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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/95 39-49

Dated : 26.11. 2012

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

Subject: **500 MW Chakothi Hattian Hydropower Project— Approval of Feasibility Stage Tariff Proposal**

Please find enclosed herewith the feasibility stage tariff proposal for 500 MW Chakothi Hattian 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.

Registrar
Dy. No. 8522
Dated 28.11.12

Encl: 1) NTDC's Authorization Notification
2) FS Level Tariff Proposal

Muhammad Zia-ur-Rehman
General Manager (WPPO)

For n.a. pl.

Dir (Tariff)

28/XI.

CC:

cc: 1. Chairman, 2. Member (L) 3. Member (T) 4. Member (Ba

- Managing Director PPIB, 50-Nazimuddin Road, F-7/4, Islamabad. (without enclosure)
- Chairman Suhail Jute Mills Limited. 125-Murree Road, P.O.Box No. 341, Rawalpindi.
- Company Secretary NTDC, 407-WAPDA House, Lahore (with reference to notification no. C.S/NTDC/637-41 dated 15.10.2012)

NATIONAL TRANSMISSION & DESPATCH COMPANY LTD.

Telephone: 99201330
PBX 99202211 / 2257
Fax: 99204236

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

No.C.S/NTDC/ 637-41

Dated: 15/10/2012

NOTIFICATION

Approval for submitting feasibility level Tariff Petition to NEPRA for 500 MW Chakothi Hattian Hydropower Project.

The Board of Directors of National Transmission and Despatch Company Limited in the 68th meeting held on 03-10-2012 against Agenda Item No. 09 has unanimously resolved and approved submission of Tariff Petition of the 500 MW Chakothi Hattian Hydropower Project to NEPRA on the finally negotiated levelized tariff of US Cents 7.896/kWh and also authorized GM (WPPO) to present the case before NEPRA.

Muhammad Dilbar Ghouri
Company Secretary NTDCL

Copy to:

1. General Manager (WPPO) NTDCL.
2. Finance Director NTDCL.
3. Manager Internal Audit, NTDCL.
4. PS to MD NTDCL.

DD (Hydel)

Director Hydel
prepare case for NEPRA
14/10

500 MW CHAKOTHI-HATTIAN 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 500 MW Chakothi-Hattian 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 Chakothi-Hattian HPP.

I. BACKGROUND

a) The 500 MW Chakothi Hattian Hydropower Project is located in district Muzaffarabad, Azad Jammu and Kashmir (AJ&K) on Jhelum River. 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 35 years including 5 years of construction and 30 years of operation.

b) Letter of Interest (LOI) for the development of the Project was issued in December 2007 by the PPIB to the sponsors, M/s Suhail Jute Mills. The sponsors later incorporated and designated a company named M/s Farooq Energy Company (Pvt.) Limited for implementing the project. The sponsors engaged M/s RSW International of Canada and M/s Designmen Consulting Engineers (Pvt.) Limited (local company based in Islamabad) as consultants for carrying out the feasibility study of the project. The Feasibility Study (ANNEX A) was completed in early 2011 and was approved by a Panel of Experts and PPIB in May 2011.

c) The Feasibility Study envisages a Run-of-River scheme, consisting of an 88m high gravity dam on River Jhelum, 9.5 km downstream of the Line of Control, diversion of the river flows through 2 concrete lined power tunnels 8560m in length (8.5m dia) and an underground power house with 4 Francis Turbine units of 125 MW each, located on the left bank of Jhelum River immediately upstream of the headpond of Kohala HPP.

d) As per the requirements of the 2002 Power Policy, the sponsors submitted a Tariff Proposal (ANNEX B) to NTDC in August 2011 indicating a levelized tariff of **US ¢ 9.727/kWh** for a 30-year agreement term. The Tariff Proposal was based on the cost estimates in the Feasibility Study (i.e., a total project cost of US $

1242.65 million), debt equity ratio of 75:25, debt term of 15 years (including a grace period of 5 years), loan interest rate of LIBOR plus 475 basis points (the entire loan was assumed as foreign loan) and IRR on equity of 20%.

e) On scrutiny of the Tariff Proposal, it was revealed that some of the costs such as the Owners' Admin cost, Engineering & Supervision cost, Owners' advisors' cost etc were based on rough percentages and were unrealistically high. The assumption of 20% IRR on equity was also higher than the 17% return allowed by NEPRA to other hydropower projects. The sponsors were, therefore, advised to lower the costs of certain specific items as well as the IRR and asked to submit a Revised Tariff Proposal vide our letter No. GM/WPPO/CE-II/DH/8199-8200 dated 12-08-2011 (ANNEX-C).

