O.C.S

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General Manager (WPPO)
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No. GM/WPPO/CE-IV/DH/ 2708-11

Dated : 23/11/2012

The Registrar NEPRA,
2nd Floor, OPF Building,
G-5/2, Islamabad.

Subject: **640 MW Azad Pattan Hydropower Project— Approval of Feasibility Stage Tariff Proposal**

Registrar
Dy. No. 7383
Dated 3/12/12

Please find enclosed herewith the feasibility stage tariff proposal for 640 MW Azad Pattan 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 please.

For info. & n/a, pl.

Encl: As Above

Muhammad Zia-ur-Rehman
General Manager (WPPO)

30/11/12

- Director (T)
- Sr. Adv (T)
- AD(Z)/FA
- MF

cc
- Chairman
- M(T)

CC:

- Managing Director PPIB, 50-Nazimuddin Road, F-7/4, Islamabad.
- Chief Executive, Alamgir Power (Pvt.) Ltd., 50-C, Margalla Road, F-8/2, Islamabad.
- Company Secretary NTDC, 407-WAPDA House, Lahore (with reference to notification no. C.S/NTDC/710-13 dated 22.10.2012)

640 MW AZAD PATTAN HYDROPOWER PROJECT, AJK: 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 a negotiated tariff for the 640 MW Azad Pattan 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 Azad Pattan HPP.

I. BACKGROUND

a) The 640 MW Azad Pattan Hydropower Project is located near the village of Muslimabad, some 7 km upstream of the Azad Pattan bridge, in district Sudhnoti, Azad Jammu & Kashmir. 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.

b) Letter of Interest (LOI) for the development of the Project was issued in April 2007 by the PPIB to the sponsors, M/s Alamgir Power Private Limited. The sponsors engaged M/s URS Scott Wilson Ltd. (U.K) and M/s FHC Consulting Engineers (Pak) as consultants for carrying out the feasibility study of the project. Upon completion, the Feasibility Study (Annex A) was approved by a Panel of Experts and PPIB in December 2011 and PPIB advised the sponsors to negotiate tariff with Power Purchaser (NTDC) vide letter dated February 13, 2012 (Annex B)

c) The Feasibility Study envisages a Run-of-River scheme, consisting of a 90 m high RCC dam on River Jhelum in a narrow gorge with 7 spillway gates, 3 openings on the left flank, 4 on the right flank and 2 Low Level Outlets (LLO), diversion of the river flows through 2 concrete lined diversion tunnels 400 m & 495 m long with a 12.5 m finished span and 14 m height and an underground power house with 4 Francis turbine units of 160 MW each capacity and an underground transformer hall.

d) As per the requirements of the 2002 Power Policy, the sponsors submitted a Feasibility Level Tariff Proposal to WPPO / NTDC in April 2012 with a levelized tariff of US ¢ 7.7396/kWh (Annex C). The Tariff Proposal was based on the cost

estimates in the Feasibility Study i.e., a total project cost of US $ 1446.735 million, debt equity ratio of 75:25, debt term of 17 years and 13.5 years including a grace period of 6 years, interest rate of LIBOR plus 475 basis points and KIBOR plus 3.50% for foreign and local debt respectively and Return on Equity (IRR based) of 17%.

e) It is clarified that during the finalization of Feasibility Report, the consultants, in response to our comments (Annex D), lowered the project cost from US$ 1482.79 million to US$ 1446.74 million, resulting in a tariff reduction (levelized) from US¢ 8.6878/kWh to US¢ 7.7396/kWh. This fact is recorded on page 11 & 12 of the above mentioned tariff proposal. Hence most of the anomalies in project cost estimates and other tariff assumptions were removed on our advice by the Sponsors in the feasibility Study.

f) On scrutiny of the Tariff Proposal submitted by the Sponsors, it was revealed that some of the costs such as L/C costs, Capitalized Finance & Consultancy Fee, Cost of contingencies assumed for Civil and E&M works, Insurance during construction, spread for local debt were high in comparison to the benchmarks set by NEPRA. The sponsors were, therefore, persuaded to lower the costs and asked to submit a Revised Tariff Proposal.

