



Registrar

# National Electric Power Regulatory Authority

## Islamic Republic of Pakistan

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No.NEPRAPAR-205/12819-12821  
October 16, 2014

Subject: **Decision of the Authority in the matter of Motion for Leave for Review filed by NTDC against Decision of the Authority in the matter of Procurement of Power from 500 MW Chakothi Hattian Hydropower Project [Case # NEPRA/PAR-205]**


Dear Sir,

In continuation of this office letter No. NEPRA/PAR-205/1058-1060 dated January 30, 2014 whereby decision of the Authority in the matter of Power Acquisition Request filed by National Transmission and Despatch Company Ltd. (NTDC) in respect of 500 MW Chakothi Hattian Hydropower Project was sent. Please find enclosed herewith the decision of the Authority along with Annex-I & II (14 pages) in the matter of Motion for Leave for Review filed by NTDC against NEPRA's decision dated 16.10.2014 in Case No. NEPRA/PAR-205.

2. The Decision is being intimated to the Federal Government for the purpose of notification in the official gazette in accordance with the provisions of Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).
3. Please note that para 15 of the Decision along with Annex-I & II needs to be notified in the official Gazette.

Enclosure: As above

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

  
( Naweed Illahi Shaikh )  
16/10/14

CC:

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

Decision of the Authority in the matter of Motion For Leave For Review filed by NTDC against  
decision of the Authority in the matter of Procurement of Power from 500 MW Chakothe-  
Hattian Hydropower Project

National Transmission and Despatch Company (hereinafter referred to as "NTDC") filed motion for leave for review (hereinafter referred to as "Review Motion") under Rule 16(6) of the NEPRA Tariff (Standards & Procedure) Rules 1998 and Regulation 3(2) of the NEPRA (Review Procedure) Regulations 2009, against decision of the Authority for procurement of power from 500-MW Chakothe Hattian hydropower project issued on January 30, 2014. The said review motion, after fulfillment of procedural requirements, was admitted by the Authority in its meeting held on May 15, 2014. In order to have fair representation of all main stakeholders the Authority decided to hold hearing in the matter. Accordingly, written notices were sent to the major stakeholders for their comments before or during the hearing so as to assist the Authority in arriving at just and fair decision on the review motion of NTDC. The hearing was held on July 16, 2014 and attended by the petitioner, PPIB and other stakeholders.

Brief background

2. Chakothe-Hattian hydropower project is 500-MW (Gross capacity) hydropower project. It is a Run-of-River medium to high head (155 M head) power plant, consisting of an 88m high gravity dam on River Jhelum, 9.8 km downstream of the line of control in the state of Azad Jammu and Kashmir (AJ&K). Diversion of the river flows through 2 concrete lined power tunnels 8560 m in length (8.5 m dia) and an underground power house with 4 Francis Turbine Units of 125 MW each, located on the left bank of Jhelum River immediately upstream of the head pond of Kohala HPP.

3. Due to location of the project in AJ&K, the request of NTDC for procurement of power and approval of feasibility stage tariff was processed under the NEPRA Interim Power Procurement (Standards & Procedure) Regulations 2005 ("IPPRs"). The Authority through its decision dated January 30, 2014 granted permission to NTDC for power procurement from the Chakothe-Hattian hydropower project and also approved feasibility stage tariff (Advance Tariff) of Rs. 6.3953/kWh (US cents 6.5259/kWh) levelized for 30 years tariff control period, with directions to negotiate Power Acquisition Contract along with terms and conditions and rates and file the same for approval by the Authority.

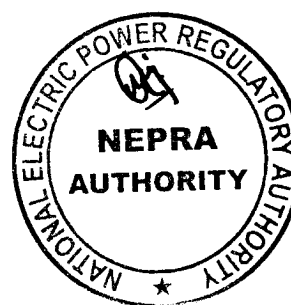
4. Submissions of NTDC

4.1 NTDC through its review motion raised the following issues which are discussed hereunder.

5. Whether NEPRA can do due diligence of negotiated terms and costs indicated on PAR filed by NTDC?

5.1 NTDC submitted that NEPRA was required to approve Advance Tariff based on the feasibility study of the project duly approved by the Panel of Experts appointed by PPIB and already negotiated/lowered project costs by NTDC in accordance with Regulation (4) 2 of the IPPR 2005. Whereas the NEPRA has reduced the tariff based on lower than the feasibility study level costs and therefore the decision of the Authority is not in line with the IPPR 2005.

5.2 The Authority has considered the contention of NTDC and noted that provisions of the aforementioned regulation provides a basis and an eligibility criteria for processing the power acquisition requests and approving advance tariff based on approved feasibility of the hydropower



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projects. It, however, does not imply that the Authority shall allow all project costs and agreed terms and parameters. In the opinion of the Authority, the feasibility studies of hydropower projects generally are based on rough estimates of costs by the consultants which are not necessarily reflective of market realities. The Authority also observed that it is the mandate of the Authority to conduct the due diligence of all terms and conditions including the tariff agreed between the parties and can only allow prudent and reasonable costs. Therefore, NTDC's contention that NEPRA should approve project cost as provided in the approved feasibility in terms of regulation 4(2) of IPPR 2005 is not maintainable and cannot be considered.

