National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/PAR-124/KHP-2014/5322-5324
April 9, 2015

Subject: **Decision of the Authority in the matter of Request filed by National Transmission and Despatch Company Ltd. (NTDC) for approval of Power Procurement and Negotiated Advance Tariff at Feasibility Stage for 1100 MW Kohala Hydropower Project [Case # NEPRA/PAR-124/KHP-2014]**

Dear Sir,

Please find enclosed herewith the subject Decision of the Authority along with Annexure I & II (25 pages) in Case No. NEPRA/PAR-124/KHP-2014.

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).

Enclosure: As above

(Syed Safeer Hussain) 09.04.15

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 Authority in the matter of request filed by National Transmission and Despatch Company for approval of power procurement and negotiated Advance Tariff at Feasibility Stage for 1100-MW Kohala Hydropower Project

1.1 The National Transmission & Despatch Company Limited (hereunder referred to as "NTDC") filed a power acquisition request under the NEPRA Interim Power Procurement (Standards & Procedure) Regulations 2005 (hereinafter referred to as "IPPRs) seeking permission of the Authority to negotiate power acquisition contract for purchase of 1100 MW electricity from Kohala Hydropower Project located in the state of Azad Jammu & Kashmir (AJK). NTDC also requested for approval of advance tariff based on a feasibility study report for negotiating a power acquisition contract to be approved by the Authority in terms of regulation 4(2) of IPPRs.

1.2. The request of NTDC was admitted by the Authority on June 11, 2014. Although no requirement of hearing is stipulated in IPPR, yet in order to ensure transparency and involvement of stakeholders, the Authority in its meeting held on August 07, 2014 decided to hold a hearing of NTDC's request. Accordingly, notice of hearing mentioning the salient features of the request of NTDC was published in the daily newspapers on September 05, 2014 for information and seeking comments of the stakeholders. Additionally, written notices were also sent to major stakeholders, who in the opinion of the Authority were interested, including all Chief Secretaries of the Provinces for participation or comments. In response, comments were filed by Transparency International Pakistan (TIP), Energy Department Government of Sindh, Pakhtunkhwa Energy Development Organization (PEDO), All commentators supported NTDC's request while Transparency international raised objection on issuance of LOI to CWE (Chinese Investors).

1.3. As scheduled, the hearing on the matter was held on September 16, 2014 at NEPRA Tower, Islamabad and was attended by representatives of PPIB, project sponsors, NTDC and other stakeholders.

2. **Submissions of NTDC**

2.1 The 1100 MW Kohala Hydropower Project is located on the Jhelum River in District Muzaffarabad near Siran village about 100 km from Islamabad, in the State of Azad Jammu & Kashmir (AJ&K). The site is located about 3 km downstream of the Kohala Bridge. The Project is being developed in private sector under the Power Policy 2002 on a Build-Own-Operation Transfer (BOOT) basis with an expected concession period of 36 years including 6 years of project construction and 30 years of operation period.

2.2 NTDC submitted that during the visit of the President of Pakistan to China in October 2008, a Memorandum of Understanding (MOU) was signed in Beijing between Ministry of Water and Power, GOP and the China International Water & Electric Corporation (CWE), a subsidiary of China Three Gorges Corporation (CTGC) (the "Main Sponsor") for implementation of 1100 MW Kohala Hydropower Project in the private sector. Subsequently, on submission of

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Performance Guarantee (PG), CWE was issued Letter of Interest (LOI) by PPIB on 15th January 2009 for review and updating (if required) of the Feasibility Study for the Project already carried out by Kohala Hydropower Consultants (KHC) under the supervision of WAPDA.

2.3 Subsequently, the Economic Coordination Committee (ECC) of the Cabinet, in its meeting held on 30th June 2011 endorsed the decision of the AJK Council for the development of the Kohala Hydropower Project in accordance with the terms of the MOU signed between the Ministry of Water & Power, Govt. of Pakistan and the CWE on 16th October 2008.

2.4 After issuance of LOI, CWE commenced updating of the feasibility study, previously conducted by PHC; the updating of the FS was duly monitored by a Panel of Experts (POE) appointed by PPIB. The updating of the feasibility report was completed and approved by the POE in April 2010

2.5 On 19th July 2011, the PPIB conveyed the approval of the feasibility study to the CWE, NTDC, NEPRA & GOAJK and advised the Sponsors (CWE) to approach NTDC-CPPA to finalize tariff within 2-months from issuance of the letter.

2.6 The Salient Features of the Kohala Hydropower Project as per its Feasibility Study are as follows:

Description	**Details**
Installed Capacity	1100 MW
Auxiliary Consumption & Power Losses	11 MW
Net Plant Capacity	1086 MW
Average Annual Net Generation	5093.632 GWh
Plant Factor	53.39%
Water Source/River	Jhelum
Location	Muzaffarabad, AJ&K
Reservoir Live Storage Capacity	8.37 million m^3
Reservoir Surface Area	0.78 km^2
Length of Reservoir	6.4 km
Dam Type	Concrete Gravity
Dam Length	212 m
Dam Height	64m
Spillways	Two (2), Gated, 15x13m
Bottom Outlet	6 Holes, 7x10m
Desander	4 No. (underground)
Headrace Tunnels	Two (2), Circular
Length, Diameter	17.5 km, 8.5 m each
Tailrace Tunnel	One (1), Circular
Length, Diameter	1.075 km, 11.6 m
Power House Type	Cavern/underground

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Power House Dimensions	187x24.6x46.8 m
Number of Units	Four (4), Vertical
Turbine Rated Output	280.6 MW
Rated Head	290 m
Rated Flow	106.25 m^3 / unit
Interconnection Voltage	500 kV
Switchgear Type	GIS, Breaker & Half

2.7 NTDC submitted that the Sponsors/CWE submitted the 1st Feasibility Stage Tariff Proposal to 'WPPO / NTDC on September 17, 2011 with a levelized tariff of US c 9.2180/kWh for a 50 year agreement term. The Tariff Proposal was based on the total project cost of US $ 2501.158 million, debt equity ratio of 70:30, debt term of 18 years including a grace period of 6 years, interest rate of LIBOR (0.8428%) plus 350 basis points for debt and Return on Equity (IRR based) of 20% and Oversees Investment Insurance @ 1.5% of total investment amount during construction period every year and 1.5% of the outstanding principle and interest amount per year during debt repayment period and 1.5% of the equity per year during repayment period of debt.

