



Green Electric Ltd

Date: 14 May 2007

Ref. No.: 15/07

The Registrar

National Electric Power Regulatory Authority (NEPRA)

OPF Building,

Shahra-e-Jamhuriyat,

G-F/2, Islamabad.

**Subject: Petition for Approval / Determination of Tariff for 191.5 MW (Gross at ISO Conditions)
Phase I Combined Cycle Power Plant at Dadu, Sindh**

Dear Sir,

I, Haseeb Khan, Chief Executive cum Director of Green Electric (Private) Limited (the "Company"), duly authorized representative of the Company having its registered office at 15, Peshawar Block, Fortress Stadium, Lahore, by virtue of the Letter of Authorization/Company resolution dated 4 May 2007 (attached for easy reference), hereby apply to the National Electric Power Regulatory Authority ("NEPRA") for approval / determination of Reference Tariff, indexation/adjustment provisions and other terms and conditions for supply of electric power services by the Company to the CPPA/NTDC.

I, certify that the documents in support, attached with this petition are prepared and submitted in conformity with the provisions of the NEPRA (Tariff Standards & Procedure) Rules, 1998 and undertake and confirm that the information provided in the attached documents is true and correct to the best of my knowledge and belief.

Attached are two Demand Drafts No. 2669423 and 0918585, in the sum of **Rs.2,595,250** (Pak. Rupees Two Million Five Hundred Ninety Five Thousand Two Hundred Fifty only) and **Rs.8,250** (Pak. Rupees Eight Thousand Two Hundred Fifty only), respectively, being the non-refundable Tariff Petition fee calculated in accordance with the NEPRA (Tariff Standards & Procedure) Rules, 1998 and the Schedule to NEPRA (Fees Pertaining to Tariff Standards & Procedure) Regulations, 2002.

Simultaneously, we are also applying for the grant of Generation License. We request that both of these applications be read and processed at the same time.

Yours Sincerely,

Haseeb Khan
Chief Executive

Encl: One original and two copies of Tariff Petition

Green Electric Ltd.

Registrar	15 Peshawar Block, Fortress Stadium, Lahore, Pakistan
Dy. No. 1485	Tel: +(92) 42 6675595 Fax: +(92) 42 6673960
Dated 23.5.07	www.greenelectric.com.pk

Copy No. 3



Green Electric (Pvt) Ltd

GREEN ELECTRIC (PRIVATE) LIMITED

WRITTEN RESOLUTION OF THE DIRECTORS OF GREEN ELECTRIC (PRIVATE) LIMITED (THE "COMPANY") DATED AS OF 04 MAY 2007

We the undersigned, being the Directors of the Company, HEREBY PASS the following Resolutions and agree that the said Resolutions shall for all purposes be as valid and effective as if the same had been passed by us at a Board Meeting of the Company duly convened and held:

1. RESOLVED that the Tariff Petition and its calculations prepared by the Management are hereby approved for submission to the National Electric Power Regulatory Authority (NEPRA).
2. RESOLVED that the Management, Mr. Haseeb Khan and Mr. Anuar Abu Bakar, is hereby given the mandate to proceed with any correction and amendment, if any, in finalizing the Tariff Petition, as attached with the request for approval paper, prior to submission to NEPRA.
3. RESOLVED that the Management, Mr. Haseeb Khan and Mr. Anuar Abu Bakar, is hereby given the mandate to proceed with the preparation, finalization and submission of the Grant of Generation License application to NEPRA.
4. RESOLVED that Mr. Haseeb Khan is hereby authorized to sign the Tariff Petition and Grant of Generation License application for and on behalf of the Company.

This Board Resolution shall remain in full force and effect until an amending resolution shall be passed by the Board.

Name of the Directors

Specimen Signature

1. Tan Sri Abd Rahim Bin Mohamad

2. Mr. Shabaruddin Bin Ibrahim

3. Mr. Nik Fuad Wan Abdullah

4. Mr. Haseeb Khan

5. Mr. Abbas Haider Bilgrami

Green Electric (Pvt) Ltd.

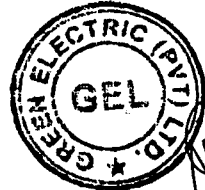
Registered Office

15 Peshawar Block, Fortress Stadium, Lahore, Pakistan
Tel: +(92) 42 6675595 Fax: +(92) 42 6673960

Karachi Office

Eden House, D 39- Block 3, Clifton, Karachi, Pakistan
Tel: +(92) 21 5363113, 5379282, Fax: +(92) 21 5363112

www.greenelectric.com.pk





UNITED BANK LTD.

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NET AMOUNT RS. ***2,595,250**

No:DP 2669423

Date: 28-APR-2007

PO NO.74121785

Pay to the NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
order of (NEPRA)

Rs. ***2,595,250.00

The Sum of Rupees TWO MILLION FIVE HUNDRED NINETY-FIVE THOUSAND TWO HUNDRED
FIFTY ONLY

Payable at:

0741-JINNAH AVENUE ISLAMABAD

For United Bank Limited

Officer

Manager

Validity up to Six Months from Date of Issue

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Demand Draft No.: 0000000270082