6. **Whether the requested cost of Civil Works is justified?**

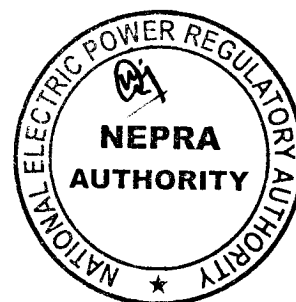
6.1 NTDC submitted that the Authority has reduced Civil Works cost by US\$ 77.110 million from US\$ 552.110 million to US\$ 475.000 million based on comparable cost approved for other hydropower projects. NTDC further submitted that civil works cost in the case of hydropower projects are not comparable due to site-specific factors that influence the civil construction costs significantly which include hydrological characteristics, site accessibility, land topography, geological conditions, the construction and design of the hydropower plant and the distance from existing infrastructure. NTDC has mentioned the following features which distinguish Chakothi Hattian hydropower project from others.

- i) 90 meters high dam make it necessary to design a comprehensive foundation treatment program to ensure the dam has adequate factors of safety under all loading conditions.
- ii) The design is based on two tunnels running along each other for 8.6 kM due to rock conditions along the tunnel route.
- iii) 150 meters of head is achieved through high dam and two long tunnels. (90 m through Dam and 60 m from two tunnels)
- iv) The project is located in the highly seismic zone with main fault line running parallel to all the project components (dam, tunnels and powerhouse) at a distance of approx. 2 kM only, which requires higher cost of structures for all the components.
- v) The location of the project is very near to the line of control requiring construction of allied infrastructure and even pose higher transportation and construction risks.

6.2 NTDC, therefore, requested that the civil works cost of US\$ 552.110 million as requested by it earlier be reinstated as final civil works cost of the project will be determined any way through international competitive bidding at EPC stage.

6.3 The Authority in its decision dated January 30, 2014 has approved US\$ 475.00 million (US\$ 0.950 million/MW) for the civil works cost which is already more than other hydropower projects not requiring long underground diversion/head race tunnels. The Authority in its recent determination of EPC stage Suki Kinari having identical associated geological risks and 19.5 KM long underground tunnel has approved US\$ 821.091 million (US\$ 0.944 million/MW) based on firm EPC price.

6.4 The cost of civil works allowed for Chakothi Hattian hydropower US\$ 475 million (US\$ 0.9500/MW) is for the feasibility stage which is likely to be changed at EPC stage of the project based on detailed engineering and design studies. This fact has also been acknowledged by NTDC in its review motion. In the opinion of the Authority the cost of civil works already assessed and approved by it in the instant case is quite reasonable and also comparable with firm market based civil works cost on per MW basis. The Authority therefore does not find any justification at this stage to review its earlier decision in the matter.



7. **Whether the requested Land Acquisition and Resettlement Cost is justified?**

7.1 NTDC submitted that it had proposed US\$ 31.790 million for land acquisition and resettlement cost based on surveys of the area, market price assessment, survey of structures involved and the number of people to be displaced and their tentative demands as provided in the approved feasibility of the project. The estimated cost is subject to adjustment at EPC and later at COD on actual; however, the resettlement cost invariably rises and if we lower the cost at this stage, there would be no benefit except a greater difference between the FS level tariff and the EPC level tariff, which is not desirable.

7.2 The Authority in its decision dated January 30, 2014 has approved US\$ 14.528 million on this account which is adjustable at COD on the basis of actual in accordance with the Hydropower Tariff Mechanism already approved by the Authority. The Authority has assessed and approved this cost component on comparable basis with other hydropower projects at the Feasibility stage, while taking into account project specific requirements which however may change at a later stage on actual basis, the adjustment of which has already been provided in the decision of the Authority. In view of the aforementioned the Authority does not find any justification to review its earlier decision in the matter without submission of any fresh evidence by the NTDC. The Authority therefore declines NTDC's request for allowing increase in land and resettlement cost at this stage.

8. **Whether the requested Project Environment, mitigation and ecology cost is justified?**

8.1 NTDC submitted that the Authority has allowed US\$ 0.472 million on account of cost for mitigating negative effects of environment and ecology due to construction of hydropower project. The petitioner has submitted that Environmental and Ecology cost is very essential for every project to comply with the environmental obligations under Pakistan and AJ&K laws. NTDC has therefore requested that realistic cost on account of environment and ecology as recommended in the original Power Acquisition Request dated 26-11-2012 may be allowed.

8.2 The Authority has assessed and approved US\$ 0.472 million for projects requirement to mitigate the negative effects of environment and ecology. The aforementioned cost has been allowed on comparable basis in line with the same cost allowed for another project being developed in the same area. The Authority considers that NTDC's request for allowing increase in cost under this head is based on estimates. The final liability as well as funds required by the project company to meet bare minimum requirements of the relevant Environmental Agency will be known with more accuracy and certainty at later stage and therefore may be considered by the Authority at next stage.

9. **Whether the requested Owner's Advisors/Consultants Cost is justified?**

9.1 NTDC submitted that it had proposed US\$ 10.500 million under the head of Owner's Advisors and US\$ 3.000 million separately for the cost of legal advisor in its earlier submission to the Authority. It has further submitted that the project sponsors had proposed US\$ 17.690 million and US\$ 8.295 million for the cost of Owner's Engineer and Legal Fee and Charges respectively based on estimated cost provided in the feasibility, which was however significantly reduced to US\$ 10.500 million and US\$ 3.00 million during tariff negotiations with the project sponsors. NTDC has therefore requested that US\$ 13.500 million for the cost of Owner's Advisors/consultants and legal advisors as per its earlier submissions on this account may be allowed

9.2 The Authority has allowed US\$ 8.532 million for cost of Owner's Advisors/Consultants including cost of legal advisor in line with the same cost allowed in other such hydropower projects. The Authority does not find any justification to reconsider its earlier approved cost in the matter without provision of



any further documentary evidence by the petitioner. The NTDC's request for allowing increase in cost under the aforementioned head is therefore declined.

