



NATIONAL TRANSMISSION & DESPATCH COMPANY LIMITED

Telephone No. 99202111
PBX 99202211 / 2325
Fax No. 99202578

Office of the
General Manager (WPPO)
325-Wapda House, Lahore

No. GM/WPPO/CE-IV/DH/3843-47

Dated: 23-4-2014


→ The Registrar NEPRA,
NEPRA Tower, Ataturk Avenue (East)
G-5/1, Islamabad.

Subject: **1100 MW Kohala Hydropower Project— Approval of Feasibility Stage Tariff Proposal**

Please find enclosed herewith the feasibility stage tariff proposal and power acquisition request (PAR) in respect of 1100 MW Kohala Hydropower Project for NEPRA's approval.

Since the subject project is located in AJ&K, which is outside NEPRA's jurisdiction, the tariff proposal is being submitted by the Power Purchaser/NTDC as a case of import of power under NEPRA's Interim Power Procurement Regulations 2005 and previous directives issued by NEPRA for projects located in AJ&K.

Encl: 1) NTDC's Authorization Notification
2) FS Level Tariff Proposal
3) Power Acquisition Request (PAR)


Muhammad Azam Khan
General Manager (WPPO)

For information
— D/Reg/AR-II
Copy to
— DG (Gen) / (M&E)
— SAT-I
CC: — Dir (HC) — m/f
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- Managing Director NTDC, 414-WAPDA House, Lahore
- Managing Director PPIB, 50-Nazimuddin Road, F-7/4, Islamabad.
- Mr. Danish Khan, Haseeb Khan & Company, 15-Peshawar Block, Fortress Stadium, Lahore Cantt.
- Company Secretary NTDC, 407-WAPDA House, Lahore (with reference to notification no. C.S/NTDC/906-9 dated 22.04.2014)

Registrar 3252
By No. 24-04-14
Dated: 24-04-14

NATIONAL TRANSMISSION & DESPATCH COMPANY LTD.

Telephone: 042-99201330
PBX 042-99202211 / 2257
Fax: 042-99204236



Office of the
Company Secretary NTDC,
Room # 407-WAPDA House, Lahore

No.C.S/NTDCL/966-9

Dated: 22/4/2014

NOTIFICATION

Approval for filing negotiated Feasibility Study Stage Tariff Proposal to NEPRA for 1100 MW Kohala Hydro Power Project and Power Acquisition Request (PAR) for NEPRA's approval

- The Board of Directors of NTDCL in its 80th meeting held on 19-04-2014 against Ex-Agenda item No. 03 has resolved and approved filing the negotiated Feasibility Stage Tariff Proposal based on levelized tariff of US cents 7.9074/kWh of the 1100 MW Kohala Hydropower Project & Power Acquisition Request (PAR) to NEPRA for approval and authorized to GM (WPPO) NTDCL to present the case before NEPRA.

Copy to:

1. Managing Director NTDCL.
2. G.M (WPPO) NTDCL
3. Finance Director NTDCL
4. Manager Internal Audit

Muhammad Dilbar Ghouri
Company Secretary NTDCL

1100 MW KOHALA HYDROPOWER PROJECT

APPROVAL OF FEASIBILITY STAGE TARIFF UNDER NEPRA'S SPECIAL 3-STAGE TARIFF MECHANISM FOR HYDROPOWER PROJECTS

This application is a request on behalf of NTDC for approval of the negotiated feasibility stage tariff for the 1100 MW Kohala Hydropower project. Since the project is located in AJ&K, it falls in territory outside NEPRA's jurisdiction and issuance of generation license for the generating company by NEPRA is not applicable for the project. However, approval of tariff for the project is still required since the power generated by it would be imported for consumption in Pakistan.

NEPRA's Special 3-Stage Tariff Mechanism allows a 3-Stage determination of Tariff for hydropower projects. This application constitutes a request for approval of the first stage tariff, i.e., the negotiated feasibility-level tariff for Kohala HPP.

1. BACKGROUND

Project Location

The 1100 MW Kohala Hydropower Project is located on the Jhelum River in District Muzaffarabad near Siran village about 100 km from Islamabad, in 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-Operate-Transfer (BOOT) basis with an expected concession period of 36 years including 6 years of construction and 30 years of operation.

Decision to Implement the Project in Private Sector

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 Performance Guarantee (PG), CWE was issued Letter of Interest (LOI) by PPIB on 15th January 2009 (Annex-1) for review and updating (if required) the Feasibility Study for the Project carried out by Kohala Hydropower Consultants (KHC) under the supervision of WAPDA; as per the LOI the audited cost of the feasibility study conducted by PHC would be reimbursed by the Sponsor to WAPDA before issuance of Letter of Support (LOS).

