons River by allowing more water into the HRT at the Ichari Dam during the month of September 2011 and during periodic inspections afterwards it was found that number of trash racks had been deteriorated. Thereafter to avoid the risk of damages to civil structures, higher drawl of water into the HRT was not allowed.

(e) The Petitioner submitted that during monsoon there is heavy inflow of trash and debris, which causes choking at the Trash Rack & head loss. The generation from

the plant goes on decreasing as the head loss increases. The upper limit of the head loss is 2.8 m and beyond this shutdown of Power Station is required for clearing of debris/trash. On an average, 8-10 flushings of 8 hrs each during monsoon months are carried out which implies a shutdown of approx. 78 hours in a year (99.11 % availability).

(f) Further, during monsoon, there is high concentration of silt in the water of river Tons, because of which underwater parts of the machines get eroded and, therefore, to contain erosion, Chibro HEP is allowed to operate at the maximum limit of 3000 PPM and the plant is shut down if the PPM is more than 3000.

(g) Moreover, during monsoon, floods/high river discharges are to be passed into the Tons River. This happens for about 154 hours in a year (98.24 % availability). The discharge increases the water level at the tail race outlet of Chibro power Station. For ensuring safety of the plant against flooding through Tail Race, outlet gates of Chibro HEP are closed and power house is kept under shutdown at 519 m or more level.

(h) Besides the above, due to space constraints in two tier switchyard at Chibro, in case of maintenance activities is performed in the switchyard, shutdown of the line equipments in the vicinity is required to ensure safety against live equipment for one day in year (99.73 % availability).

(i) Accordingly, the Petitioner requested the Commission to consider the NAPAF of (85 % x 0.7708 x 0.9911 x 0.9824 x 0.9973) or say 64 %.

(j) The Petitioner further requested the Commission to consider an additional allowance of 5% in PAF and approve NAPAF of 64%-5%= 59% for Chibro HEP in view of the fact that due to long operation of 38 years, the conditions of generating Units, their auxiliaries, instruments and control equipment have deteriorated. The wear and tear of the machines has also increased over the period of time which has reduced the efficiency of the machines.

(k) Further, the Petitioner made a submission under affidavit vide its letter No. 4768/MD/UJVNL/U-6 dated 06.08.2013 giving the details pertaining to calculation of Plant Availability Factor (PAF) with average annual PAF for the period F.Y. 2008-09 to F.Y. 2012-13 for Chibro HEP as follows:

**Actual PAF data for 2008-09 to 2012-13 for Chibro HEP**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 45.90 | 51.95 | 71.86 | 76.92 | 77.98 | 77.86 | 71.28 | 63.26 | 50.95 | 41.22 | 31.18 | 29.17 | **57.46** |
| 2 | **2009-10** | 40.35 | 38.71 | 40.76 | 61.30 | 61.48 | 64.67 | 44.42 | 38.75 | 35.62 | 35.89 | 34.82 | 36.56 | **44.44** |
| 3 | **2010-11** | 38.54 | 43.75 | 55.63 | 72.15 | 70.12 | 65.42 | 69.83 | 51.88 | 41.06 | 37.63 | 34.90 | 37.63 | **51.54** |
| 4 | **2011-12** | 40.78 | 60.82 | 64.71 | 78.83 | 73.01 | 79.54 | 51.21 | 45.83 | 35.69 | 34.48 | 34.04 | 39.99 | **53.24** |
| 5 | **2012-13** | 41.67 | 46.84 | 56.53 | 66.13 | 82.03 | 76.68 | 50.54 | 39.44 | 34.68 | 36.29 | 58.04 | 54.10 | **53.58** |
| 6 | **Avg. 2008-09 to 2012-13** | **41.45** | **48.41** | **57.90** | **71.07** | **72.92** | **72.83** | **57.45** | **47.83** | **39.60** | **37.10** | **38.59** | **39.49** | **52.05** |

From the above table it is observed that the five years' average annual PAF comes out as **52.05%.**

**2.12.3.1.2 Commission's View**

From the Petitioner's submission it has been observed that the head variation between FRL (644.75 M) and MDDL (638.00 M), and a rated head of 110 M, the head variation of the plant is upto 8%. In accordance with Regulation 51(1) of UERC Tariff Regulation, 2011 for storage and pondage type plant with head variation between FRL and MDDL of upto 8% and where plant availability is significantly affected by silt the NAPAF has been fixed as 85%.

The Commission has taken cognisance of the Petitioner's submission that plant faces problems which occur during rainy season in terms of flood pass, high PPM content, silt problem, flushing and choking to name a few, since river Tones carries heavy trash, debris and high concentration of silt during monsoon season thereby restricting the operations of the plant significantly during the season resulting in appreciable reduction of plant availability. As per Petitioner's submission, on account of the aforesaid reasons, the Petitioner resorts to the forced shutdown of about (78+154)=232 hours during monsoon in a year which works out to be 9.7 days annually. However, the Commission is of the view, that since UERC Tariff Regulations, 2011 already provide for further reduction of 5% in NAPAF for the storage & pondage type plants where plant availability is significantly affected by silt compared to such plants where the plant availability is not affected by silt. Translating this margin/allowance into days in a year, it works out to be 18.25 number of days in a year. Based on the above, the Commission does not find reason to grant any further allowance beyond the margin already provided in the Regulations.

The Petitioner has further referred to minutes of meeting dated 07.06.2004 held

with the Irrigation Deptt. Wherein considering the safety of HRT tunnel, restriction of discharge upto 200 cumecs has been divided on water carrying capacity of the tunnel. Consequent to the above discharge constraints, the plant is capable of generating the maximum power 185 MW. The Petitioner has also submitted copy of an Office Order no. 7791 dated 30.06.2000 of Chief Engineer, Yamuna Valley Project, Irrigation Department, Uttarakhand in this regard. The Petitioner has further submitted that due to the above restrictions, the load of the plant is restricted upto 185 MW which works out to 77.08% of the installed capacity(i.e. 240MW) of the HEP. Considering the above submission, the Commission is of the view that these are genuine operational constraints limiting the load (MW) capacity of the plant and admits that the claim of the Petitioner for revision/re-determination of NAPAF for Chibro HEP in accordance with the 1st proviso of the Regulation 51(1) of UERC Tariff Regulation, 2011 is reasonable. Accordingly, the plant is able to generate maximum of 185MW on this account and factoring the same allowance can be considered reducing the specified NAPAF for the plant

As far as O&M issues like maintenance of switchyard/machines/ control equipments are concerned, the Commission is of the view that the Petitioner may plan for such maintenances so that it does not affect the generation adversely and impact of such activities cannot restrict the plant operation/generation. Further, to put in perspective, the request of the Petitioner for an allowance of 5% due to ageing of machines and its auxiliaries/control equipments, it is seen that the regulations allow a ten percent allowance for maintenance, forced shut down etc. and require them to obtain 90% NAPAF as normative, while it is agreed that after a life of 38 years higher maintenance requirement, efficiency reduction, more forced outages are inevitable, action needed to minimise them prima-facie, have not been taken in real earnest. With this in view, the Commission decides to permit them the allowance of 5% sought for the first year of the Control period. For each subsequent year this allowance would be reduced by 1% which they need to recoup by efficiency improvement.