g) A Revised Tariff Proposal (Annex E) based on the negotiated costs, was submitted by the sponsors on June 18, 2012. The levelized tariff in this proposal is US ¢ 7.2904/kWh based on a total project cost US $ 1354.71 million, debt equity ratio of 75:25, debt term of 17 years and 13.5 years including a grace period of 6 years, interest rate of LIBOR plus 475 basis points and KIBOR plus 3.25% for foreign and local debt respectively and Return on Equity (IRR based) of 17%.

h) This Tariff Proposal for NEPRA is thus based on the final negotiated levelized tariff of US **Cents 7.2904/kWh** @ 10% discount rate for 30 years agreement period (Reference tariff table is attached as Annex F).

II. NEGOTIATED FEASIBILITY LEVEL REFERENCE TARIFF

Summary of the Reference Levelized Tariff is shown below:

Tariff Component		
Energy Purchase Price	**US ¢/KWh**	**PKR/KWh**
Water Use Charge	0.1705	0.1500
Variable O&M	0.0675	0.0594
Capacity Purchase Price		
Fixed O&M	0.5910	0.5200
Insurance	0.4127	0.3632

Return on Equity	2.060	1.8128
ROEDC	0.9551	0.8405
Debt Service Component	3.0336	2.6697
Total Ave. Tariff Years 1-10	8.4251	7.4140
Total Ave. Tariff Years 11-20	4.9208	4.3303
Total Ave. Tariff Years 21-30	4.6576	4.0987
Total Ave. Tariff Years 1-30	6.0012	5.2810
Levelized Tariff	**7.2904**	**6.4156**

The Reference Tariff Table is attached as Annex F

III. 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) 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), 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.

IV. PROJECT CAPITAL COST

The project cost is one of the basic inputs in deriving the tariff. The Company had based its first Tariff Proposal on the Feasibility Study cost estimates. On review, it was found that some of the cost estimates were high, and during negotiations, the Company agreed to lower those costs as described in paragraph I (f) above. After making the adjustments, a net reduction in project cost of US $ 92.027 million was achieved, break-up of which is given in the table below:

Sr. #	Cost Components	FS Level Costs (US $-millions)	Revised Costs (US $-millions)	Decrease/ Increase (US $-millions)
1	Civil Works	436.142	399.636	36.506
2	Electrical & Mechanical Equipment	495.123	483.551	11.572
3	Infrastructure	56.065	53.516	2.549
	Total EPC Cost	**987.331**	**936.705**	**50.626**
5	Insurance during construction	29.920	26.537	3.383
6	Land Acquisition & Resettlement	16.448	16.448	0
7	Owner's Engineer	22.440	22.440	0
8	Owner's advisors/Consultants	10.750	10.750	0
9	Lenders' advisor/Consultants	8.680	8.680	0
10	Owner's administration	25.930	25.930	0
11	Capitalized Finance Cost	29.281	27.474	1.807
12	L/C (DSRA and E&M)	17.328	0	17.328
13	Environmental Mitigation	0.472	0.472	0
14	O&M Mobilization	7.67	7.67	0
15	Custom Duties &Taxes	28.964	28.287	0
	Project Base Cost	**1185.219**	**1111.398**	**73.821**
16	Interest During Construction	261.516	243.310	18.206
	Total Project Cost	**1446.735**	**1354.708**	**92.027**

a) EPC Cost

The EPC cost is to be determined later as a result of a transparent International Competitive Bidding process. Our concern, however, was that whatever estimated figure for the EPC cost is provided in the FS level tariff, it is likely to be considered as a reserved EPC cost by the bidders resulting in higher bids. Based on our experience, we believe that an EPC cost of around US $ 1.4 million/MW for a 640 MW hydropower project such as Azad Pattan is sufficient. Hence the sponsors have agreed to reduce the estimated EPC cost to US $ 936.705 million from the original estimate of US $ 987.331 million.