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 (Annex-2).

Completion/Updating of the Feasibility Study

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 (Annex-3).

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 (Annex-4).

Project Features based on Feasibility Study

The Salient Features of the Kohala Hydropower Project as per its Feasibility Study (Annex-5) are as follows:

Description	Details
Installed Capacity	1100 MW
Auxiliary Consumption & Power Losses	11 MW
Net Plant Capacity	1089 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	64 m
Spillways	Two (2), Gated, 15×13 m
Bottom Outlet	6 Holes, 7×10 m
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
Power House Dimensions	187×24.6×46.8 m
Number of Units	Four (4), Vertical Francis
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

1st FS Stage Tariff Proposal by CWE to NTDC

The Sponsors/CWE submitted the 1st Feasibility Stage Tariff Proposal to WPPO / NTDC on September 17, 2011 with a levelized tariff of US ¢ 9.2180/kWh for a 50 year agreement term (Annex-6). 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 Overseas 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.

Response of NTDC to the Tariff Proposal

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 (Annex-7). 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 (Annex-8).

2nd FS Stage Tariff Proposal by CWE/CTGIC to NTDC

To resolve the issues and move forward, a meeting was held on December 01, 2011 in WAPDA House, Lahore wherein all of the issues in question were discussed at length and clarifications/justifications were shared between the parties. It was decided in the meeting that the Company shall send a revised tariff proposal to Power Purchaser/NTDC as soon as possible in the light of discussions took place in the meeting (Annex-9/MOM dated 21.12.2011).

The Company submitted its 2nd FS Stage Tariff Proposal with a levelized tariff of US cents 8.3851/kWh to NTDC (Annex-10) in which the Company accepted and incorporated NTDC's viewpoint on almost all of the issues in the revised tariff proposal but did not agree to NTDC's stance about Term of Agreement, Sinosure fees and Working Capital. Meanwhile, GOAJK vide its letter dated March 16, 2012 (Annex-11) also objected to the 50-years Agreement Term as requested by the Company.

NTDC's Response

Further meetings were held between the representatives of the Company and WPP/NTDC on March 29, 2012 and May 09, 2012 to resolve the outstanding aforementioned three issues and it was decided in these meetings that since the outstanding issues are of policy nature rather project specific and the same Company/CWE(CTGIC) had also requested NEPRA for same provisions in their FS Stage Tariff Petition of 720 MW Karot Hydropower Project, so whatever NEPRA decides about these three issues in Karot Project' Tariff Determination, similar treatment will be used for Kohala Project.

3rd FS Stage Tariff Proposal by CWE/CTGIC to NTDC

NEPRA gave its determination about FS stage tariff petition of 720 MW Karot HPP on May 29, 2012 but the Sponsors filed a Review Petition with NEPRA in June 2012. NEPRA gave its decision on Review Petition of 720 MW Karot Hydropower Project on December 11, 2012 and thereafter the Company was requested by NTDC vide its letter dated January 03, 2013 (Annex-12) to submit a revised FS stage tariff proposal for Kohala HPP while incorporating NEPRA's decision about the three outstanding issues as these were common with Karot HPP.

The Company submitted the 3rd FS stage tariff proposal on May 21, 2013 in which it surprisingly back tracked from many cost estimates agreed with Power Purchaser and mentioned in its earlier 2nd tariff proposal (US cents 8.3851/kWh) and did not incorporate NEPRA's decision about three outstanding issues and maintained its initial stance and even raised some of the previously agreed project costs like Project Development Cost, Basic Reserve Cost and Investigations & Design Cost. The levelized tariff in this 3rd FS Stage Tariff Proposal was US cents 9.5501/kWh for 50-year agreement term (Annex-13).

NTDC's Response

Subsequently on July 23, 2013, the Company was requested not to reopen the already settled issues/cost estimates and accept NEPRA's decision about the three outstanding issues and adopt similar treatment in case of Kohala HPP (Annex-14).

4th/Final FS Stage Tariff Proposal by CWE/CTGIC to NTDC

After various meetings between NTDC and the Company to resolve the issues, the Company finally submitted the 4th & final FS Stage Tariff Proposal to NTDC on March 07, 2014. All of the agreed project costs & related assumptions as stated in this tariff proposal by the Company fall within NEPRA's benchmarks set by NEPRA in its FS Stage Tariff Determinations for 840 MW Suki Kinari Hydropower Project and 720 MW Karot Hydropower Project. This final tariff proposal by the Company to NTDC was based on the total project cost of US 2397.525 million and a levelized tariff of US cents 7.9074/kWh for 30-year agreement term (Annex-15).