10. **Whether the requested O&M Mobilization Cost is justified?**

10.1 NTDC submitted that the Authority has not allowed O&M mobilization cost due to the reason that no such cost has been allowed to other hydropower projects at the feasibility stage. NTDC has further submitted that it only offers variable O&M cost and Water Use Charge for any energy delivered by a hydropower project prior to COD. Such variable cost does not include any capital expenditure incurred to fund mobilization of O&M contractor and its expenditure during construction phase at the project site before commissioning. NTDC has therefore requested that US\$ 5.000 million as per its earlier request may be allowed.

10.2 The Authority has not allowed any cost on account of O&M mobilization cost due to the reason that the nature and liability of whether such cost to be incurred by the project sponsors, is not known at the feasibility stage of the project. The Authority understands that in the case of hydropower projects the sponsors generally employ O&M contractor well in advance for necessary preparations, operating manuals and training of O&M team before the plant is handed over to the O&M contractors upon project commissioning (COD). The cost of mobilization of O&M Contractor and its responsibility (whether on EPC contractor's part or otherwise) in the instant case is not known at this stage. It is also not clear at this stage whether the O&M Mobilization cost is to be paid as advance or otherwise. The Authority therefore considers that NTDC's request for allowing O&M Mobilization cost at this stage does merit consideration and is therefore not allowed.

11. **Whether inclusion of estimated amount of Custom Duty and Taxes in the project cost is justified?**

11.1 NTDC submitted that estimated cost of custom duty should be included in feasibility stage tariff approved by the Authority with the proviso that the cost would be adjusted based on actual at COD. Otherwise the Feasibility level tariff would look erroneously low and would increase at the time of COD and there would be no material benefit for not including an estimated figure for the cost at this stage.

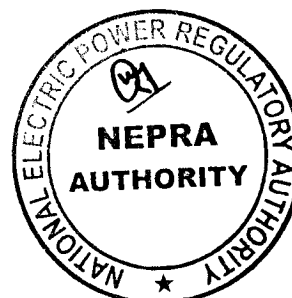
11.2 The Authority through its decision dated January 30, 2014 has allowed cost of custom duty and taxes as a pass through cost and therefore it was excluded from the total approved project cost. The Authority however agrees with the rationale and justification provided by NTDC. The Authority therefore has decided to include the cost of custom duty as a separate component in the total approved project cost as requested by NTDC. Accordingly US\$ 7.318 million as per estimated amount claimed by NTDC in its original request is allowed, subject to adjustment on actual basis at COD.

12. **Whether the proposed terms of Debt Financing are justified?**

12.1 NTDC submitted that the term of financing proposed by the Company and agreed by NTDC were based on financing terms negotiated by similar hydropower projects which have been implemented or are being implemented; therefore the debt term requested in our Feasibility stage request may not be changed as these are in any case subject to change in accordance with financing terms finalized with Lenders prior to EPC stage tariff filing.

12.2 The Authority in its decision has approved 17 years term for debt financing including 5 years project construction period for both local and foreign financing which is in line with Authority's decision in other Feasibility stage hydropower projects.

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12.3 The Authority notes that shorter debt repayment period as proposed by NTDC impacts negatively on the tariff and therefore is not in the interest of the power purchaser/consumers. In the opinion of the Authority approved minimum debt repayment period of 12 years for hydropower projects at the feasibility stage provides a room for the project sponsors for negotiating with lenders at better terms which is also applicable in the instant case as the project sponsors of Chakothi Hattian hydropower project still have to finalize terms of financing with its lenders.

12.4 The Authority considers that minimum debt repayment period of 12 years with 30 years term of PPA/concession and sufficient premium (spread) over bank rates for local and foreign financing already approved by the Authority in the instant case is quite reasonable in the current market conditions for attracting lenders. The Authority therefore decides that it will not change its previous decision in the matter at this stage and therefore NTDC's request in the matter is not accepted.

13. **Whether the proposed split between Fixed and Variable O&M cost is justified?**

13.1 NTDC has submitted that the suggested 60:40 split between the Fixed and Variable O&M cost is not realistic for hydropower projects in which the Variable O&M is almost negligible. It is therefore requested that the NTDC's proposed split between Fixed and Variable O&M (i.e. 93:7) may be restored.

13.2 The Authority in its earlier decision has approved overall amount of US\$ 15.000 million on account of per annum O&M of Chakothi Hattian hydropower project divided between fixed and variable O&M cost in a ratio of 60% and 40% respectively in view of its decision of a comparable hydropower project located in the same area.

13.3 The Authority understands that actual split between fixed and variable O&M as well as split between local and foreign component of a hydropower is not fixed rather it varies widely according to the size, selection and scope of O&M contractor. The actual terms of O&M cost in the instant case are still to be finalized with the O&M contractor by the project sponsors.