Based on the above, the Commission approves NAPAF for Chibro HEP as 85%x0.77x0.95=62.17% say 62% for FY 2013-14, 85%x0.77x0.96=62.83% say 63% for FY 2014-15 & 85%x0.77x0.97=63.49% say 64% for FY 2015-16. Accordingly, NAPAF being approved for the Control Period for this plant is:-

| FY2013-14 | FY2014-15 | FY2015-16 |
|---|---|---|
| 62% | 63% | 64% |

### 2.12.3.2 KHODRI HEP (4X30 MW)

2.12.3.2.1 It has been submitted by the Petitioner that:

(a) Chibro (4x60 MW) & Khodri (4x30 MW) Power Stations operate in tandem. The water discharged from Chibro Power Station is collected in collection gallery from which it is drawn into the tunnel of Khodri Power Station for power generation. The water level in collection gallery of Chibro is maintained at 518.5 m or higher levels. The Tail Race Channel level at Khodri Power Station normally varies between 454.5 m to 455 m depending upon water level of Dakpathar Barrage.

The Power output of a power house depends on the discharge and on the net head available at the powerhouse. In a tunnel, however the head loss increases with discharge so that the net head decreases at a very fast rate with increasing discharge.

(b) The Petitioner further submitted that rated head of Khodri Power Station is 57.9 m. The water level of Surge Tank at Khodri Power Station goes down to approx. 503 m due to increased head loss at tunnel discharge of 200 cumecs. This results in net available head of approx. 48 m (reduction of approx. 10 m head) due to frictional losses in the water path specially in following regions:

(i) HRT diameter variation between 7m to 7.5m at various places.

(ii) Trifurcation of HRT in the Kalawar thrust zone and its reunion.

(iii) Two pressure shafts followed by 2 penstocks in each instead of 4 independent penstocks.

Above reasons immensely affect the power generation by units.

(c) The Petitioner submitted that restriction of water carrying capacity of the tunnel (200 cumecs) is also applicable for Khodri Power Station as Chibro & Khodri power stations operate in tandem. As a result, maximum load at Khodri Power Station is restricted up to 83 MW only (69.17 % of the installed capacity).

(d) Further, during monsoon there is a heavy inflow of trash and debris, which causes choking at the Trash Rack & head loss at Ichari Dam site. The generation from Chibro Power Station goes on decreasing as the head loss increases. Accordingly, there is corresponding reduction in generation from Khodri Power

Station. The upper limit of the head loss is 2.8 m and beyond this shutdown of Power Station is required for clearing of debris/trash. On an average, 8-10 flushings of 8 hrs each during monsoon months are carried out, i.e. a shutdown of 78 hours in a year (99.11 % availability).

(e) Moreover, during monsoon, floods/high river discharges are to be passed into the Tons River. This happens for about 154 hours in a year (98.24 % availability). The discharge increases the water level at the tail race outlet of Chibro power Station. For ensuring safety of the plant against flooding through Tail Race, outlet gates of the Chibro HEP are closed and powerhouse is kept under shutdown at 519 m or more level. Khodri also remains under shutdown as these power stations operate in tandem. In addition, there is high concentration of silt in the water of river Tons and due to this, underwater parts of the machines get eroded and therefore to contain erosion, Khodri HEP is allowed to operate at the maximum limit of 3000 PPM and the plant is shut down if the PPM is more than 3000 .

(f) Further, during monsoon the tail race level of Khodri power station goes upto 456 m, the effective head is further reduced by approx. 1 m which is 2.08% of net head of 48 meter. Considering higher tail race level during 3 months of high discharge in Tons & Yamuna rivers, reduction of 0.52 % can be considered (Availability of 99.48 %).

(g) Accordingly, the Petitioner requested the Commission to consider NAPAF of (85 % x 0.6917 x 0.9911 x 0.9824x 0.9948) or say 57 %.

(h) The Petitioner further requested the Commission to consider an additional allowance of 5% in NAPAF and approve it as 57%-5%=52% for Khodri HEP in view of the fact due to long period of operation (approx. 30 years) of units as no major/capital maintenance of the machines has been carried out at Khodri Power Station after commissioning in the year 1984. The wear and tear of the underwater parts of the machines has increased over the period of time which has reduced the efficiency of the machines.

Further, the Petitioner made a submission under affidavit vide its letter No. 4768/MD/UJVNL/U-6 dated 06.08.2013 giving the details pertaining to calculation of Plant Availability Factor with average annual PAF for the F.Y. 2008-09 to F.Y. 2012-13 for Khodri HEP as follows:

**Actual PAF data for 2008-09 to 2012-13 for Khodri HEP**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 45.89 | 50.97 | 65.33 | 67.93 | 69.52 | 67.31 | 64.84 | 58.56 | 48.39 | 40.35 | 31.58 | 29.54 | **53.35** |
| 2 | **2009-10** | 39.25 | 38.12 | 39.67 | 55.62 | 56.45 | 57.42 | 42.31 | 36.97 | 33.92 | 33.84 | 32.83 | 34.81 | **41.77** |
| 3 | **2010-11** | 36.36 | 41.53 | 51.64 | 61.48 | 61.34 | 58.58 | 62.85 | 48.58 | 38.52 | 35.27 | 33.01 | 35.78 | **47.08** |
| 4 | **2011-12** | 38.50 | 55.81 | 58.47 | 68.84 | 64.73 | 69.25 | 47.77 | 42.92 | 33.66 | 32.39 | 32.39 | 37.53 | **48.52** |
| 5 | **2012-13** | 39.56 | 44.76 | 53.03 | 60.27 | 69.92 | 66.89 | 47.88 | 37.69 | 33.36 | 34.65 | 52.26 | 50.91 | **49.26** |
| 6 | **Avg. 2008-09 to 2012-13** | **39.91** | **46.24** | **53.63** | **62.83** | **64.39** | **63.89** | **53.13** | **44.94** | **37.57** | **35.30** | **36.41** | **37.72** | **48.00** |

**2.12.3.2.2 COMMISSION'S VIEW**

From the Petitioner's submission it has been observed that Chibro and Khodri HEP operates in tandem and discharge limitation at Chibro HEP directly affects the power output of Khodri HEP, therefore, constraint on this account is also applicable to Khodri HEP. On the restricted discharge of 200 cumecs from Ichari dam maximum load at Khodri HEP is restricted to 83 MW in place of the installed capacity of 120 MW.

The Commission has taken cognisance of the Petitioner's submission that since Chibro and Khadri HEPs are in tandem, therefore, similar to Chibro HEP, Khodri HEP faces problems which occur during rainy season in terms of flood pass, high PPM content, silt problem, flushing and choking, since river Tones carries heavy trash, debris and high concentration of silt during monsoon season thereby restricting the operations of the plant significantly during the season resulting in appreciable reduction of plant availability. As per Petitioner's submission, on account of the aforesaid reasons, the Petitioner resorts to the forced shutdown of about (78+154)=232 hours during monsoon in a year which works out to be 9.7 days annually. However, the Commission is of the view, that since UERC Tariff Regulations, 2011 already provide for further reduction of 5% in NAPAF for the storage & pondage type plants where plant availability is significantly affected by silt compared to such plants where the plant availability is not affected by silt. Translating this margin/allowance into days in a year, it works out to be 18.25 number of days in a year. Based on the above, the Commission does not find reason for any further allowance beyond the margin already provided in the Regulations.