2. SUMMARY OF PROJECT COST & LEVELIZED TARIFF

		Figures in US\$ Million				
S.#	Description	Updated Feasibility Study	1st FS Stage Tariff Proposal	2nd FS Stage Tariff Proposal	3rd FS Stage Tariff Proposal	4th/Final FS Stage Tariff Proposal
Base EPC Cost						
1	Civil Works Including Temporary Works	1091.568	1091.568	1091.568	1091.568	1091.568
2	Electrical & Mechanical Equipment & Erection Work	409.833	409.833	409.833	409.833	409.833
3	Metal Structure Equipment & Erection Work	95.664	95.664	95.664	95.664	95.664
4	Other EPC Cost (Technical Consultation, Commissioning, Acceptance etc)	8.133	8.133	8.133	8.133	8.133
5	Custom Duties	23.513	23.513	23.513	23.513	23.513
6	Basic Reserve Cost (Contingencies)	162.871	162.871	67.419	162.871	122.153
	Total (1-6)	1791.582	1791.582	1696.130	1791.582	1750.865
Investigations & Design Cost						
7	Investigations & Design Cost by the Company	106.410	106.410	106.410	97.370	97.370
8	Reimbursement to WAPDA for Original Feasibility Study Cost	6.813	9.040	9.040	9.040	9.040
	Total (7-8)	113.223	115.45	115.45	106.410	106.410
Other Costs						
9	Land, Resettlement, Environmental Protection	10.234	10.234	10.234	10.234	10.234
10	Project Management	32.365	32.365	32.365	179.158	131.00
11	Insurance During Construction	27.150	27.150	27.150	27.150	27.150
12	Law Services	10.00	10.00	10.00	10.00	10.00
13	Withholding Tax on Local Services	0.00	0.00	0.00	0.00	0.00
14	Working Capital	14.970	14.970	7.50	7.50	0.00
	Total (9-14)	94.719	94.719	87.249	234.042	178.384
15	Oversees Investment Insurance on Equity	67.460	67.460	56.22	71.593	0.00
	Total Base Construction Cost (1-15)	2066.984	2069.211	1955.049	2203.628	2035.659

<u>Financing Cost</u>						
16	Oversees Investment Insurance on Loan	157.420	157.420	126.92	87.967	68.839
17	Upfront Fee	21.163	52.472	53.477	22.459	20.307
18	Administration Fee	8.745			9.281	8.391
19	Commitment Fee	22.561			26.357	23.622
20	Interest During Construction	221.800	222.055	306.322	301.915	240.707
Total (16-20)		431.689	431.947	486.719	447.979	361.866
Project Cost (1-20)		2498.673	2501.158	2441.768	2651.607	2397.525
Debt: Equity Ratio		70:30	70:30	70:30	70:30	70:30
Interest Rate per annum (LIBOR + Spread) (%)		4.343	4.343	6.2531	5.921	5.0863
ROE (IRR based) (%)		17	20	17	17	17
Sinosure Insurance Rate per annum (%)		1.5	1.5	1.25	1.5	1.2
Agreement Term (Years)		50	50	50	50	30
Levelized Tariff (US cents/kWh)		7.861	9.2180	8.3851	9.5501	7.9074

3. NEGOTIATED FEASIBILITY LEVEL REFERENCE PROJECT COST & REFERENCE TARIFF

The negotiated Reference Project Cost & Reference Levelized Tariff is shown below:

<u>Reference Project Cost</u>	
<u>Description</u>	<u>U S\$ Million</u>
<u>Base EPC Cost</u>	
Civil Works Including Temporary Works	1091.568
Electrical & Mechanical Equipment & Erection Work	409.833
Metal Structure Equipment & Erection Work	95.664
Other EPC Cost (Technical Consultation, Commissioning, Acceptance etc)	8.133
Custom Duties	23.513
Basic Reserve Cost (Contingencies)	122.153
Total (1-6)	1750.865
<u>Investigations & Design Cost</u>	
Investigations & Design Cost by the Company	97.370
Reimbursement to WAPDA for Original Feasibility Study Cost	9.040
Total (7-8)	106.410
<u>Other Costs</u>	

