

# Chenab Energy Private Limited

July 5, 2011

The Registrar,  
National Electric Power Regulatory Authority,  
OPF Building, 2<sup>nd</sup> Floor  
Shahrah-e-Jamhooriyat, G-5/2  
Islamabad.

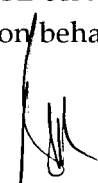
Subject: PETITION FOR DETERMINATION OF TARIFF FOR 4.8 MW  
SAHIWAL HYDROPOWER PROJECT

I, Shafiq-ur-Rehman, Chief Executive, being the duly authorized representative of Chenab Energy (Pvt.) Ltd by virtue of Board Resolution dated 25<sup>th</sup> June, 2011, hereby apply to the National Electric Power Regulatory Authority ("NEPRA") for determination of Feasibility Stage Reference Tariff, pursuant to Rule 3 of the National Electric Power Regulatory Authority (Tariff Standards and Procedure) Rules, 1998 for Chenab Energy (Pvt.) Limited

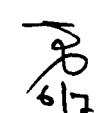
I certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provisions of the National Electric Power Regulatory Authority (Tariff Standards and Procedure) Rules, 1998 and undertake to abide by the terms and provisions of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and belief.

A Pay Order dated 10<sup>th</sup> July 2009 in the sum of Rs. 420,480 (Rupees Four Hundred Twenty Thousand Four Hundred and Eighty Only), being the non-refundable Tariff Petition fee has already been sent to you along with the application submitted on August 1, 2009.

Yours Sincerely,  
For & on behalf of Chenab Energy (Pvt.) Ltd

  
Shafiq-ur-Rehman (FCA)  
Chief Executive

Registrar	3444
Dy. No.	.....
Dated	06-07-11

For information & No. pr.  
- AD (MR) + Pa. 

Received along with (02) Two Copies of Petition  
and (03) Three Copies of F. Reports

**BEFORE**  
**THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY (NEPRA)**

**TARIFF PETITION**

ON BEHALF OF

**CHENAB ENERGY (PRIVATE) LIMITED**

FOR

DETERMINATION OF FEASIBILITY STAGE REFERENCE TARIFF FOR  
SUPPLY OF ELECTRIC POWER FROM 4.8 MW HYDROPOWER  
PROJECT

AT

LDBDC DISTT. SAHIWAL, PUNJAB

DATED: 5<sup>th</sup> July, 2011

**CHENAB ENERGY (PRIVATE) LIMITED**

ADDRESS: 92& 93 -E-1, GULBERG III, LAHORE

PHONE #: 0092-42-35750679, Cell 0092-300-4003035,

E-mail: Shafiq56@live.com

FAX #: 0092-42-35750991

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**1. GLOSSARY**

BOOT	Build, Own, Operate and Transfer
COD	Commercial Operations Date
CPP	Capacity Purchase Price
CPPA	Central Power Purchasing Agency of NTDC
CPI	Consumer Price Index
Cusec	Cubic Foot per second
CEPL	Chenab Energy (Private) Limited
DSRA	Debt Services Reserve Account
EPP	Energy Purchase Price
EPC	Engineering, Procurement and Construction
GOP	Government of Pakistan
GOB	Government of Punjab
GST	General Sales Tax
GWh	Giga watt hours=1000,000 kWh
IA	Implementation Agreement
IDC	Interest During Construction
IPP	Independent Power Producer
IRR	Internal Rate of Return
ISO	International Organization for Standardization
KIBOR	Karachi Interbank Offered Rate
Km	Kilometer=1000 meters
Kv	Kilovolt=1000 volts
kVA	Kilovolt Ampere
Kw	Kilowatt=1000 watts
kWh	Kilowatt hours
LBDC	Lower Bari Doab Canal
LIBOR	London Interbank Offered Rate
LOI	Letter of Interest
LOS	Letter of Support
LV	Low Voltage
M <sup>3</sup> m <sup>3</sup> /s or cumecs	Cubic meters
MAF	Million Acre Feet
MVA	Megavolt Ampere=1000kVA
MW	Megawatt=1000kW
MWh	Megawatt hours=1000kWh
NEPRA	National Electric Power Regulatory Authority
NPV	Net Present Value
NTDC	National Transmission and dispatch Company
O & M	Operation and Maintenance
POE	Panel of Exports

PKR or Rs.	Pakistani Rupees
PPA	Power Purchase Agreement
PPDB	Punjab Power Development Board
PPIB	Private Power and Infrastructure Board
ROE	Return on Equity
USD or US\$	United States Dollar
US ¢ or ¢	United States Cent

**2. DETAILS OF PETITIONER****2.1 NAME AND ADDRESS**

M/s Chenab Energy (Pvt.) Limited  
Address: 92& 93 -E-1, GULBERG III, LAHORE  
Phone #: 0092-42-35750679  
Fax #: 0092-42-35750991

**2.2 PROJECT SPONSORS**

- I. Chenab Limited
- II. Chen One Stores
- III. Shafiq-ur-Rehman FCA, CEO of the company
- IV. Mr. Muhammad Ashfaq
- V. Mr. Umar Ashfaq

**2.3 REPRESENTATIVES OF CHENAB ENERGY (Pvt.) LIMITED**

Mr. Shafiq-Ur-Rehman (FCA)  
Chief Executive  
Chenab Energy (Pvt.) Limited

### 3. BACKGROUND

3.1 Under the Regulation for Generation, Transmission and Distribution of Electric Power Act (XL of) 1997 (the NEPRA Act), the National Electric Power Regulatory Authority (NEPRA) is responsible, inter alia, for determining tariffs and other terms and conditions for the supply of electricity through generation, transmission and distribution. NEPRA is also responsible for determining the process and procedures for reviewing tariffs and recommending tariff adjustments etc.

3.2 Chenab Energy (Pvt.) Limited (the Project Company) has been established and set up under the laws of Pakistan and is incorporated under the Companies Ordinance 1984. It intends to set up BOOT basis, a 4.8 MW Hydropower project at LBDC in District Sahiwal in the Punjab province of Pakistan. Updated feasibility report for the project has been approved by the PPDB's Panel of Experts as conveyed by PPDB vide letter number PPDB/1274/2011 dated June 25, 2011. This Feasibility Study also incorporates the following observations raised by NEPRA;

- i. Provision of Power Acquisition Request and cost of interconnection charges by MEPCO
- ii. Updating of Feasibility Study approved by Panel Of Experts (POE) of PPDB
- iii. Resolution of Hydrological Risk in light of CPPA objection before public hearing of company's tariff application in February 2008
- iv. Resolution of Sovereign Guarantee Issue

3.3 In accordance with the policy of the Government of Punjab and Government of Pakistan, Chenab Energy (Pvt.) Ltd is resubmitting this petition for determination of Feasibility Stage Reference Tariff for the Project based on the technical data and cost estimates given in the feasibility report in order to facilitate its financing and implementation.

3.4 In accordance with the requirements of the NEPRA Act and Rules and Regulations made there under, Chenab Energy (Pvt.) Ltd hereby resubmits this petition (after updating of financial feasibility study), in accordance with the NEPRA (Tariff Standards and Procedure) Rules 1998, for determination/approval of the Feasibility Stage Reference Tariff and its Adjustment/Indexation provisions and other terms and conditions for the Project

#### 4. INTRODUCTION

4.1 The project sponsors constituted a consortium named "Chenab Consortium" to implement the 4.8 MW Sahiwal Hydropower Project. Chenab Consortium has past history and experience in ownership, operation, and maintenance of power projects. The experience gained over a period of almost three decades is considered to be very valuable for the establishment, commissioning, operations and maintenance of the proposed project.