As far as O&M issues like maintenance of machines/other equipments are concerned, the Commission is of the view that the Petitioner may plan for such maintenances so that it does not affect the generation adversely and impact of such activities cannot restrict the plant operation/generation. Further, to put in perspective,

the request of the Petitioner for an allowance of 5% due to ageing of machines and its auxiliaries/control equipments, it is seen that the regulations allow a ten percent allowance for maintenance, forced shut down etc. and require them to obtain 90% NAPAF as normative, while it is agreed that after a life of about 30 years higher maintenance requirement, efficiency reduction, more forced outages are inevitable, action needed to minimise them prima-facie, have not been taken in real earnest. With this in view, the Commission decides to permit them the allowance of 5% sought for the first year of the Control period. For each subsequent year this allowance would be reduced by 1% which they need to recoup by efficiency improvement.

Based on the above, the Commission approves NAPAF for Khodri HEP as 85%x0.69x0.95=55.71% say 55% for FY 2013-14, 85%x0.69x0.96=56.30% say 56% for FY 2014-15 & 85%x0.69x0.97=56.89% say 57% for FY 2015-16. Accordingly, NAPAF being approved for the Control Period for this plant is:-

| FY2013-14 | FY2014-15 | FY2015-16 |
|---|---|---|
| 55% | 56% | 57% |

**2.12.3.3 Maneri Bhali HEP (MB-I) (3x30MW)**

2.12.3.3.1 It has been submitted by the Petitioner that :

(a) MB-I HEP (3X30 MW) has an FRL 1294.50 m, MDDL of 1287.50 m, design head is 147.5 m & discharge is 71.4 cumecs. The power station harnesses potential of Bhaghirathi River. The River carries huge amount of silt during monsoon which contains pentangular shaped quartz particles having very high hardness. These particles cause severe erosion to the underwater parts of machines. The silt content of 10000 ppm or more is experienced during monsoon whereas the maximum limit is 2500 ppm upto which the plant can be operated. Therefore, the plant remains under shut down for approx. 33 days during monsoon period (90.96% availability). Floods/high river discharges are also passed into the Bhagirathi River during which the plant is kept under shutdown. Silt present in the river water also causes erosion to the Spherical Valve in MB-I. Shutdown of complete Power Station is required for major maintenance of spherical valves due to single surge tank gate resulting in lesser plant availability.

(b) The Petitioner also submitted that MB-I & MB-II are facing abnormal silt problem & are severely affected power stations among all LHPs of UJVN Limited. During Monsoon, the silt restricts the generation at the plants. The

generation from the plant goes on decreasing as the head loss increases due to choking of trash rack. The upper limit of the head loss is 1.0 m and beyond this shutdown of Power Station is required for clearing of debris/trash. Further, during monsoon, the higher discharge in river Bhagirathi carries large amount of trash and debris with it, due to which flushing at Maneri Dam is carried out resulting in complete shutdown of Power Station. 2 flushings of 4-5 hrs each during monsoon months are carried out, i.e. a shutdown of approx. 10 hours in a year.

(c) Moreover, in monsoon, during flood discharge in the river Bhagirathi, downstream gates of TRC of MB-I Power Station are required to be lowered. Huge silt deposition on top of Draft Tube gates has been observed in the past years due to flash floods etc. Removal of deposition of high silt requires more time & therefore Power Station remains under shutdown during this period.

(d) In addition, due to social obligations such as 'Snan' during various holy days/ festivals, more than the normal water has to be discharged in the river. This happens at least for 4-5 days in a year.

(e) Therefore, 5% reduction in availability is proposed on account of above factors (Availability 95 %).

(f) Accordingly, the Petitioner has submitted the Commission to consider the NAPAF of (85 % x 0.9096 x 0.9500) i.e. 73.45 %, say 73 %.

(g) The Petitioner further requested the Commission to consider an additional allowance of 5% in PAF and approve NAPAF of 73%-5%= 68% for MB-I HEP in view of the fact that due to long operation of 29 years, the conditions of generating Units, their auxiliaries, instruments and control equipment have deteriorated. The wear and tear of the machines has also increased over the period of time which has reduced the efficiency of the machines.

Further, the Petitioner made a submission under affidavit vide its letter No. 4768/MD/UJVNL/U-6 dated 06.08.2013 giving the details pertaining to calculation of Plant Availability Factor per Month (PAFM) with average annual PAF for the F.Y. 2008-09 to F.Y. 2012-13 for MB-I HEP as follows:

**Actual PAF data for 2008-09 to 2012-13 for MB-I Power Station (MB-I HEP)**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 76.48 | 92.11 | 77.78 | 35.48 | 0.00 | 55.56 | 98.57 | 76.67 | 66.67 | 66.67 | 66.67 | 66.67 | **64.94** |
| 2 | **2009-10** | 70.00 | 89.25 | 96.67 | 95.70 | 13.98 | 80.00 | 100.00 | 76.67 | 66.67 | 65.59 | 66.67 | 66.67 | **73.99** |
| 3 | **2010-11** | 83.33 | 100.00 | 100.00 | 86.02 | 9.32 | 88.89 | 100.00 | 87.78 | 66.67 | 66.67 | 66.67 | 62.37 | **76.48** |
| 4 | **2011-12** | 73.15 | 100.00 | 97.78 | 93.55 | 63.62 | 65.00 | 92.47 | 84.44 | 66.67 | 66.67 | 66.67 | 44.09 | **76.17** |
| 5 | **2012-13** | 71.85 | 92.22 | 100.00 | 87.85 | 5.38 | 77.78 | 73.30 | 68.89 | 66.67 | 66.67 | 66.67 | 34.77 | **67.67** |
| 6 | **Avg. 2008-09 to 2012-13** | **74.96** | **94.72** | **94.44** | **79.72** | **18.46** | **73.44** | **92.87** | **78.89** | **66.67** | **66.45** | **66.67** | **54.91** | **71.85** |

**2.12.3.3.2 COMMISSION'S VIEW**

From the Petitioner's submission it has been observed that the FRL and MDDL of the pondage of MB-I HEP are 1294.50 Metre and 1287.50 Metre respectively with a design head of 147.5 Metre. In accordance with Regulation 51(1) of UERC Tariff Regulations, 2011, the plant comes under the category of pondage type plant with head variations between FRL and MDDL upto 8% and where plant availability is significantly affected by silt, the NAPAF has been fixed as 85%.