Not Over: PKR8,250.00**

Date: 14-MAY-07

DD/PO: 0918585 A

Y TO NEPRA A/C GREEN ELECTRIC PVT LTD

OR ORDER

sum of **PAKISTANI RUPEES EIGHT THOUSAND TWO HUNDRED FIFTY ONLY**

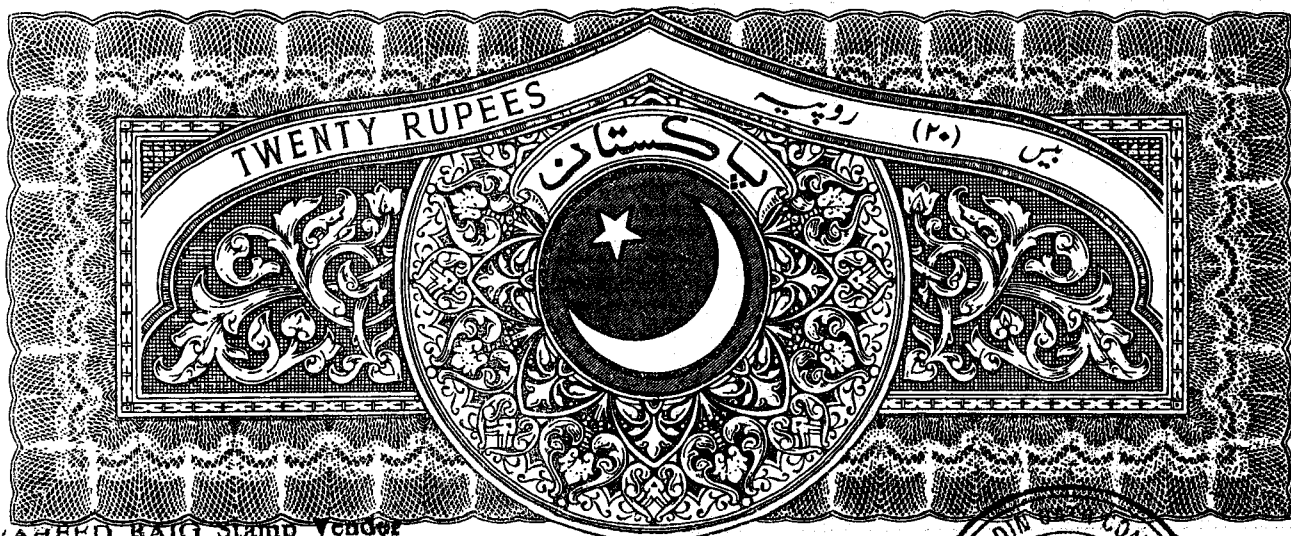
PKR8,250.00**

For MCB BANK LIMITED

To: MCB BANK LIMITED
ISLAMABAD MAIN CIVIC CENT-0613
No. 59/0000000120536

Authorized Signatory

Authorized Signatory



WAHEED BAIG Stamp Vendor

No. 116, 188-4-B-5/4, Jacob Line Karachi

7/5/07

DATE

09 MAY 2007

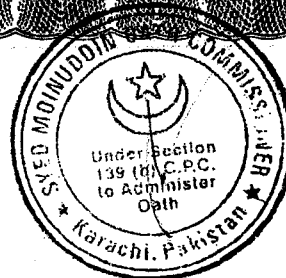
ISSUED TO WITH ADDRESS MR. Green Electric (Pvt.) Ltd.

PRODUCED WITH ADDRESS MR. Green Electric (Pvt.) Ltd.

WITNESSES

VALUE RS. (ATTACHED)

WITNESSES SIGNATURE



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

Regarding Petition for Approval/Determination of Tariff

AFFIDAVIT

of Haseeb Khan s/o Abdul Moqueet Khan, Chief Executive Officer of Green Electric (Pvt.) Ltd., 15-Peshawar Block, Fortress Stadium, Lahore Cantt.

I, Haseeb Khan s/o Abdul Moqueet Khan, Deponent, do hereby solemnly affirm and declare that:

1. I am the Chief Executive Officer, the principal and authorized representative/attorney of Green Electric (Pvt.) Limited.
2. The contents of the accompanying Application dated 9 May 2007 including all supporting documents are true and correct to the best of my knowledge and belief, and nothing material or relevant thereto has been concealed or withheld therefrom.
3. I also affirm that all further documentation and information to be provided by me in connection with the aforesaid Application shall be true and correct to the best of my knowledge and belief:

DEPONENT

VERIFICATION

It is hereby on solemn affirmation at Karachi on this 9 May 2007 that the contents of the above Affidavit are true and correct to the best of my knowledge and belief, and that nothing material or relevant thereto has been concealed or withheld therefrom:

DEPONENT

ATTESTED

**SYED MOINUDDIN
OATH COMMISSIONER
KARACHI**

**BEFORE THE NATIONAL ELECTRIC
POWER REGULATORY AUTHORITY**

TARIFF PETITION

ON BEHALF OF

GREEN ELECTRIC (PRIVATE) LIMITED

FOR

**DETERMINATION / APPROVAL OF REFERENCE TARIFF ETC.
FOR SUPPLY OF ELECTRIC POWER SERVICES FROM
APPROXIMATELY 191.5 MW CAPACITY (GROSS AT ISO CONDITIONS)
COMBINED CYCLE POWER PLANT AT DADU, SINDH.
(PHASE I PROJECT)**

May, 2007

**Green Electric (Pvt.) Limited
15-Peshawar Block, Fortress Stadium,
Lahore
Telephone: (042) 6675595 and 6660085
Facsimile: (042) 6664349 and 6673960**

TARIFF PETITION
BY
GREEN ELECTRIC (PVT.) LIMITED
15, PESHAWAR BLOCK, FORTRESS STADIUM, LAHORE

Compliance with NEPRA (Tariff Standards & Procedure) Rules 1998

**NEPRA (Tariff Standards
and Procedure) Rules 1998**

Description

Rule 3 (1) Tariff Petition Fee of **Rs.2,603,500** (covering the CPI indexation) is attached.

Rule 3(2) (a)

Name of Petitioner:

Haseeb Khan
 Chief Executive,
 Green Electric (Pvt) Limited,
 15, Peshawar Block, Fortress Stadium, Lahore.

Rule 3(2) (b)

Grounds and Facts:

Provided in detail in the attached Tariff Petition

Rule 3(2) (c)

Determination Sought

Petitioner seeks determination/approval of NEPRA to the following:

a. Reference Tariff for the generation facility that the Petitioner proposes to set up for a period from the date of its Commercial Operations until the expected life of 30 years.

b. The indexation/adjustment of the Reference Tariff over the project life of 30 years and other terms and conditions.