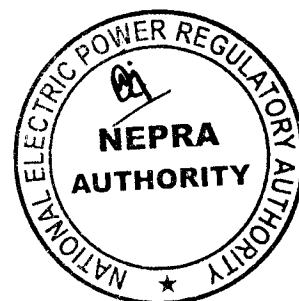
13.4 The Authority in its latest determination of EPC stage hydropower project has approved 80% of total approved per annum O&M cost as Fixed component and 20% as Variable component. The Authority, while considering it to be more realistic and market based has decided to allow the same proportion of fixed and variable O&M cost in the instant case as well. Accordingly, US\$ 12.000 million for per annum Fixed O&M cost and US\$ 3.000 million for Variable O&M cost without any change in proportion of local and foreign component is approved.

14. **Whether the proposed annual Insurance expense at 1.35% of the EPC cost is justified?**

14.1 NTDC submitted that the Authority has allowed annual insurance expense at 1% of the EPC cost, whereas the same in other hydropower projects has been allowed at 1.35% of the EPC cost. NTDC has requested that annual Insurance expense in the instant case may also be allowed at 1.35% of the EPC cost.

14.2 The Authority in its recent determinations for hydropower projects has allowed annual insurance expense at 1% of the EPC cost, while considering the current market situation and size of hydropower project. In the opinion of the Authority, the annual insurance expense at 1% of the EPC cost for a project of this size is sufficient to meet requirements of Insurance. The Authority therefore, does not agree to NTDC's request and maintains its previous decision in the matter.

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15. Based on discussion in the preceding paragraphs, NTDC is granted permission along with the following Advance Tariff for negotiating a power acquisition contract and filing the same in a prescribed manner for approval of the Authority.

Tariff Components	Year 1-12	Year 13-30	Indexation
<b>Variable Charge (Rs/kWh)</b>			
Variable O&M – Local	0.1220	0.1220	CPI
Water Use Charge	0.1500	0.1500	CPI
<b>Fixed Charge (Rs/kW/M)</b>			
Fixed O&M – Local	117.6000	117.6000	CPI
Fixed O&M – Foreign	78.4000	78.4000	PKR/US\$, US CPI
Insurance	118.3742	118.3742	PKR/US\$
Debt Service	1505.0183	-	LIBOR, KIBOR
Return on Equity	682.4778	725.4578	PKR/US\$
Return on equity during construction (ROEDC)	382.6645	382.6645	PKR/US\$

- i. The reference tariff has been calculated on the basis of net contracted capacity of 500 MW and net annual energy production of 2410 GWh.
  - ii. In the above tariff, no adjustment for Carbon Emission Reduction receipts (CERs) has been accounted for. However, upon actual realization of CERs, the same shall be distributed between the Power Purchaser and the project company in accordance with the GOP Policy for Power Generation Projects 2002 as amended from time of time.
  - iii. The above tariff is applicable for a period of thirty (30) years on BOOT basis commencing from Commercial Operation Date (COD).
  - iv. Debt service will be paid in the first 12 years of commercial operation of plant after COD.
  - v. Redemption of equity has been allowed after 12 years of commercial operation of the plant.
  - vi. The Petitioner is entitled to adjustment of cost reopeners and cost escalation in the civil works. Such adjustment will be allowed subject to provision of the required information/data in accordance with the Mechanism for Determination of Tariff for Hydropower Projects approved by NEPRA.
  - vii. The reference PKR/Dollar rate has been assumed at 1 USD = 98 PKR.
  - viii. The component wise tariff is indicated at Annex-I
  - ix. Debt Servicing Schedule is attached as Annex-II
- I. One Time Adjustment**
- a. The Principal repayment and the cost of debt will be adjusted at COD as per the actual borrowing composition and LIBOR/KIBOR at the relevant date.

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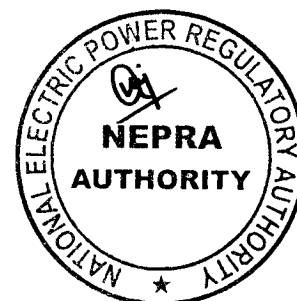
- b. Interest During Construction (IDC) will be adjusted at COD on the basis of actual debt composition, debt drawdown (not exceeding the amount allowed by the Authority) and applicable 3-months LIBOR & KIBOR during the project construction period of 60 months (5 years) approved by the Authority.
- c. The specific items of project cost to be paid in foreign currency (i.e. US\$) will be adjusted at COD on account of actual variation in exchange rate over the reference PKR/US\$ exchange rate of Rs. 98.00 on production of verifiable documentary evidence to the satisfaction of the Authority.
- d. Duties and/or taxes, not being of refundable nature, imposed on the company up to the commencement of its commercial operations for the import of its plant, machinery and equipment will be adjusted on actual basis at COD, upon production of verifiable documentary evidence to the satisfaction of the Authority.
- e. Cost of land and resettlement US\$ 14.528 million will be adjusted in accordance with the Hydropower Mechanism based on authentic documentary evidence at COD.
- f. Insurance during construction will be adjusted at COD based on actual subject to the maximum of 2.40% of the adjusted and approved EPC cost upon production of verifiable documentary evidence to the satisfaction of the Authority.
- g. Financial charges will be adjusted at COD on the basis of actual subject to the maximum of 3% of the total debt allowed (excluding the impact of interest during construction and financial charges) on production of authentic documentary evidence.
- h. Return on Equity (ROE) and Return on Equity During Construction (ROEDC) will be adjusted at COD on the basis of actual equity injections and PKR/US\$ exchange rate variation (within the overall equity allowed by the Authority at COD) during the project construction period allowed by the Authority.
- i. The reference tariff table shall be revised at COD while taking in to account the above adjustments. The Petitioner shall submit its request to the Authority within 90 days of COD for necessary adjustments in tariff.