The Commission has taken cognisance of the Petitioner's submission that the problems faced by MB-I HEP during rainy season in terms of flood pass, high PPM content, silt problem, flushing and choking to name a few, since the rivers originated from the Himalayan region carries huge amount of silt containing the particles of very high hardness, trash & debris with their flow during monsoon season, thereby restricting the operations of the plant significantly resulting in appreciable reduction of plant availability. As per Petitioner's submission, on account of the aforesaid reasons, the Petitioner resorts to the forced shutdown of about 33 days annually. The Commission acknowledges the Petitioner's submission that due to this forced closure, the plant availability reduced substantially. Further, giving due consideration to such restrictions, the Commission, in the UERC Tariff Regulations, 2011 has already provided a margin of 5% in NAPAF for the plants where plant availability is significantly affected by silt compared to such plants, where the plant availability is not affected by silt. Translating this margin/allowance into days in a year, it works out to be 18.25 number of days in a year. Based on the submission of the Petitioner, the Commission finds that a margin of 5% allowed in NAPAF in the UERC Tariff Regulations, 2011 for the plants facing such abnormal conditions is not sufficient and hence decides to allow an additional relaxation in availability of plant by 15 days including other factors like 'snan' etc. Translating these number of days into reduction

in availability, it works out to be 4% in a year. Therefore, the Commission allows a margin of further 4% allowance in plant availability and hence, additional allowance in NAPAF considering the above operational constraint/known plant condition/special circumstances for the purpose of determination of NAPAF.

As far as O&M issues like maintenance of machines/ control equipments are concerned, the Commission is of the view that the Petitioner may plan for such maintenances so that it does not affect the generation adversely and impact of such activities cannot restrict the plant operation/generation. Further, to put in perspective, the request of the Petitioner for an allowance of 5% due to ageing of machines and its auxiliaries/control equipments, it is seen that the regulations allow a ten percent allowance for maintenance, forced shut down etc. and require them to obtain 90% NAPAF as normative, while it is agreed that after a life of about 29 years higher maintenance requirement, efficiency reduction, more forced outages are inevitable, action needed to minimise them prima-facie, have not been taken in real earnest. With this in view, the Commission decides to permit them the allowance of 5% sought for the first year of the Control period. For each subsequent year this allowance would be reduced by 1% which they need to recoup by efficiency improvement.

Based on the above, the Commission approves NAPAF for MB-I HEP as 85%x0.96x0.95=77.52% say 77% for FY 2013-14, 85%x0.96x0.96=78.33% say 78% for FY 2014-15 & 85%x0.96x0.97=79.15% say 79% for FY 2015-16. Accordingly, NAPAF being approved for the Control Period for the plant is:-

| FY2013-14 | FY2014-15 | FY2015-16 |
|---|---|---|
| 77% | 78% | 79% |

**2.12.3.4 MB-II HEP (4x76MW)**

2.12.3.4.1 It has been submitted by the Petitioner that:

(a) The Petitioner has submitted that MB-II HEP (4X76 MW) has an FRL 1108.00 m, MDDL of 1103.00 m, design head is 247.5 m & discharge is 142 cumecs. The power station harnesses power potential of Bhaghirathi River. The River carries huge amount of silt during monsoon which contains pentangular shaped quartz particles having high hardness. These particles cause severe erosion to the underwater parts of machines. The silt content of 10000 ppm or more is experienced during monsoon whereas the maximum limit is 2500 PPM upto

which the plant can be operated. Floods/high river discharges are also passed into the Bhagirathi River during which plant is kept under shutdown. Therefore, plant remains under shut down for approximately 13 days during monsoon period (96.44 % availability).

(b) Further, during monsoon, the higher discharge in river Bhagirathi carries large amount of trash and debris with it, due to which frequent flushing at Joshiyara barrage are carried out resulting in complete shutdown of Power Station. 2-6 flushings of 4-6 hrs each during monsoon months are carried out ,i.e. a shutdown of 21 hrs in a year (99.77% availability).

(c) MB-I & MB-II are facing abnormal silt problem & severely affected power stations among all LHPs of UJVN Limited. During Monsoon, the silt restricts the generation at the plants. In addition, the generation from the plant goes on decreasing as the head loss increases due to choking of trash rack. The upper limit of the head loss is 1.0 m and beyond this shutdown of Power Station is required for clearing of debris/trash as given above.

(d) The power house is also closed for searching dead bodies of drowned people as & when requested by district authorities. It takes about 4 hours to empty the reservoir.

(e) During monsoon, when the reservoir level of Tehri HEP approaches 830 m, the net head available for machines reduces by 6 m for 3 months. As a result machines are operated at lesser capacity.

(f) Due to social obligations such as 'Snan' during various holy days/ festivals, more than the normal water has to be discharged in the river. This happens at least for 4-5 days in a year.

(g) Further, the failure of shaft seal is quite frequent in MB-II during monsoon due to heavy silt. Shutdown of complete machine is required for attending the fault. Also, there are other frequent breakdowns in Turbine during the monsoon period. This has resulted into frequent Breakdowns of machines, particularly in the last two years. This leads to shutdown of all machines for an average 7-8 days in a year during monsoon period. (Availability 98.08 %).

(h) Moreover, normal maintenance period of each machine is 60 days instead of 45 days due to extensive repair of major components of machines thereby

decreasing availability by 15 days for the power station. Due to erosion in underwater parts, turbine repairing time increases. (Availability 95.89 %).

(i) The Barrage level is restricted to 1104 m against FRL of 1108.0 m due to rehabilitation & resettlement problems at Joshiyara. Therefore, due to reduced Head, the Power Station is being operated at a lesser capacity. (Availability 98.38%)

(j) Due to water evacuation problem from the machines in the existing Tail Race Channel (TRC), full load on machines is not possible due to high vibrations in the machines. Due to this restriction, machines can't be run at full capacity. The combined effect is such that the capacity of MB-II is restricted to 280 MW (Availability 92.10 %).

(k) Accordingly, the Petitioner has submitted the Commission to consider the NAPAF (85 % x 0.9644 x 0.9977 x 0.9500 x 0.9808 x 0.9589 x 0.9838 x 0.9210) or say 66 %.

(l) The Petitioner also submitted that MB-II project was commissioned in March' 08 but it has been experiencing problems as enumerated above. The occurrence of faults due to high vibrations is predominant and project has not been able to achieve the design energy as envisaged in DPR and currently the capacity of MB-II has been restricted to 246 MW, i.e. further reduction of 34 MW w.r.t. installed capacity of 304 MW (Availability 88.82 %). Hence, for such reasons PAF further stands reduced to 58.62% (66% x 0.8882).

(m) Details of month wise performance of MB-II HEP based on actual load (MW) from FY 2008-09 to 2012-13, average annual PAFM is given below:

**Actual PAF DATA FOR 2008-09 TO 2012-13**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 45.12 | 68.93 | 84.45 | 67.58 | 1.93 | 60.34 | 60.82 | 40.70 | 35.87 | 36.25 | 35.68 | 36.18 | **47.82** |
| 2 | **2009-10** | 38.82 | 58.22 | 80.82 | 81.71 | 80.68 | 72.45 | 55.81 | 40.13 | 32.27 | 24.77 | 24.93 | 30.05 | **51.72** |
| 3 | **2010-11** | 43.10 | 62.88 | 81.52 | 91.84 | 66.85 | 71.77 | 72.62 | 45.80 | 36.03 | 36.29 | 35.31 | 35.76 | **56.65** |
| 4 | **2011-12** | 41.20 | 73.58 | 78.49 | 86.94 | 74.28 | 82.77 | 59.88 | 44.24 | 36.18 | 32.51 | 24.80 | 28.20 | **55.26** |
| 5 | **2012-13** | 40.61 | 57.92 | 81.28 | 81.15 | 45.03 | 74.39 | 46.25 | 30.35 | 25.06 | 24.62 | 27.26 | 33.11 | **47.25** |
| 6 | **Avg.** | **41.77** | **64.31** | **81.31** | **81.84** | **53.75** | **72.34** | **59.08** | **40.24** | **33.08** | **30.89** | **29.60** | **32.66** | **51.74** |

The Petitioner submitted that based on past performance of Maneri Bhali-II HEP the Average annual PAFM works out to 51.74% or say 52%.