Rule 3(2) (d)

Not applicable

Rule 3(2) (e)

Not applicable

Rule 3(2) (f)

Provided in detail in the attachments to Tariff Petition

Rule 3(8)

Affidavit is attached

GLOSSARY

ANSI	American National Standards Institute
a.s.l	above sea level
BTU	British Thermal Unit
BCF	Billion Cubic Feet
BOO	Build, Own, and Operate
CCPP	Combined Cycle Power Plant
COD	Commercial Operations Date
CPP	Capacity Purchase Price
CPPA	Central Power Purchasing Agency of NTDC
CPI	Consumer Price Index
D/C	Double Circuit
DSRA	Debt Services Reserve Account
EOH	Equivalent Operating Hours
EPP	Energy Purchase Price
EPC	Engineering, Procurement and Construction
FSA	Fuel Supply Agreement
GEL	Green Electric (Pvt.) Limited
GOP	Government of Pakistan
GSA	Gas Supply Agreement
GST	General Sales Tax
GT	Gas Turbine
GWh	Giga watt hours
HESCO	Hyderabad Electricity Supply Company
HHV	High Heating Value
HP	High Pressure
HRS	Heat Recovery Steam Generator
HSD	High Speed Diesel
Hz	Hertz (Frequency)
IA	Implementation Agreement
IDC	Interest During Construction
IEC	International Electro-technical Commission
IRR	Internal Rate of Return
ISO	International Organization for Standardization
kg	Kilogram
KIBOR	Karachi Interbank Offered Rate
km	Kilometer
kV	Kilovolt = 1000 volts
kVA	Kilovolt Ampere
kW	Kilowatt = 1000 watts
kWh	Kilowatt hours
LHV	Lower Heating Value
LIBOR	London Interbank Offered Rate
LOI	Letter of Interest
LOS	Letter of Support
LP	Low Pressure
MMCFD	Million Cubic Feet Per Day

MVA	Megavolt Ampere = 1000 kVA
MW	Megawatt = 1000 kilowatts
NOC	No Objection Certificate
NOx	Nitrogen Oxides
NPCC	National Power Control Centre
NTDC	National Transmission and Dispatch Company
O & M	Operation and Maintenance
PPA	Power Purchase Agreement
PPIB	Private Power and Infrastructure Board
ROE	Return on Equity
Rs.	Pakistani Rupee
SCft	Standard Cubic feet
SNGPL	Sui Northern Gas Pipelines Limited
SSGC	Sui Southern Gas Company
ST	Steam Turbine
USD or \$	United States Dollar
WAPDA	Water and Power Development Authority
WB	World Bank

PETITION**1. Details of the Petitioner****Name and Address:**

GREEN ELECTRIC (Private) Limited
15, Peshawar Block, Fortress Stadium,
Lahore, Pakistan
Phone: +92-42-6675595, +92-42-6660085
Fax: +92-42-6664349

Company Registration No: 00000015547/20051102

Representatives of the Petitioner

- | | | |
|------|---------------------|-----------------------------|
| i. | Mr. Haseeb Khan | Chief Executive |
| ii. | Mr. Anuar Abu Bakar | Project Advisor/Director |
| iii. | Mr. Danish Khan | Director Finance |
| iv. | Mr. Muhammad Akbar | General Manager (Technical) |
| v. | Mr. Abdul Rashid | Chief Financial Officer |
| vi. | Mr. Ali Akbar Javed | Sr. Manager Technical |

2. Ground for Petition

Under the “Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997), hereinafter referred to as the NEPRA Act, NEPRA (the National Electric Power Regulatory Authority) is responsible, inter-alia, to determine tariffs, rates and other terms and conditions for the supply of electric power services by the generation, transmission and distribution companies and to recommend them to the Federal Government for notification. NEPRA is also responsible for determining the process and procedures for reviewing and approving tariffs and tariff adjustments, etc.

Green Electric (Private) Limited (the “Company”) is a private limited company registered under the Companies Ordinance 1984. The Company intends to establish a power generation project of about 405 MW capacity at Deh Pipri, District of Dadu, Sindh Province in two phases of about 205 MW and 200 MW, to be operated on low-Btu gas from Zamzama gas field upon allocation of gas by the GOP and with HSD as backup fuel to be used during gas interruptions. Feasibility report for the project had been approved by the PPIB vide its letter dated 11 November 2006. The GOP has placed 40 mmscf/d gas at PPIB’s disposal for this project as intimated by the PPIB vide its letter dated 30 December 2006. Hence, Phase I project is being implemented immediately. Concurrently, the Company is also submitting an application separately for grant of Generation License for the Phase I project.

In accordance with the requirements of the NEPRA Act and Rules and Regulations made thereunder, the Company hereby submits this Petition, in accordance with the NEPRA (Tariff Standards and Procedure) Rules 1998, for determination/approval of Reference Tariff and its Indexation/Adjustment provisions and other terms and conditions for the Phase I electric power generation facility to be established at Deh Pipri, District of Dadu, Sindh Province.

3. Introduction

Under the Policy for Power Generation Projects 2002 (“Policy”), the Private Power and Infrastructure Board (“PPIB”) had issued a Letter of Interest (“LOI”) on 21 February 2006 (Attachment I) to the Company for conducting feasibility study for establishing a 405 MW private gas power project near Zamzama gas field in Sindh Province.

The feasibility study for the Project was conducted immediately by the Company through its appointed internationally based consultant. The final draft of the feasibility study was submitted in October 2006 to PPIB after incorporating comments, suggestions and recommendations by the appointed Panel of Experts from PPIB. Subsequently, the PPIB vide its letter No.1 (102) PPIB-1024/06/PRJ dated 11 November 2006 (Attachment II) had given the approval for the feasibility study and advised the Company to approach NEPRA either for acceptance of NEPRA’s Upfront Tariff or for Tariff Determination.

Then, the Company vide its letter dated 7 December 2006 (Attachment III) had informed PPIB and WAPDA that NEPRA’s Upfront Tariff was not acceptable for being lower than the tariff computed by the Company’s appointed consultant in the feasibility study and that the Company would submit a Tariff Petition to NEPRA.

Accordingly, this Tariff Petition has been filed, as per the requirements of the NEPRA Act and the rules framed thereunder. Since the Company is a new prospective Independent Power Producer (IPP), which is currently not a licensee under the NEPRA Act, the Company has simultaneously filed a separate application with NEPRA for the grant of Generation License.