4.2 The Consortium has filed the application for determination of tariff to NEPRA as on 1st August, 2009. In response to the application the NEPRA raised the following four points need to be sorted out vide its letter NEPRA/TRF-139/CEPL-2009/2700-2 dated 29th September, 2010:

- v. Provision of Power Acquisition Request and cost of interconnection charges by MEPCO
- vi. Updating of Feasibility Study approved by Panel Of Experts (POE) of PPDB
- vii. Resolution of Hydrological Risk in light of CPPA objection before public hearing of company's tariff application in February 2008
- viii. Resolution of Sovereign Guarantee Issue

4.3 The Chenab Consortium engaged Hameed Majeed Associates (Consultants) for updating the financial portion of the feasibility study for the development of 4.8 MW Hydropower project at LBDC. The work on feasibility study was commenced in March 2011. The assignment includes updating of the project cost estimates and economic and financial estimates. The Consultants submitted their report to PPDB on 29th April 2011 and gave presentation to the Panel of Experts (POEs) on 7th May 2011. POE's valuable observations and comments were duly acknowledged, evaluated and suitably incorporated in the feasibility study. After incorporating and observations of the POEs the final draft of the Feasibility Report was submitted to PPDB on 13th May, 2011 and presentation thereon was given to the POEs in the meeting convened by PPDB on 23rd May, 2011. The POEs approved the final Feasibility Report as convened vide letter No. PPDB/1274/2011 dated June 25, 2011 (**Attachment1**) and advised the Chenab Limited to approach NEPRA for approval of the Tariff.



- 4.4 Pursuant to the directions of the PPDB, this tariff Petition has been prepared and filed by CEPL in accordance with the requirements of the NEPRA Act and the rules framed thereunder.
- 4.5 The Reference Tariff as determined by NEPRA pursuant to this Petition become a part of the Power Purchase Agreement (PPA) to be executed between CEPL and the Power Purchaser i.e. MEPCO through CPPA/NTDC, based on the PPB's standardized PPA format and as mutually agreed to by the parties to cover the project specific requirements
- 4.6 CEPL will be pleased to submit any additional information as and when required by NEPRA

## 5. PROJECT DESCRIPTION

### 5.1 PROJECT LOCATION

The Project envisages development, design, engineering, financing, construction, testing & commissioning, owning, operation, maintenance and transfer of 4.8 MW Hydropower plant at LBDC in the Punjab province of Pakistan on Build, Own, Operate and Transfer (BOOT) basis in accordance with Punjab Power Generation Policy 2006, as revised in 2008 and GOP's Policy for Power Generation Projects 2002, as amended from time to time.

The project area lies on the left side of LBDC, between RD 327+800 and 340+850 in Sahiwal District. The project site is approximately 180 km southwest of Lahore, near to National Highway and the main railway track of Lahore-Karachi in district Sahiwal. The project area is accessible from Lahore and Multan through a good network of G.T. Road (N5) and is about 18 km from Okara. The nearest airport to the proposed project area is the Allama Iqbal International Airport, Lahore.

### 5.2 LOWER BARI DOAB CANAL (LBDC)

Lower Bari Doab Canal has a length of 209.3 km and its distributaries have a length of about 1317.09 km. The canal was commissioned along with Balloki Headworks in 1914 for a design discharge of 178.5m<sup>3</sup>/s in Kharif and 164m<sup>3</sup>/s in Rabi season. It was remodeled in 1965 for a design discharge of 241m<sup>3</sup>/s to feed Korang Fazil Shah Feeder at RD 570+600 for irrigation to the area which previously fed through Sindnai Headworks. The second remodeling was carried out from 1984 to 1986 for a maximum discharge of 278.70m<sup>3</sup>/s. The total design discharge of all off taking distributaries upstream of the project site is about 77.0m<sup>3</sup>/s. The Sahiwal hydropower project is proposed to be constructed at RD 329+058 by combining fall at RD 329+058 and fall at RD 340+850 both located near Sahiwal city. Presently the design discharge of the canal in the project reach at RD 329+058 to RD 340+850 is 164.0m<sup>3</sup>/s. Fresh remodeling of LBDC canal is under way which will further increase water discharge.

### 5.3 HYDROLOGICAL STUDIES

The irrigation and power department of the Government of Punjab that operate Lower Bari Doab Canal (LBDC), keep daily records of flow data. Historically daily design discharge data for the period of 1976-77 to 2003-2004 at LBDC has been analyzed from Irrigation and Power Department. Going

through the daily discharge it has been observed that design discharge of LBDC of 5,816 Cusecs has never been available. However keeping in view the expected rehabilitation of the canal system a design discharge of 5,816 cusecs has been taken into account for power generation so that in case the canal is rehabilitated the available potential is not wasted.

#### **5.4 INTERCONNECTION WITH NATIONAL GRID**

Sahiwal Hydropower Project is proposed to be interconnected to the nearest NTDC Grid Station at 11 KV Voltage level being operated by Multan Electric Power Company (MEPCO). The power will be disbursed by constructing 3.3 KM new independent 11-KV feeder with ACSR "OSPREY" Conductor from Power House to 132- KV Grid Station Sahiwal (new) by synchronizing the generation facility with later. Metering arrangements will be at the mouth of the project.

## 6. SALIENT FEATURES OF THE PROJECT

The salient features of the proposed project are as under:

<b>Design Discharge and Water Levels</b>	
Water Source	Lower Bari Doab Canal (LBDC)
Gross Head	11.20 ft.
Net Head	11.00 ft.
Design Discharge	5,816 Cusecs
Headrace Water Level	567.40 ft.
Tailrace Water Level	556.25 ft.

<b>Headrace Channel</b>	
Bed Width	134 ft.
Cross Section	Trapezoidal
Side Slopes	1 V :1.5 H
Length	Brick Lined 1110 ft. up to transition and 102.25 ft. RCC transition up to power house
Depth of flow	102.ft.
Bed Slope	1 in 10,525

<b>Tailrace Channel</b>	
Bed Width	146 ft.
Cross Section	Trapezoidal
Side Slopes	1 V :1.511 H
Length	1110 ft. brick lined and 61ft. downstream RCC
Bed Slope	1 in 10,525

<b>Syphon Spillway</b>	
Number of barrels	3, RCC barrels
Location	Adjoining the power house
Capacity of each barrel	Approx. 1230 cusecs
Total discharge	3700 cusecs

<b>Powerhouse &amp; Electrical /Mechanical</b>	
Size of building	98X134 ft
Location	Adjoining the link road crossing the canal at RD 329+058
Number of Units	3
Type of Turbines	Pit-Type Kaplan
Turbine Maximum Power, each Unit	1.6 MW
Max. Turbine Efficiency	93.5%
Generators Rated Capacity-each unit	1.6 MW
Generator Efficiency	95%
Total Plant Capacity	4.8 MW
Auxiliary Consumption @ 1%	0.05
Net Plant Capacity	4.75 MW
Power Factor	0.8 lagging 0.9 Leading
Generation Voltage	11 KV
Average Annual Gross Energy Generation	29.0 GWh
Average Annual Net Energy Generation	28.71 GWh
Average Annual Plant Factor	68.97%
Transformers Type	Three-phase, two windings, epoxy isolated, dry type
Transformer Standard	IEC 60076-11
Switchgear Type	3-Phase+neutral, metal-clad
Switchgear Rated Frequency	50 Hz
DC System	Lead-acid, 200V D.C
Chargers	Three-phase, thyristor controlled