(n) In view of all above and considering the practical difficulties and operational constrains, the Petitioner requested the Commission to allow NAPAF of 52%.

(o) Further, the Petitioner made a submission under affidavit vide its letter No. 4768/MD/UJVNL/U-6 dated 06.08.2013 reiterating the request that allow NAPAF of 52% on the basis of calculation of Plant Availability Factor per Month (PAFM) with average annual PAF for the F.Y. 2008-09 to F.Y. 2012-13 for MB-II HEP.

**2.12.3.4.2 COMMISSION'S VIEW**

From the Petitioner's submission, it has been observed that the FRL and MDDL of the pondage of MB-II HEP are 1108.00 Metre (1104 Meter due to Barrage level restriction) and 1103.00 Metre respectively with a design head of 247.5 Metre. In accordance with the Regulation 51(1) of UERC Tariff Regulations, 2011, the plant comes under the category of pondage type plant with head variations between FRL and MDDL upto 8% and where plant availability is significantly affected by silt, the NAPAF has been fixed as 85%.

The Commission has taken cognisance of the Petitioner's submission that the problems faced by MB-II HEP during rainy season in terms of flood pass, high PPM content, silt problem, flushing and choking to name a few, since the rivers originated from the Himalayan region carries huge amount of silt containing the particles of very high hardness, trash & debris with their flow during monsoon season, thereby restricting the operations of the plant significantly resulting in appreciable reduction of plant availability. As per Petitioner's submission, on account of the aforesaid reasons, the Petitioner resorts to the forced shutdown of about 13 days annually. However, the Commission is of the view, that since UERC Tariff Regulations, 2011 already provide for further reduction of 5% in NAPAF for the storage & pondage type plants where plant availability is significantly affected by silt compared to such plants where the plant availability is not affected by silt. Translating this margin/allowance into days in a year, it works out to be 18.25 number of days in a year. Based on the above, the Commission does not find reason for any further allowance beyond the margin already provided in the Regulations.

Further, the petitioner has sought an additional allowance for annual maintenance stating that the high head of this power station coupled with high influx of silt and debris causes substantial erosion/damage to the underwater parts and this

requires extended period for repairs/maintenance. It has been stated that normal maintenance period of machines is 60 days in place of 45 days. The basis of 45 days has not been elaborated. The Petitioner has also submitted the period of shutdown during annual maintenance of various machines during the last five years. It is seen that the average shutdown is about 70 days.

As per regulation, pondage type plants are allowed a window of 10% within which they are expected to accommodate their annual maintenance and other forced outages. This translates to 36.5 days in a year. Taking about 35 days for annual maintenance, as per their contention they are consuming 25 days more in annual maintenance. Their this contention is also borne out by past records. On an "as is" basis, they qualify for an additional allowance of 7%. It is however mentioned that such extended maintenance schedules are difficult to accept. The petitioner needs to have a fresh look on the processes involved and the time frame thereof with a view to substantially curtail the period taken without affecting the quality of repairs. In view of this, Commission allows 7% reduction in the availability on this account which will be reduced by 2% in each the subsequent years of this control period.

The Commission acknowledges the Petitioner's submission that restriction of the level of Joshiyara barrage to 1104 Metre against FRL of 1108 Metre due to rehabilitation and resettlement problem near the barrage. And due to this reduced head, the power station is being operated at a lesser capacity. In this regard, the Commission is of the view that rehabilitation and resettlement problem can be resolved in co-ordination with local authorities and the Petitioner should make all efforts to finalise the matter at the earliest. However, taking lenient view in the matter, the Commission decides to consider the factor of low generation due to reduced head and recognises the constraints as operational limitation. Therefore, based on the Petitioner's submission, the Commission agrees that the availability of the MB-II HEP as 98.38% and allows an additional allowance in NAPAF of MB-II HEP on account of this factor.

Further, the Commission is of the view that the impact of this reduced head will affect the generation only upto the rehabilitation and resettlement problem is over, therefore directs the Petitioner to coordinate with the concerned authorities and make its all efforts to resolve the issue within certain timeframe without further delay and submit a quarterly progress report to the Commission. Relaxation to this effect shall only be applicable till the matter is resolved.

The Commission has taken cognizance of the Petitioner's submission that due to existing configuration of the Tail Race Channel (TRC), the improper water evacuation causes high vibration in the machines, which restricts the generation of the plant to 280 MW instead of the full load of 304 MW. A technical report on CFD analysis of MB-II HEP prepared by SVN Institute of Technology, Surat has also been submitted by the Petitioner alongwith its submission, in which the study concluded that "*the existing tailrace configuration is not suitable for proper evacuation of the flow of all the turbine units running at full load. This is due to the presence of opposite front wall close to the draft tube which induces violent vortices in the tailrace channel and reverse flow in the draft tube...*"

The Commission is of the view that though the above restriction is due to design fault and can be rectified in accordance with the recommendations of the studies carried out, however, the impact of restriction will persist till rectification works carry out, therefore, taking a lenient view, the Commission decides to consider this factor as operational constraint of MB-II HEP as the Petitioner is facing this problem since commissioning of the project. Hence, the Commission allows a margin of 280MW/304MW=92.10% in the availability of MB-II HEP.

The Commission has observed from the Petitioner's submission that it has requested for further reduction of 34 MW w.r.t. installed capacity of 304 MW on account of occurrence of faults due to high vibrations on the machines.

The Commission finds this reason as absolute negligence on the part of the Petitioner. Such submissions questions the practices, procedures and methodology adopted by the Petitioner for maintenance of the plants. The Commission is of the view that such operational issues should be rectified by the Petitioner on its own and cannot be accepted as basis for revision/determination of NAPAF.

Based on the above, the Commission approves NAPAF for MB-II HEP as 85%x0.98x0.92x0.93=71.27% say 71% for FY 2013-14, 85%x0.98x0.92x0.95=72.80% say 73% for FY 2014-15 & 85%x0.98x0.92x0.97=74.33% say 74% for FY 2015-16. Accordingly, NAPAF being approved for the Control Period for this plant is:-

| FY2013-14 | FY2014-15 | FY2015-16 |
|---|---|---|
| **71%** | **73%** | **74%** |

**2.12.3.5 RAMGANGA HEP (3x66MW)**

2.12.3.5.1 It has been submitted by the Petitioner that:

(a) Ramganga HEP is a Multipurpose Power Project. The Dam was constructed mainly for Irrigation and Flood Control purpose and is under the control of UP Irrigation Department. Water is released from the Dam as per irrigation requirements of UP and power is accordingly generated as per the releases and there is no control of UJVN Ltd. on the release of water from Ramganga Dam and as such the project is not operated as storage scheme in true sense.