1100 MW Kohala Hydropower Project - Negotiated FS Stage Tariff Proposal by NTDC to NEPRA

Land, Resettlement, Environmental Protection	10.234
Project Management	131.00
Insurance During Construction	27.150
Law Services	10.00
Withholding Tax on Local Services	0.00
Working Capital	0.00
Total (9-14)	178.384
Oversees Investment Insurance on Equity	0.00
Total Base Construction Cost (1-15)	2035.659
Financing Cost	
Oversees Investment Insurance on Loan	68.839
Upfront Fee	20.307
Administration Fee	8.391
Commitment Fee	23.622
Interest During Construction	240.707
Total (16-20)	361.866
Project Cost (1-20)	2397.525
Debt: Equity Ratio	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

Reference Levelized Tariff

Energy Purchase Price	US ¢/kWh	PKR/kWh
• Water Use Charge	0.1875	0.1500
• Variable O&M	0.1530	0.1224
Capacity Purchase Price		
• Fixed O&M	0.4589	0.3671
• Insurance	0.4640	0.3712
• Sinosure Fee	0.2444	0.1955
• Return on Equity	2.5014	2.0011
• ROEDC	1.2224	0.9779
• Debt Component	2.6758	2.1407
Levelized Tariff (1-30)	7.9074	6.3259

"This Tariff Proposal for NEPRA by NTDC is thus based on the finally negotiated total project cost of US\$ 2397.525 million and resulting levelized tariff of US Cents 7.9074/kWh @ 10% discount rate for 30 years agreement period/term as detailed in the above tables (Reference tariff table is attached as Annex -16)".

4. TARIFF STRUCTURE

The Reference Tariff has a typical two-part structure envisioned in the 2002 Power Policy having a Capacity Purchase Price (Rs/kW/Month) and an Energy Purchase Price (Rs/kWh).

Capacity Purchase Price is derived by adding the yearly (Fixed O&M + Insurance During Operation + ROE + ROEDC + Debt Service + Sinosure Fee) and dividing the sum by the Contract Capacity, i.e., the guaranteed Capacity of the plant at a certain discharge capacity and head, and 12.

The Energy Purchase Price is derived by dividing the sum of the annual (Water Use Charge + Variable O&M cost) by the estimated annual energy of the plant.

The payments to the company would be made every month through Capacity Payment (Capacity Purchase Price for the relevant year X the Tested Capacity) plus the Energy Payment (the Energy Purchase Price X actual energy delivered).

The main parts of the Capacity Payment, i.e., the Return on Equity (ROE), the Return on Equity during Construction (ROEDC), Sinosure fee and the Debt Service are directly dependent on the Project capital cost while the Fixed O&M and the Insurance During Operation are part of the recurring or running costs.

The Variable Payment's components, i.e., the Variable O&M and the Water Use Charge are also part of the running cost but the actual payments to be made against these heads are dependent on the actual energy (kWh) delivered during a month.

5. DETAIL OF PROJECT CAPITAL COST A/W JUSTIFICATIONS

a) EPC Cost

The EPC cost would be finally determined at the EPC stage Tariff (2nd Stage) Tariff determination after competitive bidding for the EPC contracts 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 is based on the estimates made in the Feasibility Study of the project.

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 (Annex-17). 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\$ 1750.865 (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.

Custom Duties & Taxes

Custom duty @ 5% on import of plant and equipment has been worked out as US\$ 23.513 million. This cost shall be adjusted at EPC stage Tariff Determination and at COD based on actual tax levied on imported equipment.

Basic Reserve Cost (Contingencies)

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. The Company did not agree with our viewpoint and quoted the example of NEPRA's tariff determination of Karot HPP in which it has allowed US\$ 65.126 million on account of contingencies on the basis of 12% of civil works (less general items) and 5% of E&M equipment in FS stage tariff. The Company finally accepted to lower the estimate from 10% of EPC cost (US\$ 162.871 million) to 7.5% of the EPC cost equivalent to US \$ 122.153 million and this revised cost estimate of US\$ 122.153 million @ 7.5% of EPC has been incorporated in the FS Level Tariff.

Investigations & Design/Engineering & Supervision

The Company in its first tariff proposal requested for US\$ 106.410 million to cater for investigations & design or engineering & supervision cost. During scrutiny, it was revealed that the Company double-counted the cost of the FS conducted by WAPDA's consultant which is to be reimbursed to WAPDA, therefore after necessary adjustment the cost under this head was re-adjusted as US\$ 97.370 million (5.6% of EPC cost). The break-up of this cost estimate as provided by the Company is as under:

Investigations & Design	=	US \$ 31.890 million
Construction Design & As-Built Design	=	US \$ 47.910 million
Design & Construction Supervision	=	US \$ 17.570 million
Total	=	US \$ 97.370 million

The cost estimate as shown above has been included in the Tariff Petition. For comparison purpose, NEPRA has allowed US \$ 82.541 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.