The approved Tariff after the determination by NEPRA would become part of the Power Purchase Agreement (PPA) to be executed between the Company and the Power Purchaser i.e. CPPA/NTDC, based on the PPIB’s standardized PPA format and as mutually agreed to by the parties to cover project specific requirements.

All the pertinent information about the project i.e. technical description, the Environmental Impact Assessment (EIA) Report, NTDC’s recommendations for Interconnection, financial data, sponsors information and the feasibility study report have been attached with the application for the grant of Generation License.

Any additional information required by NEPRA would be submitted by the Company, as and when demanded.

4. Project Description

As explained above, the total capacity of the proposed generation facility is 405 MW. The project is to be implemented in two phases as per LOI issued by the PPIB. Due to gas availability constraint, the Company intends to first implement Phase I of the Project i.e. installation of about 191.5 MW (Gross at ISO Conditions) combined cycle power plant (CCPP). The combined cycle technology is proven, reliable, cheaper and environmental friendly due to which such plant is usually operated as a base-load plant. After a detailed study, as discussed in the feasibility study report, the consultant had recommended the following three CCPP options for the proposed Phase I project:

- Siemens SGT 800 (3+1 Configuration)

- GE MS 9001 E (1+1 Configuration)
- Mitsubishi M 701 D (1+1 Configuration)

Currently, the Company is in the process of finalizing the EPC Contractor looking at the possibility of installing either Siemens or General Electric (GE) machines for its CCPP. Whereas, the Mitsubishi machine is not being considered due to low efficiency and higher requirement of gas compared to the gas allocation. The proposed Reference Tariff is based on Siemens machines as recommended in the feasibility report. If GE machine is selected for the Phase I project, then the relevant information will be submitted to NEPRA.

The CCPP will be installed at Deh Pipri, District of Dadu, Sindh Province and will operate primarily on low Btu gas from Zamzama gas field and HSD as the backup fuel during contingency for a period of seven (7) days only in an Agreement Year. Since Zamzama gas has low Btu content, technical modifications are required to be done on the combustion system for the GT. These modifications would cause additional 5% to 10% expense compared to the normal GT. As a result, the Tariff for this type of GT will be higher than the normal GT.

In addition, the gas from Zamzama gas field has high percentage of Nitrogen i.e. 21% as against the normal content of Nitrogen (less than 10%) in the pipeline quality gas. Gas constituent limits are normally specified by the GT manufacturers to assure stable combustion during operation. For example GE has specified 15% as the maximum limit for total inert gases (Nitrogen and Carbon Dioxide) in the fuel gas for their heavy duty GT. As for Zamzama gas, it has total inert gases of up to 24% (Nitrogen and Carbon Dioxide). Fuel gas with large percentage of an inert gas like Nitrogen will have a ratio of rich-to-lean flammability limit less than that of natural gas. Low flammability ratio may experience problems in maintaining stable combustion over the full operations range of the GT. The use of this type of gas requires additional studies on case to case basis, as standard combustors have to be modified. The presence of excessive Nitrogen in Zamzama gas limits the availability of suitable GT and requires additional engineering and modification of the combustion system, thus having impact on EPC prices, which in turn give rise to the Tariff.

Furthermore, due to the global increase in demand for power generation plants, the pressure on their prices is mounting. The Company, however, expects that there would be no unreasonable increase in the price and will implement the project at the price and indexation/adjustments within the estimated price as in the feasibility study report except for the additional costs of the following items which are not included in the feasibility study report:

<u>Item Description</u>	<u>Estimated Price</u>
- Desalination Plant	Euro 1.9 Million
- Black Start Facility	Euro 0.7 Million
- Waste Water Disposal	Euro 1.5 Million
- Residential Colony with amenities	<u>Euro 4.5 Million</u>
Total:	Euro 8.6 Million
	or US \$ 11.02 Million

Rationale for Additional Costs

All the above items are specific to this project and involve additional expenses. Item-wise justification is given below:

Desalination Plant

The quality of the underground water within the project area is very saline. The area is located at the tail end of Dadu canal, thus having a limited charging source. The project site entails additional cost due to uncertainty and saline nature of underground water. Conductivity of the underground water ranges from 1000-3000 $\mu\text{s}/\text{cm}$. As such, a Desalination Plant will be required to reduce the salt and hardness contents in the water before using it for de-mineralizing plant and for make-up in the cooling tower. The cost of the Desalination Plant is estimated as €1.9 million (eq. to USD2.432 million). This cost has been included in the cost of water supply system.

Black Start Facility

The Black Start facility had been discussed in the feasibility study report by the consultant as an optional item. It has been included in the project as a requirement by the Power Purchaser and agreed by the POE. The Company also feels that this Black Start facility should be provided at one of the Power Plants in a zone to facilitate early recovery from a blackout due to system collapse. The cost of the Black Start facility is estimated at €0.7 million (eq. to USD0.896 million). This cost has been included in the overall project cost.

Waste Water Disposal

Due to high salinity content in the water, excessive blow down from the cooling tower will be required. This water cannot be discharged to the canal or nearby agriculture land due to environmental constraints. However, this waste water can be discharged to Chandan Wah drain located at a distance of about 6-8 kilometers after ensuring that the temperature rise and other contents meet the environmental requirements. The cost of having the waste water disposal is estimated at €1.5 million (eq. to USD1.92 million). This cost has been included in the overall project cost.

Residential Colony

The project site is located in the interior Sindh and away from any major city. Construction of residential colony with all amenities is absolutely necessary to attract and retain competent and experienced operational staff. This will facilitate attending of contingencies promptly and would result in a low downtime and a higher availability of the CCP. The cost impact of this item is estimated at €4.5 million (eq. to USD5.76 million). This cost has been included in the cost of civil works of the project.

5. Optional Items

In addition to the above, the consultant had discussed the following items as additional options for the project:

Bypass Stack

A bypass stack can be installed at the exhaust of the GT before the HRSG to redirect the exhaust heat toward atmosphere. In this case, a diverter damper will have to be installed to prevent the GT exhaust from going straight to the HRSG. The main purpose of this bypass stack is to allow the GT to run in simple cycle mode where the electrical energy can be generated during the construction period to cater for the national load requirement and subsequently, during operational period, whenever the HRSG or ST will be out of operation due to maintenance or forced shutdown. The efficiency of the simple cycle is much lower compared to the combined cycle. Merits and demerits for provision of bypass stack were discussed in detail in the feasibility study report. The additional cost of constructing the bypass stack is estimated at €3.9 million (eq. to USD4.992 million). This cost has been included in the overall project cost.