f) Following a number of meetings with the representatives of the sponsors who finally agreed to submit a Revised Tariff Proposal (ANNEX D). Such a proposal, largely based on the negotiated costs, was submitted by the sponsors in October 2011. The levelized tariff in this proposal was US ¢ 7.88/kWh based on a total project cost US $ 1051.055 million, debt equity ratio of 75:25, debt term of 15 years (including a grace period of 5 years), interest rate of LIBOR plus 475 basis points and Return on Equity (IRR based) of 17%.

g) The Revised Tariff proposal contained some minor errors, e.g., the IRR on Equity stream was not calculated properly, the O&M cost estimates and the Insurance During Operation were slightly higher than the negotiated figures. In addition, no provision for local loan was included in the tariff calculations, which was unrealistic. Hence the tariff was further fine-tuned and the negotiated Reference Tariff Table (ANNEX E) with a levelized tariff of **US Cents 7.896/kWh** has been arrived at.

h) This Tariff Proposal for NEPRA is thus based on the final negotiated tariff of US **Cents 7.896/kWh** (levelized for 30 years at a discount rate of 10%).

II. NEGOTIATED FEASIBILITY LEVEL REFERENCE TARIFF

The negotiated FS level tariff of US Cents 7.896 is lower by US Cents 1.831 Cents/kWh as compared to the initial levelized tariff of US Cents 9.727/kWh first proposed by the Company. The reduction has been achieved by rationalizing/ reducing the project and O&M costs as well as reduction of IRR on equity from 20% to 17%. In fact, the reduction in the tariff is actually greater if calculated on the same assumption of using 100% foreign loan as in both the Tariff proposals by the Company. The final recommended tariff assumes 20% local loan portion (that has a higher, i.e., 15.11%) interest rate than the interest rate of 5.17% on foreign loan.

Summary of the Reference Tariff levelized for 30 years is shown below

Tariff Component	US ¢/KWh	PKR/KWh
Energy Purchase Price		
Water Use Charge	0.175	0.150
Variable O&M	0.042	0.036
Sub total	0.217	0.186
Capacity Purchase Price		
Fixed O&M	0.581	0.497
Insurance	0.449	0.385
Return on Equity	1.958	1.676
ROEDC	1.236	1.058
Withholding Tax	0.240	0.205
Debt Service Component	3.216	2.753
Subtotal	7.679	6.574
Total Ave. Tariff Years 1-10	9.149	7.833
Total Ave. Tariff Years 11-30	5.503	4.711
Total Ave. Tariff Years 1-30	6.355	5.440
Levelized Tariff	7.896	6.760

The Reference Tariff Table is attached as ANNEX E

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 + Withholding Tax on Dividend) 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. Unfortunately, some of these estimates were illogically high, while other costs such as custom duties on imported machinery and O&M mobilization costs, which are legitimate expenses, had been missing from the first tariff proposal. After making the adjustments, a net reduction in project cost of US $ 155.06 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	552.11	552.110	0
2	Electrical & Mechanical Equipment	207.37	200.050	(7.32)
3	Other EPC costs i.e. Preliminary, Building, Establishment & Misc	83.15	49.690	(33.46)
4	Mobilization Cost	10.00	0	(10.00)
	Total EPC Cost	**852.63**	**801.850**	**(50.78)**
5	Insurance during construction	22.11	20.046	(2.064)
6	Land Acquisition & Resettlement	31.79	31.790	0
7	Engineering & supervision - Owner Engineer	44.22	14.500	(29.72)
8	Engineering & supervision - Owner advisor	17.69	10.500	(7.19)
9	Engineering & supervision - Lenders' advisor and agents	8.84	5.800	(3.04)
10	Owner administration and overhead	48.64	22.200	(26.44)
11	Legal fee & charges	8.84	3.000	(5.84)
12	Debt working fee	8.84	-	-
13	Debt front-end fee	8.84	-	-
14	Debt arrangement fee	8.84	-	-
	Financial Charges (12+13+14)	26.52	23.662	(2.858)
15	L/C commitment fee for EPC	8.84	0	(8.84)
16	Environment & Ecology	8.84	8.019	(0.821)
17	O&M Mobilization	0	5.00	+5.00
18	Custom Duties	0	7.318	+7.318
	Project Base Cost	1078.96	953.68	(125.28)
19	Interest During Construction	164.69	139.28	(25.41)
	Total Project Cost	**1,243.65**	**1092.97**	**(150.69)**

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 $ 800 million for a 500 MW hydropower project such as Chakothi-Hattian is sufficient. Hence the sponsors have agreed to reduce the estimated EPC cost to US $ 801.85 million (inclusive of mobilization cost) from the original estimate of US $ 852.63 million.