2.8 On scrutiny of the Tariff Proposal submitted by the Sponsors, it was revealed that some of the claimed costs and stated assumptions such as Concession Period, Basic Reserve Cost/Contingencies, Return on Equity, Debt to Equity Ratio, Project Management cost, Overseas Investment Insurance, US CPI Inflation factor, Reference Indexation Date for US CPI and Pak WPI, Investigations & Engineering Cost, Working Capital ,Fixed O&M and Variable O&M Cost, Miscellaneous Cost, Novation Cost, Energy Generation beyond Annual Benchmark ,Hedging Cost, Civil Works Cost Escalation , Chinese Currency (RMB Yuan) Indexation , Carbon Credits were either high in comparison to the benchmarks set by NEPRA or had no precedence in the country. This was pointed out to the Company vide our letter dated October 01, 2011. The Company did not accept our viewpoint on almost the entire issues raised and maintained their earlier cost estimates and for some costs only provided further justifications vide its letter dated November 03, 2011.

2.9 NTDC submitted that various meetings were held with the project sponsors to resolve the issues and move forward followed by tariff negotiations in the 2nd and 3rd tariff proposals submitted by the project company. Finally, NTDC and the project sponsors agreed to the total project cost of US 2397.525 million and a levelized tariff of US cents 7.9074/kWh (Rs.6.3259/kWh at PKR/US$ exchange rate of Rs. 80) for 30-year agreement term with the following breakup of total project cost

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Figures in US$ Million

S. #	Description	4th /Final FS Stage Tariff Proposal
1.	Civil Works Including Temporary Works	1091.568
2.	Electrical & Mechanical Equipment & Erection Work	409.833
3.	Metal Structure Equipment & Erection Work	95.664
4.	Other EPC Cost (Technical Consultation, Commissioning, Acceptance etc)	8.133
5.	Custom Duties	23.513
6.	Basic Reserve Cost (Contingencies)	122.153
	Total (1-6)	1750.865
7.	Investigation & Design Cost by the Company	97.370
8.	Reimbursement to WAPDA for Original Feasibility Study Cost	9.040
	Total (7+8)	106.410
9	Land, Resettlement, Environmental Protection	10.234
10	Project Management	131.00
11	Insurance During Construction	27.150
12	Law Services	10.00
13	Withholding Tax on Local Services	0.00
14	Working Capital	0.00
	Total (9-14)	178.384
15	Oversees Investment Insurance on Equity	0.00
	Total Base Construction Cost (1-15)	2035.659
16	Oversees Investment Insurance on Loan	68.839
17	Upfront Fee	20.307
18	Administration Fee	8.391
19	Commitment Fee	23.622
20	Interest During Construction	240.707
	Total (16-20)	361.866
	Project Cost (1-20)	2397.525
	Debt: Equity Ration	70:30
	Interest Rate per annum (LIBOR + Spread) (%)	5.0863
	ROE (IRR based (%)	17
	Sinosure Insurance Rate per annum (%)	1.2
	Agreement Term (Years)	30
	Levelized Tariff (US cents/kWh)	7.9074

3. Based on information provided by NTDC as well as comments received from stakeholders, the following issues have been framed for discussion and consideration by the Authority.

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i) Whether No Objection Certificate (NOC) in respect of the project from the relevant Environmental Protection Agency has been obtained?

ii) Whether the energy estimates as submitted by the petitioner are based on hydrological data collected from the site, or whether the hydrological data collected from nearby sites has been interpolated to arrive at the energy estimates?

iii) Whether the claimed EPC cost of US$ 1750.864 million (1.60 million per MW) which is considered to be on higher side as compared to what has been allowed by the Authority in similar cases, is justified?

iv) Whether the claim of Basic Reserve cost/contingencies amounting to US$ 122.153 million at the rate of 7.5% of the EPC cost is justified?

v) Whether the claimed cost of Technical Consultation mentioned under the head of "Other EPC Cost" amounting to US$ 8.133 million as well as claim of US$ 97.370 million under the head of "Investigation and Design Cost" are justified?

vi) What is the reason/basis of the increase in cost of feasibility study conducted by WAPDA from US$ 6.813 million to US$ 9.040 million?

vii) Whether the project management cost claim amounting to US$ 131.0 million at the rate of 7.50% of the EPC cost is justified?

viii) Whether the proposed cost of Land, Resettlement, Environment Protection US$ 10.234 million is justified?

ix) Whether the proposed cost of Insurance during Construction of US$ 27.150 million is justified?

x) Whether the claim of financial charges amounting to US$ 52.32 million is justified?

xi) Whether the proposed terms of financing for debt are justified?

xii) Whether the proposed terms of Sinosure Fee on Debt are justified?

xiii) Whether the amount of O&M cost of US$ 31.168 million per annum as claimed by the petitioner is justified?

xiv) Whether the requested rate of return on Equity at 17% is justified?

The above mentioned issues have been discussed separately as hereunder.

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4. **Whether No Objection Certificate (NOC) in respect of the project from the relevant Environmental Protection Agency has been obtained?**

4.1 The issue was discussed in the hearing held on September 16, 2014, wherein NTDC was directed by the Authority to submit written explanation on the issue. However, NTDC in response to our letter dated October 16, 2014 has submitted that WAPDA initially conducted the Environmental study of the project as part of the Feasibility Study and in the year 2009 submitted a petition to AJ&K Environment Protection Agency (EPA) for approval of the EIA study. Due to change of the ownership of the project from WAPDA to the private sector, such approval has not been given so far. However, the company has hired the services of SMEC International (Pvt) Ltd for updating the earlier conducted EIA study of the project and for obtaining NOC from AJK Environmental Protection Agency. The company is hopeful that it will obtain NOC in due time. NTDC further submitted that during meeting among representatives of PPIB, the Sponsors, AJK PPC, AJK EPA and NTDC on September 29, 2014 in PPIB's office at Islamabad, it has been decided that Sponsors will refine the on-going environmental study and AJK PPC and AJK EPA will facilitate the sponsors in obtaining relevant information/data.

