



Registrar

**National Electric Power Regulatory Authority**  
**Islamic Republic of Pakistan**

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No. NEPRA/UTH-01/15031-15033  
October 14, 2015

**Subject: Decision of the National Electric Power Regulatory Authority in the matter of Motions for Leave for Review filed against Determination of the Authority dated April 2, 2015 regarding Upfront Tariff for Small Hydro Power Generation Projects Upto 25 MW Installed Capacity**

Dear Sir,

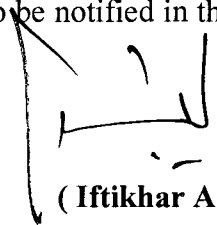
This is in continuation of this office letter No. NEPRA/UTH-01/4744-4746 dated April 2, 2015 whereby Determination of the Authority in the matter of Upfront Tariff for Small Hydro Power Generation Projects upto 25 MW installed capacity was sent to the Federal Government for notification in the official Gazette.

2. Please find enclosed herewith the decision of the Authority along with Annex-I, II, III, IVA, IVB, VA, VB, VIA, VIB, VIIA and VIIB (44 pages) in the matter of Motions for Leave for Review filed against Determination of the Authority dated April 2, 2015 regarding Upfront Tariff for Small Hydro Power Generation Projects Upto 25 MW Installed Capacity

3. The Decision is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).

4. The Order at Paragraph 12 of the Authority's Decision needs to be notified in the official Gazette.

Enclosure: As above

  
14/10/15  
( Iftikhar Ali Khan )

Secretary  
Ministry of Water & Power  
'A' Block, Pak Secretariat  
Islamabad

CC:

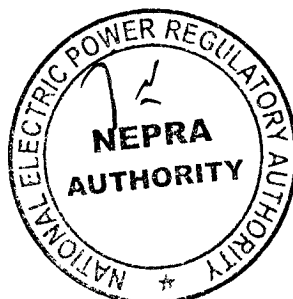
1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
2. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad.

**DECISION OF THE NATIONAL ELECTRIC POWER REGULATORY  
AUTHORITY IN THE MATTER OF MOTION FOR LEAVE FOR REVIEW FILED  
AGAINST DETERMINATION OF THE AUTHORITY DATED APRIL 02, 2015  
REGARDING UPFRONT TARIFF FOR SMALL HYDRO POWER GENERATION  
PROJECTS UP TO 25 MW INSTALLED CAPACITY**

1. National Electric Power Regulatory Authority (hereinafter referred to as the "Authority") issued its determination in the matter of upfront tariff for small hydro power generation project up to 25 MW installed capacity on April 2, 2015 (hereinafter referred to as the "Upfront Tariff Determination").
  - 1.1 The following two companies filed motion for leave for review (hereinafter referred to as the "review motions") against the Upfront Tariff Determination dated April 2, 2015:
    - i) Riali Hydro Power Company (Pvt.) Limited (RHPCI)
    - ii) Kathai-II Hydro (Pvt.) Limited (KHL)

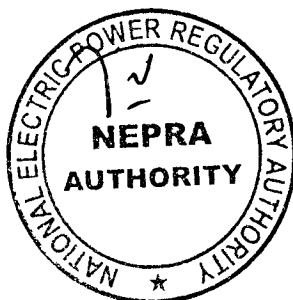
The review motions were filed under rule 16(6) of the NEPRA (Tariff Standards and Procedure) Rules, 1998 read with Regulation 3 of the NEPRA (Review Procedure) Regulations, 2009.

- 1.2 The Authority admitted the review motions on April 29, 2015 and decided to club both review motions for a consolidated decision.
- 1.3 Further, the Authority decided to hold a public hearing on the matter, in order to arrive at a just and informed decision and to hear the points of view/suggestions of all the stakeholders regarding the review motions. Accordingly, notices of hearing were issued to the Petitioners and all main stakeholders on May 13, 2015 for participation in the hearing.
- 1.4 In response to the aforesaid notice of hearing, comments were received from Blue Star Energy (Pvt.) Limited (BSEPL). The Alternative Energy Development Board (AEDB) and Frontier Mega Structure & Power (Pvt.) Limited (FMSP) also made comments with regard to the Upfront Tariff Determination and the same have been considered by the Authority in the



instant decision. The aforementioned comments have been discussed in subsequent paragraphs under the relevant heads.

- 1.5 Hearing of review motions was held on May 21, 2015 at NEPRA Tower, Islamabad, wherein participation was made by various stakeholders.
- 1.6 The Energy & Power Department, Government of Khyber Pakhtunkhwa (GoKPK) vide letter no. F&P/CPO/AMH-II/NEPRA/2014-15 dated April 20, 2015 submitted that the Upfront Tariff Determination does not include proposals submitted by GoKPK. In this regard a request was made by the GoKPK for a meeting with the Authority.
- 1.7 Considering the nature of issues highlighted by the GoKPK and the applicability of the upfront tariff to all stakeholders, the Authority decided to allow GoKPK to provide/submit comments and also held a meeting on the subject matter with senior management of Energy Department of GoKPK on June 25, 2015 at NEPRA Tower, Islamabad.
- 1.8 During the meeting, the GoKPK built their case regarding the need to revise the financial parameters forming the basis of the Upfront Tariff Determination in order to make the same viable and acceptable to private investors and to bring it in line with the ground realities. The Authority asked the GoKPK to provide certain key information, including copies of executed EPC contracts for hydropower projects being developed by the GoKPK as well as written recommendations regarding change in the bases of the Upfront Tariff Determination.
- 1.9 The Pakhtunkhwa Energy Development Organization (PEDO) vide letter no. 2064-67/PEDO/P&F/NEPRA dated July 16, 2015 submitted cost breakup of Machai, Ranolia, Jabori and Karora hydropower projects. Further, PEDO vide letter no. 20/PEDO/P&F/NEPRA dated July 24, 2015 submitted copies of executed EPC contracts of Jabori Hydropower Project and Karora Hydropower Project, both of which are being developed by the GoKPK. The Authority has considered all fresh information and recommendations provided by the GoKPK while deciding the instant review motions. The submissions/ recommendations of GoKPK, where appropriate, have been discussed in subsequent paras under the relevant heads.





2. **Grounds of review motions**

2.1 Briefly, the Petitioners have sought review of the Upfront Tariff Determination on the following grounds:

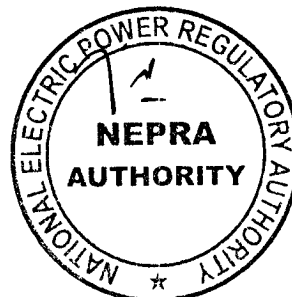
- i) The EPC cost assumed in the Upfront Tariff Determination is too low;
- ii) A mechanism for indexation of civil works cost (one-time adjustment at COD) on account of variation in prices of major inputs (i.e. Fuel, Steel, Labor and Cement) during the construction period has not been allowed;
- iii) The assumed Debt financing cost (premium over KIBOR) is low;
- iv) The assumed Debt-Equity ratio is low;
- v) The percentage assumed for Financing fee and charges is low;
- vi) The timelines regarding validity of the upfront tariff and maximum time for financial close may be altered;
- vii) Other minor grounds.

3. **EPC Cost**

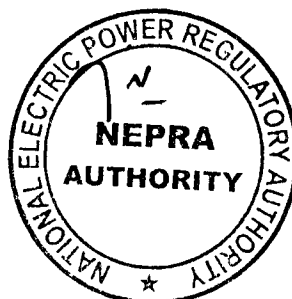
3.1 The Petitioners stated that the Upfront Tariff Determination does not offer a commercially viable solution from the perspective of potential reputable contractors which are acceptable to international lenders. The Petitioners submitted that it is extremely difficult to seek interest of any international contractor at the base EPC cost that has been assumed for high-head small hydropower projects. RHPCI, proposed that a standard base EPC cost of US\$ 2.8 million per MW may be assumed for the purpose of calculation of the upfront tariff.

3.2 The Petitioners further claimed that the EPC prices that form the basis of the Upfront Tariff Determination are almost four years old now; whereas the most recent EPC contracts executed by a Government agency, PEDO, represent much higher EPC costs which fall within the range of US\$ 2.77 – US\$ 3.27 million per MW.

3.3 Based on the aforementioned grounds the Petitioners requested the Authority to revise the project costs forming the basis of the Upfront Tariff Determination.



- 3.4 On this matter, BSEPL vide letter no. BSEPL/NEPRA/2015/2 dated May 19, 2015 supported the Petitioners' stance and stated that the EPC cost approved by the Authority recently in other similar cost plus determinations is much higher than the one granted in the Upfront Tariff Determination. BSEPL neither made any specific mention of the determined EPC costs nor suggested a standard EPC cost to form the basis of the upfront tariff.
- 3.5 FMSP vide its letter dated April 22, 2015 in its comments also highlighted the issue of lower per MW EPC cost assumed for upfront tariff. FMSP suggested that the EPC cost of a 25 MW project should be approx. US\$ 2.3 million per MW. Further, FMSP suggested that for a 5 MW project the EPC Cost should be US\$ 2.6 million per MW and for 1 MW project it should be US\$ 3.0 million per MW. FMSP requested that the EPC cost for high head projects under 10 MW should be US\$ 2.6 - 3.0 million per MW.
- 3.6 The Authority, after considering the opinions and comments of all stakeholders decided that the underlying costs forming the basis of the Upfront Tariff Determination need to be reassessed based on more recent and fresh information provided by the GoKPK. The Authority is cognizant of the fact that the EPC contracts of low head and high head small hydropower projects previously available with the Authority were executed in the year 2011. Therefore the Authority has established that the EPC cost forming the basis of the upfront tariff for high head projects needs to be adjusted to account for the inflation factor. Further, the Authority has analyzed the fresh information presented by the GoKPK in the form of executed EPC contracts for two high head small hydropower projects being executed by PEDO, namely Karora HPP and Jabori HPP, and has found that the EPC prices of these projects, arrived at through competitive bidding, are much higher than the EPC cost assumed for the Upfront Tariff Determination. In view of the aforementioned, the Authority has decided to revise the underlying EPC cost for high head projects based on the indexed EPC cost of Ranolia HPP and the EPC cost of Karora and Jabori HPP.
- 3.7 During the meeting with the Authority on June 25, 2015, the representatives of GoKPK suggested that the difference in upfront tariff between low head and high head small hydropower projects may be maintained and therefore the underlying costs for upfront tariff for low head small hydropower projects may be revised by the same proportion as that for high head small



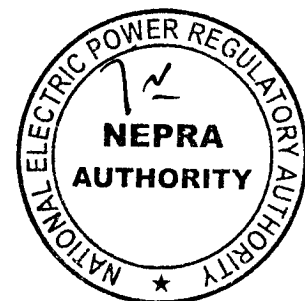
hydropower projects. The Authority considers that the suggestion of GoKPK is logical and therefore has decided to revise the underlying EPC cost of low head hydropower projects based on the same rationale.