b) Insurance During Construction

Insurance during construction was estimated @ 2.94% of the EPC cost plus custom duties in the first tariff proposal which was found to be higher than the bench marks set so far by NEPRA for hydropower projects. For example, in case of 150 MW Patrind HPP, the amount allowed under this head is capped at 2.75% of EPC cost plus custom duties, therefore the sponsors were asked to bring it down and inline with what has been allowed so far. After negotiations, the sponsors brought it down to 2.75% of EPC cost or US$ 26.537 million.

c) Land Acquisition & Resettlement Cost

The estimate of US$ 16.448 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. This is a significant cost and we would expect the AJ&K government to handle the issue in a fair and transparent 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 bourne by the consumers.

d) Owners' Engineer

This was estimated as US $ 22.440 m in the Feasibility Study and the Tariff Proposal submitted by the company. The amount was found to be reasonable as compared to the amounts allowed by NEPRA for similar hydropower projects like 840 MW Sukki Kinari HPP (US$ 77.708 m) and 720 MW Karot HPP (US$ 82.541m); hence the same has been allowed.

e) Owners' Advisors/Consultants

The owners' advisory cost estimate of US $ 10.750 m was also comparable to recent NEPRA's tariff determination of 720 MW Karot HPP, so it has been kept as the same.

f) Lender's Advisors /Consultants

This cost was earlier made part of the capitalized finance cost (financial charges) in the feasibility report and first tariff proposal, but keeping in view the earlier NEPRA's determinations/decisions, it was decided to show it as a separate item as it has no direct relationship with project size and resulting costs. An amount of US$ 8.680 m (0.93% of EPC cost) has been estimated by the sponsors to cater for these advisory services which is found reasonable and inline with NEPRA's earlier tariff determinations; hence the same is hereby endorsed.

g) Owner's Administration

In the Tariff Petition by the sponsors an amount of US$ 25.930 million was estimated for owner's administration. When the same was compared with NEPRA's tariff determinations for similar size projects like 720 MW Karot HPP (US$ 82.541 million), it was found to be a reasonable estimate; hence it was accepted.

h) Capitalized Finance Cost (Financial Charges)

An amount of US$ 37.96 million (3.5% of debt) was requested by the sponsors in its tariff proposal which was found to be higher than the benchmark (3% of debt) set by NEPRA, hence the sponsors were asked to provide details and bring it down. During scrutiny, it was found that the Lender's advisory cost was also made part of this estimate which was not the case in previous tariff determinations. Hence, the cost is now shown as a separate item and the remaining cost after adjustments has reduced to US$ 27.474m (2.7% of debt) which is within NEPRA's approved limits.

i) L/C (DSRA and E&M)

An amount of US $ 17.328 million was included in the first Tariff Proposal by the sponsors to cover the cost of L/C establishment, commission and confirmation cost of the E&M L/C who argued that it was mandatory due to poor credit rating of the country. As the requirement of L/C Commitment Fee for EPC depends on the originating country of EPC contractor, the financial rating of Pakistan and its banks at a particular point in time as well as the prevailing global economic conditions, the amount has been deleted from the tariff at this stage. It will only be recommended for inclusion in the EPC tariff if unavoidable at that time.

j) Environmental Mitigation

An amount of US $ 0.472 million @ 0.05% of the EPC cost has been kept to meet the company's legal obligations under the law for environmental mitigation during construction period; it includes costs for water quality management, environmental management & training , solid waste management, health care projects etc.

k) O&M Mobilization Cost

An O&M mobilization cost of $ 7.67 million is recommended. This cost is attributable to O&M contractor/company which is mobilized a considerable period before the COD and its pre-COD cost is not reflected in the annual O&M cost that only become due after the COD.

l) Custom Duties & Taxes

Custom duty @ 5% and Sindh Infrastructure Development Surcharge @ of 0.85% is levied on the import of plant and equipment as per the tax laws as claimed by the Company in its tariff proposal. Since this cost is a pass through item and allowed on actual basis, therefore an amount of US$ 28.287 m @ 5.85% of the E&M cost is allowed.

m) Interest During Construction

The financing plan for the project assumes a 75:25 debt equity ratio. Out of the total loan amount required, 20% has been assumed as local loan and 80% has been assumed as foreign loan. Both foreign and local loans are assumed to have payback periods of 17 years and 13.5 years respectively inclusive of the construction period of 6 years). Interest rates have been assumed as 5.30% for foreign loan (Current LIBOR rate of 0.55% + spread of 4.75%) and 15.25% for local loan (Current KIBOR rate of 12.00% + spread of 3.25%).