Dry Air-Cooled Condenser (DACC)

Steam is condensed inside a finned-tubes cooled by the ambient air forced to flow outside the banks of finned tubes in DACC. This option has been considered in the feasibility study due to saline nature of underground water at the project site. Though the water requirement is very small in DACC, the plant capacity and efficiency drop are significant of above 2%. Moreover, the operational cost will also increase. As such this option has been dropped.

Gas Compression Plant

The gas for the project will be supplied from SSGC after their metering point at a distance of about 1.6 km. The gas pressure is normally around 1000 psi. As such, the Company does not foresee any requirement for the gas compression plant; rather it will have to install a gas reducing plant to ensure certain pressure for the GT. However, this gas compression plant will be kept as an option until a clear indication from the SSGC of the gas pressure.

6. **SALIENT FEATURES OF POWER PLANT**

The salient features of the proposed facility, Phase I CCPP, are as under:

a) **Technology and Configuration**

The Company intends to use proven, reliable and environmental friendly gas-fired combined cycle technology for the proposed plant. The plant configuration either Siemens or GE is being considered, in line with the recommendations by the consultant in the feasibility study.

In the case of Siemens configuration, three GTs, three HRSG and one ST will be installed to achieve the desired combined cycle capacity. Whereas, in the case of GE, one GT, one HRSG and one ST will be installed to achieve the desired combined cycle capacity.

Technical Data

Description	Siemens	General Electric
Configuration	3 x 45 MW GT 3 HRSG 1 x 56 MW ST	1 x 125 MW GT 1 HRSG 1 x 66 MW ST
Gross Capacity (on Gas)	191 MW (at ISO Conditions)	191 MW (at ISO Conditions)
Gross Efficiency (on Gas)	52.17% (at ISO Conditions)	51.96% (at ISO Conditions)
Gross Heat Rate (on Gas)	6542 BTU/kWh (at ISO Conditions)	6569 BTU/kWh (at ISO Conditions)

b) **Site and Utilities**

The Company has purchased the required land measuring about 50 acres on Dadu-Johi road, approximately 4.5 km from Dadu city. The site is currently in the possession of the Company, has been fenced and is ready for mobilization by the EPC Contractor.

The Company is in the process of approaching the relevant Government agencies for supply of water for the project. Analysis conducted by the appointed contractor on the underground and canal water has shown that the water quality is not so good for use at the plant unless special treatment is done to remove impurities.

c) **Interconnection with Power Purchaser System**

On the basis of the load flow analysis carried out by NTDC/WAPDA, a 220 kV Double Circuit transmission line on twin bundled rail conductor from the Company power plant to the nearby 500 kV Dadu grid system has been proposed for reliable power dispersal. While the transmission lines will be financed, constructed, owned, operated and maintained by NTDC, necessary facilities will be provided in the plant switchyard by the Company for interconnection of transmission line with the plant.

d) Fuel Supply

The primary fuel for the facility will be Low BTU gas from Zamzama gas field, with the HSD as back-up fuel for contingency.

The allocation of gas for the proposed Phase I project has been confirmed by GOP up to the year 2013 and to be extended beyond the year 2013 subject to its availability. The Sui Southern Company (SSGC) will supply gas to the project up to 40 MMSCFD.

Regarding supply of gas after the year 2013, the GOP is aware of the situation and is actively working on renewing the existing gas supply agreements with gas companies beyond the year 2013 by allowing new exploration concessions. The GOP is also discussing an agreement with Iran for import of gas. These measures will most likely result in extension of the firm gas supply commitment to the proposed plant for 15-30 years; However, in order to cater for any expected contingencies, the plant is designed to allow operation on HSD as a back-up fuel. The Reference Tariff would, however, require revision to cater for operation on HSD for extended periods of time.

7. SUMMARY OF CAPITAL COSTS

The summary of the capital cost of the Phase I project is as under:

Description	Project Cost in USD (million)
Project Development	
• Feasibility study & other consultancy services	1.000
• Land and land development	1.500
Subtotal (a)	2.500
Plant Cost (including Equipment & Services)	
• Gas Turbine	44.416
• Heat Recovery Steam Generator	23.680
• Steam Turbine	16.128
• Control & Instrumentation System	2.816
• Electrical System	12.928
• Balance of Plant	9.472
• Water Supply System and its Treatment	1.024
• Access Road Upgrade	0.512
• Gas Pipeline	0.384
• Civil Works	11.392
• Engineering, Management, Erection, Testing & Commissioning	29.824
Subtotal (b)	152.576
Transportation	2.944
Residential Colony (not included in the feasibility study)	5.760
Waste Water Disposal (not included in the feasibility study)	1.920
Desalination Plant (not included in the feasibility study)	2.432
Subtotal (c)	13.056
EPC Base Cost (Subtotals (b) + (c))	165.632
Additional Optional Items Required by the Power Purchaser	
• Black start Facility	0.896
• Bypass Stack	4.992
Subtotal (d)	5.888
Total EPC Cost (EPC Base Cost + Subtotal (d))	171.520
Project Company Cost	
• Construction Management	2.500
• Custom Duty @ 5% of the Imported Equipment Cost	4.551
• Insurance during Construction (not included in the feasibility study)	2.000
• Fees, Permits, Legal Expenses etc.	1.500
• Withholding Tax	2.600
• Utilities during Construction (not included in the feasibility study)	0.300
• Owner's Engineer	1.500

GEL – Tariff Petition

• Independent Engineer	0.250
• Pre-COD O&M Costs	1.500
• Fuel Cost during Testing and Commissioning (un-recovered)	0.700
Subtotal (e)	17.401
Capital Expenditure (Subtotal (a) + Total EPC Cost + Subtotal (e))	191.421
Financing Cost	
• Financing Fees	2.595
• Interest During Construction	21.465
Subtotal (f)	24.060
Total Project Cost (Capital Expenditure + Subtotal (f))	215.481
Cost per kW	USD 1,125
Exchange Rate : Euro1.00 = USD1.28	