**7. SUMMARY OF PROJECT COST**

Sr. No.	Description	Amount Rs. Million	Amount US\$ Million
<b>1</b>	<b>PRELIMINARY WORKS</b>		
	Project Development Cost	10.577	0.126
	Land acquisition & Development Cost	20.641	0.246
	<b>Sub- Total (1)</b>	<b>31.218</b>	<b>0.372</b>
<b>2</b>	<b><u>ENGINEERING PROCUREMENT &amp; CONSTRUCTION (EPC) COSTS</u></b>		
<b>(i)</b>	<b>GENERAL ITEMS</b>		
	Dewatering for Power House	6.453	0.077
	Construction of Staff Colony	28.406	0.338
	Power House Offices	4.404	0.052
	Water Supply, Sewerage & Septic System etc	12.837	0.153
	<b>Sub- Total (i)</b>	<b>52.100</b>	<b>0.620</b>
<b>(ii)</b>	<b>CIVIL WORKS</b>		
	<b>(a) Power Channel</b>		
	Fall Structure at RD 329+058	20.554	0.245
	Fall Structure at RD 340+850	7.044	0.084
	Upstream Transition	45.302	0.539
	Downstream Transition	23.069	0.275
	Headrace Channel	54.313	0.647
	Tailrace Channel	54.823	0.653
	Roads	4.194	0.050
	<b>Sub- Total (ii)(a)</b>	<b>209.299</b>	<b>2.493</b>
	<b>(b) Bridges</b>		
	Bridge RD 337+388	8.593	0.102
	<b>Sub- Total (ii)(b)</b>	<b>8.593</b>	<b>0.102</b>
	<b>(c) Power House</b>		
	Power House	212.605	2.531
	<b>Sub- Total (ii)(C)</b>	<b>212.605</b>	<b>2.531</b>
	<b>Sub- Total (ii)</b>	<b>430.497</b>	<b>5.126</b>
<b>(iii)</b>	<b>ELECTRO- MECHANICAL EQUIPMENT</b>		
	Mechanical Works	266.529	3.173
	Electrical Works	180.351	2.147
	<b>Sub- Total (iii)</b>	<b>446.880</b>	<b>5.320</b>
<b>(iv)</b>	<b>DESIGN &amp; ENGINEERING</b>	48.368	0.576
<b>(v)</b>	<b>INTERCONNECTION FACILITIES</b>	15.000	0.179
	<b>BASE EPC COST (i+ii+iii+iv+v)</b>	<b>992.846</b>	<b>11.820</b>
<b>3</b>	<b>OTHER COSTS</b>		
	Custom Duties	23.940	0.285
	<b>Sub- Total (3)</b>	<b>23.940</b>	<b>0.285</b>

<b>4</b>	<b>PROJECT COMPANY COSTS</b>		
	Insurance during Construction	13.403	0.160
	Construction Management	49.600	0.590
	Owner's Engineer	12.000	0.143
	Independent Engineer	6.000	0.071
	Pre- COD O&M Costs	12.000	0.143
	<b>Sub- Total (4)</b>	<b>93.003</b>	<b>1.107</b>
<b>5</b>	<b>TOTAL CAPEX (1+2+3+4)</b>	<b>Sub- Total (5)</b>	<b>1,141.007</b>
<b>6</b>	<b>FINANCING COST</b>		
	Debt arrangement Fee, Commitment Fee etc	27.384	0.326
	Interest during Construction	215.15	2.561
	<b>Sub- Total (6)</b>	<b>242.532</b>	<b>2.887</b>
<b>7</b>	<b>TOTAL PROJECT COST</b>	<b>(5+6)</b>	<b>1,383.539</b>
			<b>16.470</b>

## 7.1 COMPARISON OF PROJECT COST

The original feasibility study of the Sahiwal Hydropower Project was conducted by a consortium of Pakistan Engineering Services (Pvt.) Ltd and Berqab Consulting Services (Pvt.) Ltd in 2004. In 2008 the CEPL revised the project cost estimates and filed Tariff Petition to NEPRA in 2009. But NEPRA wants Tariff calculation based on updated project cost estimates. As a result CEPL update project cost estimates in 2011 and approved the updated financial feasibility study by PPDB. The comparison of the project cost estimates over these periods is given below:

PROJECT COST SUMMARY	FEASIBILITY STUDY					
	Original (2004)		Revised (2008)		Revised (2011)	
	USD	PKR	USD	PKR	USD	PKR
Preliminary Works	0.235	14.080	0.269	21.522	0.372	31.217
Civil Works	3.581	214.840	6.138	491.017	5.745	482.598
Electro-Mechanical Equip.	3.840	230.396	6.931	554.483	5.320	446.880
Design & Engineering	0.349	20.963	0.605	48.368	0.576	48.368
Interconnection Facilities	-	-	-	-	0.179	15.000
Custom Duties	-	-	-	-	0.285	23.940
Insurance during Const.	-	-	-	-	0.160	13.403
Project Company Costs	0.109	6.517	0.098	7.820	0.948	79.600
Financing Costs	-	-	-	-	0.326	27.384
<b>Total Base Cost</b>	<b>8.113</b>	<b>486.796</b>	<b>14.040</b>	<b>1,123.210</b>	<b>13.909</b>	<b>1,168.391</b>
Escalation	0.178	10.693	0.596	47.700	-	-
Interest During Const.	-	-	-	-	2.561	215.147
<b>Total Cost</b>	<b>8.291</b>	<b>497.489</b>	<b>14.636</b>	<b>1,170.910</b>	<b>16.471</b>	<b>1,383.538</b>
Exchange Rate - PKR/US\$	60.00		80.00		84.00	

## 8. DETAILS OF PROJECT COST

### 8.1 PRELIMINARY WORKS

#### 8.1.1 Project Development Costs

This covers the sponsors' development costs. These include updating of feasibility studies, project company set-up costs as well as the costs associated with issuance of performance guarantees and NEPRA fees etc. The total cost estimated is US\$ 0.0.1259 million.

	PKR	US\$
Registration Fee- PPDB	8,400	100
Purchase of Pre-Qualification Documents	84,000	1,000
Purchase of RFP Documents	168,000	2,000
Evaluation of Bidding	84,000	1,000
Bank Guarantees payable to PPDB	210,000	2,500
Fees for Project Feasibility Studies	2,100,000	25,000
Company Registration Expenses	252,000	3,000
NEPRA Fees	900,000	10,714
Legal Expenses	2,944,000	35,048
EPC Tender Preparation & Evaluation	3,826,200	45,550
<b>Total</b>	<b>10,576,600</b>	<b>125,912</b>

#### 8.1.2 Land Acquisition & Development Cost

This covers the acquisition of 32 acres of land as well as construction of boundary wall. The total cost of the land acquisition and land development is estimated to be US\$ 0.246 million. The details of land are as follows:

	Unit	Qty	Rate (Rs.)	Amount
Land (Permanents)	Acres	5.00	1,800,000	9,000,000
Land (Temporary)	Acres	27.00	360,000	9,720,000
<b>Total</b>		<b>32.00</b>		<b>18,720,000</b>

#### Construction of Boundary Wall

	Unit	Qty	Rate (Rs.)	Amount (Rs.)
Brick Masonry in 1:4 C/S Mortar	100 CFT	96.08	11,000	1,056,880
External & Inter Plaster	100 SFT	256.20	3,200	819,840
Colony Gate	SFT	98.00	450	44,100
<b>Total</b>				<b>1,920,820</b>



## 8.2 BILL OF QUANTITIES

Detailed Bill of Quantities (BOQ) for each of the project components has been worked out on the basis of feasibility stage designs/drawings. All foreseeable items required for the construction of the project components has been quantified and shown in BOQ.