4.2 The Authority understands that the instant project is being set up in the State of Azad Jammu & Kashmir and therefore NOC of the EIA study of the project is to be granted by the Environmental Protection Agency of the AJ&K. Since the Government of AJ&K has endorsed the GOP Policy for power Generation Projects 2002, therefore PPIB vide its letter dated July 19, 2011 has approved the project's updated Feasibility study through its appointed Panel of Experts and advised the project sponsors to approach NTDC/CPPA for negotiation of tariff within 2 months.

4.3 It may be mentioned here that the issue of NOC does not have direct impact on the tariff to be approved by the Authority. The Authority notes that the project is in the developmental stage and all legal requirements including NOC by the relevant EPA needs to be fulfilled by the project sponsors as already decided by PPIB before the project execution/construction stage. The Authority therefore directs NTDC as well as the project sponsors to complete all institutional requirements before filing of next stage (EPC stage) tariff application.

Objections raised by Transparency International Pakistan (TIP)

4.4 TIP through its letter dated October 4, 2014 addressed to the Prime Minister and copy to Chairman NEPRA and others (~~Annex-II~~) has submitted that Contract can not be awarded to Chinese Investors (M/s CWE) ~~based~~ on MOU without Public Tendering in violation of PPRA Ordinance 2002 and PPRA 2004. It has been further submitted that NEPRA has accepted the NTDC's request based on cost submitted by M/s CWE and is in the process of approving the tariff, which will cost over Rs. 1.5 billion per month additional and illegal revenue to M/s CWE. Law is that all costs shall be based on competitive cost based on Internal Contract Bidding. TIP through its letter has requested the Prime Minister to take immediate action and terminate the

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illegally awarded contract and process the project as 'WAPDA own project' , which will result in 60-65% of this tariff.

4.5 NTDC in its response to the Authority vide letter dated October 23, 2014 has submitted that the instant tariff has been negotiated at feasibility level cost estimates. The EPC cost estimates in the updated feasibility report by CWE were lower than the cost estimates made in the feasibility study got conducted by WAPDA. The EPC bidding is carried out for the EPC stage tariff and the Feasibility level tariff is based on estimates provided in the Feasibility study rather than on ICB. NTDC submitted that it does not agree that the EPC cost estimates and all other expenses are highly inflated as asserted by TIP.

4.6 NTDC further submitted that it was a policy decision taken by the GOP to implement the project in the private sector and as stated earlier such decisions do not fall in NTDC's domain. It is however, not clear on which basis the TIP has decided that 'processing of the project by WAPDA will result in 60-65% of this tariff'.

4.7 It may be mentioned here that hydropower power projects are allowed Advance Tariff at feasibility stage based on cost estimates provided in the feasibility. The Advance Tariff allowed by the Authority is not final tariff rather adjusted/revised at second stage i.e. EPC stage on the basis of firm costs arrived at through a process of ICB to be carried out by the project sponsors. Therefore concerns of TIP with regard high project cost of Kohala hydropower project proposed by NTDC will be taken care off at the next stage of tariff application by NTDC based on ICB to be carried out by the project sponsors.

5. **Whether the energy estimates as submitted by the petitioner are based on hydrological data collected from the site, or whether the hydrological data collected from nearby sites has been interpolated to arrive at the energy estimates?**

5.1 NTDC has submitted that net capacity of the Kohala project after auxiliary consumption of 11 MW (1%) will be 1089 MW. The net annual energy has been claimed as 5093.632 GWh at 53.39% Plant Factor. The NTDC has submitted that four vertical Francis turbines of 280.6 MW each will be installed ro make up total installed capacity of 1100 MW. The annual energy estimates have been worked out on the basis of historical hydrology data, rated head of 290 m and rated flow of 106.25 m3/unit.

5.2 As per the feasibility report hydrological data for the period 1970-2006 has been used to work out annual energy of the project. NTDC during the hearing submitted that annual energy estimates are based on hydrological data collected from site as well as the hydrological data from nearby sites has been interpolated to arrive at the energy estimates for the project.

5.3 The Authority considers that the capacity and annual energy of the Kohala HPP has been derived on the basis of historical hydrological data collected by the project consultants for the project site as well as nearby sites which will be again reviewed in pursuance of detailed engineering to be carried out at the time of ICB. The Authority therefore approves the project

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net capacity of 1089-MW after taking into account the proposed auxiliary consumption of 11 MW as well as the proposed net annual energy of 5093.632 GWh at this stage.

6. **Whether the claimed EPC cost of US$ 1750.864 million (1.60 million per MW) which is considered to be on higher side as compared to what has been allowed by the Authority in similar cases, is justified?**

6.1 NTDC has proposed US$ 1750.864 million as EPC cost of the project inclusive of US$ 23.513 million based at 5% of the cost of imported plant and machinery, for custom duty. As per NTDC the proposed EPC cost has been negotiated at the 4th tariff proposal submitted by the project sponsors after series of meetings. NTDC submitted that the EPC cost would be finally determined at the EPC stage Tariff (2nd Stage) Tariff determination after competitive bidding for the EPC contract is carried out by the Sponsors as per NEPRA's 3-Stage Tariff Mechanism for Hydropower Projects. The current EPC cost in the Feasibility Level Tariff application is based on the estimates made in the Feasibility Study of the project.