8. SUMMARY OF PROJECT INFORMATION**a) Based on Low BTU Gas**

Description	Data	
Total Project Cost (USD million)	215.481	
Cost in USD per kW at 191.5 MW (Gross at ISO Conditions)	1125	
Loan (%)	80	
Equity (%)	20 adjustable up to 30%, if required by Lenders	
Nameplate Capacity (Gross at ISO Conditions) in MW	191.5	
Estimated Gross Capacity at Reference Site Conditions in MW	183.4	
Auxiliary Consumption in MW	4.3	
Net Capacity at Reference Site Conditions (at 220 kV busbar) in MW	179.1	
Annual Plant Capacity Factor (Notional) in %	60	
Annual Total Energy Generation at 60% Plant Capacity Factor in GWh	964	
Auxiliary Consumption in %	2.32	
Estimated Annual Energy Sale to CPPA/WAPDA in GWh	941	
Gross Heat Rate at Reference Site Conditions in BTU/kWh	6554	
Net Heat Rate (at 220 kV busbar) in BTU/kWh based on new and clean machines	6715	
Net Thermal Efficiency in % based on new and clean machines	50.83	
Fuel Gas Cost per kWh Sold		
• in Rs. per kWh	1.7729	
• in US cents per kWh	2.955	
Maximum Fuel Consumption per Day (LHV of 711 BTU/scf) in MMSCF	40.6	
Average Fuel Gas Consumption per year in MMSCF	8891	
Fuel Gas Consumption Throughout Project Life in BSCF	267	
Reference Tariff at 60% Plant Capacity Factor	Rs./kWh	US cents/kWh
Average for Year 1 to 10	4.6642	7.7736
Average for Year 11 to 30	2.8716	4.7860
Average for Year 1 to 30	3.4691	5.7818
Levelized Tariff over Plant Life at 10% Discount Rate	4.0400	6.7334

b) Based on HSD

Description	Data	
Total Project Cost (USD million)	215.481	
Cost in USD per kW at 191.5 MW (Gross at ISO Conditions)	1125	
Loan (%)	80	
Equity (%)	20 adjustable up to 30%, if required by Lenders	
Capacity (Gross at ISO Conditions) in MW	182.9	
Estimated Gross Capacity at Reference Site Conditions in MW	175.1	
Auxiliary Consumption in MW	4.3	
Net Capacity at Reference Site Conditions (at 220 kV busbar) in MW	170.9	
Annual Plant Capacity Factor (Notional) in %	60	
Annual Total Energy Generation at 60% Plant Capacity Factor in GWh	920	
Auxiliary Consumption in %	2.43	
Estimated Annual Energy Sale to CPPA/WAPDA in GWh	898	
Gross Heat Rate at Reference Site Conditions in BTU/kWh	6947	
Net Heat Rate (at 220 kV busbar) in BTU/kWh based on new and clean machines	7118	
Net Thermal Efficiency in % based on new and clean machines	47.95	
HSD Cost per kWh Sold		
• in Rs. per kWh	6.8874	
• in US cents per kWh	11.4790	
Maximum HSD Consumption per Day in liter	859,043	
Average HSD Consumption per year (for 7 days only) in liter	5,979,512	
Reference Tariff at 60% Plant Capacity Factor	Rs./kWh	US cents/kWh
Average for Year 1 to 10	9.9466	16.5776
Average for Year 11 to 30	8.0674	13.4457
Average for Year 1 to 30	8.6938	14.4897
Levelized Tariff over Plant Life at 10% Discount Rate	9.2923	15.4871

Note: Both of the above calculation details, on Gas and HSD, are included as Attachments IV & V.

9. Tariff Calculation Assumptions

The following assumptions have been made in order to work out the Reference Tariffs for the CCP operation on Low BTU Gas as well as on HSD:

Sr. No	Description	Assumption
	MAIN ASSUMPTIONS	
1	Plant Size	<ul style="list-style-type: none"> Approximately 191.5 MW (Gross at ISO Conditions) when operates on Fuel Gas Approximately 182.9 MW (Gross at ISO Conditions) when operates on HSD Approximately 179.1 MW (Net at Reference Site Conditions) when operates on Fuel Gas Approximately 170.9 MW (Net at Reference Site Conditions) when operates on HSD
2	<ul style="list-style-type: none"> Total Project Cost Capital Expenditure Custom Duties & Taxes IDC Financial Charges & Fees 	<ul style="list-style-type: none"> USD215.481million USD191.421 million USD 4.551 million (calculated at 5% of imported plant equipment costs). However, the actual amount will be determined at COD and the Total Project Cost will be adjusted accordingly. USD21.465 million. The IDC amount is calculated based on 70% Foreign Loan and 30% Local Loan. However, the actual IDC will be calculated at the time of Financial Close. USD2.595 million
3	<ul style="list-style-type: none"> Debt : Equity Ratio Equity Portion Equity Funding Loan Currency 	<ul style="list-style-type: none"> 80 : 20 USD43.097 million 100% USD and/or Euro Pakistan Rupees and USD or Euro depending on availability
4	Interest Rate	<ul style="list-style-type: none"> KIBOR at 10.63% plus 3% premium for Local Loan LIBOR at 5.36025% plus 3% premium for Foreign Loan
5	Payment Schedule	Quarterly payment inclusive of Principal and Interest which will be finalized at Financial Close
6	Loan Tenure	10 year plus 28 months Grace Period
7	Construction Period	28 months
8	Reference Exchange Rate	USD1.00 = Rs.60.00 Euro1.00 = USD1.28