The derivation of the unit rates for construction of the civil works are based on the C&W rates (Notification) for Sahiwal (Mar 2011). Base rates and sources of prices of the escalable input cost items of the Civil Works of the project are as under:

Item	Unit Rate (Rs.)	Source
Steel	71,165/Ton	Mar,2011 C&W Rates
Cement	346/bag	-do-
Labor (Skilled)	500 (Av.)	-do-
Labor (Unskilled)	220 (Av.)	-do-
Fuel (Diesel)	82.22/Liter	-do-

The cost of Civil Works will be subject to adjustment from time to time during construction for any variation in the base price of the above inputs.

## 8.3 CONSTRUCTION MANAGEMENT

This category includes CEPL's necessary internal expenditures associated with the undertaking of the project during construction period, and is estimated at US\$ 0.590 million. It covers salaries and related costs of the company employees, office costs such as rent, supplies and furniture, and the costs associated with supervision and monitoring of the construction contract and all other aspects of the project.

Designation	Qty	Salary/Month/Emp		No. of Months	Total Salary	
		Rs.	USD		Rs.	USD
Chief Executive Officer	1	500,000	5,952	36	18,000,000	214,286
Manager Accounts	1	200,000	2,381	36	7,200,000	85,714
Project Coordinator	1	150,000	1,786	36	5,400,000	64,286
Accounts Assistant	1	50,000	595	36	1,800,000	21,429
Manager Admin	1	75,000	893	36	2,700,000	32,143
Admin Officers	2	40,000	476	36	1,440,000	17,143
Peon	2	8,000	95	36	288,000	3,429
Driver	2	10,000	119	36	360,000	4,286
Security Guard	4	8,000	95	36	288,000	3,429
Site Security Guards	8	8,000	95	28	224,000	2,667
					<b>37,700,000</b>	<b>448,810</b>
Rent for the project office till COD					5,400,000	64,286
Travelling Expenses					4,000,000	47,619
Project Office Furniture & Fixtures					2,500,000	29,762
<b>Grand Total</b>					<b>49,600,000</b>	<b>590,476</b>

#### 8.4 PRE-COD INSURANCE COST

Pre-COD insurance costs covers the insurance cost of Project Company's assets during construction and the same are incurred prior to COD. This cost is estimated at 1.35% of EPC costs.

#### 8.5 CUSTOM DUTIES & TAXES

Custom Duties equivalent to US\$ 0.285 million assumed as 6.0% of the cost of plant and equipment to be imported for the project are included in the project cost estimates in accordance with Punjab Power Generation Policy 2006 as amended and GOP's Policy for Power Generation Projects 2002 as amended from time to time.

#### 8.6 INTEREST DURING CONSTRUCTION (IDC)

Interest during construction (IDC) has been calculated on the basis of the construction period of 24 months. Actual IDC, however, shall be subject to change depending on the fluctuations in the base rate (3-month KIBOR), funding requirements (draw-downs) of the project during the construction period etc.

##### Basis for IDC Calculation

3 month KIBOR	13.24%
Spread	3.50%
<b>Total Interest Rate</b>	<b>16.74%</b>

<b>Semi-Annual Phasing</b>	<b>Draw Down (%)</b>
1	35%
2	25%
3	20%
4	20%
<b>Total</b>	<b>100%</b>

#### 8.7 FINANCIAL CHARGES

Financial Charges include the costs related to the Debt financing of the Project. Such costs include, inter alia, the lenders' up-front fee and commitment fee; charges related to various letters of credit to be established in favor of various contracting parties; fees payable and stamp duty applicable on the financing documents; agency fee; security trustee fee etc.

	US\$ Million
Lender Upfront Fees (@ 1.25% of loan facility)	0.136
Lenders Consultancy Fee, Agency Fee	0.066
Commitment Fees (0.50% of the Loan amount)	0.054
L/C Charges, Commissions etc	0.070
<b>Total</b>	<b>0.326</b>

## 9. REFERENCE TARIFF

### 9.1 INVESTMENT COST

The cost estimates for civil works are based on the preliminary design/drawings prepared on the basis of equipment and configuration. The sponsor's expenditure in carrying out preliminary works such as feasibility study, legal & financial advisory services, inland transportation of equipment, insurance during construction and working capital etc. have been estimated on the basis of current rates.

		US\$ Million
	<b>Project Costs</b>	<b>Total</b>
1	Preliminary Works	0.371
2	Civil Works	5.745
4	Electro-Mechanical Equipment	5.320
5	Design & Engineering	0.575
6	Interconnection Facilities	0.179
7	Custom Duties & Taxes	0.285
8	Insurance during Construction	0.160
9	Project Company Costs	0.948
10	Financing Fees & Charges	0.326
	<b>Total Capital Cost</b>	<b>13.909</b>
11	Interest During Construction (IDC)	2.561
	<b>Total Project Cost</b>	<b>16.470</b>

### 9.2 CAPITAL STRUCTURE

The capital structure of the Project is as follows:

	US\$ Million
Debt	13.177
Equity	3.293
Total Capital Cost	16.470
Debt Equity Ratio	80: 20

### 9.3 WATER USE CHARGE

This component represents the water use charge per unit of energy in KWh generated by the Plant and delivered to the Power Purchaser by using the water of the LBDC. This charge is payable to the Govt. of Punjab under the Water Use Agreement to be executed between CEPL and the Government of Punjab. This component will be subject to adjustment for Pak WPI for "manufacturing" in accordance with Punjab Power Generation Policy 2006

and as revised in 2008. The water use charges have been fixed at the rate of Rs. 0.15/Kwh subject to annual adjustability. The water use charges shall be a pass-through item to the power purchaser

#### 9.4 OPERATIONS & MAINTENANCE COSTS

The operational cost of the project has been divided into two parts:

- Variable O&M Cost
- Fixed O&M Cost

##### i.) Variable O&M Costs

Variable O& M component caters the cost of the services of the O&M operator, contractors' mobilization and replacement of spare parts on completion of their service life as well as replacement on account of premature failure of the parts. It also includes cost of maintenance for unscheduled/unforeseen outages and consumption of lubricants, chemicals etc. 50% of this component is in foreign currency to cater for the procurement of the spare parts and technical services from abroad.

##### ii.) Fixed O&M Costs

This component mainly includes management fee and cost of expatriate services for operation and maintenance of the plant. It also includes remuneration to the staff and other administrative costs including rents, utilities, NEPRA fees, audit fees, legal retainership, consultancy fees, environmental monitoring and reporting fees. The fixed O&M cost includes 20% foreign component and 80% local component.

The break-up of annual estimated operating cost are as follows:

Description of Expense	Amount in US\$
Variable O& M Cost	62,208
Fixed O&M Cost	93,780
<b>Total</b>	<b>155,988</b>

#### 9.5 INSURANCE COST

The insurance component consists of all risk insurance/reinsurance for the project, as well as business-interruption insurance, which are lenders and PPA stipulated requirements. Insurance policies are required to be maintained for the plant life as specified in the standardized PPA. The risks to be covered through insurance shall include machinery breakdown, natural calamities

(like earthquake), sabotage and consequential business interruption, etc. The insurance estimated as 1.35% of the EPC has been worked out to US\$ 0.149 million.

#### **9.6 RETURN ON EQUITY**

The ROE component includes 17% return (IRR based) on the invested equity. Under the Punjab Power Generation Policy 2006, as amended, the hydropower project is to be constructed on Build, Own, Operate and Transfer (BOOT) basis, Pursuant to GOP's November 2005 Guidelines for Determination of Tariff for IPPs, equity has been redeemed after completion of the debt servicing. The project on expiry of the concession period would be transferred to the government against national cost as stipulated in the Punjab Power Generation Policy 2006, as amended.