4. **Mechanism for indexation of civil work costs, one-time indexation adjustment at COD**

4.1 The Petitioners have stated that the Upfront Tariff Determination does not provide any mechanism for indexation of civil work costs, which is allowed as a standard practice in cost-plus hydropower tariff determinations. The lack of an indexation mechanism poses a very significant risk to sponsors, particularly as small hydro projects opting for the upfront tariff shall not be eligible for other cost openers available under the cost-plus regime. The Petitioners requested that the Upfront Tariff Determination should include a one-time adjustment mechanism at COD as mostly allowed under the cost plus regime for variation in officially published price indices for Steel, Cement, Diesel and Labor. The Petitioner suggested that 60% of the EPC cost should be adjusted for variations in civil work costs and the non-EPC components of the project cost shall be adjusted based on the revised EPC cost. Further, it was suggested that 40% of the assumed EPC cost should be adjusted, in case of projects funded through local debt only, for exchange rate variation over 36 months starting from the date of financial close.

4.2 FMSP in its comments has stated that the EPC cost indexation mechanism provided in the case of cost plus tariff is one of the key elements that attract international EPC contractors for participating in the hydro power industry, therefore the same should also be made a part of the upfront tariff.

4.3 The Authority is of the view that the One-Time adjustment mechanism in the Upfront Tariff Determination which comprised of adjustment on account of exchange rate variation on 40% of the project cost for local debt only, was devised to be simple in application in order to remove any uncertainties regarding COD adjustment of tariff and to cater for the limitations of the upfront tariff regime; however, as submitted by the Petitioners, the said One-Time adjustment mechanism may not provide enough risk coverage for the average investor to comfortably arrange financing for hydropower projects.





4.4 In view of the above the Authority has decided to revise the previous onetime adjustment mechanism as under:

- a) 40% of the assumed EPC cost will be adjusted over 36 months (maximum) starting from the date of financial close of the project for USD/PKR exchange rate variation.
- b) 60% of the assumed EPC cost converted at reference USD/PKR exchange rate of 101.95 will be adjusted over 36 months (maximum) starting from the date of financial close of the project according to the formula below:

$$P_n = 0.51 + 0.10*(C_n/C_o) + 0.09*(S_n/S_o) + 0.15*(F_n/F_o) + 0.15*(L_n/L_o)$$

Where;

$P_n$  is the adjustment factor to be applied for civil works;

$C_n$  is the index value for the relevant month for Cement as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

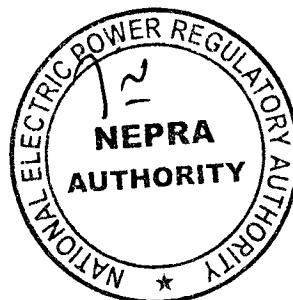
$S_n$  is the index value for the relevant month for Steel Bar & Sheets as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

$F_n$  is the index value for the relevant month for Diesel Oil as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

$L_n$  is the index value for the relevant month for Mason (Raj) for Rawalpindi as per the Wage Rates published in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

$C_o$ ,  $S_o$ ,  $F_o$  and  $L_o$  are the reference values of the price indices for Cement, Steel Bar & Sheets, Diesel Oil and Mason (Raj) respectively as available at the time of financial close of the project.

4.5 Further, the Authority is of the view that the above one-time adjustment mechanism will provide more clarity as to how the tariff is to be worked out at the COD. The revised one-time adjustment mechanism necessitates that



the adjustment of project cost be applied to all projects regardless of their debt financing being foreign or local, in order to maintain a balance between all sources of debt financing and to ensure that one type of debt financing is not inherently at an advantage or disadvantage under the upfront tariff regime. Therefore, the Authority has decided that the one-time adjustment will be applied on projects based on local as well as foreign debt.

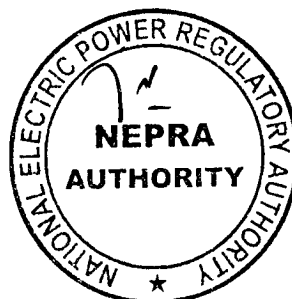
**5. Debt financing cost**

- 5.1 The Petitioners have stated that the Authority has assumed local debt financing cost as KIBOR + 3% in the Upfront Tariff Determination. The Petitioners have requested the Authority to allow 3 months KIBOR plus a premium of 350 basis points for local financing.

The Authority considers that the request of the Petitioners is justified. The Authority in the case of other medium sized hydropower projects has allowed spread over KIBOR of 3.25%. The Authority considers that arrangement of debt for small hydropower projects is comparatively difficult and therefore it is required that a reasonable margin/ spread over KIBOR be allowed for small hydropower projects. The Authority has therefore decided to allow a maximum interest rate of 3 months KIBOR plus 350 basis points for the upfront tariff.

**6. Debt Equity ratio**

- 6.1 The Petitioners stated that the Upfront Tariff Determination is based on a Debt-Equity ratio of 80:20. The Petitioners submitted that a debt equity ratio of 75:25 is a more realistic ratio for hydropower projects and that it has previously been allowed in other upfront tariffs.
- 6.2 FMSP in its comments stated that financial institutions are wary of investing in hydro power due to existence of risks including gestation period, physical security of the projects area etc. FMSP has requested that a flexibility of debt equity ratio be allowed to projects that are not able to achieve financial close at 80:20 debt equity ratio. The Authority considers that the concept of a





flexible debt equity ratio does not go hand in hand with the concept of an upfront tariff where minimum reopeners should be allowed.

- 6.3 The Authority has therefore decided that a Debt Equity ratio of 75 : 25 is suitable for the upfront tariff for small hydropower projects and is hereby allowed. This Debt-Equity ratio will not be flexible in any way, and will remain constant for the purpose of all adjustments in tariff, regardless of the actual Debt-Equity ratio of the individual project.

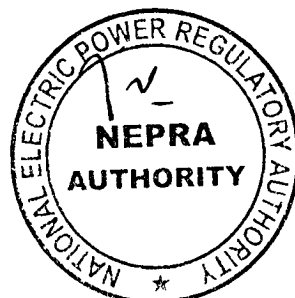
## 7. Financing fee and charges

- 7.1 The Petitioners stated that, in line with some of the other upfront tariff determinations, financing fees & charges should be based on 3.5% of the assumed debt.
- 7.2 The Authority considers the request of the Petitioner to be justified and hereby allows financing fees and charges based on 3.5% of the assumed debt (excluding IDC and financial charges).
- 7.3 Based on the discussions outlined in the previous paras, the per MW total project costs forming the bases of the upfront tariff are hereby revised as under:

	100% Foreign Financing	100% Local Financing
Low Head	US\$ 3.945 Million / MW	US\$ 4.206 Million / MW
High Head	US\$ 2.794 Million / MW	US\$ 2.988 Million / MW

## 8. Annual plant factor

- 8.1 RHPCL submitted that the figure of 50% should be retained as the minimum threshold for plant factor; however the determination should stipulate the tariff for a range of plant factors in order to bring more clarity about the upfront tariff to the investor as well as the general public.

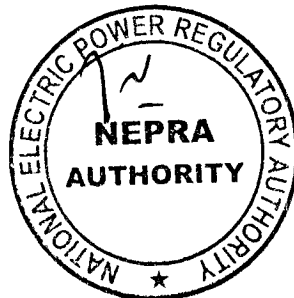


8.2 BSEPL in its comments stated that plant factor is linked with installed capacity. For the same site installing a smaller capacity will get higher plant factor, while bigger installed capacity will get a lower plant factor. BSEPL claimed that the sponsor will adjust the installed capacity so that low head plants can achieve plant factor of just 65% and high head just 50%. BSFPI suggested that in order to extract maximum energy from any site, it is suggested that the sponsors be given incentive for the additional energy produced as follows:

Energy Generated (Plant Factor)	Tariff
65% to 70% for low head and 50% to 55% for high head	75% of tariff
70% to 75% for low head and 55% to 60% for high head	50% of tariff
Beyond 75% for low head and beyond 60% for high head	10% of tariff

8.3 FMSP in its comments stated that the Upfront Tariff Determination is based on the lowest plant factor. According to FMSP, if the output assumed is at its lowest only then the projects with the lowest possible project cost will be feasible at this tariff. FMSP stated that it is best if the Authority can come up with a different mechanism to incorporate the plant factor. However, if the same mechanism is applied, the minimum plant factor threshold should be increased to 60% for high head projects.

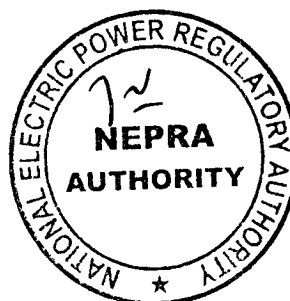
8.4 The Authority considers that in view of the complexities associated with hydropower it has already determined a very detailed and practical mechanism for adjustment of plant factor, which allows projects to transfer the risk of hydrology to the power purchaser under the upfront tariff regime, despite the general opinion previously held that the concept of transferring hydrology risk to the power purchaser may not work well under an upfront tariff regime. The mechanism for adjustment of plant factor has been commended by the Petitioners as well as other stakeholders. The proposal of BESPL is unjustified as it would put unfair burden on the power purchaser. Additionally, the proposal of FMSP to increase the minimum plant factor threshold to 60% for high head projects can also not be considered, as it would possibly phase out many of the potential high head small hydropower projects from the ambit of the upfront tariff regime.





**9. Other Minor Grounds**

- i) The Petitioner has stated that water use charges is a pass through item and payment on this behalf be made on monthly or quarterly basis instead of spread over a twelve months. The Petitioner seems to have misunderstood the wording of the Upfront Tariff Determination. The Authority hereby clarifies that the payment of water use charges shall be reimbursed as per standard clauses of the Water Use Agreement and PPA.
- ii) The Petitioner has suggested that the validity of the upfront tariff and time period for achieving financial close be amended to 18 months and 12 months respectively. The Authority has considered the request of the Petitioner and has decided to maintain its original decision on the matter, i.e. the validity period of the upfront tariff will remain 12 months, and the projects will be required to achieve financial close within 18 months.
- iii) The Petitioner has suggested that the wording related to carbon credits be modified so that the company is not obligated to process and apply for carbon credits if there is no commercial basis for doing so. The Authority hereby clarifies that projects opting for the upfront tariff have no obligation to apply for carbon credits, however, they are encouraged to do so.
- iv) The Petitioner submitted that due to existence of ECC approved standardized hydropower security documents redrafting should be avoided. The Petitioner suggested that AEDB and PPIB may jointly be tasked with expeditiously finalizing any minor changes required in the standardized hydropower documents in consultation with project sponsors. The Authority has clarified on concerns raised by the AEDB regarding standardized security documents in subsequent paragraphs.
- v) The Petitioners also made the following suggestions:
  - a) The tariff granted to projects located in AJK through NTDC under the Interim Power Procurement (Procedures and Standards) Regulations, 2015 shall be notified in the official gazette and that all indexations and adjustments in the tariff shall be directly determined by NEPRA from then onwards.