6.2 According to the NTDC the EPC cost was estimated twice by different consultants and more importantly for different employers. A consortium of SMEC (Australia), Scott Wilson (UK), Sogreah Consultants (France), MES (Pakistan) & EGC (Pakistan) hired by WAPDA for conducting the feasibility study of Kohala Hydropower Project estimated an EPC Cost of US$ 2005.889 million. After award of LOI, CWE/CTGC engaged China Water Resources Beifang Investigation & Research Co. Ltd (BIDR) for updating of the feasibility study. BIDR estimated an EPC Cost of US$ 1750.864 (including Custom Duties of US$ 23.513 million). Since the EPC cost estimated by the Chinese consultant hired by the Sponsors (CWE, China) is lower than the estimate of the Consultants hired by WAPDA, the same has been adopted for the Feasibility Level Tariff.

6.3 The following break up of EPC cost has been provided by the NTDC.

EPC Cost	US$ Million
Civil works including Temporary works	1091.568
Electrical & Mechanical works	409.833
Metal structure equipment	95.664
Other EPC Cost (Technical Consultation)	8.133
Basic Reserve Cost (Contingencies)	122.153
Custom duties	23.513
Total	**1750.864**

6.4 The Authority understands that NTDC 's instant request is based on negotiated costs while relying on cost estimates provided in the project feasibility of Kohala Hydropower Project. The Authority notes that correctness of proposed cost estimates for various components can be judged from the extent of various technical studies and thorough due diligence carried out by the project consultants while preparing project feasibility. The Hydropower Mechanism already

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approved by the Authority also emphasizes on completeness and thorough studies of geology and other technical requirements. The Authority however has observed that in practice such studies are left to be undertaken later by the EPC contractor/project contractor while carrying detailed engineering in pursuance of EPC bidding for the project. The Authority has therefore observed wide variation in the EPC Cost of a hydropower project as worked out by the consultants in the project feasibility and one arrived at later through a process of competitive bidding carried out by the sponsors.

6.5 NTDC during hearing as well as written submissions provided in support of its proposed EPC Cost has contended that the EPC Cost estimated in the feasibility and proposed by it is based on prevailing market rates and conditions and therefore represent fair and justified costs for various components of EPC.

6.6 The Authority considers that feasibility level cost in the case of hydropower projects are not firm rather based on estimates by the consultants. The Authority therefore feels that detailed prudence check for the project costs of Kohala hydropower project may be deferred till the next stage when EPC and other project costs will be firm and ascertained through competitive bidding supported with verifiable documentary evidence. In the meantime the proposed cost for main components of EPC cost has been judged for its reasonableness on comparable basis with similar costs of the other such hydropower projects at the feasibility level as discussed hereunder.

6.7 The Civil works cost of US$ 1091.568 million is slightly higher than other conventional hydropower project at feasibility stage but quite comparable with civil works cost of hydropower projects involving long diversion/head race tunnels, like Chakothi Hattian Hydropower Project, already approved by the Authority. The total proposed cost of electromechanical equipment of US$ 505.497 million (US$ 0.46 million/MW) is found to be reasonable in comparison to per MW cost approved for other similar projects.

6.8 The Authority notes that US$ 122.153 million on account of Basic Reserve Cost or Contingencies on the basis of 7.50% of the EPC Cost has been proposed by NTDC. NTDC in its submissions has stated that the Company had requested for Basic Reserve Cost/Contingencies @ 10% of EPC cost (i.e., US $ 162.817 million) in its first tariff proposal. NTDC's viewpoint about the contingency was that it should be kept at a minimum level at the FS stage tariff, and preferably be eliminated altogether at the EPC stage.

6.9 The Authority understands that provision for contingencies/basic reserve in the feasibility cost estimates is widely practiced for large hydropower projects like that of Kohala and therefore is genuine requirement to meet unavoidable unforeseen costs of the project. The Authority however considers that requirement of contingency cost is eliminated once the costs are developed based on detailed engineering and design and ascertained through a process of competitive bidding by the project sponsors, which in this case is to be done at later stage i.e. EPC stage. The Authority therefore considers that it has already allowed, as per project specific

requirement, the cost of contingency to other such hydropower projects at feasibility stage and therefore on same basis decides to allow US$ 122.153 million for the cost of contingency/ basic reserve cost.

6.10 In view of discussion in the preceding paragraphs, the EPC Cost of US$ 1750.864 million is approved as requested by NTDC. The civil works cost will be allowed adjustment due to variation in the price of construction materials such as steel, cement, labor and fuel based on relevant price indices while no variation will be allowed in the material quantities (BOQs) to be fixed at the time of next stage tariff application by NTDC.

7. **Whether the claimed cost of US$ 97.370 million under the head of "Investigation and Design Cost" are justified?**

7.1 NTDC submitted that it has negotiated US$ 97.370 million in aggregate for investigations and design cost. NTDC while providing justification & rationale for the negotiated cost of US$ 97.370 million under the aforementioned head has submitted that Investigation & Design/Engineering Supervision costs are allocated for undertaking the necessary engineering & design works as well as engineering supervision during the construction period, keeping in view the scope and size of works of Kohala project and was part of the approved feasibility report. NTDC has further submitted that the scrutiny of NEPRA's relevant benchmarks revealed that NEPRA has allowed US$ 82.541 million and US$ 77.708 million (about 10% of the EPC Cost) in FS stage tariff determinations of 720 MW Karot HPP and 840 MW Suki Kinari HPP respectively. The following breakup of Investigation and Design cost has been provided by NTDC.

Investigations & Design Cost/Engineering Supervision	**US$ Million**
Investigation & Design	31.890
Construction Design & As built Design	47.910
Design and Construction Supervision	17.570
Total	**97.370**

7.2 NTDC has referred to cost allowed by the Authority for the same component in the case of Karot and Suki Kinari Hydropower Projects at their feasibility stage tariff.

7.3 The Authority notes that it has already allowed Engineering investigation & Design cost in the case of aforementioned hydropower projects on the basis of consultants estimates worked out in their respective feasibility reports. The NTDC's negotiated & proposed Investigation & Design cost of US$ 97.370 million is however higher than other aforementioned hydropower projects but lower in terms of percentage of EPC cost. The Authority also notes that there has been substantial reduction in the cost allowed by the Authority under this head between the two distinct stages i.e. feasibility stage and EPC stage from US$ 77.708 million to US$ 37.437 million respectively in the case of Suki Kinari Hydropower project.