#### **9.7 DEBT SERVICING COMPONENT**

The debt servicing (repayment of principal and interest charges) would be on quarterly basis for a 10-year period after the grace period. There would no charge under this category for the next 20 years of plant operation. The debt portion is presently estimated as 80% of the project cost.

#### **9.8 REFERENCE EXCHANGE RATE**

The local currency components of total capital cost have been translated to US\$ at the following reference exchange rate:

$$\text{US\$ 1} = \text{PAK Rs. 84.00}$$

#### **9.9 CARBON CREDITS**

Hydropower is a clean form of electricity. The project will reduce CO<sub>2</sub> emissions and would mitigate other pollutants, such as SO<sub>2</sub>, NO<sub>x</sub> and particulates associated with power generation from fossil fuels. The actual amount, timing, other details of the monetary gains from carbon credit schemes are uncertain at this point. So the Generation Tariff for the project is calculated irrespective of the outcome of the carbon credits.

#### **9.10 HYDROLOGICAL RISK**

For Hydel Power Projects, water inflows to generate electricity do not remain the same throughout the year rather they depend on seasonal variations. The output of power plant is accordingly dependent on water inflows. During a period of lean water inflows, the power project will not be able to cover its

fixed costs due to actual operation of the plant at less than average estimated plant factor. In development of hydropower projects one of the impediments is the hydrological issue. This long standing issue has been deliberated at various forums and among stakeholders. It is worth mentioning that as a result of diligent efforts of PPDB it has been agreed that the hydrological risk shall be borne by the power purchaser.

### 9.11 BASIC DATA FOR ECONOMIC ANALYSIS

The basic financial data for economic and financial evaluation are shown below:

Item	Unit	Value
Estimated Plant Gross Capacity	MW	4.80
Annual Gross Energy Generation	GWh	29.00
Auxiliary Consumption @1.0%	GWh	0.29
Estimated Annual Net Energy	GWh	28.71
Annual Plant Capacity Factor	%	68.97%
Project Basis		BOOT
Operation time		30 years
NPV Discount rate	%	10
Debt to equity ratio		80 : 20
<b>Debt finance - loan terms:</b>		
Loan Tenure	Year	10-year plus 24 months grace period
Interest rate	%	3 month KIBOR at 13.24% per annum+350 basis points
Payment Schedule		Quarterly payments inclusive of principal and interest
<b>Equity finance:</b>		
Return on Equity (IRR basis)	%	17.0%
Withholding Tax on Dividend	%	7.5 %
Variable O&M Costs		USD 0.0622 million (50% Foreign Component and 50% Local Component)
Fixed O&M Costs		USD 0.0938 million (20% Foreign Component and 80% Local Component)
Insurance		1.35% of EPC Cost
Water Use Charge		Rs. 0.15/KWh as payable to Punjab Govt.

Tariff Components	Indexation Factor
<b>Fixed Charges (Rs./KW/Month)</b>	
Fixed O&M	
Local	WPI
Foreign	PKR/US\$, US CPI
Insurance	PKR/US\$
Return on Equity	PKR/US\$
Return on Equity during Redemption	PKR/US\$
Debt Service	Variation in KIBOR
<b>Variable Charges (Rs./Kwh)</b>	
Variable O&M	
Local	WPI
Foreign	PKR/US\$, US CPI
Water Use Charge	WPI

### 9.12 OTHER GENERAL ASSUMPTIONS

The proposed Reference Tariff is based on the following assumptions. Any change in any of these assumptions will result in changes in the Reference Tariff:

- a. Project financing structure is based on 80:20 debt-equity ratio
- b. The exchange rates are assumed to be 84 for PKR/USD.
- c. 100% of Debt has been assumed to be financed through local banks and financial institutions.
- d. A constant ROE is assumed which results in an IRR of 17% over 30 years.
- e. Custom Duties amounting to USD 0.285 Million on the import of plant and equipment have been assumed for reference purposes. Any variation in the Custom Duties as per actual payment will be adjusted at COD.
- f. No tax on any income of the CEPL including sales proceeds from NTDC is assumed. Corporate Tax, General Sales Tax, and all other taxes shall be treated as pass through items.



- g. The construction period for the purpose of Reference Tariff calculations has been assumed as 24 months from the 'Notice to Proceed' to the EPC contractor. In case the completion of the project takes more than 24 months, IDC and ROEDC shall be adjusted based on the actual time taken for the completion of the project.
- h. Withholding Tax on dividend @7.5% as required under the Income Tax Ordinance, 2001 is assumed. Any change in the rate of the withholding tax would be pass-through to the Power Purchaser.
- i. No Debt service Reserve Account (DSRA), Maintenance Reserve Account or Contingency Reserve Account or any other Reserve Account has been considered in the tariff model.
- j. During construction period, the timing of debt drawdown may vary from that estimated now; as such, the actual 'Interest during construction' (IDC) will be updated at COD and the Reference Tariff table will be adjusted accordingly. Similarly the adjustments for variations in the assumed benchmark interest rates etc shall be applied.
- k. Tolerance of +/- 3% in Dispatch is assumed
- l. No hedging cost has been assumed for exchange rate fluctuations during construction
- m. In case of any unintentional error or omissions, typographic errors, and any genuine assumption being overlooked, the same will be corrected/incorporated and advised to NEPRA as soon as CEPL becomes aware of it

**9.13 SUMMARY OF FEASIBILITY STAGE REFERENCE TARIFF**

The summary of Feasibility Stage Reference Tariff is given below:

<b>Tariff Components</b>	<b>Year 1-10</b>	<b>Year 1-30</b>
<b>Capacity Purchase Price (CPP)</b>	<b>Rs/Kw/Month</b>	<b>Rs/Kw/Month</b>
Fixed O&M- Foreign	27.3526	27.3526
Fixed O&M- Local	109.4105	109.4105
Insurance	217.8464	217.8464
Return on Equity	816.6718	853.6159
ROE during Construction	190.8970	190.8970
Withholding Tax @7.5%	75.5677	78.3358
Debt Service	3990.954	0.0000
<b>Energy Purchase Price</b>	<b>Rs/Kwh</b>	<b>Rs/Kwh</b>
Variable O&M- Foreign	0.0910	0.0910
Variable O&M- Local	0.0910	0.0910
Water Use Charge	0.1500	0.1500
<b>Total Levelized Tariff (Rs./Kwh)</b>	<b>8.3820</b>	
<b>Total Levelized Tariff (US\$./Kwh)</b>	<b>9.9785</b>	

## 9.14 PROPOSED FEASIBILITY STAGE REFERENCE TARIFF

Reference Tariff Table

Year	Variable Charge (Rs./kWh)				Capacity Charge (Rs./kW/Month)									Total		
	Water Use Charge	Variable O&M (Local)	Variable O&M (Foreign)	Total	Fixed O&M (Foreign)	Fixed O&M (Local)	Insurance	Return on Equity	ROEDC	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total	Capacity Purchase Price (Rs/KWh)	Rs. per kWh	¢ per kWh
1	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	824.200	3,166.754	5,428.700	10.7825	11.1145	13.2316
2	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	971.077	3,019.877	5,428.700	10.7825	11.1145	13.2316
3	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	1,144.127	2,846.827	5,428.700	10.7825	11.1145	13.2316
4	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	1,348.016	2,642.938	5,428.700	10.7825	11.1145	13.2316
5	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	1,588.239	2,402.715	5,428.700	10.7825	11.1145	13.2316
6	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	1,871.271	2,119.683	5,428.700	10.7825	11.1145	13.2316
7	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	2,204.741	1,786.213	5,428.700	10.7825	11.1145	13.2316
8	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	2,597.636	1,393.318	5,428.700	10.7825	11.1145	13.2316
9	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	3,060.547	930.407	5,428.700	10.7825	11.1145	13.2316
10	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	816.6718	190.8970	75.5677	3,565.952	385.112	5,428.700	10.7825	11.1145	13.2316
11	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
12	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
13	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
14	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
15	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
16	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
17	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
18	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
19	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
20	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
21	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
22	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
23	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
24	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
25	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
26	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
27	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
28	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
29	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
30	0.1500	0.0910	0.0910	0.3320	27.3526	109.4105	217.8464	853.6159	190.8970	78.3385	-	-	1,477.4609	2.9345	3.2666	3.8888
Levelized Tariff (1-30 Years)				0.3320	27.3526	109.4105	217.8464	829.5353	190.8970	76.5324	1,103.8610	1,497.4871	4,052.9224	8.0499	8.3820	9.9785