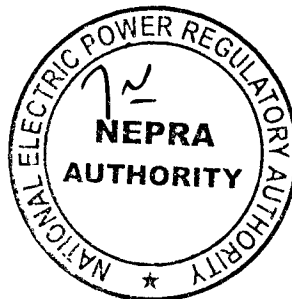


- b) The net annual plant factor is based on energy generated at the plant's bus bar as per the Grid Code, Distribution Code and established precedent.
- c) Standard allowance for scheduled and forced outages shall be incorporated in the power purchase agreement as per established benchmarks for other hydropower IPPs.
- d) The insurance adjustment mechanism for exchange rate variation at xix (b) on pages 60-61 of the Upfront Tariff Determination shall only apply in case the power producer petitions for it, otherwise no project-specific adjustment on this account shall be made.

#### 10. Comments of AEDB

10.1 The AEDB in its comments has raised certain observations regarding the Upfront Tariff Determination. The Authority has given due consideration to the concerns of AEDB regarding practical issues related to the standardized PPA based on the upfront tariff for small hydropower projects. However, the Authority feels that certain misconceptions related to the upfront tariff and hydropower projects in particular need to be removed to enable the AEDB to expedite the finalization of the standardized security documents. The AEDB has submitted, *inter alia*, that:

- a) *"NEPRA has asked to follow the 'standard security package' with 'appropriate modifications'. The standard package for hydro power projects is premised on two-part tariff with capacity payments not linked to net annual plant factor or actual water flow; there being no 'Monthly Benchmark Hydrology' or 'Monthly Benchmark Energy' concepts there - Capacity Payments are payable in case of large hydro without - measurement of monthly hydrology. These are fundamental variations which necessitate AEDB to follow the Cost-Plus Wind model, but that would further complicate matters as that would only work for a project where the hydro risk is transferred to the purchaser, and will not work where the project opts to keep the hydro risk - in- the latter case, the appropriate model will be of the 'upfront-wind'. Summarising, the document will end-up being a mix of all three, and this will entail considerable work. As NEPRA is processing review petitions by the developers and may alter the fundamental assumptions in its determination against these review petitions, the documents may have*



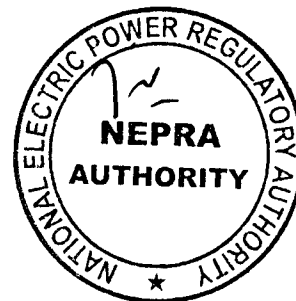
*to be revised substantially and this would entail a lot of wasted effort. Since NEPRA has given 12 months for acceptance of tariff and has asked AEDB to prepare the documents, AEDB requests NEPRA to count 12 months after its decision on review petitions is given."*

In this regard, the Authority considers that the request of AEDB to count 12 months for acceptance of upfront tariff from the date of the instant review decision is justified. The Authority has therefore decided that the validity period of the upfront tariff will be considered from the date of notification of this decision. Since a considerable time period has passed after the original Upfront Tariff Determination was issued, the Authority expects that at the time of issuance of the instant review decision, the AEDB has made considerable headway with regard to the development of a standardized security package. The Authority considers that, for this purpose, the standardized PPA already available with the Private Power & Infrastructure Board (PPIB) can be used with necessary modifications. In view of the aforementioned, the Authority expects that the standardized security package regarding upfront tariff for small hydropower projects will be finalized shortly.

- b) *"There is no mechanism in the standard documents for revision of the annual capacity factor after COD. Its implications in terms of the drafting will have to be considered afresh."*

The Authority considers that this is a misconception regarding the upfront tariff on AEDB's part. The plant factor is only adjustable up till the COD.

- c) *"NEPRA has not considered the interconnection costs in the upfront tariff. The perennial issue remains - the NTDC - DISCO agreement where CPPA is the purchaser but the line is to be constructed by DISCO (or by the project and then transferred to DISCO) will continue to be an obstacle to the bankability of these documents. It may be noted that no PPA has so far been signed with this mode. Merely making the Guidelines does not work (and is not working) unless NEPRA steps forward and resolves this issue."*

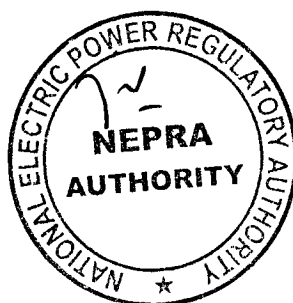




- d) *"In order to comply with the Upfront Tariff Determination, unlike upfront wind projects, AEDB will have to ask for Term Sheets and Financing Documents in the IA due to several reasons, including the tariff true-up on COD. There is no reason why these documents should be provided to NEPRA and not to AEDB, given that the project cannot claim Sinasure, IDC, insurance costs, actual interest on debt (with sharing of 60:40 of lower interest costs), uplift of 40% of local debt for foreign exchange variation, and the like without "authentic documentary evidence" being demonstrated to NEPRA."*
- e) *"NEPRA requires in the Upfront Tariff determination that the hydrology for streams/nullahs hydrology must be monitored and if there is a 'material' change in hydrology, then for the power purchaser to 'place it before NEPRA'. If this results in a downward change in tariff, it will be impossible to bank such a PPA. NEPRA may clarify this, and perhaps replace it with a shift of hydrology risk to purchaser if the hydrology is more than, say 20%, lower over 3 years, and for the purchaser and seller to share the 'upside' if the hydrology is 20% higher than assumed hydrology over 3 years. This can eliminate the uncertainty."*

The Authority feels that there is a need to clarify the clause of the Upfront Tariff Determination which states that, if over long term, material variation between actual hydrology of the site and hydrology assessed by the panel of experts as detailed above is observed by the power purchaser, it shall be placed before the Authority by the power purchaser, for its consideration. It is hereby clarified that the sole purpose of the aforementioned clause was to monitor the practicability and effectiveness of the upfront tariff scheme. There is no intention to adjust the tariff of any project on the basis of changes in hydrology observed subsequent to the COD. Therefore, this clause has no adverse implications on the bankability of the EPA/PPA.

- f) *"The water use charges are made as 'pass-through' items (PTI) - the PTI are payable over a period of 12 months after they are incurred. Under the standardised Water Use Agreements, the WUC are payable each month within 30 days of invoice by the Provincial Government."*

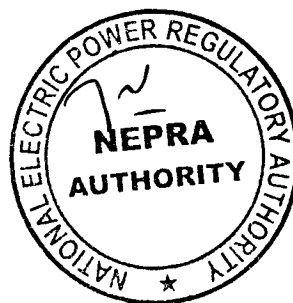


*This means the IPP will have to pay WUCs from its own pocket each month and then bill the purchaser for reimbursement over the next 12 months, and this process will repeat every month. Under the standardised security documents, WUCs are part of the Energy Charges and are billed on per kWh generated basis. NEPRA may clarify this or address this in its final determination after reviewing the review petitions by the project companies.”*

The Authority has already expressed its stance on this issue in previous paragraphs. In short, the practice in vogue for payment of Water Use Charges on monthly basis will continue in case of upfront tariff as well.

- g) *“NEPRA has required that revised net annual plant capacity factor (NAPCF) for projects opting upfront tariff without detailed engineering design will get a revised POE certificate regarding the NAPCF 15 days after COD. AEDB feels that this is not going to work for small hydropower projects, and would be detrimental for success of upfront tariff scheme for small hydropower. For instance, if the revised NAPCF falls substantially below 65%/50%, then should the power purchaser be still obliged to purchase at the given tariff and make capacity payments? More precisely, if the EPA/PPA has been signed (long before COD) with hydrology risk transferred to the purchaser, will the EPA/PPA be amended (extensively) to transfer the risk back to the IPP (as projects with below 65%/ 55% plant factor cannot transfer the hydrology risk to the purchaser). This would make the whole transaction highly bankable [sic].”*

The Authority considers that this is yet another misconception regarding the upfront tariff on AEDB's part. The very purpose of the Authority to include the clause regarding adjustment of the tariff due to change in plant factor based on detailed design was to provide comfort to the investor as well as the power purchaser. Due to the way in which hydropower projects are implemented in practice, such a drastic change in design parameters at the detailed design stage which could result in the need to amend the EPA/PPA at COD is not at all expected. The mechanism for adjustment of plant factor



based on detailed design will in fact make the EPA/PPA more bankable as it is fair and transparent.

- h) *“The projects are required to transfer the complex to the Provincial Governments for Rs. 1 at the end of the Term. However, as evident from the Upfront Tariff Determination for small hydropower projects, no redemption of equity is provided for, unlike the “standardised package” whereby redemption of equity is allowed after payment of debt.”*

The Authority would like to stress that the AEDB’s understanding on this aspect of upfront tariff is incorrect. The assumed Equity has been redeemed in the tariff calculations and this is clearly visible in the tariff tables attached along with the determination of the Authority.