The Interest during construction (IDC) thus works out as US $ 243.310 million and has been included in the project cost for working out the tariff.

V. RUNNING/OPERATIONAL COST

a) Fixed O&M:

The Fixed O&M cost estimated by the sponsors is US$ 18.407 million per annum (40% foreign & 60% local) which includes Operators expenses on personnel, temporary technical support from head office, services and supplies, insurances under operator's purview, maintenance cost for generation facility, substation, civil and general, office maintenance, travel, legal and other overheads like vehicles and equipment depreciation, safety equipment, tools, staff colony expenses etc. Fixed O&M also includes Owner's administration cost after COD that includes salaries & wages, utilities, vehicles running, travel and conveyance, office supplies, rent and taxes, medical insurances, lenders/owner's advisors cost and site office expenses.

The O&M of the IPPs are usually handled by specialist O&M companies and the final EPC level Fixed O&M Cost would be based on competitive bids and/or other supporting documents to be made available by the sponsors in this regard at the time of EPC level Tariff determination; however, the estimate of US$ 18.407 million at this stage seems reasonable and has been retained.

b) Variable O&M

The Variable O&M cost assumed by the sponsors as US $ 2.069 million per annum (0.153% of total project cost) with no foreign component was found to be comparable with other hydropower projects. For example, in case of 720 MW Karot HPP and 840 MW Sukki Kinari HPP, NEPRA allowed 1.5% of total project cost to cater for the O&M requirements. Here for 640 MW Azad Pattan HPP, the allowed cost of US$ 18.407m (Fix O&M) +US$ 2.069m (Var. O&M) comes out to be US$ 20.476 m which is 1.5% of total project cost and within reasonable limits.

c) 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. Its rate is liable to be adjusted if and when the government policy changes in this regard.

VI. OTHER COST COMPONENTS IN TARIFF

a) 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 75% loan of the entire project capital cost of US $ 1354.708 million, i.e., a debt portion of US $ 1016.031 million. The debt component is further bifurcated into foreign and local loan in the ratio of 80% & 20% respectively.

The Interest Rates assumed for the foreign loan of US $ 812.825 million is 5.30% (the current LIBOR rate 0.55%+spread of 4.75%); the interest rate for local loan of US$ 203.206 million is assumed as 15.25% (the current KIBOR rate 12.00% + spread of 3.25%); both foreign and local loans are assumed to have payback periods of 11 and 7.5 years respectively (excluding the construction period of 6 years). The interest rate spreads 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 shall apply on the foreign loan portion as per standard practice and NEPRA rules.

b) Return on Equity

During the negotiations, the Sponsors were of the view that hydropower projects including the Azad Pattan project should be allowed 20% IRR on equity due to higher risks involved. 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 $ 338.677 million has been assumed in the final tariff. The equity injection has not been assumed to be made 30 months prior to Construction start as allowed by the ECC for private-sector hydropower projects in its decision dated July 30, 2009. Such adjustment shall be made at the time of EPC stage tariff determination when actual costs before financial closing will be known, however, the company shall have to provide proof of the actual expenditures at the time of the 2nd stage Tariff Determination to finalize the IRR on Equity stream.