## 9.15 DEBT SERVICING SCHEDULE

Period	Principal	Repayment	Mark-up	Balance	Debt Service
	Million Rs.	Million Rs.	Million Rs.	Million Rs.	Million Rs.
Quarter 1	1,106.83	11.15	46.32	1,095.68	57.47
Quarter 2	1,095.68	11.62	45.85	1,084.07	57.47
Quarter 3	1,084.07	12.10	45.37	1,071.96	57.47
Quarter 4	1,071.96	12.61	44.86	1,059.36	57.47
Year 1	4,358.54	47.47	182.41	4,311.07	229.88
Quarter 1	1,059.36	13.14	44.33	1,046.22	57.47
Quarter 2	1,046.22	13.69	43.78	1,032.54	57.47
Quarter 3	1,032.54	14.26	43.21	1,018.28	57.47
Quarter 4	1,018.28	14.85	42.61	1,003.42	57.47
Year 2	4,156.39	55.93	173.94	4,100.46	229.88
Quarter 1	1,003.42	15.48	41.99	987.95	57.47
Quarter 2	987.95	16.12	41.35	971.82	57.47
Quarter 3	971.82	16.80	40.67	955.02	57.47
Quarter 4	955.02	17.50	39.97	937.52	57.47
Year 3	3,918.21	65.90	163.98	3,852.31	229.88
Quarter 1	937.52	18.23	39.24	919.29	57.47
Quarter 2	919.29	19.00	38.47	900.29	57.47
Quarter 3	900.29	19.79	37.68	880.50	57.47
Quarter 4	880.50	20.62	36.85	859.88	57.47
Year 4	3,637.59	77.65	152.23	3,559.95	229.88
Quarter 1	859.88	21.48	35.99	838.39	57.47
Quarter 2	838.39	22.38	35.09	816.01	57.47
Quarter 3	816.01	23.32	34.15	792.69	57.47
Quarter 4	792.69	24.30	33.17	768.39	57.47
Year 5	3,306.96	91.48	138.40	3,215.48	229.88
Quarter 1	768.39	25.31	32.16	743.08	57.47
Quarter 2	743.08	26.37	31.10	716.71	57.47
Quarter 3	716.71	27.48	29.99	689.23	57.47
Quarter 4	689.23	28.63	28.84	660.61	57.47
Year 6	2,917.41	107.79	122.09	2,809.63	229.88
Quarter 1	660.61	29.82	27.65	630.78	57.47
Quarter 2	630.78	31.07	26.40	599.71	57.47
Quarter 3	599.71	32.37	25.10	567.34	57.47
Quarter 4	567.34	33.73	23.74	533.61	57.47
Year 7	2,458.44	126.99	102.89	2,331.45	229.88
Quarter 1	533.61	35.14	22.33	498.48	57.47
Quarter 2	498.48	36.61	20.86	461.87	57.47
Quarter 3	461.87	38.14	19.33	423.73	57.47
Quarter 4	423.73	39.74	17.73	383.99	57.47
Year 8	1,917.69	149.62	80.26	1,768.06	229.88
Quarter 1	383.99	41.40	16.07	342.59	57.47
Quarter 2	342.59	43.13	14.34	299.46	57.47
Quarter 3	299.46	44.94	12.53	254.52	57.47
Quarter 4	254.52	46.82	10.65	207.70	57.47
Year 9	1,280.56	176.29	53.59	1,104.27	229.88
Quarter 1	207.70	48.78	8.69	158.93	57.47
Quarter 2	158.93	50.82	6.65	108.11	57.47
Quarter 3	108.11	52.95	4.52	55.16	57.47
Quarter 4	55.16	55.16	2.31	(0.00)	57.47
Year 10	529.90	207.70	22.18	322.19	229.88

**ATTACHEMENTS**

1. Feasibility Stage Approval Notification
2. PPIB Letter of Sovereign Guarantee
3. Minutes of the Meeting of CPPA regarding Resolution of Hydrological Risk
4. MEPCO Letter of Power Acquisition Request
5. Board Resolution passed by Directors of Chenab Energy (Pvt.) Ltd
6. Affidavit of Mr. Shafiq-ur-Rehman, CEO, Chenab Energy (Pvt.) Ltd
7. Feasibility Report of the Project , May 2011



No. PPDB/ 1279 /2011

**PUNJAB POWER DEVELOPMENT BOARD**

**ENERGY DEPARTMENT**

1<sup>st</sup> Floor, Central Design Building,  
Irrigation Secretariat, Old Anarkali, Lahore  
(Ph: 042-99212794 Fax: 042-99212796)

Date 25.06 /2011

To,

**M/s Chenab Energy (Private) Limited**  
92 & 93 - E-1, Gulberg-III,  
Lahore

**Subject: UPDATED FEASIBILITY STUDY REPORT OF 4.8 MW SAHIWAL HYDROPOWER PROJECT**

**Reference: 1. Minutes of Meeting of Panel of Experts (POE) dated 23.05.2011**  
**2. Your letter dated June 08, 2011**

As already conveyed vide our letter No. 1071-79/12/2011 dated 25.05.2011 that Panel of Experts (POE) appointed by PPDB Board, has approved the updated Feasibility Study Report in respect of your project in light of direction of NEPRA vide letter No. NEPRA/TRF-100/2074-76 dated August 27, 2010. This Feasibility Study Report also encompasses observations of NEPRA pertaining to your project disseminated vide letter No. NEPRA/TRF-139/CEPL-2009/2700-02 dated 29.09.2010. Therefore, now, you may proceed further in light of Hydropower Mechanism - July 2008 issued by NEPRA with respect to Hydropower Project.

**MANAGING DIRECTOR**

**PUNJAB POWER DEVELOPMENT BOARD**

**CC:**

1. The Chairman PPDB, 10-A, Ali Block, New Garden Town, Lahore
2. The Secretary, Government of the Punjab, Energy Department, Lahore



Attn: - *Shafiqur Rehman* o/c  
 GOVERNMENT OF PAKISTAN  
 MINISTRY OF WATER AND POWER  
 (PRIVATE POWER & INFRASTRUCTURE BOARD)

No. 1(101) PPIB/10/PRJ

10<sup>th</sup> June 2010

Mr. Rab Nawaz  
 Secretary  
 Irrigation & Power Department  
 Government of Punjab

Subject: Punjab Power Generation Policy 2006 (Revised 2009)

Dear Sir,

This has reference to your letter No. SO(P)/21-56/04(G.P)/2006 dated 12<sup>th</sup> May 2010 whereby some guidance regarding the further processing of the power projects in province of Punjab under the Punjab Power Generation Policy, 2006 has been solicited.