## II. Pass-Through Items

No provision for income tax has been accounted for in the tariff. If the power producer is obligated to pay any tax, the exact amount paid by the power producer (the Company) shall be reimbursed by the Power Purchaser to the Company on production of original receipts. This payment should be considered as pass-through payment (Rs/kW/M) spread over a twelve (12) months period in addition to fixed charges in the Reference Tariff.

Withholding tax on dividends is also a pass through item just like other taxes as indicated in the government Guidelines. Withholding tax shall be paid @ 7.5% of the return on equity (including return on equity during construction). The Power Purchaser shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 17% equity according to the following formula:

$$\text{Withholding Tax Payable} = \{[17\% * (E_{(Ref)} - E_{(Red)})] + \text{ROEDC}_{(Ref)}\} \times 7.5\%$$





Where:

$E_{(Ref)}$	=	Adjusted Reference Equity at COD
$E_{(Red)}$	=	Equity Redeemed
$ROEDC_{(Ref)}$	=	Adjusted Reference Return on Equity during Construction

In case the Company does not declare a dividend in any particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what has been paid in that year and the total entitlement as per the Net Return on Equity) would be carried forward and accumulated so that the Company is able to recover the same as a pass through item from the Power Purchaser in future on the basis of the total dividend payout.

### III. Hydrological Risk

Hydrological Risk shall be borne by the Power Purchaser in accordance with the GoP Policy for Power Generation Projects 2002.

### IV. Indexation

The following indexation shall be applicable to the reference tariff:

#### i) Indexation applicable to O&M

The Variable O&M cost is based on local currency. The Fixed O&M cost is based on 60% local and 40% foreign expense. The local component of O&M will be adjusted on account of Inflation (CPI), whereas the foreign component of O&M will be adjusted on account of Rupee/Dollar exchange rate variation and US CPI. Quarterly adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January & 1st April respectively on the basis of the latest available information with respect to local CPI general (notified by Federal Bureau of Statistics Pakistan), US CPI (notified by US bureau of labor statistics) and revised TT & OD Selling rate of US Dollar (notified by the National Bank of Pakistan). The mode of indexation will be as under:

#### a. Fixed O&M

$$F O\&M_{(LREV)} = O\&M_{(LREF)} * CPI_{(REV)} / 185.180$$

$$F O\&M_{(FREV)} = O\&M_{(FREF)} * USCPI_{(REV)} / 231.407 * ER_{(REV)} / 98$$

Where:

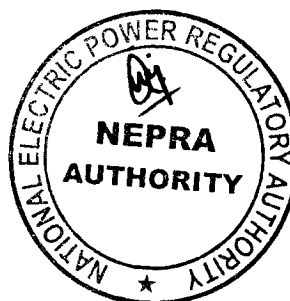
$F O\&M_{(LREV)}$  = The revised applicable Fixed O&M local component of tariff indexed with CPI (General).

$F O\&M_{(FREV)}$  = The revised applicable Fixed O&M foreign component of tariff indexed with US CPI and exchange rate variation.

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

$O\&M_{(FREF)}$  = The reference fixed O&M foreign component of tariff for the relevant period.

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- CPI<sub>(REV)</sub> = The Revised Consumer Price Index (General) for the relevant month.
- CPI<sub>(REF)</sub> = The Consumer Price Index (General) of September 2013 notified by the Pakistan Federal Bureau of Statistics.
- US CPI<sub>(REV)</sub> = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.
- US CPI<sub>(REF)</sub> = Reference US CPI (All Urban Consumers) notified by the Bureau of Labor Statistics for the month of September 2013.
- ER<sub>(REV)</sub> = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

b. Variable O&M

$$V O\&M_{(LREV)} = O\&M_{(LREF)} * CPI_{(REV)} / 185.180$$

Where:

- V O&M<sub>(LREV)</sub> = The revised applicable Variable O&M local component of tariff indexed with CPI.
- O&M<sub>(LREF)</sub> = The reference variable O&M local component of tariff for the relevant period.
- CPI<sub>(REV)</sub> = The Revised Consumer Price Index (General) for the relevant month.
- CPI<sub>(REF)</sub> = The Consumer Price Index (General) of September 2013 notified by the Federal Bureau of Statistics.
- US CPI<sub>(REV)</sub> = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.
- US CPI<sub>(REF)</sub> = Reference US CPI (All Urban Consumers) notified by the Bureau of Labor Statistics for the month of September 2013.
- ER<sub>(REV)</sub> = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

ii) Water Use Charges

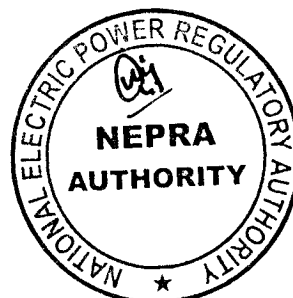
Water Use Charge will be paid on units delivered basis and will be indexed with Consumer Price Index (General) annually from the date of COD. The first such adjustment shall be due after one year of commercial operation from COD, according to the formula:

$$WUC_{(REV)} = WUC_{(REF)} * CPI_{(REV)} / 185.180$$

Where;

- WUC<sub>(REV)</sub> = The revised Water Use Charge component of tariff indexed with Consumer Price Index (CPI).
- WUC<sub>(REF)</sub> = The reference Water Use Charge component of tariff for the relevant period.
- CPI<sub>(REV)</sub> = The Revised Consumer Price Index (General) for the relevant month.
- CPI<sub>(REF)</sub> = The Consumer Price Index (General) of September 2013 notified by the Federal Bureau of Statistics.