Land Resettlement, Environmental Protection

The estimate of US\$ 10.234 m on this account has not been changed. The cost is a pass-through item to be based on the actual expenditure incurred on this account with the involvement of the AJK government. The cost estimate is for acquisition of land for construction of dam and power house as well as compensation for the 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 hm². 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 & site specific cost and its comparison with cost allowed to other hydropower by NEPRA is not relevant. However, for the sake of number's comparison; NEPRA has allowed US \$ 16.147 million to 840 MW Suki Kinari HPP for Land and Environment & Ecology as well as US \$ 12.50 million to 720 MW Karot HPP in their FS Stage tariff determinations respectively. This is a significant cost and we would expect the AJ&K government to handle the issue in a transparent and prudent manner, allowing only the fair and essential costs for resettlement as all costs incurred on this account would be reflected in the tariff, which has to be ultimately borne by the consumers.

Project Management Cost / Project Development Cost

This issue was the subject of extended debate with the sponsors. NTDC disagrees with the concept of estimating the Project Management Cost as a percentage of the EPC cost as the EPC cost does not necessarily have a direct relationship with Project Management Cost. That is why, NTDC did not recommended costs based on percentages to NEPRA before in case of previous hydropower IPPS such as the 84 MW New Bong Escape HPP, 150 MW Patrind HPP, 640 MW Azad Pattan HPP & 500 MW Chakothi Hattian HPP. This concept was also recognized in the Feasibility report cost estimate of Kohala and the Company's 1st tariff proposal submitted to NTDC in which it had requested for US \$ 32.365 million for Project Management.

However, when the same Sponsors (M/s CWE/CTGIC) were allowed 10% of EPC cost as Project Management Cost for 720 MW Karot HPP by NEPRA, they raised their demand from US \$ 32.365 million to US \$ 179.158 million (10% of EPC cost) under this head. The Company was repeatedly asked for reduction of this cost. However, the Company was insistent that NEPRA had allowed 10% of EPC cost as Project Management Cost for Karot HPP and since they were the same company, they were unable to accept or justify a lower cost to their higher management for a bigger project than what had been allowed by the regulator. The Company finally agreed to a fixed/capped cost of US \$ 131.0 million (7.5% of the EPC cost) for Project Management and it will not escalate in dollar terms in the future. The Company has additionally offered that if GOP/NEPRA allows US\$/RMB Yuan parity, this cost can further be reduced by US\$ 7.4 million. This final offer been agreed as the Tariff negotiations would have otherwise reached a deadlock.

Insurance During Construction

Insurance during construction has been estimated @ 1.554% of the EPC cost plus custom duties (US\$ 27.150 million) in the tariff proposals by the Company to NTDC. Since NEPRA has allowed higher costs @ 2.40% of EPC cost to Karot HPP and @ 1.87% of EPC cost to 840 MW Suki Kinari HPP to cater for insurance during construction, the requested cost of US\$ 27.150 million was found reasonable and has been incorporated in the Tariff.

Law Services/Legal Fees & Charges

The Company has requested for US\$ 10.00 million on account of law services/legal fees & charges associated with engagement of international and local law firms for advice on all legal aspects of the Project including, but not limited to, negotiation and execution of EPC contract (s), Security documents like IA, PPA, WUA, and agreements with Lenders. This cost has been found to be reasonable in view of the complexities involved in project located in AJ&K with a long project development & construction period. For comparison, NEPRA has allowed US\$ 7.771 million to 840 MW Suki Kinari HPP in November 2008 and US\$ 8.532 million to 720 MW Karot HPP in May 2012.

Working Capital Facility

The Sponsors in their first tariff proposal demanded US\$ 14.97 million on account of working capital and then reduced this amount to US\$ 7.50 million in their 2nd & 3rd tariff proposals. However, NTDC insisted that this cost has never been allowed to any other hydropower IPP by NEPRA and is only a feature of thermal projects tariff determinations for reasons associated with that technology, therefore it has no justification here. Finally the Sponsors agreed to our viewpoint and deleted this cost from their final tariff proposal.

Overseas Investment Insurance on Equity/Sinosure Fee on Equity

The Sponsors initially requested for US\$ 67.460 million, US\$ 56.22 million & US\$ 71.593 million in their first three tariff proposals respectively with the viewpoint that it is mandatory for Chinese investors to have this insurance while investing abroad. Since NEPRA has never allowed this cost to any other project before and not even to 720 MW Karot HPP, being sponsored by same Chinese Company, NTDC refused to accept this cost. Finally, the Company has agreed to withdraw its claim and deleted this cost from the final tariff proposal. Hence, this cost is not part /deleted from the tariff proposal.