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7.4 The Authority in the case of 720-MW Karot Hydropower Project, which is also owned and developed by the same sponsors (Three Gorges) has approved US$ 82.541 million for Engineering and investigation cost in the feasibility stage tariff. The Authority considers that Investigation & Design cost of US$ 97.370 million proposed by NTDC for the 1100-MW Kohala Hydropower project is reasonable and therefore is approved by the Authority. The cost under this head will be reviewed by the Authority on the basis of documentary evidence at the time of next tariff application to be filed by NTDC

8. **What is the reason/basis of the increase in cost of feasibility study conducted by WAPDA from US$ 6.813 million to US$ 9.040 million?**

8.1 NTDC has proposed US$ 9.040 million on account of reimbursement of cost of initial feasibility of Kohala Project conducted by the consultants of WAPDA. As per the terms of the Letter of Interest (LOI) issued to the project sponsors by Private Power & Infrastructure Board (PPIB), the audited cost of the feasibility study conducted by Kohala Hydropower Consultants (KHC) would be reimbursed by the Sponsor to WAPDA before issuance of Letter of Support (LOS). The amount of reimbursement to WAPDA on aforementioned ground as mentioned in the updated feasibility of Kohala Hydropower project was US$ 6.813 million which has been subsequently increased to US$ 9.040 million in the final negotiated proposal submitted by NTDC

8.2 The Authority notes that NTDC has not provided any documentary evidence to ascertain the actual cost to be reimbursed to WAPDA neither any proof verifying payment (if any) made to NTDC has been provided by NTDC. The Authority therefore has decided not to approve any amount for reimbursement of feasibility cost to WAPDA at this stage. The same, however, will be considered by the Authority based on verifiable documentary evidence at the time of next stage tariff application to be filed by NTDC.

9. **Whether the project management cost claim amounting to US$ 131.0 million at the rate of 7.50% of the EPC cost is justified?**

9.1 NTDC has negotiated US$ 131.00 million on account of Project Management cost @ 7.50% of the EPC cost without any escalation in dollar terms in the future. NTDC was asked to provide full justification along with breakup of the proposed project management cost, however, no cost breakup of project management has been provided by NTDC. The NTDC in its written submissions has again referred to Karot HPP where the Authority has allowed this cost component @ of 10% of the EPC Cost.

9.2 The Project Management/Construction supervision cost component generally comprises of Owner's Engineer cost for construction supervision and project company's administrative cost during the project construction period. The Authority in its latest tariff determination of Suki Kinari (EPC stage) has assessed and approved US$ 33.383 million under this head, which in terms of percentage of EPC works out to be 2.54%.

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9.3 The Authority has carefully examined the proposed negotiated cost as well as the rational and justification provided in support of claimed cost of US$ 131.0 million. The Authority considers that instant application of NTDC is based on feasibility level costs estimated by the project consultants and duly approved by the Panel of Experts of PPIB and therefore any comparison with other hydropower project at advanced stage such as EPC stage tariff of Suki Kinari Hydropower project would not be rational basis for determining project costs of Kohala hydropower project at this stage. The Authority also notes that project management cost do not vary in direct proportion to the project size and/or project construction period but also dependent on the scope and responsibilities agreed with consultants for project supervision. The Authority while taking into account all above mentioned aspects of the case has assessed US$ 87.543 million and allowed for project management cost at this stage subject to review by the Authority based on documentary evidence to be provided by NTDC at the time of next stage tariff application.

10. **Whether the Land Resettlement, Environment Protection Cost of US$ 10.234 million is justified?**

10.1 NTDC has proposed US$ 10.234 million for procurement of land, Resettlement of affected inhabitants and protection of environment cost. NTDC has submitted that cost estimate is for acquisition of land for construction of dam and power house as well as compensation for loss of houses, commercial buildings, trees, raising and replacement of bridges & roads and rerouting of utilities. The land acquisition area for Siran dam site is 98 hm^{2}. It has also been assessed that about 20-60 households in the reservoir area will need relocation and premises of 15-20 households in Barsala town will be affected. This figure is entirely a project and site specific cost and its comparison with cost allowed to other hydropower projects by NEPRA is not relevant.

10.2 The cost under this head is allowed as per actual requirement of the project and is therefore adjustable at the time of COD based on authentic documentary evidence to be provided by the petitioner. The cost of raising and replacement of bridges and roads however is not covered under this cost item as mentioned above by NTDC. Such cost is part of overall civil works cost and included in the cost estimates of civil works cost in the project feasibility. However, the estimated cost of land acquisition, resettlement and Environment protection proposed by the NTDC is reasonable and therefore approved by the Authority subject to adjustment at COD on the basis authentic and verifiable documentary evidence to the provided by the NTDC.

11. **Whether the proposed cost of Insurance during Construction of US$ 27.150 million is justified?**

11.1 NTDC has submitted that Insurance during construction has been estimated @ 1.554% of the EPC Cost plus custom duties in the tariff proposal by the Company to NTDC. NTDC further submitted that the proposed cost for insurance during construction is quite reasonable as

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compared to the same cost approved by the Authority for other comparable hydropower projects.

11.2 The cost of Insurance during construction US$ 27.150 million as proposed by NTDC is reasonable on comparable basis and therefore is approved by the Authority.

12. **Whether the claim of financial charges amounting to US$ 52.32 million is justified?**

12.1 NTDC has proposed US$ 52.320 million in aggregate for financial charges comprising US$ 20.307 million for Upfront Fee, US$ 8.391 Administrative Fee and US$ 23.622 million for Commitment Fee

12.2 The Authority in other cases has allowed financial charges on lump sum basis at the set benchmark of 3.00% of the debt amount without taking into account the impact of IDC and financial charges. Based on the same principal adopted for other hydropower projects the cost of financial charges at 3% of debt excluding the impact of IDC works out to be US$ 41.616 million and therefore approved by the Authority.