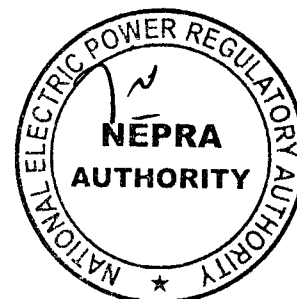
## 11. SUMMARY OF THE UPFRONT TARIFF

- 11.1 For the purpose of clarity for the investors and the general public, a summary of the levelized upfront tariff based on the assumed reference parameters (US cents/ kWh) with various presumed plant factors is given hereunder:

Presumed Plant Factor	Low Head		High Head	
	With 100% foreign debt	With 100% local debt	With 100% foreign debt	With 100% local debt
50%	¢ 10.8892	¢ 12.7804	¢ 10.0597	¢ 11.8299
55%	¢ 10.8892	¢ 12.7804	¢ 9.1452	¢ 10.7545
60%	¢ 10.8892	¢ 12.7804	¢ 8.3831	¢ 9.8583
65%	¢ 10.8892	¢ 12.7804	¢ 7.7383	¢ 9.1001
70%	¢ 10.0903	¢ 11.8676	¢ 7.1855	¢ 8.4501
75%	¢ 9.4374	¢ 11.0764	¢ 6.7065	¢ 7.8867
80%	¢ 8.8475	¢ 10.3841	¢ 6.2874	¢ 7.3938

## 12. ORDER

In exercise of powers under section 7 (3) (a) read with section 31 (4) of the Act, the Authority hereby determines and approves the following upfront tariffs, for generation of electricity from small hydro power generation, for delivery of electricity to the power purchaser:







A) Applicable to low-head hydropower projects with head of 20 meters and below:

**REFERENCE TARIFF ON BOOT BASIS**

	With 100% foreign debt		With 100% local debt	
	Years 1 to10 (Rs. /kWh)	Years 11 to 30 (Rs. /kWh)	Years 1 to10 (Rs. /kWh)	Years 11 to 30 (Rs. /kWh)
<b>Energy Charge</b>				
Variable O & M				
- Local	0.1299	0.1299	0.1299	0.1299
- Foreign	0.1299	0.1299	0.1299	0.1299
<b>Capacity Charge</b>				
Fixed O & M				
- Local	0.6233	0.6233	0.6233	0.6233
- Foreign	0.1558	0.1558	0.1558	0.1558
Insurance	0.7841	0.7841	0.7841	0.7841
Return on equity	4.8511	4.9464	5.1886	5.2904
Debt servicing	6.7417	-	9.1786	-
<b>Total tariff</b>	<b>13.4158</b>	<b>6.7694</b>	<b>16.1901</b>	<b>7.1134</b>

Levelised tariff		
- Rs. /kWh	11.1016	13.0297
- US cents/kwh.	10.8892	12.7804



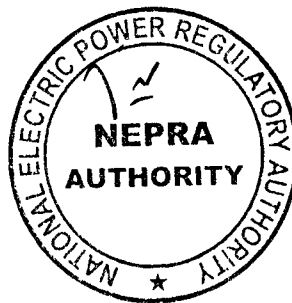


B) Applicable to high-head hydropower projects with head of more than 20 meters:

**REFERENCE TARIFF ON BOOT BASIS**

	With 100% foreign debt		With 100% local debt	
	Years 1 to10 (Rs. /kWh)	Years 11 to 30 (Rs. /kWh)	Years 1 to10 (Rs. /kWh)	Years 11 to 30 (Rs. /kWh)
<b>Energy Charge</b>				
Variable O & M				
- Local	0.1183	0.1183	0.1183	0.1183
- Foreign	0.1183	0.1183	0.1183	0.1183
<b>Capacity Charge</b>				
Fixed O & M				
- Local	0.5678	0.5678	0.5678	0.5678
- Foreign	0.1419	0.1419	0.1419	0.1419
Insurance	0.7646	0.7646	0.7646	0.7646
Return on equity	4.4676	4.5553	4.7918	4.8859
Debt servicing	6.2087	-	8.4767	-
<b>Total tariff</b>	<b>12.3872</b>	<b>6.2662</b>	<b>14.9794</b>	<b>6.5968</b>

Levelised tariff		
- Rs. /kWh	10.2559	12.0606
- US cents/kwh.	10.0597	11.8299





C) Summary of indexations applicable on various tariff components is as follows:

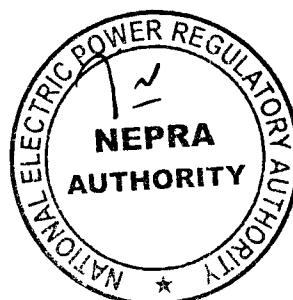
	<u>Indexation</u>	
Variable O & M		
- Local	CPI (General)	
- Foreign	US CPI and PKR/US\$	
Fixed O & M		
- Local	CPI (General)	
- Foreign	US CPI and PKR/US\$	
Insurance	PKR/US \$	
Return on equity	PKR/US \$	
Debt servicing		
- Principal	<u>Foreign debt</u> PKR/US \$	<u>Local debt</u> -
- Interest	3 months US \$ LIBOR & PKR/US \$	3 months KIBOR

i) Hydrological risk

Projects having certified net annual plant factor below 65% for low head projects and below 50% for high head projects, after allowing auxiliary consumption @ 1% on gross installed capacity, will not be eligible for transfer of hydrological risk to the power purchaser.

The eligible projects will have one-time irrevocable option, at the time of opting for upfront tariff, to bear hydrological risk or to transfer this risk to the power purchaser..

In cases where hydrological risk is borne by the power purchaser, the company shall receive an assured minimum amount every month from the power purchaser to cover its fixed costs (fixed O&M, insurance, return on equity and debt servicing) in case the plant is available but sufficient water i.e. at least equal to the average historic hydrology for that particular month





is not available to generate electricity. Payment on account of hydrological risk shall be made by the power purchaser, on the basis of benchmark monthly energy generation, based on the average historic hydrology for that particular month. Further, the tariff will be limited to the extent of benchmark net annual energy generation of the project; while net annual energy generation supplied to the power purchaser in a year, in excess of the benchmark net annual energy generation will be charged at 10% of the prevailing upfront tariff. The power purchaser before signing the Power Purchase Agreement should verify the month wise benchmark hydrology.

Power producers opting to bear hydrology risk will be allowed to sell all power at the prevailing upfront tariff.

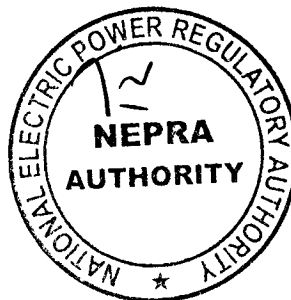
ii) **Adjustment on account of savings in cost of debt**

This upfront tariff has been worked out on the basis of 3 months LIBOR of 0.28250% plus a premium of 450 basis points for foreign financing and 3 months KIBOR of 6.73% plus a premium of 350 basis points for local financing. In case the spread negotiated is less than the said limits, the savings in the premium over KIBOR/LIBOR shall be shared by the power purchaser and the power producer in the ratio of 60 : 40 respectively. The power producer shall submit relevant authentic documentary evidence to the Authority, for the aforesaid adjustment within 15 days of commercial operations date of the relevant company/project. In case the premium on KIBOR/LIBOR is higher than that mentioned above, no adjustment on the basis of actual higher premium will be allowed.

The interest during construction assumed for the purpose of tariff calculations is as follows:

	Low head hydropower projects		High head hydropower projects	
	With 100% foreign debt	With 100% local debt	With 100% foreign debt	With 100% local debt
	US \$ in millions per MW		US \$ in millions per MW	
Interest during construction	0.241	0.502	0.171	0.365

The interest during construction will be reassessed at commercial operations date with actual LIBOR/KIBOR and spread as detailed above.



iii) **Adjustment on account of Sinosure fees**

For projects having foreign financing, an appropriate adjustment in benchmark project cost will be allowed on account of Sinosure or other export credit insurance fees, where applicable, at actual not exceeding 7% of the total benchmark foreign debt. In case the sponsors manage better alternative Sinosure or other credit insurance arrangement, the same will be considered at the time of allowing adjustment of such fees. The power producer, if it intends to claim Sinosure or other such fees, shall submit relevant authentic documentary evidence to the Authority, within 15 days of commercial operations date of the relevant company/project.

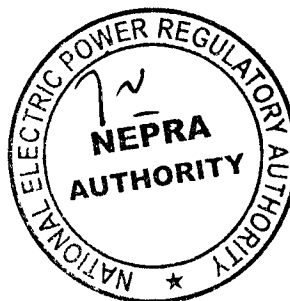
iv) **Adjustment on account of actual plant factor**

The above tariff has been worked out, after allowing auxiliary consumption @ 1% on gross installed capacity, on the following plant factors:

	<b>Annual plant factor</b>
Low-head hydropower projects with head of 20 meters and below	65%
High-head hydropower projects with head of more than 20 meters	50%

This tariff will be adjusted based on actual certified net annual plant factor, if actual certified net annual plant factor of the site is above 65% for low head hydropower projects and above 50% for high head hydropower projects.

For companies opting for upfront tariff without finalization of their detailed project design, the power producer shall submit request for onetime adjustment, within 15 days of the commercial operations date of the relevant company/project, accompanied by the revised panel of experts certificate regarding net annual plant factor, on the basis of detailed project design. Other terms and conditions of the upfront tariff, including for installed capacity and net annual plant factor will remain applicable. For projects which have already opted for upfront tariff on the basis of detailed project design, this onetime adjustment will not be applicable.





v) Adjustment for loan structure

The company will have to provide its proposed loan structure to the Authority, along with its application opting for upfront tariff. The Authority will allow tariff to the company on the basis of its proposed loan structure. The tariff once allowed (i.e. on the basis of 100% foreign loan, 100% local loan or mixture of foreign and local loan) will not be subject to any further change, regardless of any subsequent change(s) in the financing structure, etc., except for the adjustment in accordance with the onetime adjustment mechanism detailed herein, where applicable, and the application of relevant indexations/adjustment as detailed in this order.

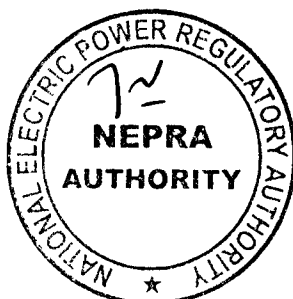
Tariffs detailed in this order have been calculated on the basis of project financing structure of equity plus 100% foreign loan and equity plus 100% local loan. For proposed loan composition other than the one mentioned above i.e. 100% foreign/local, the Authority after consideration will allow a two part tariff on the basis of request as follows:

Part 1	=	Tariff calculated on the basis of project financing structure of equity plus 100% foreign loan x Foreign debt of the relevant company as a percentage of its total debt
Part 2	=	Tariff calculated on the basis of project financing structure of equity plus 100% local loan x Local debt of the relevant company as a percentage of its total debt

All the terms and conditions detailed in this order will, with due alteration of details, also apply to two part tariff, as detailed above, allowed to any company.

vi) Pass-Through Items

If the company is obligated to pay any tax on its income from generation of electricity from small hydro, or water use charges/IRSA charges/other such levies or charges, not being of refundable nature, are payable by the company for generation of electricity from small hydro or any duties and/or taxes, not being of refundable nature, are imposed on the company upto the commencement of its commercial operations for import of its plant,



3



machinery and equipment, the exact amount paid by the company on these accounts shall be reimbursed by the power purchaser on production of original receipts. This payment should be considered as a pass-through payment spread over a twelve months period. The payment on account of water use charges shall be spread equally over 12 months for each year. Furthermore, in such a scenario, the company shall also submit to the power purchaser details of any tax/levies/charges savings and the power purchaser shall deduct the amount of these savings from its payment to the company on account of taxation.

The adjustment for duties and/or taxes will be restricted only to the extent of duties and/or taxes directly imposed on the company. No adjustment for duties and/or taxes imposed on third parties such as contractors, suppliers, consultants, etc., will be allowed. Further, withholding tax on dividend will also not be allowed as a pass through item.

vii) **Onetime adjustment of Tariff after COD**

The following Total EPC costs will be assumed for the purpose of Onetime adjustment of Tariff:

High Head	US\$ 2.409 Million / MW
Low Head	US\$ 3.211 Million / MW

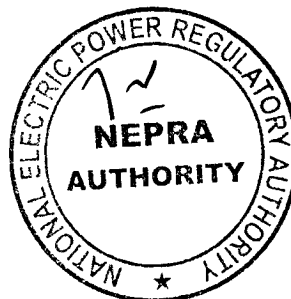
40% of the assumed EPC cost will be adjusted over 36 months (maximum) starting from the date of financial close of the project for USD/PKR exchange rate variation.