(b) Further, the Petitioner submits that in rainy season all the units are kept in standstill condition and generation is almost nil as water is stored in the dam during this period. Generally, this period falls between 16th June to 15th October of each year. In summer the water discharge from the reservoir is less and operation of two units at full load or three units at part load is possible. During winter, due to greater demand of water for irrigation in various parts of U.P, the water availability from the reservoir is highest and generally all the three units run at about 85-90% of full load.

(c) The Petitioner also mentioned that FRL of Ramganga Dam is 365.3 m and its MDDL is 323 m and the design net head of Ramganga Power station is 84.4 m. Net head varies from 108.85 m to 54.9 m depending on the reservoir level and tail water level.

(d) Moreover, due to long operation of 38 years, the conditions of generating Units, their auxiliaries, instruments and control equipment have deteriorated. The wear and tear of the machines has also increased over the period of time which has reduced the efficiency of the machines.

(e) In view of above, the Petitioner has submitted that the past performance data of Ramganga HEP should form the basis for determination of NAPAF. Details of month wise performance, i.e.% PAFM of Ramganga HEP based on actual load (MW) from FY 2008-09 to 2012-13 as submitted by the Petitioner is given below:

**ACTUAL PAF DATA FOR 2008-09 TO 2012-13**

| S. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 49.87 | 30.63 | 8.75 | 0.00 | 0.00 | 0.00 | 5.87 | 5.52 | 28.38 | 53.94 | 47.87 | 24.94 | **21.31** |
| 2 | **2009-10** | 14.21 | 24.57 | 34.55 | 8.50 | 0.00 | 0.00 | 4.40 | 0.00 | 16.06 | 21.93 | 7.47 | 14.68 | **12.20** |
| 3 | **2010-11** | 10.37 | 2.82 | 4.18 | 0.00 | 0.00 | 0.00 | 12.25 | 18.18 | 23.25 | 61.09 | 48.83 | 57.92 | **19.91** |
| 4 | **2011-12** | 20.34 | 14.03 | 34.39 | 0.00 | 28.19 | 22.91 | 2.33 | 5.66 | 32.32 | 32.89 | 57.73 | 54.89 | **25.47** |
| 5 | **2012-13** | 21.41 | 42.23 | 29.97 | 10.59 | 0.00 | 0.00 | 0.00 | 6.38 | 35.08 | 17.68 | 0.00 | 37.49 | **16.74** |
| 6 | **Avg.** | **23.24** | **22.85** | **22.37** | **3.82** | **5.64** | **4.58** | **4.97** | **7.15** | **27.02** | **37.51** | **32.38** | **37.98** | **19.13** |

(f) The Petitioner has requested the Commission to consider the NAPAF of Ramganga HEP as 19%.

(g) In addition, the Petitioner also submitted that due to long operation of 38 years, the conditions of generating Units, their auxiliaries, instruments and control equipment have deteriorated. The wear and tear of the machines has also increased over the period of time which has reduced the efficiency of the machines. For improved performance of the machines, RMU of the Power Station has also been proposed and the DPR for RMU of Ramganga Power Station has been approved by the Board of UJVN Limited.

Further, UJVN Ltd. made a submission under affidavit vide its letter No. 4768/MD/UJVNL/U-6 dated 06.08.2013 reiterating its request for allowing NAPAF on the basis of average annual Plant Availability Factor achieved during the period F.Y.

**2.12.3.5.2 COMMISSION'S VIEW**

The Commission has taken cognizance of the submission made by the Petitioner with respect to Ramganga HEP, wherein the Petitioner has classified the plant as a multipurpose project and the Dam has been mainly constructed for the purpose of irrigation and flood control. Even till date, the Ramganga Dam is under the control of Uttar Pradesh Irrigation Department and water from the Dam is released as per the irrigation requirement of Uttar Pradesh enabling generation of power thereof corresponding to the quantum of water released. As there is apparently no control of the Petitioner on the release of water from Ramganga Dam, it cannot be operated as storage scheme in true sense.

Considering the above factual positions and circumstances under which the plant operates, the Commission has decided to accept the methodology submitted by the Petitioner in calculation of NAPAF for the plant based on the actual performance of the plant during past years and accordingly revise the NAPAF on the basis of average annual PAFM achieved during last 5 years i.e. from FY 2008-09 to FY 2012-13 as proposed by the Petitioner.

The Commission, therefore, approves revised NAPAF for Ramganga HEP as 19%.

### 2.12.3.6 ROR POWER STATIONS
### (CHILLA, DHAKRANI, DHALIPUR, KULHAL & KHATIMA)

2.12.3.6.1 It has been submitted by the Petitioner that :

(a) The Business Plan submitted by it to the Commission, 90% Dependable Year had been derived for various Power Stations on the basis of 10-daily average discharge data.

(b) The Petitioner has also submitted that the Run of River Plants generally operate as base load power station, depending upon the availability of water in the power channel. On the basis of historical data of daily generation, average load has been indicated as declared capacity towards the calculation of PAF for determination of NAPAF in respect of RoR Power Stations.

(c) The Petitioner has submitted that the 90 % Dependable Year for Dhakrani (33.75 MW) is the year 2004-05. The Plant Availability Factor (PAF) based on the daily Declared Capacity for the year 2004-05 has been calculated as 42%. Therefore, for Dhakrani Power Station the Petitioner has requested to allow the NAPAF of 42 %.

(d) For Dhalipur Power Station (51 MW), 90 % Dependable Year has been proposed as 2004-05. The Plant Availability Factor (PAF) based on the daily Declared Capacity for the year 2004-05 has been calculated as 41% . Therefore, the Petitioner has requested the Commission to allow NAPAF of 41 % in respect of Dhalipur Power Station.

(e) For Kulhal Power Station (30 MW), 90 % Dependable Year has been proposed as 2001-02. The Plant Availability Factor (PAF) based on the daily Declared Capacity for the year 2001-02 has been calculated as 47%. Therefore, the Petitioner has requested the Commission to allow NAPAF of 41% in respect of Kulhal Power Station.

(f) The Petitioner has submitted that for Chilla Power Station (144 MW), although, 90 % Dependable Year comes as year 2005-06, however, 90% dependable year in the Post Tehri scenario is 2009-10. Therefore, The Plant Availability Factor (PAF) based on the daily Declared Capacity for the year 2009-10 has been calculated as 59%. Therefore, the Petitioner has requested the Commission to allow NAPAF of 59% in respect of Chilla Power Station.