13. **Whether the proposed terms of financing for debt are justified?**

13.1 NTDC has submitted that the Project is envisaged to be financed through 70% loan of the entire project capital cost of US$ 2397.525 million i.e. a debt portion of US$ 1678.268 million. The debt component is assumed to be 100% foreign loan. The Interest rates assumed for the foreign loan is 5.0863% (the current LIBOR rate of 0.33630% plus spread of 4.75%). The payback period is assumed to be 12 years (excluding the construction period of 6 years). The repayment of debt is assumed to be on half yearly basis.

13.2 The Authority has examined the terms of debt negotiated agreed with the sponsors of Kohal hydropower project and finds to be in general agreement with such terms approved for other hydropower projects. The Authority however notes that spread over LIBOR as agreed at 4.75% is on higher side especially in the presence of sinosure insurance on debt (discussed in subsequent paragraphs). The Authority therefore has decided to allow spread over LIBOR at 4.50% and is therefore approved subject to review by the Authority at the time of next stage tariff application to be filed by NTDC.

13.3 Based on the above approved terms of debt the estimated amount of Interest During Construction (IDC) has been worked out as US$ 224.905 million as against NTDC's proposed figure of US$ 240.707 million and included in the total project cost. The debt service schedule is attached as Annex-II. The amount of IDC will be adjusted at COD based on actual variation in LIBOR (semi-annual) and change in currency exchange rates (US$/PKR) during the project construction period of 6 years.

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14. **Whether the proposed terms of Sinosure Fee on Debt are justified?**

14.1 NTDC has proposed US$ 68.839 million for Sinosure Fee on debt for the project construction period based on 1.2% per annum on outstanding amount of loan including interest during construction. It has also claimed Sinosure for the debt repayment period after COD for the 12 years debt repayment period on the same basis. However no working in support of its claim neither any documentary evidence in support of its requested Sinosure Fee has been provided by NTDC.

14.2 The Authority in the case of Karot HPP has allowed Sinosure for the project construction period as well as project's 12 years operational period of debt repayment at 1.20% per annum to be calculated on total outstanding debt and interest based on then information provided by the petitioner (Chinese investors). The Authority however , subsequently in the case of Suki Klnari HPP (EPC Stage) has provisionally allowed US$ 94.585 million(lump sum), as Sinosure Fee on debt at 7% of total loan amount.

14.3 The Authority notes that it has already allowed Sinosure Fee on debt to power projects being developed by Chinese Investors based on preliminary information provided by the petitioners. However, the final terms and conditions of Sinosure Fee agreed with lenders/Sinosure agency will be known once these projects achieve Financial Close. The Authority considers that allowing different applicable terms and conditions of Sinosure Fee for different power projects is not a rationale basis and against consumers' interest who have to bear this additional cost for the whole term of the project. The Authority therefore, considers that the issue of Sinosure Fee claimed by the Chinese Investors for investment in power projects in Pakistan needs to be taken up by the Government of Pakistan with the Chinese Government for its waiver or at least setting minimum acceptable level together with applicable terms and conditions so as to avoid unreasonable hike in the tariffs of power generation projects being developed with Chinese investment.

14.4 Nevertheless, the Authority in its latest determination of a hydropower project being funded with Chinese investment based on information provided to the Authority has approved Sinosure Fee on debt at 7% lumpsum. The Authority has therefore decided to allow Sinosure Fee on debt on same basis. Accordingly lump sum amount of US$ 115.839 million has been worked out on account of Sinosure Fee at 7% of the debt and is therefore approved by the Authority.

15. **Whether the amount of O&M cost of US$ 31.168 million per annum as proposed by NTDC is justified?**

15.1 NTDC has negotiated US$ 31.168 million for total O&M cost which works out to be 1.3% of the total negotiated project cost comprising US$ 23.376 million for Fixed O&M (60% foreign and 40% local component) and US$ 7.792 million as Variable O&M (60% foreign and 40% local component). NTDC in its submissions has mentioned that in the 1st Tariff Proposal, the Sponsors had requested for US$ 26.509 million for catering the Fixed Operation &

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Maintenance works with 60% & 40% bifurcation into foreign & local components respectively. The estimate for Variable O&M cost was US$ 3.301 million (80% Foreign & 20% Local). In aggregate, the requested cost for O&M was US$ 29.81 million per annum (1.19% of the then total Project Cost). However, later on, the Company revised its estimated per annum O&M cost upwards and finally after series of meeting and negotiations agreed at US$ 31.168 million and the same has been requested for approval of the Authority.

15.2 The Authority has examined the request of NTDC for its proposed per annum cost of O&M expense and observed that the arguments as well as the rational provided by it for agreed per annum O&M cost of Kohala Hydropower Project is not acceptable and justified. The Authority considers that annual requirement of O&M cost of each hydropower project is different and project specific and does not have direct correlation with either size or cost of the project nor it can form basis for such cost approved for other hydropower projects.

15.3 The Authority understands that the instant request of NTDC for approval of per annum O&M cost is based on estimates which will be firmed up at later stage when these costs would be ascertained with more accuracy. Nevertheless, it is responsibility of the Authority to consider and allow such costs which are reasonably required to meet genuine needs of the project. The Authority has carefully examined the O&M cost requirement of Kohala HPP vis-a vis the amount of per annum cost allowed in such comparable hydropower projects and therefore has decided to allow an aggregate per annum amount of US$ 26.677 million. Since, in the case of hydropower plants substantial portion of the per annum cost is fixed in nature and Variable cost is very low. Accordingly the Authority allocated the overall per annum O&M into fixed and variable as given hereunder.

O&M Cost/annum	**US$ Million**
Fixed O&M - Foreign	14.0256
Fixed O&M - Local	9.3504
Sub-total	**23.3760**
Variable O&M- Foreign	1.9806
Variable O&M - Local	1.3204
Sub-total	**3.3010**
Total O&M	**26.6770**

15.4 The total O&M cost as well as its allocation between fixed and variable along with proportion of foreign and local component will be reviewed by the Authority at the next stage tariff application to be filed by NTDC on the basis of documentary evidence or other information available with the Authority to meet genuine needs of per annum O&M cost for the project.