60% of the assumed EPC cost converted at reference USD/PKR exchange rate of 101.95 will be adjusted over 36 months (maximum) starting from the date of financial close of the project according to the formula below:

$$P_n = 0.51 + 0.10*(C_n/C_o) + 0.09*(S_n/S_o) + 0.15*(F_n/F_o) + 0.15*(L_n/L_o)$$

Where;

P<sub>n</sub> is the adjustment factor to be applied for civil works;





Cn is the index value for the relevant month for Cement as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Sn is the index value for the relevant month for Steel Bar & Sheets as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Fn is the index value for the relevant month for Diesel Oil as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Ln is the index value for the relevant month for Mason (Raj) for Rawalpindi as per the Wage Rates published in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Co, So, Fo and Lo are the reference values of the price indices for Cement, Steel Bar & Sheets, Diesel Oil and Mason (Raj) respectively as available at the time of financial close of the project.

The adjustments will be made on quarterly basis and where applicable, the amounts will be spread equally into quarters after considering the annual phasing already allowed by the Authority in its determination.

All other project costs, excluding IDC will be considered as local costs and shall not be adjusted in any way.

IDC will be adjusted based on the combined impact of the allowed financing mix and One-Time adjustment of EPC cost.

viii) Indexations/adjustment

The tariff allowed to any company, after onetime adjustment where applicable, will remain unchanged throughout the tariff control period, except for the adjustments due to indexations/adjustment detailed in this order. The indexations of O & M, return on equity, principal repayment of debt and interest will be allowed on quarterly basis on 1<sup>st</sup> July, 1<sup>st</sup> October, 1<sup>st</sup> January and 1<sup>st</sup> April. Insurance component will be adjusted annually.

The mode of indexations/adjustment will be as under: ✓





a) Indexations applicable to O & M:

$$VOM_{(LREV)} = VOM_{(LREF)} * CPI-G_{(REV)} / CPI-G_{(REF)}$$

$$VOM_{(FREX)} = VOM_{(FREX)} * US\ CPI_{(REV)} / US\ CPI_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

$$FOM_{(LREV)} = FOM_{(LREF)} * CPI-G_{(REV)} / CPI-G_{(REF)}$$

$$FOM_{(FREX)} = FOM_{(FREX)} * US\ CPI_{(REV)} / US\ CPI_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

Where:

$VOM_{(LREV)}$  = The revised applicable variable O & M local component of tariff

$VOM_{(FREX)}$  = The revised applicable variable O & M foreign component of tariff

$FOM_{(LREV)}$  = The revised applicable fixed O & M local component of tariff

$FOM_{(FREX)}$  = The revised applicable fixed O & M foreign component of tariff

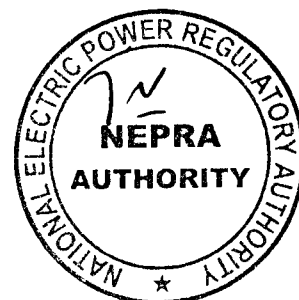
$VOM_{(LREF)}$  = The reference variable O & M local component of tariff for the relevant period

$VOM_{(FREX)}$  = The reference variable O & M foreign component of tariff for the relevant period

$FOM_{(LREF)}$  = The reference fixed O & M local component of tariff for the relevant period

$FOM_{(FREX)}$  = The reference fixed O & M foreign component of tariff for the relevant period

$CPI-G_{(REV)}$  = The revised Consumer Price Index (General) based on latest available information with respect to Consumer Price Index (General) as notified by the Pakistan Bureau of Statistics





US CPI<sub>(REV)</sub> = The revised US CPI (all urban consumers) based on latest available information with respect to US CPI (notified by US Bureau of Labor Statistics)

ER<sub>(REV)</sub> = Revised TT & OD selling rate of US Dollar as notified by the National Bank of Pakistan as at the last day of the preceding quarter

CPI-G<sub>(REF)</sub> = Reference Consumer Price Index (General) - Current reference 199.66 Consumer Price Index (General) for the month of May 2015 as notified by the Pakistan Bureau of Statistics

US CPI<sub>(REF)</sub> = Reference US CPI (all urban consumers) - Current reference 237.805 US CPI (all urban consumers) for the month of May 2015 as notified by the US Bureau of Labor Statistics

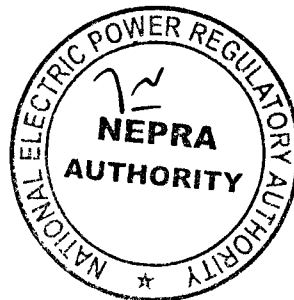
ER<sub>(REF)</sub> = Reference TT & OD selling rate of US dollar - current reference 101.95

b) Adjustment of insurance component

In case of insurance denominated in US \$, insurance cost component of tariff will be adjusted only on account of US \$/PKR exchange rate variation annually, not exceeding the insurance cost actually incurred. For availing this adjustment, relevant company will have to substantiate through authentic documentary evidence that the insurance cost allowed to it (from COD to date) does not exceed the insurance cost actually incurred.

c) Indexations applicable to return on equity

$$ROE_{(REV)} = ROE_{(REF)} * ER_{(REV)} / ER_{(REF)}$$





Where:

$ROE_{(REV)}$  = The revised applicable return on equity tariff component indexed with exchange rate parity

$ROE_{(REF)}$  = The reference return on equity tariff component for the relevant period

$ER_{(REV)}$  = Revised TT & OD selling rate of US Dollar as notified by the National Bank of Pakistan as at the last day of the preceding quarter

$ER_{(REF)}$  = Reference TT & OD selling rate of US dollar – current reference 101.95

d) Indexations applicable to foreign debt

Foreign debt and its interest will be adjusted on quarterly basis, on account of revised TT & OD selling rate of US Dollar, as notified by the National Bank of Pakistan as at the last day of the preceding quarter, over the applicable reference exchange rate.

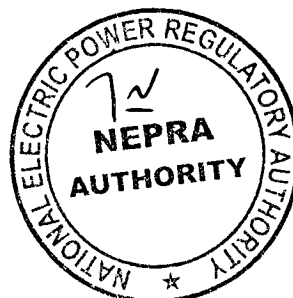
e) Indexation applicable to foreign interest

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 0.28250\%) / 4$$

Where:

$\Delta I$  = The variation in interest charges applicable corresponding to variation in 3 months LIBOR.  $\Delta I$  can be positive or negative depending upon whether 3 months LIBOR<sub>(REV)</sub> per annum > or < 0.28250%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each quarter under adjustment.

$P_{(REV)}$  = The outstanding principal (as indicated in the attached





debt service schedule to this order at Annex-IV B/VI B), on a quarterly basis at the relevant quarterly calculations date. Quarter 1 shall commence on the commercial operations date (i.e. the first figure will be used for calculation purposes of interest for the first quarter after COD).

LIBOR<sub>(REV)</sub> = Revised 3 months US \$ LIBOR as at the last day of the preceding quarter

f) Indexation applicable to local interest

$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 6.73\%) / 4$

Where:

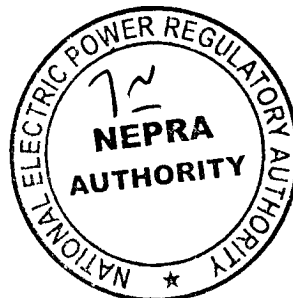
$\Delta I$  = The variation in interest charges applicable corresponding to variation in 3 months KIBOR.  $\Delta I$  can be positive or negative depending upon whether 3 months KIBOR<sub>(REV)</sub> per annum > or < 6.73%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each quarter under adjustment.

$P_{(REV)}$  = is the revised outstanding principal (as indicated in the attached debt service schedule to this order at Annex-V B/VII B), after allowing onetime adjustment for exchange rate parity, on a quarterly basis at the relevant quarterly calculations date. Quarter 1 shall commence on the commercial operations date (i.e. the first figure will be used for calculation purposes of interest for the first quarter after COD).

KIBOR<sub>(REV)</sub> = Revised 3 months KIBOR as at the last day of the preceding quarter

Note:

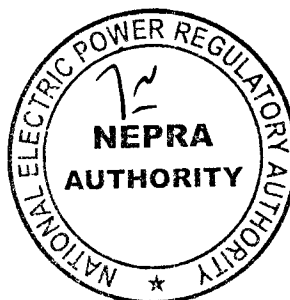
Above described indexations/adjustment will be approved and announced by the Authority within fifteen days of the company's request for ✓



indexations/adjustment in tariff in accordance with the requisite mechanisms stipulated herein.

**Terms and Conditions of Upfront Tariff:**

- ix) These tariffs are only applicable for small hydro power generation companies (hereinafter referred to as the "companies") meeting the following conditions:
- a) Companies with installed capacity of the project, for which upfront tariff is being opted, in the range of 1 MW to 25 MW.
  - b) Companies recommended by the relevant agency for the grant of upfront tariff on the format attached as Annex-I and having a certificate from the relevant agency, on the format attached as Annex-II, about the net annual plant factor of their site, based on their proposed installed capacity and long term historical hydrological data of the site.
  - c) Companies whose proposed plant and machinery is new. The relevant company will provide a certification in this regard and about other requirements of this upfront tariff on the format attached as Annex-III, along with their application to the Authority for acceptance of upfront tariff.
  - d) Companies who have not already executed a power purchase agreement with the power purchaser for the relevant project or have achieved financial close for the relevant project.
- x) The plant and machinery of the project, will be certified as new and of international standard by an independent engineer, appointed in accordance with the terms of power purchase agreement before any payment under this tariff is made. The said certificate shall be obtained and retained by the power purchaser.
- xi) The choice to opt for this tariff will only be available up to 12 months, from the date of notification of this order.
- xii) The upfront tariff granted to any particular company for any particular project will no longer remain applicable/valid if, financial close is not achieved for the relevant project within 18 months from the date of





decision of the Authority granting upfront tariff for that particular project, or a generation license is declined to the relevant company/project.