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iii) Insurance

Insurance cost component of tariff, in case insurance is denominated in foreign currency, will be adjusted on account of PKR/US\$ exchange rate variation at COD and thereafter on an annual basis at actual subject to the maximum of 1.0% of the EPC cost on production of authentic documentary evidence by the Petitioner, according to the following formula:

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

Where;

$Ins_{(REV)}$  = Revised Insurance cost component of tariff adjusted with the exchange rate variation (PKR/US\$)

$Ins_{(REF)}$  = Reference insurance cost component of tariff for the relevant period.

$ER_{(REV)}$  = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan.

$ER_{(REF)}$  = The reference TT & OD selling rate of US dollar as notified by the National Bank of Pakistan.

iv) Adjustment for LIBOR/KIBOR variation

- a) The interest part of fixed charge component of foreign debt will remain unchanged throughout the term except for the adjustment due to exchange rate variation and variation in 3-months LIBOR, while spread of 4.75% on LIBOR remaining the same, according to the following formula:

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 0.42\%) / 4$$

Where;

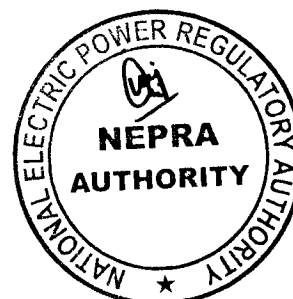
$\Delta I$  = the variation in interest charges applicable corresponding to variation in three-month LIBOR.  $\Delta I$  can be positive or negative depending upon whether  $LIBOR_{(REV)} >$  or  $<$  0.42%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each period under adjustment applicable on quarterly basis.

$P_{(REV)}$  = the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a quarterly basis at the relevant calculations dates.

- b) The interest part of fixed charge component of local debt will remain unchanged throughout the term except for the adjustment due to variation in 3-months KIBOR, while spread of 3.25% on KIBOR remaining the same, according to the following formula:

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 9.50\%) / 4$$

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Where;

$\Delta I$  = the variation in interest charges applicable corresponding to variation in three-month KIBOR.  $\Delta I$  can be positive or negative depending upon whether  $KIBOR_{(REV)} >$  or  $<$  9.50%. The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each period under adjustment applicable on quarterly basis.

$P_{(REV)}$  = the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a quarterly basis at the relevant calculations dates.

v) Return on Equity

Return on equity (ROE) as well as Return on Equity during Construction (ROEDC) component of tariff shall be adjusted for variation in PKR/US\$ exchange rate according to the following formula:

$$\begin{aligned} ROE_{(REV)} &= ROE_{(REF)} * ER_{(REV)}/ER_{(REF)} \\ ROEDC_{(REV)} &= ROEDC_{(REF)} * ER_{(REV)}/ER_{(REF)} \end{aligned}$$

Where;

$ROE_{(REV)}$  = Revised Return on Equity component of tariff expressed in Rs/kW/M adjusted with exchange rate variation.

$ROEDC_{(REV)}$  = Revised Return on Equity during Construction component of tariff in Rs/kW/M adjusted with exchange rate variation.

$ROE_{(REF)}$  = Reference Return on Equity component of tariff expressed in Rs/kW/M for the relevant period.

$ROEDC_{(REF)}$  = Reference Return on Equity during Construction component of tariff expressed in Rs/kW/M for the relevant period.

$ER_{(REV)}$  = Revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

$ER_{(REF)}$  = Reference TT and OD selling rate of US dollar.

Note: -

Adjustment on account of inflation, foreign exchange rate variation and LIBOR/KIBOR variation will be approved by the Authority within fifteen working days after receipt of complete required information by the petitioner upon its request for adjustment in tariff in accordance with the requisite indexation mechanism stipulated hereinabove.

V. Other Terms and Conditions of Tariff

Design & Manufacturing Standards:

Hydel Power Generation system shall be designed, manufactured and tested in accordance with the latest IEC standards or other equivalent standards. All plant and equipment shall be new and of standard quality.

M.

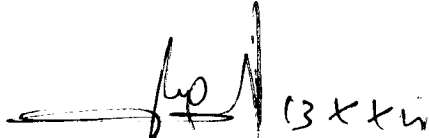


Power Curve of the Hydel Power Complex:

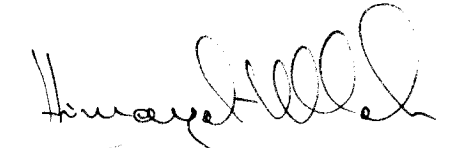
The power curve of the Hydel Power plant shall be verified by the Power Purchaser, as part of the Commissioning tests according to the latest IEC standards and shall be used to measure the performance of the hydel generating units.