(g) The Petitioner has submitted that on the basis of the available data the 90% Dependable Year for Khatima (41.4 MW) is the year 2009-10. The Plant Availability Factor (PAF) based on the daily Declared Capacity for the year 2009-10 has been calculated as 42 % Therefore, the Petitioner has requested the Commission to allow NAPAF of 42% in respect of Khatima Power Station. The Petitioner also submitted that RMU of Unit # 1 of Khatima Power Station is in progress and the unit shall not be available for generation and the scheduled completion of RMU works of Unit# 1 is 31.3.2013. Hence, in light of this fact, the Petitioner has requested to fix the NAPAF for Khatima Power Station as 2/3rd value of 42 % i.e., 28% during the year 2013-14.

Further, UJVN Ltd. made a submission under affidavit vide its letter No. 4768/MD/UJVNL/U-6 dated 06.08.2013 giving the details pertaining to calculation of Plant Availability Factor per Month (PAFM) and average annual PAF for the F.Y. 2008-09 to F.Y. 2012-13 for its RoR plants as follows.

**Actual PAF data for 2008-09 to 2012-13 for Dhakrani**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 50.54 | 60.12 | 85.43 | 88.89 | 86.02 | 84.25 | 77.51 | 60.25 | 35.46 | 25.81 | 22.12 | 17.78 | **57.85** |
| 2 | **2009-10** | 24.69 | 38.81 | 45.43 | 71.30 | 77.42 | 77.43 | 47.60 | 33.48 | 22.37 | 18.45 | 23.60 | 29.15 | **42.48** |
| 3 | **2010-11** | 36.15 | 49.61 | 61.73 | 89.06 | 97.78 | 72.69 | 86.88 | 66.02 | 55.63 | 44.92 | 36.51 | 38.71 | **61.31** |
| 4 | **2011-12** | 47.11 | 74.36 | 80.79 | 88.89 | 83.15 | 90.47 | 73.69 | 56.79 | 42.25 | 38.71 | 32.80 | 39.76 | **62.40** |
| 5 | **2012-13** | 47.31 | 55.15 | 64.00 | 77.71 | 87.74 | 90.07 | 66.81 | 48.20 | 32.69 | 27.81 | 51.11 | 61.65 | **59.19** |
| 6 | **Avg. 2008-09 to 2012-13** | **41.16** | **55.61** | **67.48** | **83.17** | **86.42** | **82.98** | **70.50** | **52.95** | **37.68** | **31.14** | **33.23** | **37.41** | **56.64** |

**Actual PAF data for 2008-09 to 2012-13 for Dhalipur**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 48.89 | 60.15 | 89.28 | 93.86 | 91.52 | 87.58 | 78.68 | 59.54 | 33.78 | 25.68 | 22.13 | 17.01 | **59.01** |
| 2 | **2009-10** | 26.21 | 38.65 | 45.16 | 74.76 | 79.25 | 81.31 | 47.06 | 32.81 | 23.72 | 19.35 | 24.09 | 26.88 | **43.27** |
| 3 | **2010-11** | 34.68 | 50.66 | 59.93 | 87.98 | 87.41 | 71.70 | 86.84 | 67.45 | 52.62 | 45.29 | 36.97 | 40.86 | **60.18** |
| 4 | **2011-12** | 45.62 | 75.65 | 81.11 | 90.20 | 87.29 | 89.50 | 75.14 | 56.23 | 38.74 | 33.02 | 31.03 | 41.62 | **62.10** |
| 5 | **2012-13** | 49.22 | 56.99 | 65.29 | 80.33 | 87.10 | 89.28 | 69.32 | 47.25 | 33.84 | 28.46 | 52.59 | 71.66 | **60.95** |
| 6 | **Avg. 2008-09 to 2012-13** | **40.86** | **56.42** | **68.16** | **85.43** | **86.51** | **83.87** | **71.41** | **52.66** | **36.54** | **30.36** | **33.36** | **39.61** | **57.10** |

**Actual PAF data for 2008-09 to 2012-13 for Kulhal**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 60.89 | 68.92 | 75.89 | 77.26 | 96.02 | 97.44 | 90.43 | 66.22 | 56.34 | 33.01 | 29.88 | 26.24 | **64.88** |
| 2 | **2009-10** | 34.22 | 49.46 | 54.00 | 80.97 | 87.42 | 88.78 | 60.65 | 51.11 | 29.68 | 26.13 | 30.83 | 30.32 | **51.96** |
| 3 | **2010-11** | 39.00 | 58.82 | 68.33 | 91.08 | 72.90 | 71.56 | 99.46 | 79.78 | 66.56 | 61.61 | 53.33 | 53.33 | **67.98** |
| 4 | **2011-12** | 53.00 | 79.68 | 87.44 | 95.38 | 90.11 | 99.44 | 86.99 | 65.56 | 52.58 | 45.91 | 41.15 | 51.72 | **70.75** |
| 5 | **2012-13** | 60.67 | 65.27 | 70.78 | 86.88 | 94.14 | 98.44 | 82.74 | 59.78 | 42.58 | 36.67 | 66.19 | 81.94 | **70.51** |
| 6 | **Avg. 2008-09 to 2012-13** | **49.56** | **64.43** | **71.29** | **86.31** | **88.12** | **91.13** | **84.05** | **64.49** | **49.55** | **40.67** | **44.28** | **48.71** | **65.22** |

**Actual PAF data for 2008-09 to 2012-13 for Chilla**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 56.92 | 70.03 | 66.25 | 70.45 | 93.86 | 93.43 | 82.19 | 65.09 | 67.03 | 73.36 | 62.25 | 54.82 | **71.31** |
| 2 | **2009-10** | 65.97 | 75.92 | 71.99 | 90.75 | 80.11 | 69.26 | 63.98 | 55.56 | 54.55 | 63.75 | 62.55 | 63.93 | **68.19** |
| 3 | **2010-11** | 65.95 | 66.22 | 80.09 | 95.03 | 96.12 | 72.99 | 92.03 | 75.05 | 49.15 | 29.12 | 67.73 | 69.67 | **71.60** |
| 4 | **2011-12** | 83.80 | 93.64 | 92.20 | 91.62 | 87.41 | 91.76 | 89.14 | 68.50 | 63.98 | 69.24 | 70.19 | 69.51 | **80.91** |
| 5 | **2012-13** | 69.95 | 84.25 | 88.43 | 92.23 | 92.20 | 89.10 | 84.45 | 67.25 | 64.20 | 68.91 | 67.46 | 69.53 | **78.16** |
| 6 | **Avg. 2008-09 to 2012-13** | **68.52** | **78.01** | **79.79** | **88.02** | **89.94** | **83.31** | **82.36** | **66.29** | **59.78** | **60.88** | **66.04** | **65.49** | **74.03** |