Overseas Investment Insurance on Loan/Sinosure Fee on Debt

The Sponsors requested for US\$ 157.420 million, US\$ 126.92 million , US\$ 87.967 million and finally US\$ 68.839 million in their 1st, 2nd, 3rd, & 4th/ final tariff proposal respectively on the basis of different percentage levels against varying debt amount. However, NTDC's stance from the beginning was that whatever NEPRA will allow in terms of percentage & methodology on debt component in case of 720 MW Karot HPP, it will be acceptable to NTDC. The Company finally agreed after a lot of persuasion and calculated the Oversees Investment Insurance on Debt/Sinosure Fee on Debt on the basis of same percentage .i.e. 1.2% per annum and on the same methodology as used by NEPRA in Karot's Determination. The amount under this head was finally worked out as US\$ 68.839 million. However, NEPRA is requested to verify the computation methodology with its own methodology used for calculating Sinosure fee on debt in case of Karot HPP as neither NEPRA nor the Company has shared with us the excel based sheets which they used for computations.

Upfront Fee, Administration Fee & Commitment Fee / Financial Charges

The Sponsors has requested for Upfront fee @ 1.21% of the total debt amount as one time payment, Administration fee @ 0.5% of debt value of every year and Commitment fee @ 0.5% of undrawn debt value of every year ("cumulatively, the Financial Charges"). The amounts calculated on the basis of aforementioned percentages and respective debt amounts are US\$ 20.307 million (Upfront fee), US\$ 8.391 million (Administration fee) & US\$ 23.622 million (Commitment fee). In aggregate, the cost under financial charges comes out to be US\$ 52.32 million or 3.12% of the debt amount. NEPRA has previously capped this cost @ 3.00% of debt amount, however, keeping in view the quantum of debt amount (US\$ 1678.268 million) and longer construction period of 6 years, this amount of US\$ 52.32 million @ 3.12% of debt be approved.

Interest During Construction (IDC)

The financing plan for the project assumes a 70:30 debt equity ratio. The entire debt (US\$ 1678.268 million) has been assumed to be a foreign loan. Interest during Construction (IDC) of US\$ 240.707 million has been worked out while using interest rate of 5.0863% per annum (6- month LIBOR @ 0.33630% plus 4.75% spread) and on the basis of 6-year construction period. Being an essential constituent of project finance and having existence in all tariff determinations, NTDC endorses this amount of US\$ 240.707 million for approval. IDC shall be adjustable at EPC stage and at COD based on the then debt amounts, interest rates and draw downs.

Energy Generation beyond Annual Benchmark

The company proposed an incentive of additional capacity payment @ 10% of levelized CPP, besides EPP for energy generation beyond annual benchmark of 5093.632 GWh. The sponsors were informed that though such incentive has been allowed to projects where payments are based on benchmark energy levels, in the Standard PPA for 2002 Power Policy, where the concept of capacity payments is linked to Available Capacity, this incentive has not been allowed. Finally the sponsors withdrew their proposal and deleted this demand.

Carbon Credits

The company initially proposed that carbon credits, if earned by the project, will be shared on the proportion of 75% for Company and 25% for local community. NTDC did not agree to the proposition and maintained that it should be shared as per GOP/NEPRA policy in this regard. The Company finally accepted our viewpoint and recorded it in its tariff proposal as per our stance on page 28 of the 4th/ final tariff proposal of March 06, 2014.

6. RUNNING / OPERATIONAL COST

Operation & Maintenance (O&M)

In their 1st Tariff Proposal, the Sponsors requested for US\$ 26.509 million for catering the Fixed Operation & 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\$ 29.814 million per annum (1.19% of the then total Project Cost).

However, later on, the Company revised its estimate in May 2013 (3rd Tariff Proposal) corresponding to 1.5% of the project cost (US\$ US \$ 39.775 million) presumably on the basis of Karot Determination where similar percentage based cost has been allowed for O&M cost.

NTDC tried its best for a downward reduction in the estimate on the grounds that linking O&M cost to the Project cost where huge portion of the cost is associated with civil structures and these civil works will hardly require O&M expense on recurring basis. However, the Company was insistent and only agreed to reduce the estimate to 1.3% of total Project Cost (US \$ 31.168 million per annum). This agreed cost has been incorporated and is being endorsed for approval by NEPRA.

The segregation between fixed & variable O&M cost is as under:

Cost Component	Amount Million(US\$)	Split
Fixed O&M	23.376	60% Foreign & 40% Local
Variable O&M	7.792	60% Foreign & 40% Local
Total	31.168 Million	

Water Use Charge

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 paisas/kWh as per government policy and the same rate has been incorporated in the Reference Tariff. This rate is liable to be adjusted if and when the government policy changes in this regard.