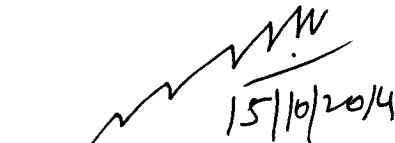
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AUTHORITY

  
Khawaja Muhammad Naeem  
Member

  
Major <sup>(Rtd)</sup> Haroon Rashid  
Member

  
Himayat Ullah Khan  
Member

  
Habibullah Khilji  
Vice Chairman/Member

**CHAKOTHI HATTIAN HYDROPOWER PROJECT  
ADVANCE TARIFF - REVIEW MOTION**

Year	Variable O&M Local	Water Use Charge	Fixed O&M Local	Fixed O & M Foreign	Insurance	Return on Equity	ROE During Construction	Loan Repayment	Interest Charges	Total Tariff
	Rs./kWh	Rs./kWh	Rs. / kW/M	Rs. / kW/M	Rs. / kW/M	Rs. / kW/M	Rs. / kW/M	Rs. / kW/M	Rs./kW/M	Rs. / kWh
1	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	674.8544	830.1640	7.4534
2	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	719.5306	785.4877	7.4534
3	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	767.7793	737.2390	7.4534
4	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	819.9514	685.0669	7.4534
5	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	876.4384	628.5799	7.4534
6	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	937.6770	567.3413	7.4534
7	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	1,004.1549	500.8634	7.4534
8	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	1,076.4172	428.6011	7.4534
9	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	1,155.0737	349.9446	7.4534
10	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	1,240.8073	264.2110	7.4534
11	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	1,334.3829	170.6354	7.4534
12	0.1220	0.1500	117.6000	78.4000	118.3742	682.4778	382.6645	1,436.6582	68.3601	7.4534
13	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
14	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
15	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
16	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
17	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
18	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
19	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
20	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
21	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
22	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
23	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
24	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
25	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
26	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
27	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
28	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
29	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
30	0.1220	0.1500	117.6000	78.4000	118.3742	725.4578	382.6645			3.8135
<b>Levelized Tariff</b>	<b>0.1220</b>	<b>0.1500</b>	<b>117.6000</b>	<b>78.4000</b>	<b>118.3742</b>	<b>694.3922</b>	<b>382.6645</b>	<b>671.4482</b>	<b>416.3659</b>	<b>6.4444</b>

Levelized Tariff (1-30 years) discounted at 10% per annum = US Cents 6.5759/kWh at reference exchange rate of 1US\$=Rupees 98.00.