2. PPIB has reviewed Punjab Power Generation Policy, 2006 (revised in 2009) and Policy for Power Generation Projects, 2002 and is of the view that there shall be Government of Punjab Implementation Agreement (IA) by and between the Government of Punjab and the Project Company undertaking and enumerating mutual rights and obligations therein. However, it is pertinent to mention that authorization for entering into IA and PPA by the Government of Punjab shall have to be obtained from the Federal Government in light of 18<sup>th</sup> Amendment to the Constitution whereby the subject of Electricity has been transferred to Part-II of Federal Legislative List. Furthermore, it is advised that the concessions/ incentives being provided to IPPs below 50 MW be in line with the Federal Government's Policy for Power Generation Projects 2002 and the Standardized Security Package for IPPs approved by the Economic Coordination Committee (ECC) of the Cabinet.

3. Moreover, upon execution of the Project Documents including IA, Power Purchase Agreement (PPA) and Water Use Agreement (WUA), the Project Company is required to arrange and fulfill conditions for procuring finance and having done so may be declared to have achieved financial close for the project. Thereafter, the Government of Pakistan will provide the Sovereign Guarantee to the Project Company for payment obligations of the, Power Purchaser under the PPA and, the Provincial Government under the WUA, in light of the ECC decision dated 1<sup>st</sup> September 2005.

5. We hope that above clarification satisfies your queries.

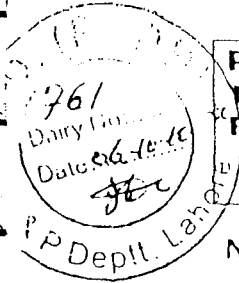
Best Regards

Yours Sincerely,

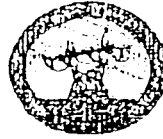
(N. A. Zubert)  
 Managing Director

Issued  
*Attn*  
 16/6/10

# Central Power Purchasing Agency



PABX: 042-99202211/2106  
Tel: 042-99204045  
Fax: 042-99201179



Office of the  
Chief Operating Officer (CPPA)  
107 – WAPDA-House  
Lahore

No. COO/CPPA/CE/MT-III/PPDB/5924-34

Dated: 05/10/2010

1. Chief Executive Officer,  
Lahore Electric Supply Company Limited  
22/A Queens Road, Lahore.
2. Chief Executive Officer,  
Multan Electric Power Company,  
MEPCO Complex, Khanewal Road, Multan.
3. Chief Executive Officer,  
Gujranwala Electric Power Company,  
565/A, Model Town, Gujranwala.
4. Chief Executive Officer,  
Faisalabad Electric Supply Company Limited  
Canal Road, Abdullah Pur, Faisalabad.
5. Chief Executive Officer,  
Islamabad Electric Supply Company Ltd.  
Section 40, G-7/4, Islamabad.
6. The Managing Director PPDB,  
I&P Deptt., 1<sup>st</sup> Floor Central Design Building  
Irrigation Secretariat, Old Anarkali, Lahore

**Subject: Meeting on Development of Small Hydropower Projects in the Province of Punjab**

As desired by NEPRA vide its minutes of meeting dated August 27, 2010, a meeting was held on 30.09.2010 in the Committee Room No. 307, WAPDA House, Lahore, chaired by Chief Operating Officer (CPPA), with the representatives of LESCO, GEPCO, FESCO, MEPCO, IESCO and Punjab Power Development Board (PPDB) Punjab, Irrigation & Power Department, Punjab for discussion and settlement of following issues:

- i. Filing of request for Power Acquisition by DISCO
- ii. Responsibilities of Interconnection and Dispersal arrangement and bearing costs thereof.
- iii. Responsibility to bear Hydrological Risk

All the above issues were discussed in detail between the participants. It was resolved as under:-

## **Filing of request for Power Acquisition by DISCO**

The representatives of MEPCO & FESCO informed that they have already submitted Power Acquisition Requests (PARs) before NEPRA for the Small Hydropower Projects falling under their jurisdiction. All representatives of DISCOs assured that they will submit PARs for the respective projects as and when required by NEPRA.

Cont/d.....P/2

MF.  
See in min. one month i)  
6/10/10



ii) **Interconnection Cost**

The sponsors of the Small Hydropower Projects will carry out Feasibility Studies in consultation with the panel of experts of relevant DISCOs regarding interconnectivity schemes for power take off. While conducting the Feasibilities Studies, level of transmission voltage, length of line and its cost shall be mentioned in the report. Its impact on tariff with and without cost of Interconnection shall be narrated in the report for determination of tariff by NEPRA.

iii) **Hydrological Risk**

For Small Hydropower Projects (SPPs) being developed on rivers upstream of canals, the Hydrological Risk shall be borne by the Purchaser as per Policy. However, for SPPs developed down stream on canals or in case of construction of new canals or new branch canals on the upstream of existing projects on rivers/canals resulting in reduction of flows, the hydrological risk due to reasons caused by the humans shall be borne by the Punjab Irrigation & Power Department and accordingly it shall be incorporated in the relevant Agreement between the parties.

DA/  
*List of Participants*

  
**(ARSHAD RAZA)**  
Chief Operating Officer

CC:

1. The Chairman PPDB Board, Lahore.
2. Managing Director PEPCO, 723-WAPDA House, Lahore.
3. Chief Executive Officer NTDC, 414-WAPDA House, Lahore.
4. Registrar NEPRA, 2<sup>nd</sup> Floor, OPF Building, G-5/2, Islamabad.
5. Secretary, Irrigation and Power Department, Government of Punjab, Lahore.

**List of Participants In the meeting with Punjab Power Development Board,  
Punjab, Irrigation & Power Department, LESCO, MEPCO, GEPCO, FESCO  
and IESCO held on 30.09.2010 at 307-WAPDA House, Lahore.**

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**CPPA**

- |                              |                         |                 |
|------------------------------|-------------------------|-----------------|
| 1. Mr. Arshad Raza           | Chief Operating Officer | <b>On chair</b> |
| 2. Mr. Ehsan-ul-Majeed Khan  | Chief Engineer          |                 |
| 3. Mr. Khadim Hussain Baloch | Manager Technical       |                 |

**GEPCO**

- |                               |                         |
|-------------------------------|-------------------------|
| • Mr. Mohammad Ibrahim Majoka | Chief Executive Officer |
|-------------------------------|-------------------------|

**LESCO**

- |                             |                      |
|-----------------------------|----------------------|
| 1. Rana Muhammad Ajmal      | General Manager      |
| 2. Mr. Gulzar Ahmed Bhatti  | Chief Engineer (T&G) |
| 3. Mr. Manzoor Hussain Sial | Manager Marketing    |
| 4. Sayyed Mubasher Masood   | Legal Director       |

**FESCO**

- |                           |                      |
|---------------------------|----------------------|
| 1. Mr. Ghazanfar Ali Khan | Chief Engineer (P&D) |
| 2. Mr. Mohammad Ibrahim   | Chief Engineer/CSD   |
| 3. Rana Muhammad Saleem   | Deputy Manager       |

**MEPCO**

- |                         |                    |
|-------------------------|--------------------|
| 1. Mr. Anjum Naveed     | Chief Engineer/CSD |
| 2. Mr. Mudassir Hussain | Deputy Manager     |

**IESCO**

- |                            |                |
|----------------------------|----------------|
| • Mr. Mohammad Yousaf Awan | Chief Engineer |
|----------------------------|----------------|

**PPDB and I&P Deptt., Punjab**

- |                                |  |
|--------------------------------|--|
| 1. Mr. Iftikhar Ahmad Randhawa | Managing Director PPDB                   |
| 2. Mr. Israr-ul-Haq            | Chief Engineer (SPRU), I&P Deptt.        |
| 3. Ch. Saeed Ahmed             | Chief Engineer (Irrigation), Lahore Zone |
| 4. Mr. Abdul Rauf              | Manager Finance, PPDB                    |
| 5. Mr. Zulfiqar Ahmad          | Dy. Manager, PPDB                        |

**MULTAN ELECTRIC POWER COMPANY (WAPDA)**OFFICE OF THE  
CHIEF EXECUTIVE MEPCONo. 2670 /MT/DMCMDated 31.10.2009Mr. Nisar Bazmi  
Director (Technical) CPPA,  
190, WAPDA House Lahore.Subject: - **PURCHASE OF POWER FROM SPPS.**

MEPCO is ready to purchase power from below mentioned Small Power Producers provided the cost of connectivity is borne by the respective sponsors:-

1. Chenab Energy Pvt: Hydro Power Project Sahiwal 4.8-MW  
(A project of Irrigation & Power Department)
2. Halib Rafique Pvt: Ltd: Panjnad Hydro Power Project 15-MW  
All Pur

  
Chief Engineer / (CS) Director  
MEPCO Ltd: Multan



## MULTAN ELECTRIC POWER COMPANY (WAPDA)

T/Ph. No. 061-9210443

Office of the  
Chief Executive Officer  
MEPCO Ltd. Multan.