7. OTHER COST COMPONENTS IN TARIFF

Concession Period

The Sponsors initially demanded 50-years agreement term on the basis that an amendment to the Power Policy 2002 allows up to 50-years agreement term and based its tariff on the same assumption not only in the feasibility study but also in their first three tariff proposals. Although, a concession period of upto 50 years for private hydropower projects has been allowed in the 2002 Power Policy through an amendment, NTDC is of the opinion that concession period should be around 25-30 years as unnecessary lengthy PPAs neutralizes the benefits of BOOT concept envisioned in the Policy for hydropower IPPs. Moreover, GOAJ&K has seconded NTDC's viewpoint and raised its objections over the proposed 50-year agreement term by the Company vide its letter March 16, 2012 (Annex-11). As a result of prolonged deliberations, the Sponsors were finally persuaded to accept a shorter concession period/agreement term of 30 years. Hence the Tariff Petition being submitted to NEPRA is based on a 30 year PPA term/concession period.

Debt Service

Debt Servicing is a major tariff component during the initial years of the plant operation. 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 of US \$ 1678.268 million is 5.0863% (the current LIBOR rate 0.33630%+spread of 4.75%); the payback period is assumed to 12 years (excluding the construction period of 6 years). The interest rate spread (4.75%) tally with the ones allowed by NEPRA for hydropower projects so far.

The loan pay-back has been calculated in the Tariff Table, using the Annuity method; floating interest rates for interest rate variations and Rupee/dollar exchange rate parity shall apply on the foreign loan portion as per standard practice and NEPRA rules.

Return on Equity

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 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 (page 37 of the 4th /final tariff proposal of the Company).

Insurance During Operation

The Insurance during operation assumed by the Sponsors of US\$ 23.637 million is @ 1.35% of the EPC Cost, which is considered sufficient enough to cater for insurance expense during operational phase of the project keeping in view the size, complexity and structures involved in the project. Moreover NEPRA has also allowed costs equivalent to 1.35% of EPC cost for Insurance during Operations phase to hydropower projects including 720 MW Karot HPP. Therefore NTDC endorses the cost of US\$ 23.637 million @ 1.35% of EPC cost for Kohala project as well for approval by NEPRA.

Withholding Tax

Withholding Tax @ 7.5% of the ROE shall be payable to the Company as per standard practice being a pass-through item against the actual amount of tax paid on dividend. Due to being a pass-through cost rather than a recurring cost, it has not been included in the Tariff Table as it would be payable as a pass-through as per the NEPRA's devised formula given below:

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

8. ESCALATIONS & INDEXATIONS

Indexations on Tariff components would be applicable as per the standard NEPRA rules and then further subsequently elaborated in the Power Purchase Agreement. However following are generally applicable indexations allowed by NEPRA against various tariff components which are also being requested for Kohala Project.

Tariff Component	Indexation
Water Use Charge	Pakistan CPI (General)
Variable O&M (Local)	Pakistan CPI (General)
Variable O&M (Foreign)	PKR/US\$ & US CPI
Fixed O&M (Foreign)	PKR/US\$ & US CPI
Fixed O&M (Local)	Pakistan CPI (General)
Insurance during Operations	PKR/US\$
ROE	PKR/US\$
ROEDC	PKR/US\$
Withholding Tax	PKR/US\$
Loan (Foreign)	LIBOR (semi-annual) & PKR/US\$

9. SUMMARY OF ASSUMPTIONS USED IN TARIFF CALCULATIONS:

1	Installed Capacity (MW)	1100
2	Net Capacity (MW)	1089
3	Annual Net Estimated Energy (GWh)	5093.632
4	Project Base Cost (US \$ Million)	2156.818
5	Interest During Construction (US \$ Million)	240.707
6	Total Project Cost (US \$ Million)	2397.525
7	Debt Equity Ratio	70:30
8	Agreement Term (Years)	30
9	Total Debt Amount (US \$ Million)/ All Foreign	1678.268
10	Interest rate (Foreign Loan)-including spread (%)	5.0863
11	Debt Repayment Period for Loan (Years)	12
12	Repayment Frequency	Semi-annual
13	Equity Amount (US \$ Million)	719.257
14	IRR on Equity (%)	17
15	Construction Period (Months)	72
16	Reference Exchange Rate (1 US \$=Pak Rupee)	80
17	NPV Discount Rate (%)	10

18	Oversees Investment Insurance on Debt/Sinosure Fee (%)	1.2
19	Annual Phasing of Expenditure (%)	10, 18, 20, 20
		20, 12