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Insurance cost during operation

15.5 NTDC has requested US$ 23.637 million which is 1.35% of its proposed EPC cost. The Authority in its latest determinations for hydropower projects has allowed annual insurance expense at 1% of the EPC Cost while considering the volume of project size and volume of EPC cost. In view hereof the Authority has decided to allow annual insurance expense at 1% of the EPC cost. The insurance cost will be adjusted at COD on the basis of actual subject to the maximum cap of 1% of the EPC cost.

Water Use Charge

15.6 NTDC has submitted that the Water Use Charge is payable to the respective province (in this case, AJ&K) where the project is located. Its current rate is 15 paisa/kWh as per government policy and the same rate has been incorporated in the Reference Tariff. This rate is liable to be adjusted as and when the government policy changes in this regard.

15.7 The Authority has allowed Water Use Charge at Paisa 15/kWh to other hydropower projects as per GOP Policy for Power Generation Projects 2002 with adjustment based on annual CPI (general) applicable after one year of COD, and is therefore allowed on similar terms in the instant case.

16. **Whether the requested rate of return on Equity at 17% is justified?**

16.1 NTDC has submitted that during the tariff negotiations, the Sponsors were of the view that hydropower projects including the Kohala project should be allowed 20% IRR on equity due to higher risks involved and long development period. However, since NEPRA' has allowed only 17% IRR on equity to hydropower projects in their tariff determinations so far, therefore 17% IRR on the equity amount of US$ 719.257 million (30% of total project cost) has been assumed in the final tariff and the Company agreed to 17% IRR on equity with the condition that if a higher return is allowed to any hydropower project subsequently, the same shall be allowed to Kohala project as well without any discrimination.

16.2 The Authority so far has allowed 17% return on equity (IRR based) to all hydropower projects. In the Authority's opinion 17% return (IRR based) is quite reasonable especially for large hydropower projects having comparatively long construction period which results into quite higher nominal rate of return. The Authority has therefore decided to allow 17% return on equity (IRR based) in the instant case in line with its decision for other such hydropower projects.

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17. Order

Based on discussion in the preceding paragraphs, NTDC is granted permission under Rule 4 of IPPR, 2005 to initiate power acquisition contract negotiations for power procurement on behalf of DISCOs. Under regulation 4(2) of the IPPR, 2005, the Authority hereby allows as advanced tariff as well:-

Tariff Components	Year 1-12	Year 13-30	Indexation
Variable Charge (Rs/kWh)			
Variable O&M – Local	0.0254	0.0254	CPI (Local)
Variable O&M-Foreign	0.0381	0.0381	PKR/US$, US CPI
Water Use Charge	0.1500	0.1500	CPI (Local)
Fixed Charge (Rs/kW/M)			
Fixed O&M – Local	70.1208	70.1208	CPI (Local)
Fixed O&M – Foreign	105.1813	105.1813	PKR/US$, US CPI
Insurance	131.3014	131.3014	PKR/US$
Debt Service	1375.2395	-	LIBOR
Return on Equity	904.1578	961.0985	PKR/US$
Return on equity during construction (ROEDC)	460.4262	460.4262	PKR/US$

i. The reference tariff has been calculated on the basis of net contracted capacity of 1089 MW and net annual energy production of 5093.632 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.

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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 at the relevant date.

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 6-months LIBOR during the project construction period of 72 months (6 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$ 10.234 million will be adjusted in accordance with the Hydropower Mechanism based on authentic documentary evidence at COD.

f. 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.

g. 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.

h. 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:

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

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 60% foreign and 40% local. The Fixed O&M cost is based on 60% foreign and 40% local 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

$F\ O\&M_{(LREV)} = O\&M_{(LREF)} * CPI_{(REV)} / 199.40$
$F\ O\&M_{(FREV)} = O\&M_{(FREF)} * USCPI_{(REV)} / 238.031 * ER_{(REV)}/98$

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.
$CPI_{(REV)}$ = The Revised Consumer Price Index (General) for the relevant month.
$CPI_{(REF)}$ = The Consumer Price Index (General) of September 2014 notified by the Pakistan Federal Bureau of Statistics.
$US\ CPI_{(REV)}$ = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.
$US\ CPI_{(REF)}$ = Reference US CPI (All Urban Consumers) notified by the Bureau of Labor Statistics for the month of September 2014.
$ER_{(REV)}$ = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

b. Variable O&M

$V\ O\&M_{(LREV)} = O\&M_{(LREF)} * CPI_{(REV)} / 199.40$
$V\ O\&M_{(FREV)} = O\&M_{(FREF)} * USCPI_{(REV)} / 238.031 * ER_{(REV)}/98$

Where:

$V\ O\&M_{(LREV)}$ = The revised applicable Variable O&M local component of tariff indexed with local CPI.
$V\ O\&M_{(FREV)}$ = The revised applicable Variable O&M foreign component of tariff indexed with US CPI.
$O\&M_{(LREF)}$ = The reference variable O&M local component of tariff for the relevant period.
$O\&M_{(FREF)}$ = The reference variable O&M Foreign component of tariff for the relevant period.
$CPI_{(REV)}$ = The Revised Consumer Price Index (General) for the relevant month.

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$CPI_{(REF)}$ = The Consumer Price Index (General) of September 2014 notified by the Federal Bureau of Statistics.

$US\ CPI_{(REV)}$ = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.

$US\ CPI_{(REF)}$ = Reference US CPI (All Urban Consumers) notified by the Bureau of Labor Statistics for the month of September 2014.

$ER_{(REV)}$ = 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:

$$WUC_{(REV)} = WUC_{(REF)} * CPI_{(REV)} / 199.40$$

Where;

$WUC_{(REV)}$ = The revised Water Use Charge component of tariff indexed with Consumer Price Index (CPI).