No. 387 /MT/DMCM/

Dated 02 MAR 2010

Chief Operating Officer CPPA,  
107-WAPDA House Lahore

Subject: PURCHASE OF 4.8-MW HYDRO POWER FROM M/S. CHENAB  
ENERGY PVT LTD.

The brief regarding offer of power by the subjected SPP is as below:-

- 1- M/S Chenab Energy Pvt. Ltd. Nishatabad Faisalabad had offered to export 4.8-MW Hydro Power to MEPCO at 11-KV voltage level. The SPP primarily intends to sell Energy @ Rs. 7.754 per KWH and has expressed that the tariff may further enhance due to rise in rate of US Dollar. The SPP is establishing its Hydro Power Station on Lower Bari Doab Canal (LBDC) at Sahiwal.
- 2- As per connectivity arrangement, the offered 4.8-MW Power can be disbursed by constructing 3.3-KM new independent 11-KV feeder with ACSR "OSPREY" Conductor from Power House to 132-KV Grid Station Sahiwal (New) by synchronizing the generation facility with later. The estimated cost for option is Rs. 9.42 Million.
- 3- The case was considered by Power Purchase Committee MEPCO in meeting dated 09-02-2010 to discuss its technical feasibility and economical viability. The Committee was of the opinion that Hydro Power being the cheapest, be purchased from the SPP but the tariff offered as Rs. 7.754 per KWH seems to be appreciably high.
- 4- The load flow analysis of the proposed independent feeder reveals that the technical parameters viz. maximum %age power loss and %age voltage drop are respectively 2% & 3.3% within permissible limit (Copy of Load Flow Study is enclosed for ready reference).
- 5- Hence the matter is referred to your office for providing guide Lines to MEPCO to proceed further in the subject.

  
Manager (Marketing, Tariff & C.M.)  
MEPCO Limited Multan.

*Copy for information of Chenab Energy Ltd.*



# Chenab Energy Private Limited

**EXTRACT OF RESOLUTION PASSED BY THE BOARD OF DIRECTORS  
OF CHENAB ENERGY (PRIVATE) LIMITED IN ITS MEETING HELD ON  
SATURDAY, 25<sup>th</sup> DAY OF JUNE 2011.**

We hereby certify that the following resolution of the Board of Directors of "Chenab Energy (Pvt.) Ltd" was passed at the meeting of the Board held on the 25<sup>th</sup> day of June 2011 and has been duly recorded in the Minute Book of the company

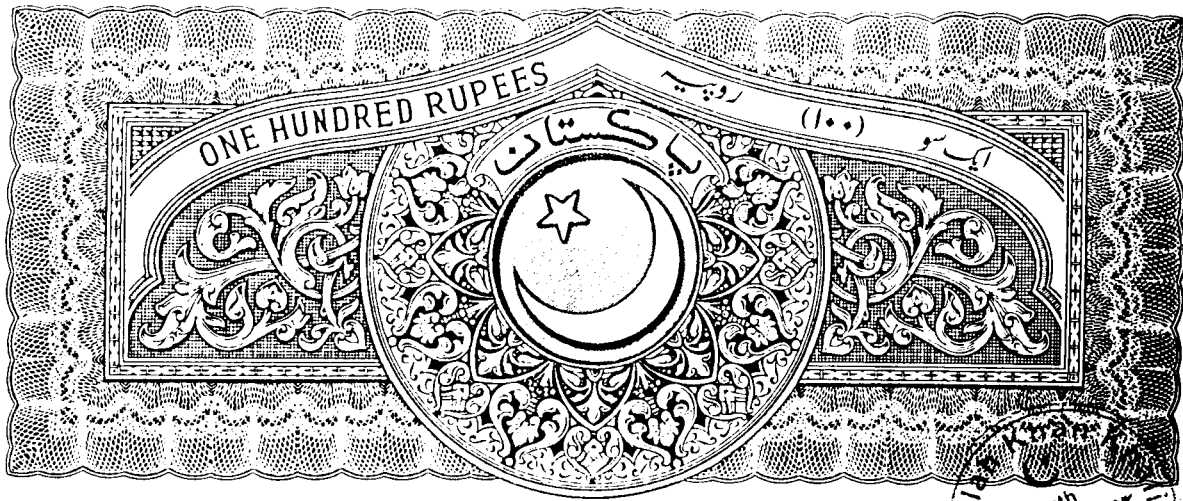
1. **RESOLVED** that in terms of NEPRA Letter No. NEPRA/TRF-139/CEPL-2009/2700-2, an updated Tariff Petition be filed by and on behalf of the Chenab Energy (Pvt.) Ltd with the National Electric Power Regulatory Authority ("NEPRA") for determination and approval of the generation tariff for 4.8 MW Hydropower Project at LBDC, District Sahiwal, Punjab (the "Project")
2. **FURTHER RESOLVED** that Mr. Shafiq-ur-Rehman, Chief Executive, Chenab Energy (Pvt.) Ltd, be and is hereby authorized to sign the Tariff Petition and the necessary documentation, pay the necessary filling fees, appear before NEPRA as needed, provide any information required by NEPRA in respect of the project, and do all acts and things necessary for the processing, completion and finalization of the aforementioned Tariff Petition.

Dated: June 25, 2011

CERTIFIED TRUE COPY

For Chenab Energy (Pvt.) Ltd

Chairman



BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY  
("NEPRA"), ISLAMABAD

PETITION FOR DETERMINATION OF TARIFF

**AFFIDAVIT**

of Mr. Shafiq-ur-Rehman, Chief Executive,  
Chenab Energy (Pvt.) Ltd, having its corporate  
office at 91-91, E-1, Gulberg III, Lahore

I, Shafiq-ur-Rehman S/o Mr. Aziz-ur-Rehman, do hereby solemnly affirm and declare as under that:

1. I am the Chief Executive Officer and principal authorized representative of Chenab Energy (Pvt.) Ltd
2. I have filed the accompanying Tariff Petition together with the supporting documents before the learned Authority, and the contents of the same may kindly be read as an integral part of this affidavit
3. The contents of the accompanying Tariff Petition are true and correct to the best of my knowledge and belief, and that nothing has been concealed
4. I also affirm that all further documentation and information to be provided by me in connection with the aforesaid Petition shall be true and correct to the best of my knowledge and belief

Deponent

**VERIFICATION**

Verified on oath on this day of 5<sup>th</sup> July 2011 that contents of this affidavit are true and correct to the best of my knowledge and belief

Deponent

**TESTED**  
Oath  
Commissioner  
Lahore High Court  
Lahore  
Advocate