9	NPV Discount Rate (Levelized Tariff)	10%
10	Working Capital	Rs.227.372 million. This amount is for maintaining HSD for a period of 7 days on base load operation, as required in the PPA. Financing charges of 12.63% (3 months KIBOR plus 2%) per annum has been applied for 30 years period.
11	Fixed O&M Costs	USD3.1 million (eq. to Rs.186 million). Foreign Component is assumed at 65% and Local Component is assumed at 35%.
12	PPA Term	30 years
13	Equity IRR	15% (net)
OPERATIONAL ASSUMPTIONS		
14	Reference Gas Price (February 2007)	<ul style="list-style-type: none"> Rs.238.38 per MMBTU (HHV) delivered at Site excluding GST. HHV/LHV Factor is 1.1076 Rs.264.03 per MMBTU (LHV) delivered at Site excluding GST.
15	Reference HSD Price (April 2007)	<ul style="list-style-type: none"> Rs.37.81 per liter (HHV) including GST, excluding transportation or Rs.32.88 per liter (HHV) excluding GST, excluding transportation HHV/LHV Factor is 1.06 Rs.40.08 per liter (LHV) including GST, excluding transportation or Rs.34.85 per liter (LHV) excluding GST, excluding transportation Gross Calorific Value : 42,880 BTU/kg (HHV) Net Calorific Value : 40,453 BTU/kg (LHV)
16	Thermal Efficiency	<ul style="list-style-type: none"> Net Efficiency of 50.83% on Low BTU Gas Net Efficiency of 47.95% on HSD <p>Note: New Plant within 500 Equivalent Operating Hours (EOH) at base load operation</p>
17	Net Heat Rate	<ul style="list-style-type: none"> 6715 BTU/kWh (LHV) at base load on Gas 7118 BTU/kWh (LHV) at base load on HSD
18	Plant Capacity Factor	60% (Notional)
19	Annual Plant Availability	88%
20	Plant Degradation and Part Load Operation	As per the Heat Rate and Performance curves by the Manufacturer
21	Fuel Type	Primary Fuel is Gas and Back up Fuel is HSD. HSD storage is to cater for 7 days operation continuously at base load in a year.
22	Reference Site Conditions	<ul style="list-style-type: none"> Mean Annual Temperature : 28°C Relative Humidity : 50%

		<ul style="list-style-type: none"> • Pressure : 1.013 Bar • Capacity adjustment for hourly reading and global warming : 1%
	INDEXATION, ESCALATION AND COST ADJUSTMENT ASSUMPTIONS	
22	Inflation Factor <ul style="list-style-type: none"> • Variable O&M Local • Variable O&M Foreign • Fixed Component Local • Fixed Component Foreign • Insurance • ROE Local • ROE Foreign 	<ul style="list-style-type: none"> • Local CPI • United States CPI • Local CPI • United States CPI • United States / Euro CPI • Local CPI • United States / Euro CPI
23	Currency Indexation Factor <ul style="list-style-type: none"> • Variable O&M Foreign • Fixed O&M Foreign • Insurance • ROE Foreign 	<ul style="list-style-type: none"> • USD/Rs. variation • USD/Rs. variation • Euro/Rs. variation • Euro/Rs. variation
24	Price Factor <ul style="list-style-type: none"> • Fuel • Mark-up 	<ul style="list-style-type: none"> • Changes in Gas and/or HSD prices • Changes in 3 months KIBOR (quarterly basis) • Changes in 3 months LIBOR (quarterly basis) indexed to Euro/USD/Rs. exchange rate and reference interest rate. • This indexation/adjustment also applies to the Working Capital requirement
25	Fuel Cost Factor	<p>The Fuel Cost Component will be adjusted with respect to increase in Heat Rate as per the Heat Rate curves provided by the Manufacturer to:</p> <ul style="list-style-type: none"> • Compensate for the effects of efficiency degradation annually and between the Scheduled Maintenance cycles • Compensate for efficiency decrease due to Partial Loading • Compensate for changes in ambient temperature • Compensate for non-recoverable degradation after COD
26	Reference Indexation Date	August 2006

10. Other General Assumptions

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

- a) Custom Duties amounting to USD 4.551 Million have been assumed on the import of plant and equipment. Any variation in the Custom Duties as per actual payment will be adjusted at COD. Similarly, custom duties on import of spare parts after COD will be allowed as pass through.
- b) No tax on any income of the Company including the sale proceeds from CPPA/NTDC has been assumed. Corporate tax, General Sales Tax and all other taxes, fees etc. by any Govt. functionary including local bodies as and when imposed, shall be treated as a pass through item.
- c) Withholding tax at 6 % on local services by the Contractors/Consultants. No withholding tax for EPC/offshore contractor/s. In case there is any change in taxes etc., or additional taxes, fees, levies, etc. are imposed, the EPC cost and the Reference Tariff will be adjusted accordingly.
- d) 70% foreign and 30% local debt. If the actual debt procurement composition is different, repayment terms and interest rate benchmarks shall be affected and adjustments/indexations shall be made accordingly.
- e) 100 % Foreign Equity. If local equity is required to be invested, the indexation criteria proposed above for the ROE component for foreign as well as local equity components would apply in the ratio of the equity actually injected in foreign and local currency.
- f) Power Purchaser shall make all payments to the Company to cover the cost of all the energy delivered to the Grid during the pre-COD period on account of the trial runs and during testing/retesting, commissioning of the Plant and additional commercial operations testing until COD is achieved. The payments will be invoiced to the Power Purchaser as per mechanism specified in the PPA. Similarly, the price of energy delivered during testing post-COD period shall be paid as per the EPP component of the tariff.
- g) The Power Purchaser shall be solely responsible for the financing, engineering, procurement and construction of the Interconnection and Transmission facilities.
- h) No Debt Services Reserve Account (DSRA), Maintenance Reserve Account or Contingency Reserve Account or any other Reserve Account has been considered in the tariff model. However, financing cost for an amount of Rs.227.372 million on account of maintaining inventory of HSD for Plant operation for seven (7) days at base load in the event of gas interruption has been accounted for. This will be retained throughout the Term of the PPA. The interest rate used is 3 months KIBOR plus 2% per annum. The Working Capital requirement shall be recalculated at the time of COD based on the prevailing market price of HSD. In case the plant has to operate on HSD, the energy billing shall be based on the HSD Tariff fortnightly basis and HSD price shall be charged on 'Last In First Out' (LIFO) basis.
- i) No Letter of Credit (L/C) confirmation charges have been assumed in the Capital Expenditure. Any L/C confirmation charges would be allowed as a pass through item on actual basis.