b) Insurance During Construction

Insurance During Construction has been estimated @ 2.5% of the EPC cost. The amount was US $ 22.11 m in the original proposal but has now been reduced to US $ 20.066 m due to reduction in the EPC cost. The same percentage (i.e., 2.5% of EPC cost) has been allowed in case of New Bong Escape and Patrind Hydropower Projects; hence it has been allowed.

c) Land Acquisition & Resettlement Cost

The estimate of $ 31.79 m on this account has not been changed. However, this was earlier made part of the Civil Works cost by the sponsors. The cost is now shown separately as it is a pass-through item to be based on the actual expenditure incurred on this account with the involvement of the provincial/ AJK government. The cost estimate is for acquisition of 250 hectares of private land for construction of dam and power house and compensation/relocation of 180 households. 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 a pass-through and would be reflected in the tariff, which has to be ultimately bourne by the consumers.

d) Engineering & Supervision—Owners' Engineer's Cost

This was estimated as US $ 44.22 m in the Feasibility Study and the first Tariff Proposal submitted by the company. The amount was considered to be unreasonably high by this office especially in view of the fact that in Hydropower IPPs implemented under the EPC mode (as the Chakothi-Hattian project is likely to follow), the detailed designing is carried out mainly by the EPC contractor and the role of "Owners' Engineer" is limited. Hence, the sponsors agreed to lower the cost to a more reasonable amount of US $ 14.5 million (a reduction of US $ 29.7 million).

The sponsors have agreed to the reduction on the condition that the indicated amount is not an upper cap and could be revised at the time of EPC level tariff negotiations subject to scrutiny of audited expenditures incurred on the account up to that point.

e) Engineering & Supervision—Owners' Advisors Cost

The owners' advisory cost estimate of US $ 17.69 m was also excessive and the sponsors agreed to reduce it to US $ 10.5 m on the same condition as in the preceding paragraph.

f) Engineering & supervision – Lenders' advisor and agents

This was initially estimated as US $ 8.84 million (@ 1% of the EPC cost) but was considered to be high and reduced to $ 5.8 million subject to revision at the time of EPC level tariff submission.

g) Owner's administration and overhead

In the first Tariff Petition by the sponsors an amount of $ 48.64 million was estimated for owner's administration and overheads. It has been reduced to US $ 22.2 million; again subject to revision at the time of the 2nd stage tariff submission, if required.

h) Legal fee & charges

These estimated charges have been reduced from US $ 8.84 million (@ 1% of the EPC cost) to US $ 3.0 million subject to revision, if required, at the time of EPC stage tariff approval.

i) Financial Charges (Debt Working Fee, Debt Front-end Fee & Debt Arrangement Fee)

The Debt Working Fee, Debt Front-end Fee and Debt Arrangement Fee constituting the Financial Charges were estimated as US $ 8.84 million each (i.e., a total of $ 26.52 m) by the sponsors in their first tariff petition. They have now agreed to reduce the total financial charges to US $ 23.3662 million, subject to revision as per actual costs.

j) L/C Commitment Fee for EPC

An amount of US $ 8.84 was included in the first Tariff Proposal by the sponsors. 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 it is unavoidable at the time.

k) Environment & Ecology

An amount of US $ 8.019 million @ 1% 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 supply, sewerage, income generation and community support program, site protection and rehabilitation programmes, monitoring programme, fish hatchery and recreational facilities etc.

l) O&M Mobilization Cost

An O&M mobilization cost of $ 5 million is recommended. This was missing from the first Tariff Proposal but is a legitimate cost as the O&M contractor 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.

m) Custom Duties

Custom duty @ 5% is levied on the import of plant and equipment as per the current tax laws. Hence an amount of US$ 7.318 million has been added to the project cost.

n) 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 loans are assumed to have payback periods of 10 years (excluding the construction period of 5 years). Interest rates have been assumed as 5.17% for foreign loan (Current LIBOR rate of 0.42% + spread of 4.75%) and 15.11% for local loan (Current KIBOR rate of 11.86% + spread of 3.25%).

The Interest During Construction (IDC), thus works out as US $ 139.28 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$ 14 million per annum (20% foreign & 80% local) which includes the salary and wages and other related expenses of all Operation and Maintenance staff as well as the maintenance cost of the Complex. The O&M of the IPPs are usually handled by specialist O&M companies and the final or 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.

b) Variable O&M

The Variable O&M cost was shown by the sponsors as US $ 8 million per annum with a foreign portion of US $ 6.4 million in their initial Tariff Proposal. .This was unacceptable as the Variable O&M cost of hydropower projects is very low. Hence, the sponsors were persuaded to reduce the cost drastically to US $ 1 million, which translates into a per kWh cost of Rs 0.186 in the Reference Tariff Table.