- xiii) The targeted maximum construction period after financial close is 36 months. No adjustment will be allowed in this tariff to account for financial impact of any delay in project construction. However, the failure of a project to complete construction within 36 months of financial close will not invalidate the tariff granted to it.
- xiv) The decision to opt for upfront tariff once exercised will be irrevocable.
- xv) In the above tariff no adjustment for certified emission reductions has been accounted for. However, if the company chooses to register for carbon credits, the subsequent proceeds from trading of carbon credits, shall be distributed between the power purchaser and the power producer in accordance with the Policy for Development of Renewable Energy for Power Generation 2006, as amended from time to time.
- xvi) This upfront tariff would also be available, for hydro power generation companies located outside legal jurisdiction of the Authority, under the provisions of National Electric Power Regulatory Authority Interim Power Procurement (Procedures and Standards) Regulations, 2005. All indexations and adjustments in the tariff in such cases may be directly determined by NEPRA, however this will be subject to the terms and conditions of the Power Acquisition Contract between NTDC and the foreign company along with necessary government approvals/ understanding.
- xvii) This upfront tariff will only be available for green field hydropower projects.
- xviii) This tariff will be applicable for a period of thirty years (30) from the commencement of commercial operations.
- xix) The terms and conditions specified herein form an integral part of this tariff.
- xx) **Design & Manufacturing Standards:**

Small hydro power generation system shall be designed, manufactured and tested in accordance with the latest ASME, ANSI, IEC standards or other equivalent standards. All plant and equipment shall be new.





**xxi) Power curve of the hydro power complex:**

The power curve of the hydro power plant shall be verified by the power purchaser, as part of the commissioning tests, according to the latest IEC standards and shall be used to measure the performance of the hydro generating units.

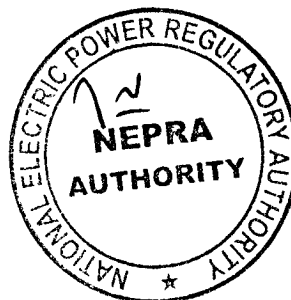
**xxii) Emissions Trading/ Carbon Credits:**

The company granted this tariff shall process and obtain emissions/carbon credits expeditiously and credit the proceeds to the power purchaser in accordance with the Policy for Development of Renewable Energy for Power Generation 2006, as amended from time to time.

**xxiii) General:**

- The power purchaser, before signing the Power Purchase Agreement, shall satisfy itself that the plant and machinery proposed to be installed is new and is of an acceptable quality.
- The projects allowed upfront tariff will be transferred, at the end of tariff control period of 30 years, to the power purchaser/relevant Government at a notional price of Rs. 1.
- The Power Purchase Agreement should stipulate terms and conditions, regarding periodic physical inspection of plant and machinery, ensuring that the power plant of the company allowed this tariff is properly maintained and continues to supply energy for the entire tariff control period of 30 years.
- Pre COD sale of electricity is allowed to the power producer, subject to the terms and conditions of Power Purchase Agreement, at the applicable tariff excluding principal repayment of debt component and interest component. However, pre COD sale will not alter the required commercial operations date stipulated by the Power Purchase Agreement in any manner.
- General assumptions, which are not covered in this determination and National Electric Power Regulatory Authority Upfront Tariff (Approval & Procedure) Regulations, 2011, may be dealt with as per the standard terms of the Power Purchase Agreement.

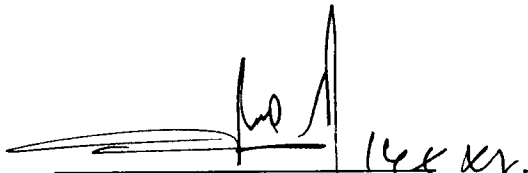
The order at paragraph 12 is recommended for notification by the Federal Government in the official gazette in accordance with Section 31(4) of the

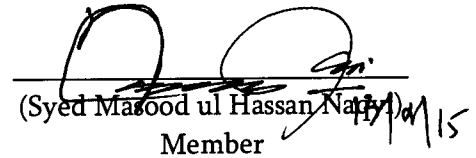





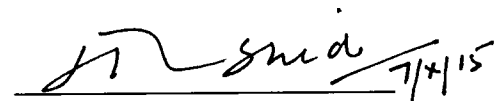
Regulation of Generation, Transmission and Distribution of Electric Power Act,  
1997.

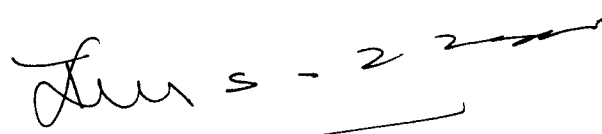
AUTHORITY


  
(Khawaja Muhammad Naeem)  
Member

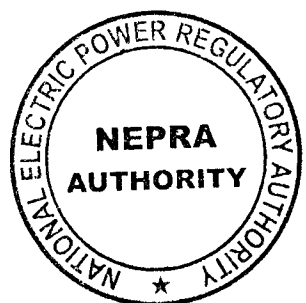
  
(Syed Mazood ul Hassan Nadeem)  
Member

  
(Himayat Ullah Khan)  
Member

  
(Major (Rtd.) Haroon Rasheed)  
Vice Chairman

  
(Tariq Saddozai)  
Chairman

  
14-10-2015





[On letter head of relevant agency]

Annexure - I

Date: -----

The Registrar,  
National Electric Power Regulatory Authority,  
Islamabad

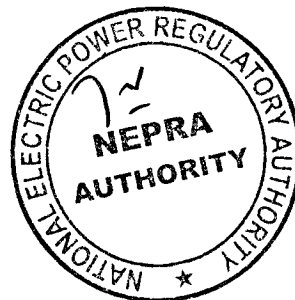
**SUBJECT:— Recommendation for grant of upfront tariff**

1. We hereby recommend [NAME OF THE COMPANY], for the grant of upfront tariff, as approved by the National Electric Power Regulatory Authority *vide* its determination dated [DATE OF THE UPFRONT TARIFF DETERMINATION], for its project of [GROSS INSTALLED CAPACITY OF THE PROJECT] MW installed capacity to be located at [ADDRESS OF THE PROJECT SITE].
2. We further confirm that our panel of experts has provided certificate regarding annual plant factor of [NAME OF THE COMPANY] for its project of [GROSS INSTALLED CAPACITY OF THE PROJECT] MW installed capacity to be located at [ADDRESS OF THE PROJECT SITE] on the prescribed format *vide* letter no. \_\_\_\_\_ dated: \_\_\_\_\_ which is enclosed for consideration of the Authority.

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Dated: \_\_\_\_\_



Date: \_\_\_\_\_

The Registrar,  
National Electric Power Regulatory Authority,  
Islamabad

**SUBJECT:— Certificate Regarding Annual Plant Factor**

1. A Panel of Experts (POE) was appointed by [NAME OF RELEVANT AGENCY] in respect of small hydropower project of [NAME OF THE COMPANY].
2. Based on the proposed installed capacity/installed capacity as per the detailed design [DELETE WHICHEVER IS INAPPLICABLE] and long term historical hydrological site data, the findings of the POE are as follows:

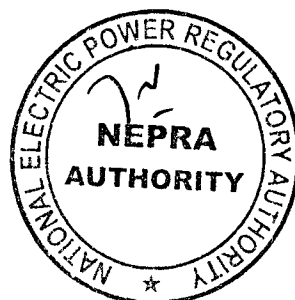
Name of the company	:	
Address of project site	:	
Gross head [meters]	:	
Net head [meters]	:	
Gross plant installed capacity [MW]	:	
Auxiliary consumption @ 1%	:	
Net plant installed capacity [MW] (to be used for computation of plant factor)	:	
Net deliverable energy [Gwh.]	:	
Plant factor based on net deliverable energy	:	

Monthly benchmark hydrology [m<sup>3</sup>/s]:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total

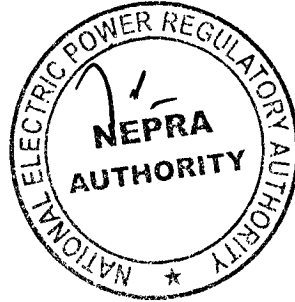
Monthly benchmark net deliverable energy [GWh.]:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total



3. It is hereby confirmed that the plant factor as detailed above, may be used for allowing upfront tariff, to the aforesaid company for the project site detailed above, and above findings of the POE may be made a basis for making hydrological risk payments, if any, by the power purchaser.

[TO BE SIGNED BY REPRESENTATIVE OF THE RELEVANT AGENCY]



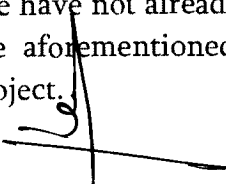
Date: \_\_\_\_\_

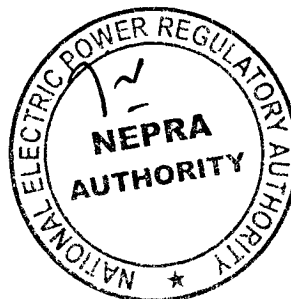
The Registrar,  
National Electric Power Regulatory Authority,  
Islamabad

**SUBJECT:— Certifications in respect of application opting for upfront tariff  
for small hydropower generation**

I, [NAME, DESIGNATION], being the duly Authorized representative of [NAME OF APPLICANT COMPANY] by virtue of [BOARD RESOLUTION/POWER OF ATTORNEY DATED ], hereby confirm that for our project of [GROSS INSTALLED CAPACITY OF THE PROJECT] MW installed capacity to be located at [ADDRESS OF THE PROJECT SITE]:

1. All the plant and machinery to be installed will be brand new.
2. [NAME OF APPLICANT COMPANY] will/will not [DELETE WHICHEVER IS INAPPLICABLE] bear the hydrological risk.
3. The above mentioned is a green field hydro power project, [NAME OF APPLICANT COMPANY] has not availed any soft loan for the aforesaid project. In case any soft loan becomes available to [NAME OF APPLICANT COMPANY] we will intimate the Authority, within 10 days of such event and will not claim the upfront tariff granted to us.
4. The annual plant factor of the aforementioned project, as certified by the panel of experts, is based / not based [DELETE WHICHEVER IS INAPPLICABLE] on the detailed design report.
5. We have not already executed a power purchase agreement with the power purchaser for the aforementioned project or have achieved financial close for the aforementioned project.