It is also pertinent to mention that the sponsors have included an assumption in their tariff proposal and insisted that the same should be made part of our tariff petition to NEPRA which reads as follows:

"The sponsors strongly believe that a return of at least 20% as allowed for indigenous coal projects is required to expedite development of the largely untapped hydropower resources and take into account the long development period and higher risks. The project would be entitled to any enhancement of such return if and when announced for the sector as a whole."

c) Insurance During Operation

The Insurance during operation Cost assumed by the sponsors @ 1.35% of the EPC Cost was found to be inline with NEPRA's benchmarks which resulted into an annual cost of US$ 12.645 million.

d) Withholding Tax

Withholding Tax @ 7.5% of the ROE and has not been included in the Tariff Table as it would be payable as a pass-through against the actual amount of tax paid on dividend.

VII. ESCALATIONS & INDEXATIONS:

The company would be entitled to cost escalation in Civil Works on account of variation in the costs of Fuel, Labour, Steel and Cement as allowed in NEPRA's Special Tariff Mechanism for Hydropower Projects. In addition, cost variation due to change in geological conditions in tunnels (if any) would also be applicable as allowed in NEPRA's Special Tariff Mechanism.

Indexations on Tariff components would be applicable as per the standard NEPRA rules and would be elaborated later in the Power Purchase Agreement. However, the following indexations have been assumed by the Company against each tariff component which are consistent with NEPRA determinations in this regard.

Tariff Component	Indexation
Variable O&M (Local)	WPI (Quarterly)
Fixed O&M (Foreign)	PKR/US$ & US CPI (Quarterly)
Fixed O&M (Local)	WPI (Quarterly)
Insurance during Operations	PKR/US$
ROE	PKR/US$
ROEDC	PKR/US$
Loan (Foreign)	LIBOR (semi-annual) & PKR/US$
Loan (Local)	KIBOR (semi-annual)

VIII. SUMMARY OF ASSUMPTIONS USED IN TARIFF CALCULATIONS:

1	Installed Capacity (MW)	640
2	Annual Estimated Energy (GWh)	3075
3	Project Base Cost (US $)	1111.398 m
4	Interest During Construction (US $)	243.310 m
5	Total Project Cost (US $)	1354.708 m
6	Debt Equity Ratio	75:25
7	Agreement Term (Years)	30
8	Debt Foreign/ Local ratio	80/20
9	Total Debt Amount (US $)	1016.031 m
10	Foreign Debt Amount (US $)	812.824 m
11	Local Debt Amount (US$)	203.206m
12	Interest rate (Foreign Loan)-including spread (%)	5.30
13	Interest rate (Local Loan)—including spread (%)	15.25
14	Debt Repayment Period for Foreign Loan excl. Construction time (6 Years)	11
15	Debt Repayment Period for Local Loan excl. Construction time (6 Years)	7.5
16	Repayment Frequency	Semi-annual
17	Equity Amount (US $)	338.677 m
18	IRR on Equity (%)	17%
19	Construction Period (Months)	72
22	Reference Exchange Rate (1 US $=Pak Rupee)	88
23	NPV Discount Rate (%)	10

GENERAL CONDITIONS

a. Considering the three stage tariff determination process allowed by NEPRA for hydropower projects, the tariff is being submitted for approval on the basis of project cost assumed in the feasibility report and is subject to adjustments during the second and third stage tariff determinations. Typical tariff re-openers as are available under the applicable tariff determination 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 3064 GWh (net of auxiliary and station demand).

c. Feasibility stage project cost estimates provide a valuation based upon the price level as of September 2011. Escalation of prices and currency fluctuations arising after September 30, 2011 has not been accounted for in computing the Project Costs.

d. The Debt: Equity ratio is assumed to be 75:25. The final debt/equity ratio would be subject to lenders approval later on and may have an impact on tariff.

e. 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.

f. 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/KIBOR rates and actual drawdown profile of the loans during the construction period.

g. The Power Purchaser would be responsible for procuring, financing, constructing operating and maintenance of the interconnection to the grid and transmission facilities.

h. Applicable Custom Duties and Taxes for import of plant and materials are assumed to be 5.85%. 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.

i. 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.

j. No agency fee (for raising local and foreign debts) has been assumed.

k. CDM revenues, if any, will be dealt with in accordance with Government Policy;