$WUC_{(REF)}$ = The reference Water Use Charge component of tariff for the relevant period.

$CPI_{(REV)}$ = The Revised Consumer Price Index (General) for the relevant month.

$CPI_{(REF)}$ = The Consumer Price Index (General) of September 2014 notified by the Federal Bureau of Statistics.

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.

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

iv) Adjustment for LIBOR variation

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 6-months LIBOR, while spread of 4.50% on LIBOR remaining the same, according to the following formula:

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 0.3363\%) / 2$$

Where;

ΔI = the variation in interest charges applicable corresponding to variation in six-month LIBOR. Δ I can be positive or negative depending upon whether $LIBOR_{(REV)}$ > or < 0.3363%. The interest payment obligation will be enhanced or reduced to the extent of Δ I for each period under adjustment applicable on semi-annual basis.

$P_{(REV)}$ = the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a semi-annual 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:

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

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.

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Note: -

Adjustment on account of inflation, foreign exchange rate variation and LIBOR 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.

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.

AUTHORITY

Khawaja Muhammad Naeem
Member

Major (Rtd) Haroon Rashid
Member

Himayat Ullah Khan
Member

Habibullah Khilji
Vice Chairman/Member

Brig (Rtd) Tariq Saddozai
Chairman

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Annex-I

KOHALA HYDROPOWER PTOJECT
ADVANCE TARIFF

Year	Variable O&M Local	Variable O&M Foreign	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./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	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	784.4252	590.8143	8.0293
2	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	822.8211	552.4184	8.0293
3	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	863.0963	512.1432	8.0293
4	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	905.3429	469.8966	8.0293
5	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	949.6574	425.5821	8.0293
6	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	996.1410	379.0985	8.0293
7	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	1,044.8999	330.3396	8.0293
8	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	1,096.0454	279.1942	8.0293
9	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	1,149.6943	225.5452	8.0293
10	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	1,205.9693	169.2703	8.0293
11	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	1,264.9987	110.2408	8.0293
12	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	904.1578	460.4262	1,326.9176	48.3219	8.0293
13	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
14	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
15	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
16	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
17	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
18	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
19	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
20	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
21	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
22	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
23	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
24	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
25	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
26	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
27	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
28	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
29	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
30	0.0254	0.0381	0.1500	70.1208	105.1813	131.3014	961.0985	460.4262			4.6471
Levelized Tariff	**0.0254**	**0.0381**	**0.1500**	**70.1208**	**105.1813**	**131.3014**	**919.9423**	**460.4262**	**708.4107**	**285.6005**	**7.0917**

Levelized Tariff (1-30 years) discounted at 10% per annum = US Cents 7.2365/kWh at reference exchange rate of 1US$=Rupees 98.00.

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Annex-II

KOHALA HYDROPOWER PTOJECT

Debt Servicing Schedule

Period	Foreign Debt					Annual Principal Repayment Million US$	Annual Interest Million US$	Annual Debt Servicing Million US$	Annual Principal Repayment Rs./kW/M	Annual Interest Rs./kW/M	Annual Debt Servicing Rs./kW/M
	Principal Million $	Repay-ment Million $	Mark-Up Million $	Balance Million $	Debt Service Million $						
	1,654.8367	51.6756	40.0164	1,603.1612	91.6920						
1	1,603.1612	52.9251	38.7668	1,550.2360	91.6920	104.6007	78.7833	183.3840	784.4252	590.8143	1,375.2395
	1,550.2360	54.2050	37.4870	1,496.0311	91.6920						
2	1,496.0311	55.5157	36.1763	1,440.5154	91.6920	109.7207	73.6633	183.3840	822.8211	552.4184	1,375.2395
	1,440.5154	56.8582	34.8338	1,383.6572	91.6920						
3	1,383.6572	58.2331	33.4589	1,325.4241	91.6920	115.0913	68.2927	183.3840	863.0963	512.1432	1,375.2395
	1,325.4241	59.6412	32.0507	1,265.7829	91.6920						
4	1,265.7829	61.0835	30.6085	1,204.6994	91.6920	120.7247	62.6593	183.3840	905.3429	469.8966	1,375.2395
	1,204.6994	62.5606	29.1314	1,142.1388	91.6920						
5	1,142.1388	64.0734	27.6186	1,078.0655	91.6920	126.6339	56.7501	183.3840	949.6574	425.5821	1,375.2395
	1,078.0655	65.6227	26.0692	1,012.4427	91.6920						
6	1,012.4427	67.2096	24.4824	945.2331	91.6920	132.8324	50.5516	183.3840	996.1410	379.0985	1,375.2395
	945.2331	68.8348	22.8572	876.3983	91.6920						
7	876.3983	70.4994	21.1926	805.8989	91.6920	139.3342	44.0498	183.3840	1,044.8999	330.3396	1,375.2395
	805.8989	72.2041	19.4878	733.6948	91.6920						
8	733.6948	73.9501	17.7418	659.7446	91.6920	146.1543	37.2297	183.3840	1,096.0454	279.1942	1,375.2395
	659.7446	75.7384	15.9536	584.0063	91.6920						
9	584.0063	77.5698	14.1221	506.4364	91.6920	153.3082	30.0758	183.3840	1,149.6943	225.5452	1,375.2395
	506.4364	79.4456	12.2464	426.9908	91.6920						
10	426.9908	81.3667	10.3253	345.6241	91.6920	160.8123	22.5717	183.3840	1,205.9693	169.2703	1,375.2395
	345.6241	83.3343	8.3577	262.2898	91.6920						
11	262.2898	85.3494	6.3426	176.9404	91.6920	168.6837	14.7003	183.3840	1,264.9987	110.2408	1,375.2395
	176.9404	87.4133	4.2787	89.5271	91.6920						
12	89.5271	89.5271	2.1649	0.0000	91.6920	176.9404	6.4436	183.3840	1,326.9176	48.3219	1,375.2395

Reference: LIBOR at 0.3363% plus 4.50% spread..