6. [NAME OF APPLICANT COMPANY] may be granted upfront tariff based on the following loan structure:

Foreign loan	_____ %
Local loan	_____
<b>TOTAL</b>	<u>100</u>

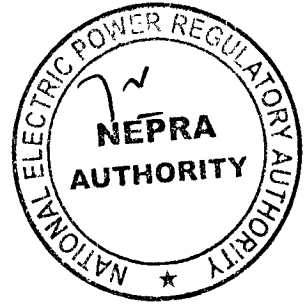
Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

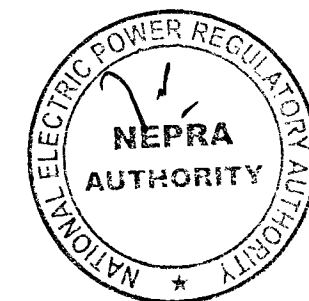
Designation: \_\_\_\_\_

Company Seal



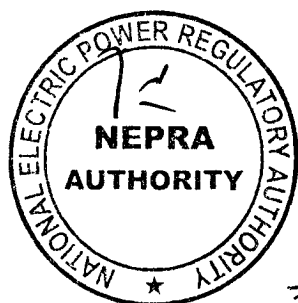
**UPFRONT TARIFF FOR LOW HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% FOREIGN FINANCING  
REFERENCE TARIFF**

Year	Energy Purchase Price		Capacity Purchase Price						Total Tariff
	Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Fixed O&M Foreign	Insurance	Return on Equity (ROE)	Principial Repayment	Interest	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	
1	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	4.2666	2.4751	13.4158
2	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	4.4743	2.2674	13.4158
3	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	4.6922	2.0495	13.4158
4	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	4.9207	1.8211	13.4158
5	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	5.1602	1.5815	13.4158
6	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	5.4115	1.3302	13.4158
7	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	5.6750	1.0667	13.4158
8	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	5.9513	0.7904	13.4158
9	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	6.2410	0.5007	13.4158
10	0.1299	0.1299	0.6233	0.1558	0.7841	4.8511	6.5449	0.1968	13.4158
11	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
12	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
13	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
14	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
15	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
16	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
17	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
18	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
19	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
20	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
21	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
22	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
23	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
24	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
25	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
26	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
27	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
28	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
29	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
30	0.1299	0.1299	0.6233	0.1558	0.7841	4.9464	-	-	6.7694
<b>Levelized Tariff</b>	<b>0.1299</b>	<b>0.1299</b>	<b>0.6233</b>	<b>0.1558</b>	<b>0.7841</b>	<b>4.8843</b>	<b>3.3500</b>	<b>1.0443</b>	<b>11.1016</b>



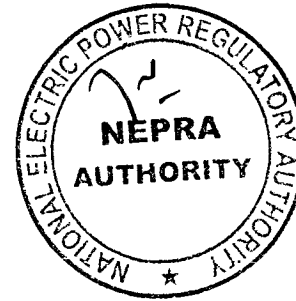
**UPFRONT TARIFF FOR LOW HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% FOREIGN FINANCING**  
**Debt Servicing Schedule for the Purpose of Indexation of Debt Component Only**

Period	Foreign					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million US\$	Repayment Million US\$	Mark-Up Million US\$	Balance Million US\$	Debt Service Million US\$			
	7.67	0.15	0.09	7.52	0.2423			
	7.52	0.15	0.09	7.36	0.2423			
	7.36	0.15	0.09	7.21	0.2423			
	7.21	0.16	0.09	7.05	0.2423			
1	7.67	0.61	0.36	7.05	0.9692	4.2666	2.4751	6.7417
	7.05	0.16	0.08	6.90	0.2423			
	6.90	0.16	0.08	6.74	0.2423			
	6.74	0.16	0.08	6.57	0.2423			
	6.57	0.16	0.08	6.41	0.2423			
2	7.05	0.64	0.33	6.41	0.9692	4.4743	2.2674	6.7417
	6.41	0.17	0.08	6.25	0.2423			
	6.25	0.17	0.07	6.08	0.2423			
	6.08	0.17	0.07	5.91	0.2423			
	5.91	0.17	0.07	5.74	0.2423			
3	6.41	0.67	0.29	5.74	0.9692	4.6922	2.0495	6.7417
	5.74	0.17	0.07	5.56	0.2423			
	5.56	0.18	0.07	5.39	0.2423			
	5.39	0.18	0.06	5.21	0.2423			
	5.21	0.18	0.06	5.03	0.2423			
4	5.74	0.71	0.26	5.03	0.9692	4.9207	1.8211	6.7417
	5.03	0.18	0.06	4.85	0.2423			
	4.85	0.18	0.06	4.66	0.2423			
	4.66	0.19	0.06	4.48	0.2423			
	4.48	0.19	0.05	4.29	0.2423			
5	5.03	0.74	0.23	4.29	0.9692	5.1602	1.5815	6.7417
	4.29	0.19	0.05	4.10	0.2423			
	4.10	0.19	0.05	3.90	0.2423			
	3.90	0.20	0.05	3.71	0.2423			
	3.71	0.20	0.04	3.51	0.2423			
6	4.29	0.78	0.19	3.51	0.9692	5.4115	1.3302	6.7417
	3.51	0.20	0.04	3.31	0.2423			
	3.31	0.20	0.04	3.11	0.2423			
	3.11	0.21	0.04	2.90	0.2423			
	2.90	0.21	0.03	2.69	0.2423			
7	3.51	0.82	0.15	2.69	0.9692	5.6750	1.0667	6.7417
	2.69	0.21	0.03	2.48	0.2423			
	2.48	0.21	0.03	2.27	0.2423			
	2.27	0.22	0.03	2.06	0.2423			
	2.06	0.22	0.02	1.84	0.2423			
8	2.69	0.86	0.11	1.84	0.9692	5.9513	0.7904	6.7417
	1.84	0.22	0.02	1.62	0.2423			
	1.62	0.22	0.02	1.39	0.2423			
	1.39	0.23	0.02	1.17	0.2423			
	1.17	0.23	0.01	0.94	0.2423			
9	1.84	0.90	0.07	0.94	0.9692	6.2410	0.5007	6.7417
	0.94	0.23	0.01	0.71	0.2423			
	0.71	0.23	0.01	0.48	0.2423			
	0.48	0.24	0.01	0.24	0.2423			
	0.24	0.24	0.00	(0.00)	0.2423			
10	0.94	0.94	0.03	(0.00)	0.9692	6.5449	0.1968	6.7417



**UPFRONT TARIFF FOR LOW HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% LOCAL FINANCING  
REFERENCE TARIFF**

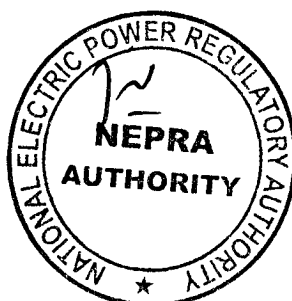
Year	Energy Purchase Price		Capacity Purchase Price							Total Tariff
	Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Fixed O&M Foreign	Insurance	Return on Equity (ROE)	Principal Repayment	Interest		
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh		
1	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	3.4730	5.7056	16.1901	
2	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	3.8421	5.3364	16.1901	
3	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	4.2505	4.9280	16.1901	
4	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	4.7023	4.4762	16.1901	
5	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	5.2021	3.9764	16.1901	
6	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	5.7551	3.4235	16.1901	
7	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	6.3668	2.8118	16.1901	
8	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	7.0435	2.1350	16.1901	
9	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	7.7922	1.3864	16.1901	
10	0.1299	0.1299	0.6233	0.1558	0.7841	5.1886	8.6204	0.5581	16.1901	
11	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
12	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
13	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
14	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
15	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
16	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
17	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
18	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
19	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
20	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
21	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
22	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
23	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
24	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
25	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
26	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
27	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
28	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
29	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
30	0.1299	0.1299	0.6233	0.1558	0.7841	5.2904	-	-	7.1134	
<b>Levelized Tariff</b>	<b>0.1299</b>	<b>0.1299</b>	<b>0.6233</b>	<b>0.1558</b>	<b>0.7841</b>	<b>5.2240</b>	<b>3.4367</b>	<b>2.5460</b>	<b>13.0297</b>	





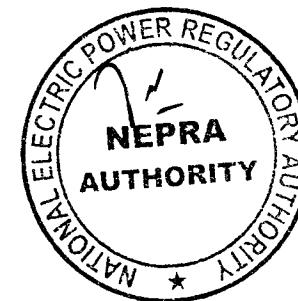
**UPFRONT TARIFF FOR LOW HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% LOCAL FINANCING**  
**Debt Servicing Schedule for the Purpose of Indexation of Debt Component Only**

Period	Local Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million Rs.	Repayment Million Rs.	Mark-Up Million Rs.	Balance Million Rs.	Debt Service Million Rs.			
	321.58	4.71	8.22	316.87	12.93			
	316.87	4.83	8.10	312.04	12.93			
	312.04	4.95	7.98	307.09	12.93			
	307.09	5.08	7.85	302.01	12.93			
1	321.58	19.58	32.16	302.01	51.74	3.4730	5.7056	9.1785
	302.01	5.21	7.72	296.79	12.93			
	296.79	5.34	7.59	291.45	12.93			
	291.45	5.48	7.45	285.97	12.93			
	285.97	5.62	7.31	280.35	12.93			
2	302.01	21.66	30.08	280.35	51.74	3.8421	5.3364	9.1785
	280.35	5.77	7.17	274.58	12.93			
	274.58	5.91	7.02	268.67	12.93			
	268.67	6.06	6.87	262.61	12.93			
	262.61	6.22	6.72	256.39	12.93			
3	280.35	23.96	27.78	256.39	51.74	4.2505	4.9280	9.1785
	256.39	6.38	6.56	250.01	12.93			
	250.01	6.54	6.39	243.47	12.93			
	243.47	6.71	6.23	236.76	12.93			
	236.76	6.88	6.06	229.88	12.93			
4	256.39	26.51	25.23	229.88	51.74	4.7023	4.4762	9.1785
	229.88	7.06	5.88	222.82	12.93			
	222.82	7.24	5.70	215.59	12.93			
	215.59	7.42	5.51	208.17	12.93			
	208.17	7.61	5.32	200.55	12.93			
5	229.88	29.32	22.42	200.55	51.74	5.2021	3.9764	9.1785
	200.55	7.81	5.13	192.75	12.93			
	192.75	8.01	4.93	184.74	12.93			
	184.74	8.21	4.72	176.53	12.93			
	176.53	8.42	4.51	168.11	12.93			
6	200.55	32.44	19.30	168.11	51.74	5.7551	3.4235	9.1785
	168.11	8.64	4.30	159.48	12.93			
	159.48	8.86	4.08	150.62	12.93			
	150.62	9.08	3.85	141.54	12.93			
	141.54	9.32	3.62	132.22	12.93			
7	168.11	35.89	15.85	132.22	51.74	6.3668	2.8118	9.1785
	132.22	9.55	3.38	122.67	12.93			
	122.67	9.80	3.14	112.87	12.93			
	112.87	10.05	2.89	102.82	12.93			
	102.82	10.31	2.63	92.52	12.93			
8	132.22	39.70	12.04	92.52	51.74	7.0435	2.1350	9.1785
	92.52	10.57	2.37	81.95	12.93			
	81.95	10.84	2.10	71.11	12.93			
	71.11	11.12	1.82	59.99	12.93			
	59.99	11.40	1.53	48.59	12.93			
9	92.52	43.92	7.82	48.59	51.74	7.7922	1.3864	9.1785
	48.59	11.69	1.24	36.90	12.93			
	36.90	11.99	0.94	24.91	12.93			
	24.91	12.30	0.64	12.61	12.93			
	12.61	12.61	0.32	0.00	12.93			
10	48.59	48.59	3.15	0.00	51.74	8.6204	0.5581	9.1785