## CHAKOTHI HATTIAN HYDROPOWER PROJECT

## Debt Servicing Schedule

Period	Foreign Debt					Local Debt					Annual Principal Repayment Rs./kW/Month	Annual Interest Rs./kW/Month	Annual Debt Servicing Rs./kW/Month
	Principal Million \$	Repayment Million \$	Mark-Up Million \$	Balance Million \$	Debt Service Million \$	Principal Million \$	Repayment Million \$	Mark-Up Million \$	Balance Million \$	Debt Service Million \$			
	556.8280	8.4443	7.1970	548.3838	15.6413	180.5429	1.6399	5.7548	178.9030	7.3947			
	548.3838	8.5534	7.0879	539.8303	15.6413	178.9030	1.6922	5.7025	177.2108	7.3947			
	539.8303	8.6640	6.9773	531.1664	15.6413	177.2108	1.7461	5.6486	175.4647	7.3947			
	531.1664	8.7759	6.8653	522.3904	15.6413	175.4647	1.8018	5.5929	173.6629	7.3947			
1	556.8280	34.4376	28.1275	522.3904	62.5651	180.5429	6.8800	22.6989	173.6629	29.5789	674.8544	830.1640	1,505.0183
	522.3904	8.8894	6.7519	513.5010	15.6413	173.6629	1.8592	5.5355	171.8037	7.3947			
	513.5010	9.0043	6.6370	504.4968	15.6413	171.8037	1.9185	5.4762	169.8852	7.3947			
	504.4968	9.1207	6.5206	495.3761	15.6413	169.8852	1.9796	5.4151	167.9056	7.3947			
	495.3761	9.2385	6.4027	486.1376	15.6413	167.9056	2.0427	5.3520	165.8628	7.3947			
2	522.3904	36.2528	26.3123	486.1376	62.5651	173.6629	7.8001	21.7788	165.8628	29.5789	719.5306	785.4877	1,505.0183
	486.1376	9.3579	6.2833	476.7796	15.6413	165.8628	2.1078	5.2869	163.7550	7.3947			
	476.7796	9.4789	6.1624	467.3007	15.6413	163.7550	2.1750	5.2197	161.5800	7.3947			
	467.3007	9.6014	6.0399	457.6993	15.6413	161.5800	2.2444	5.1504	159.3356	7.3947			
	457.6993	9.7255	5.9158	447.9738	15.6413	159.3356	2.3159	5.0788	157.0197	7.3947			
3	486.1376	38.1638	24.4013	447.9738	62.5651	165.8628	8.8431	20.7358	157.0197	29.5789	767.7793	737.2390	1,505.0183
	447.9738	9.8512	5.7901	438.1226	15.6413	157.0197	2.3897	5.0050	154.6300	7.3947			
	438.1226	9.9785	5.6627	428.1441	15.6413	154.6300	2.4659	4.9288	152.1641	7.3947			
	428.1441	10.1075	5.5338	418.0366	15.6413	152.1641	2.5445	4.8502	149.6196	7.3947			
	418.0366	10.2382	5.4031	407.7984	15.6413	149.6196	2.6256	4.7691	146.9940	7.3947			
4	447.9738	40.1754	22.3897	407.7984	62.5651	157.0197	10.0257	19.5532	146.9940	29.5789	819.9514	685.0669	1,505.0183
	407.7984	10.3705	5.2708	397.4279	15.6413	146.9940	2.7093	4.6854	144.2847	7.3947			
	397.4279	10.5045	5.1368	386.9234	15.6413	144.2847	2.7956	4.5991	141.4891	7.3947			
	386.9234	10.6403	5.0010	376.2831	15.6413	141.4891	2.8848	4.5100	138.6043	7.3947			
	376.2831	10.7778	4.8635	365.5053	15.6413	138.6043	2.9767	4.4180	135.6276	7.3947			
5	407.7984	42.2931	20.2720	365.5053	62.5651	146.9940	11.3664	18.2125	135.6276	29.5789	876.4384	628.5799	1,505.0183
	365.5053	10.9171	4.7242	354.5882	15.6413	135.6276	3.0716	4.3231	132.5560	7.3947			
	354.5882	11.0582	4.5831	343.5300	15.6413	132.5560	3.1695	4.2252	129.3865	7.3947			
	343.5300	11.2011	4.4401	332.3288	15.6413	129.3865	3.2705	4.1242	126.1160	7.3947			
	332.3288	11.3459	4.2953	320.9829	15.6413	126.1160	3.3748	4.0199	122.7412	7.3947			
6	365.5053	44.5224	18.0427	320.9829	62.5651	135.6276	12.8864	16.6925	122.7412	29.5789	937.6770	567.3413	1,505.0183
	320.9829	11.4926	4.1487	309.4903	15.6413	122.7412	3.4823	3.9124	119.2589	7.3947			
	309.4903	11.6411	4.0002	297.8492	15.6413	119.2589	3.5933	3.8014	115.6656	7.3947			
	297.8492	11.7916	3.8497	286.0576	15.6413	115.6656	3.7079	3.6868	111.9577	7.3947			
	286.0576	11.9440	3.6973	274.1137	15.6413	111.9577	3.8261	3.5687	108.1316	7.3947			
7	320.9829	46.8692	15.6959	274.1137	62.5651	122.7412	14.6096	14.9692	108.1316	29.5789	1,004.1549	500.8634	1,505.0183
	274.1137	12.0984	3.5429	262.0153	15.6413	108.1316	3.9480	3.4467	104.1836	7.3947			
	262.0153	12.2547	3.3865	249.7606	15.6413	104.1836	4.0739	3.3209	100.1097	7.3947			
	249.7606	12.4131	3.2282	237.3475	15.6413	100.1097	4.2037	3.1910	95.9060	7.3947			
	237.3475	12.5736	3.0677	224.7739	15.6413	95.9060	4.3377	3.0570	91.5683	7.3947			
8	274.1137	49.3398	13.2253	224.7739	62.5651	108.1316	16.5633	13.0155	91.5683	29.5789	1,076.4172	428.6011	1,505.0183
	224.7739	12.7361	2.9052	212.0378	15.6413	91.5683	4.4760	2.9187	87.0923	7.3947			
	212.0378	12.9007	2.7406	199.1371	15.6413	87.0923	4.6187	2.7761	82.4736	7.3947			
	199.1371	13.0674	2.5738	186.0697	15.6413	82.4736	4.7659	2.6288	77.7078	7.3947			
	186.0697	13.2363	2.4050	172.8334	15.6413	77.7078	4.9178	2.4769	72.7900	7.3947			
9	224.7739	51.9405	10.6246	172.8334	62.5651	91.5683	18.7783	10.8006	72.7900	29.5789	1,155.0737	349.9446	1,505.0183
	172.8334	13.4074	2.2339	159.4260	15.6413	72.7900	5.0745	2.3202	67.7154	7.3947			
	159.4260	13.5807	2.0606	145.8453	15.6413	67.7154	5.2363	2.1584	62.4791	7.3947			
	145.8453	13.7562	1.8851	132.0891	15.6413	62.4791	5.4032	1.9915	57.0760	7.3947			
	132.0891	13.9340	1.7073	118.1551	15.6413	57.0760	5.5754	1.8193	51.5005	7.3947			
10	172.8334	54.6783	7.8868	118.1551	62.5651	72.7900	21.2895	8.2894	51.5005	29.5789	1,240.8073	264.2110	1,505.0183
	118.1551	14.1141	1.5272	104.0409	15.6413	51.5005	5.7531	1.6416	45.7474	7.3947			
	104.0409	14.2965	1.3447	89.7444	15.6413	45.7474	5.9365	1.4582	39.8109	7.3947			
	89.7444	14.4813	1.1599	75.2631	15.6413	39.8109	6.1257	1.2690	33.6851	7.3947			
	75.2631	14.6685	0.9728	60.5946	15.6413	33.6851	6.3210	1.0737	27.3641	7.3947			
11	118.1551	57.5605	5.0046	60.5946	62.5651	51.5005	24.1364	5.4425	27.3641	29.5789	1,334.3829	170.6354	1,505.0183
	60.5946	14.8581	0.7832	45.7365	15.6413	27.3641	6.5225	0.8722	20.8416	7.3947			
	45.7365	15.0501	0.5911	30.6863	15.6413	20.8416	6.7304	0.6643	14.1112	7.3947			
	30.6863	15.2447	0.3966	15.4417	15.6413	14.1112	6.9449	0.4498	7.1663	7.3947			
	15.4417	15.4417	0.1996	0.0000	15.6413	7.1663	7.1663	0.2284	0.0000	7.3947			
12	60.5946	60.5946	1.9705	0.0000	62.5651	27.3641	27.3641	2.2148	0.0000	29.5789	1,436.6582	68.3601	1,505.0183