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 $ 1092.965 million, i.e., a debt portion of US $ 819.72 million. The sponsors had initially assumed 100% foreign loan in their first as well as revised tariff proposals. This was considered unrealistic since some local debt is also required. Hence, in the final Reference Table being presented to NEPRA for approval, 20% local loan and 80% foreign loan has been assumed.

The Interest Rates assumed for the foreign loan of US $ 618.94 million is 5.17% (the current LIBOR rate 0.42%+spread of 4.75%); the interest rate for local loan of Rs 17,118.78 million (US $ 200.78 X 85.61) is assumed as 15.11% (the current KIBOR rate 11.86% + spread of 3.25%); both loans are assumed to have payback periods of 10 years (excluding the construction period of 5 years).

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

The sponsors had initially suggested 20%IRR on equity in their Tariff Proposal and kept sticking to their demand during the negotiations. However, we showed our inability to accept the same and only 17% IRR on the equity amount of US $ 273.242 million has been assumed in the final tariff. The equity injection has 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. 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 insisted on including a proviso in this regard in the Tariff Proposal, which reads as follows:

"The sponsors agreed to the reduction in IRR on Equity under protest and on the condition that any subsequent concession available in this regard would be applicable to this Project, as and when granted by GoP."

c) Insurance During Operation

The Insurance During Operation Cost was earlier assumed by the sponsors @ 1.35% of the Total Project Cost. It has been reduced to 1.35% of the EPC Cost in the final tariff, i.e., US $ 10.83 million per annum.

d) Withholding Tax

Withholding Tax @ 7.5% of the ROE and has been included in the Tariff Table. It would be payable as a pass-through against the actual amount of tax paid on dividend.

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 detailed in the Power Purchase Agreement.

SUMMARY OF ASSUMPTIONS USED IN TARIFF CALCULATIONS:

1	Installed/ Contract Capacity (MW)	500
2	Annual Estimated Energy (GWh)	2409.88
3	Project Base Cost (US $)	953.69 m
4	Interest During Construction (US $)	139.28 m
5	Total Project Cost (US $)	1092.965 m
6	Debt Equity Ratio	75:25
7	Agreement Term (Years)	30
8	Debt Foreign/ Local ratio	80/20
9	Total Debt Amount (US $)	819.72 m
10	Foreign Debt Amount (US $)	618.94 m
11	Local Debt Amount (Rs)	17,188.78 m
12	Interest rate (Foreign Loan)-including spread (%)	5.17
13	Interest rate (Local Loan)—including spread (%)	15.11
14	Debt Repayment Period excl Construction time(Years)	10
15	Repayment Frequency	Quarterly
16	Equity Amount (US $)	273.24 m
17	IRR on Equity (%)	17%
18	Construction Period (Months)	60
19	Time of COD from Financial close (Months)	66
20	Reference Exchange Rate (1 US $=Pak Rupee)	85.61
21	NPV Discount Rate (%)	10

GENERAL CONDITIONS

- The cost of working capital has not been claimed or included in the project cost;
- No other tax (including Federal Excise Duty) has been assumed except Customs Duty of 5% on imported equipment. It is assumed that no part of the power plant and the associated equipment supplied under the "equipment supply contract" will be treated as locally manufactured;
- Any tax on income of the Company from the sales of electricity to NTDC, general sales tax and all other corporate taxes will be treated as pass-through items.
- No withholding tax on supply of plant and equipment is assumed.
- Withholding tax on dividend is assumed as pass through item.
- Any taxes, duties and cess imposed either in Pakistan and or in AJ&K whether pursuant to a change in law or otherwise (where such tax, duty or cess has not been expressly assumed herein) shall be treated as a pass-through item.
- No hedging cost has been assumed for exchange rate or interest rate fluctuations during construction period;

- NTDC will be responsible for procuring, financing, constructing, operating and maintenance of the interconnection, Metering System and the Power Purchaser transmission facilities at Project site.
- Interconnection with the Power Purchaser's transmission at 220 kV is assumed. In case the interconnection is required at a higher voltage, the additional cost will be made part of the Project cost and will be reflected in the tariff at the time of COD.
- No security trustee fee and or agency (local and or foreign agency) fee assumed.
- No L/C confirmation charges have been assumed. If applicable, the adjustment based on actual shall be treated as a pass through item;
- Reference Tariff Table will be updated at EPC level tariff determination on account of various adjustments provided in this proposal and subsequently at COD.