10. GENERAL CONDITIONS

- a. Considering the three stage tariff determination process allowed by NEPRA for hydropower projects, the 1st stage tariff, largely based on the feasibility report, is being submitted for approval by NEPRA and is subject to adjustments during the second and third stage tariff determinations. Typical tariff re-openers as are available under the applicable tariff mechanism will be available to the Project at later stages of tariff determinations.
- b. Tariff has been calculated considering 72 months of construction as envisaged in the feasibility report and based on average estimated annual energy of 5093.632 GWh (net of auxiliary and station demand).
- c. The Debt: Equity ratio is assumed to be 70:30. The final debt/equity ratio would be subject to lenders approval later on and may have an impact on tariff.
- d. An Equity IRR of 17% is assumed over the life of the Project; the Sponsors, however, believe that a return of at least 20%, as allowed for indigenous coal projects should be allowed to hydropower projects taking into account the long development period and higher risks involved. As such the Sponsors have requested that the project should be entitled to enhancement of return on equity if and when such enhancement is allowed for other hydropower projects.
- e. The Interest during Construction (IDC) has been calculated on the terms anticipated to be offered by multilaterals and local banks. Actual IDC, however, shall be subject to change depending on actual pricing agreed with the financiers, variation in base LIBOR rate and actual drawdown profile of the loans during the construction period.
- f. The Power Purchaser would be responsible for procuring, financing, constructing operating and maintenance of the interconnection to the grid and transmission facilities.
- g. Applicable Custom Duties and Taxes for import of plant and materials are assumed to be @ 5.0%. No other tax (including federal excise duty) has been assumed. Any tax on income from sale of electricity, general sales tax and all other corporate taxes are treated as pass-through.
- h. Withholding tax @ 6.0% on local supplies/services by the Contractors/Consultants has not been included in the project cost. No withholding tax on supply of plant and materials has been assumed. It is assumed that no part of plant and equipment supplied by the foreign manufacturer will be treated as locally manufactured.
- i. CDM revenues, if any, will be dealt with in accordance with Government Policy;

Proposed Feasibility Stage Reference Tariff

Year	Energy Purchase Price (Rs./kWh)				Capacity Purchase Price (Rs. / kW / Month)									CPP Rs./kWh	Total Tariff	
	VO&M Foreign	VO&M Local	WUC	Total	Fixed O&M Foreign	Fixed O&M Local	Insurance	Sinosure	ROE	ROEDC	Principal	Interest	Total		Rs./kWh	¢ /kWh
1	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	166.2317	767.4880	381.1798	639.8517	514.5354	2757.0891	7.0735	7.3458	9.1823
2	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	152.3791	767.4880	381.1798	672.8103	481.5768	2743.2364	7.0379	7.3103	9.1379
3	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	138.5264	767.4880	381.1798	707.4666	446.9205	2729.3838	7.0024	7.2748	9.0935
4	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	124.6738	767.4880	381.1798	743.9080	410.4790	2715.5311	6.9668	7.2392	9.0490
5	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	110.8212	767.4880	381.1798	782.2265	372.1605	2701.6785	6.9313	7.2037	9.0046
6	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	96.9685	767.4880	381.1798	822.5188	331.8682	2687.8258	6.8958	7.1681	8.9602
7	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	83.1159	767.4880	381.1798	864.8866	289.5005	2673.9732	6.8602	7.1326	8.9158
8	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	69.2632	767.4880	381.1798	909.4367	244.9504	2660.1206	6.8247	7.0971	8.8713
9	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	55.4106	767.4880	381.1798	956.2815	198.1055	2646.2679	6.7891	7.0615	8.8269
10	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	41.5579	767.4880	381.1798	1005.5394	148.8477	2632.4153	6.7536	7.0260	8.7825
11	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	27.7053	767.4880	381.1798	1057.3344	97.0526	2618.5626	6.7181	6.9904	8.7381
12	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	13.8526	767.4880	381.1798	1111.7975	42.5895	2604.7100	6.6825	6.9549	8.6936
13	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
14	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
15	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
16	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
17	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
18	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
19	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
20	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
21	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
22	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
23	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
24	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
25	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
26	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
27	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
28	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
29	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
30	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	0.0000	812.5492	381.1798	0.0000	0.0000	1481.5315	3.8010	4.0733	5.0917
Levelized Tariff at 10% Discount Rate																
	0.0734	0.0490	0.1500	0.2724	85.8618	57.2412	144.6996	76.2117	779.9793	381.1798	584.8686	249.5123	2,359.5542	6.0536	6.3259	7.9074