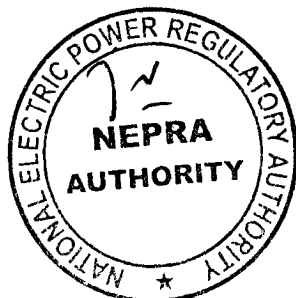
**UPFRONT TARIFF FOR HIGH HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% FOREIGN FINANCING  
REFERENCE TARIFF**

Year	Energy Purchase Price		Capacity Purchase Price						Total	Tariff
	Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Fixed O&M Foreign	Insurance	Return on Equity (ROE)	Principal Repayment	Interest		
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh		
1	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	3.9293	2.2794	12.3872	
2	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	4.1206	2.0881	12.3872	
3	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	4.3212	1.8875	12.3872	
4	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	4.5316	1.6771	12.3872	
5	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	4.7522	1.4564	12.3872	
6	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	4.9836	1.2251	12.3872	
7	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	5.2263	0.9824	12.3872	
8	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	5.4807	0.7279	12.3872	
9	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	5.7476	0.4611	12.3872	
10	0.1183	0.1183	0.5678	0.1419	0.7646	4.4676	6.0274	0.1812	12.3872	
11	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
12	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
13	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
14	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
15	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
16	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
17	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
18	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
19	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
20	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
21	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
22	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
23	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
24	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
25	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
26	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
27	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
28	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
29	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
30	0.1183	0.1183	0.5678	0.1419	0.7646	4.5553	-	-	6.2662	
<b>Levelized Tariff</b>	<b>0.1183</b>	<b>0.1183</b>	<b>0.5678</b>	<b>0.1419</b>	<b>0.7646</b>	<b>4.4981</b>	<b>3.0851</b>	<b>0.9618</b>	<b>10.2559</b>	



**UPFRONT TARIFF FOR HIGH HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% FOREIGN FINANCING**  
**Debt Servicing Schedule for the Purpose of Indexation of Debt Component Only**

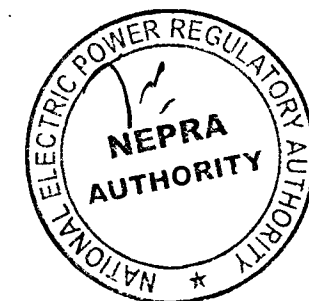
Period	Foreign Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million US\$	Repayment Million US\$	Mark-Up Million US\$	Balance Million US\$	Debt Service Million US\$			
	35.52	0.70	0.42	34.82	1.1223			
	34.82	0.71	0.42	34.11	1.1223			
	34.11	0.71	0.41	33.40	1.1223			
	33.40	0.72	0.40	32.68	1.1223			
1	35.52	2.84	1.65	32.68	4.4892	3.9293	2.2794	6.2087
	32.68	0.73	0.39	31.94	1.1223			
	31.94	0.74	0.38	31.20	1.1223			
	31.20	0.75	0.37	30.45	1.1223			
	30.45	0.76	0.36	29.70	1.1223			
2	32.68	2.98	1.51	29.70	4.4892	4.1206	2.0881	6.2087
	29.70	0.77	0.36	28.93	1.1223			
	28.93	0.78	0.35	28.15	1.1223			
	28.15	0.79	0.34	27.37	1.1223			
	27.37	0.80	0.33	26.57	1.1223			
3	29.70	3.12	1.36	26.57	4.4892	4.3212	1.8875	6.2087
	26.57	0.80	0.32	25.77	1.1223			
	25.77	0.81	0.31	24.95	1.1223			
	24.95	0.82	0.30	24.13	1.1223			
	24.13	0.83	0.29	23.30	1.1223			
4	26.57	3.28	1.21	23.30	4.4892	4.5316	1.6771	6.2087
	23.30	0.84	0.28	22.45	1.1223			
	22.45	0.85	0.27	21.60	1.1223			
	21.60	0.86	0.26	20.73	1.1223			
	20.73	0.87	0.25	19.86	1.1223			
5	23.30	3.44	1.05	19.86	4.4892	4.7522	1.4564	6.2087
	19.86	0.88	0.24	18.97	1.1223			
	18.97	0.90	0.23	18.08	1.1223			
	18.08	0.91	0.22	17.17	1.1223			
	17.17	0.92	0.21	16.26	1.1223			
6	19.86	3.60	0.89	16.26	4.4892	4.9836	1.2251	6.2087
	16.26	0.93	0.19	15.33	1.1223			
	15.33	0.94	0.18	14.39	1.1223			
	14.39	0.95	0.17	13.44	1.1223			
	13.44	0.96	0.16	12.48	1.1223			
7	16.26	3.78	0.71	12.48	4.4892	5.2263	0.9824	6.2087
	12.48	0.97	0.15	11.50	1.1223			
	11.50	0.98	0.14	10.52	1.1223			
	10.52	1.00	0.13	9.52	1.1223			
	9.52	1.01	0.11	8.51	1.1223			
8	12.48	3.96	0.53	8.51	4.4892	5.4807	0.7279	6.2087
	8.51	1.02	0.10	7.49	1.1223			
	7.49	1.03	0.09	6.46	1.1223			
	6.46	1.05	0.08	5.42	1.1223			
	5.42	1.06	0.06	4.36	1.1223			
9	8.51	4.16	0.33	4.36	4.4892	5.7476	0.4611	6.2087
	4.36	1.07	0.05	3.29	1.1223			
	3.29	1.08	0.04	2.20	1.1223			
	2.20	1.10	0.03	1.11	1.1223			
	1.11	1.11	0.01	(0.00)	1.1223			
10	4.36	4.36	0.13	-	4.4892	6.0274	0.1812	6.2087



## Annex-VII A

UPFRONT TARIFF FOR HIGH HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% LOCAL FINANCING  
REFERENCE TARIFF

Year	Energy Purchase Price		Capacity Purchase Price							Total Tariff
	Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Fixed O&M Foreign	Insurance	Return on Equity (ROE)	Principal Repayment	Interest		
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh		
1	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	3.2074	5.2693	14.9794	
2	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	3.5483	4.9283	14.9794	
3	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	3.9255	4.5512	14.9794	
4	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	4.3427	4.1339	14.9794	
5	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	4.8043	3.6723	14.9794	
6	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	5.3149	3.1617	14.9794	
7	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	5.8799	2.5967	14.9794	
8	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	6.5049	1.9718	14.9794	
9	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	7.1963	1.2804	14.9794	
10	0.1183	0.1183	0.5678	0.1419	0.7646	4.7918	7.9612	0.5154	14.9794	
11	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
12	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
13	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
14	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
15	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
16	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
17	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
18	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
19	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
20	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
21	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
22	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
23	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
24	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
25	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
26	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
27	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
28	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
29	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
30	0.1183	0.1183	0.5678	0.1419	0.7646	4.8859	-	-	6.5968	
<b>Levelized Tariff</b>	<b>0.1183</b>	<b>0.1183</b>	<b>0.5678</b>	<b>0.1419</b>	<b>0.7646</b>	<b>4.8245</b>	<b>3.1739</b>	<b>2.3513</b>	<b>12.0606</b>	



**UPFRONT TARIFF FOR HIGH HEAD HYDROPOWER PROJECTS (1 TO 25 MW) BASED ON 100% LOCAL FINANCING**  
**Debt Servicing Schedule for the Purpose of Indexation of Debt Component Only**

Period	Local Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	Principal Million Rs.	Repayment Million Rs.	Mark-Up Million Rs.	Balance Million Rs.	Debt Service Million Rs.			
	228.45	3.35	5.84	225.11	9.19			
	225.11	3.43	5.76	221.68	9.19			
	221.68	3.52	5.67	218.16	9.19			
	218.16	3.61	5.58	214.55	9.19			
1	228.45	13.91	22.85	214.55	36.76	3.2074	5.2693	8.4766
	214.55	3.70	5.49	210.84	9.19			
	210.84	3.80	5.39	207.05	9.19			
	207.05	3.89	5.30	203.15	9.19			
	203.15	3.99	5.20	199.16	9.19			
2	214.55	15.39	21.37	199.16	36.76	3.5483	4.9283	8.4766
	199.16	4.10	5.09	195.06	9.19			
	195.06	4.20	4.99	190.86	9.19			
	190.86	4.31	4.88	186.56	9.19			
	186.56	4.42	4.77	182.14	9.19			
3	199.16	17.02	19.73	182.14	36.76	3.9255	4.5512	8.4766
	182.14	4.53	4.66	177.61	9.19			
	177.61	4.65	4.54	172.96	9.19			
	172.96	4.77	4.42	168.20	9.19			
	168.20	4.89	4.30	163.31	9.19			
4	182.14	18.83	17.93	163.31	36.76	4.3427	4.1339	8.4766
	163.31	5.01	4.18	158.30	9.19			
	158.30	5.14	4.05	153.15	9.19			
	153.15	5.27	3.92	147.88	9.19			
	147.88	5.41	3.78	142.48	9.19			
5	163.31	20.83	15.92	142.48	36.76	4.8043	3.6723	8.4766
	142.48	5.55	3.64	136.93	9.19			
	136.93	5.69	3.50	131.24	9.19			
	131.24	5.83	3.36	125.41	9.19			
	125.41	5.98	3.21	119.43	9.19			
6	142.48	23.05	13.71	119.43	36.76	5.3149	3.1617	8.4766
	119.43	6.13	3.05	113.29	9.19			
	113.29	6.29	2.90	107.00	9.19			
	107.00	6.45	2.74	100.55	9.19			
	100.55	6.62	2.57	93.93	9.19			
7	119.43	25.50	11.26	93.93	36.76	5.8799	2.5967	8.4766
	93.93	6.79	2.40	87.15	9.19			
	87.15	6.96	2.23	80.19	9.19			
	80.19	7.14	2.05	73.05	9.19			
	73.05	7.32	1.87	65.73	9.19			
8	93.93	28.21	8.55	65.73	36.76	6.5049	1.9718	8.4766
	65.73	7.51	1.68	58.22	9.19			
	58.22	7.70	1.49	50.52	9.19			
	50.52	7.90	1.29	42.62	9.19			
	42.62	8.10	1.09	34.52	9.19			
9	65.73	31.20	5.55	34.52	36.76	7.1963	1.2804	8.4766
	34.52	8.31	0.88	26.22	9.19			
	26.22	8.52	0.67	17.70	9.19			
	17.70	8.74	0.45	8.96	9.19			
	8.96	8.96	0.23	0.00	9.19			
10	34.52	34.52	2.24	0.00	36.76	7.9612	0.5154	8.4766