**Actual PAF data for 2008-09 to 2012-13 for Khatima**

| Sl. No. | Year | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **2008-09** | 38.53 | 48.89 | 61.92 | 60.00 | 53.10 | 43.64 | 54.31 | 37.56 | 37.09 | 34.21 | 26.96 | 25.09 | **43.44** |
| 2 | **2009-10** | 34.50 | 46.75 | 54.87 | 64.01 | 60.93 | 67.19 | 35.65 | 38.97 | 44.34 | 41.10 | 38.73 | 38.10 | **47.10** |
| 3 | **2010-11** | 43.32 | 50.76 | 57.97 | 63.54 | 63.07 | 58.37 | 55.71 | 36.23 | 34.63 | 39.23 | 35.24 | 35.76 | **47.82** |
| 4 | **2011-12** | 38.93 | 59.53 | 71.66 | 68.57 | 69.19 | 72.06 | 43.40 | 25.04 | 37.56 | 39.86 | 31.90 | 32.10 | **49.15** |
| 5 | **2012-13** | 42.27 | 53.30 | 62.76 | 72.50 | 52.09 | 51.77 | 50.45 | 40.70 | 37.60 | 38.69 | 29.81 | 33.66 | **47.13** |
| 6 | **Avg. 2008-09 to 2012-13** | **39.51** | **51.85** | **61.84** | **65.72** | **59.68** | **58.61** | **47.90** | **35.70** | **38.24** | **38.62** | **32.53** | **32.94** | **46.93** |

**2.12.3.6.2 COMMISSION'S VIEW**

Notwithstanding specific views expressed by the Commission in the Tariff Order dated 06.05.2013 for UJVN Ltd., the Petitioner has again proposed the same methodology for computation of NAPAF. The Commission does not accept the methodology proposed by the Petitioner and reiterates its views stipulated in the Tariff Order which are reproduced below:

*"The Commission also asked UJVN Ltd to submit the 10 day daily discharge data for each of the stations for past 20 years. UJVN Ltd. expressed its inability to submit the same and did not submit the data for past 20 years for all the stations.*

*The Commission, however, observed that the NAPAF submitted by UJVN Ltd. for pure Run Off River plants are substantially higher than the NAPAF approved by CERC for*

*NHPC stations of ROR type plants which is 60% in case of Salal and Uri stations and 55% for Tanakpur station.*

*The Commission in absence of past 20 years 10 day daily discharge data and original DPR decides to provisionally approve the NAPAF for ROR type plants as the minimum NAPAF submitted by UJVN Ltd. under two approaches. However, as it has been observed that Kulhal, Dhalipur and Dhakrani are fed from a common water channel, the NAPAF for these stations should not be at significance variance with each other. In view of the same, the Commission has provisionally approved the NAPAF for the above mentioned stations (i.e. Kulhal, Dhalipur and Dhakrani) as minimum of the NAPAF submitted under the two approaches for these three stations..."*

Subsequent to its earlier submission on methodology for computation of NAPAF for RoR plants, the Petitioner has proposed another methodology based on the average plant availability for past 5 years. Considering this approach very close to the actual operations/generation of the plants in the past years, the Commission has decided to admit the request of the Petitioner for revising the NAPAF earlier approved by the Commission in the Tariff Order dated 06.05.2013 for UJVN Ltd.

Further, with regard to the request of the Petitioner to allow the NAPAF for Khatima Power Station as 2/3rd value of NAPAF of the plant during the year 2013-14, as RMU of Unit No. 1 of Khatima Power Station is in progress and the unit shall not be available for generation till 31.3.2014, i.e. the scheduled date of completion, the Commission is of the view that the capacity of generating units under Renovation and Modernization shall not be considered in installed capacity while computing the plant availability factor. For relaxation to this effect shall be applicable only upto the scheduled date of completion of RMU works. However, the Petitioner is cautioned to complete the RMU within the scheduled time.

Based on the submissions of the Petitioner, UPCL's comments and Commission's analysis, the Commission approves the plant-wise NAPAF for Petitioner's RoR HEPs as follows:

| S. No. | Name of the Plant | NAPAF approved by the Commission |
|---|---|---|
| 1 | Dhakrani | 57% |
| 2 | Dhalipur | 57% |
| 3 | Kulhal | 65% |
| 4 | Chilla | 74% |
| 5 | Khatima | 47% |

Hence, based on the above discussions the NAPAF approved by the Commission for the Petitioner's Large HEP are given in the table below:

| Sl. No. | Name of Plant | | NAPAF Approved by the Commission in the T.O. dated 06.05.2013 | NAPAF Proposed by UJVN Ltd. | | | NAPAF Approved by the Commission | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | In the Review Petition dated 01.07.2013 | In the Revised submission dated 29.07.2013 | In the Addl. Submission dated 06.08.2013 | FY 2013-14 | FY 2014-15 | FY 2015-16 |
| 1 | Chibro | Pondage | 85% | 29% | 59% | 52.05% | **62%** | **63%** | **64%** |
| 2 | Khodri | Pondage | 85% | 30% | 52% | 48% | **55%** | **56%** | **57%** |
| 3 | MB-I | Pondage | 85% | 50% | 68% | 71.85% | **77%** | **78%** | **79%** |
| 4 | MB-II | Pondage | 85% | 59% | 52% | 51.74% | **71%** | **73%** | **74%** |
| 5 | Ramganga | Storage | 85% | * | 19% | 19.13% | **19%** | | |
| 6 | Dhakrani | RoR | 77% | 44% | 42% | 56.64% | **57%** | | |
| 7 | Dhalipur | RoR | 77% | 45% | 41% | 57.10% | **57%** | | |
| 8 | Kulhal | RoR | 77% | 49% | 47% | 65.22% | **65%** | | |
| 9 | Chilla | RoR | 76% | 65% | 59% | 74.03% | **74%** | | |
| 10 | Khatima | RoR | 78% | 67% (44% in view of RMU) | 28% | 46.93% | **47%** | | |

It is learnt that the Petitioner is taking up RMU of most of its LHPs, accordingly the NAPAF approved above will be reviewed.

These NAPAF for RoR stations are being determined for this control period only on account of absence of data required as per provisions of the Regulation. The Petitioner is directed to make concerted efforts to obtain the required data from their predecessor company/CEA and ensure availability of this data by 31.03.2015 positively so that appropriate norms for next control period could be determined.

The Commission in view of data constraints mentioned above and also to obviate financial stress being faced by the Petitioner has as aforesaid, NAPAF which are consistent with the prevailing efficiency of the Petitioner. As mentioned earlier there is need for urgent efficiency improvement especially in the Petitioner's maintenance practices and time taken therein as also to usher in required preventive maintenance to substantially reduce the forced outages. In a bid to induce the Petitioner to take efficiency improvement measures, progressive tightening of norms in case of pondage type plants has also been incorporated. The Petitioner may note carefully if required level of efficiency improvement is not evident in their ensuing performance, the Commission may partially or fully withdraw the relaxations considered in this order in next control period.

The Respondent is given liberty to approach this Commission on occurrence of any of the following for suitable upward revision of the NAPAF:-

i) The present embargo on not filling the Dam of MB-II beyond 1104 Meter is lifted.

ii) The present embargo on not allowing flow of water in tunnel feeding Chibro HEP beyond 200 cumecs is lifted.

The NAPAF norms determined hereto above shall be applicable from the date of effect of original Tariff Order dated 06.05.2013. The Petitioner is directed to revise its bills so far raised based on above Tariff Order and the Respondent is directed to ensure payment of arrears accruing to Petitioner due to above revised NAPAF within 30 days of raising revised bills by the Petitioner.

| **(K.P. Singh)** | **(C.S. Sharma)** | **(Jag Mohan Lal)** |
|---|---|---|
| **Member** | **Member** | **Chairman** |