- j) Maximum HSD storage for 7 days plant operation on base load during the gas interruption. Any additional carrying cost due to changes in the fuel supply patterns would be allowed as a pass through item or adjusted in tariff.
- k) In case the plant is dispatched on HSD for longer periods (more than 7 days in a year), the efficiency degradation/adjustment being different on HSD will be allowed by the Power Purchaser in accordance with the recommendations of the manufacturer. Similarly, additional cost for gas turbine start-up, shutdown as well as part-load operation with HSD shall be compensated by factors based on the data from the gas turbine manufacturer.
- l) If there is any gas supply interruption during the term of the PPA and the Plant is dispatched on HSD, the Power Purchaser will pay the Company in accordance with the Reference Tariff based on HSD operation.
- m) The timing of debt drawdown may vary from the estimated timing during the construction period, 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.
- n) The Variable O&M costs are based on 60% Plant Capacity Factor. Operation and Maintenance of the plant will be as per the manufacturer's recommendations in the O&M manuals.
- o) Tolerance of +/- 3 % in Dispatch.
- p) Scheduled Outage up to thirty (30) days for annual maintenance; up to forty-five (45) days for Major Overhauling as and when due; and five hundred (500) hours for Forced Outages per year are assumed during which full capacity payment would be paid based on the tested capacity.
- q) The number of Cold, Warm and Hot Start-ups of the Units/Plant will be considered as per manufacturer's recommendations and prudent utility practices. 40 nos. of free unit starts and 20 nos. of complete complex starts each year without any spill-over are assumed. The cost of additional starts-ups in any year shall, be pass-through to the Power Purchaser.
- r) Hedging cost during construction on account of foreign currency payment to EPC contractor would be made part of the Project Cost. Final local debt amount at COD would be based on actual exchange rates used by the banks to make payments to EPC contractor. Actual hedging cost would be used based on forward rates received from the lead bank immediately after financial close.
- s) Withholding tax on dividends is at 7.5% as required under the Income Tax Ordinance, 2001. Any change in the rate of the withholding tax would be pass through to the Power Purchaser.
- t) Zakat deduction on dividends (currently at 2.5%) as required under Zakat Ordinance is considered as a pass through.
- u) No Working Capital for bridge financing is accounted for in the Tariff Model; any time gap as per Power Purchaser and Fuel supplier payment terms may require additional Working Capital requirement.

- v) All other assumptions not expressly stated herein are taken as per 1994 Standard PPA. In case there are any changes to the 1994 PPA having implication on the operational and financial cost, the tariff components would be adjusted accordingly.
- w) 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 the Company becomes aware of it.
- x) Any additional indexation or concession allowed by the GOP, NEPRA or another Govt. functionary to any IPP shall be allowed to the Company without any discrimination.

11. Reference Tariff

The proposed Reference Tariff is a typical two-part tariff comprising an Energy Purchase Price (EPP) for the energy actual dispatched and delivered to the Power Purchaser and a Capacity Purchase Price (CPP) based on the dependable capacity/declared available capacity. Details are as under:

A. Energy Purchase Price

The Energy Purchase Price indicates the price of a unit of electrical energy i.e. kWh and consists of a Fuel Component and a Variable O&M component as explained below:

i. Fuel Component

This component represents the price of the fuel consumed (Low BTU Gas or HSD) per unit in kWh at the guaranteed efficiency level as adjusted in accordance with the PPA. The thermal efficiency initially is measured based on optimum loading of a brand new machine. Subsequently, the thermal efficiency will be adjusted according to the following factors which shall be applicable to the Fuel Component which would need to be incorporated in the PPA:

- a) Degradation Factor for Plant Capacity and Heat Rate (Recoverable and Non-Recoverable) for each Agreement Year as per the manufacturer's data /table/curves; and
- b) Partial Load Heat Rate Adjustments as per the manufacture's data /table.

When the plant will be dispatched on HSD during any contingency, the Fuel Component as well as other tariff components will change on account of lesser plant capacity and lower efficiency. The Reference Tariff for Plant operation on HSD (Attachment V) as determined/approved by NEPRA shall be applicable and payments shall be made by the Power Purchaser in accordance with this tariff.

ii. Variable O&M Component

Total Variable O & M cost is calculated based on annual operation at 60% plant load factor. This component caters for the cost of the services of the O&M operator on a kWh basis for the day to day management of the CCPP. In addition, it also includes replacement of spare parts on completion of service life of such parts as well as replacement on account of premature failure of parts. It also includes cost of maintenance for unforeseen/unscheduled outages. Consumption of lubricants, chemicals, etc. is also included in this component. This component is mainly in US Dollar for procurement of imported spare parts as well as technical services from abroad. The foreign component is estimated at 80% and would be subject to adjustment both for USD/Rs. variations as well as US CPI indexation. The remaining 20% local component will be indexed for local CPI.

B. Capacity Purchase Price

The Capacity Purchase Price is based on the Contracted Capacity, which will be established through testing prior to achieving COD and periodically, thereafter. It is expressed in Rs./kW per hour based on 100% plant load factor and is payable on the basis of the (i) Available Capacity as declared by the Company or established through Dispatch by the NPCC, on hourly basis and (ii) last tested capacity during the period of Scheduled Outage and allowable Forced Outage hours. This is a fixed monthly payment payable to the Company irrespective of the actual dispatch of the CCPP by the Power Purchaser.

It is added that the project is to be constructed on Build, Own and Operate (BOO) basis. Therefore, there is no recovery of the original equity invested by the project Sponsors. The plant would remain the property of the sponsors after expiry of the 30 years Term of the PPA.

The Capacity Purchase Price is further divided into the following components:

a) Fixed O&M Costs (Foreign) - 65% of the Total

Major overhauling of the machines is conducted after every interval of certain EOH as per the manufacturer's recommendations. This is to ensure that the recoverable degradation of capacity and heat rate are restored. This component mainly includes the management fee and cost of expatriate services. It would be subject to indexation/adjustment both for US CPI inflation as well to USD/Rs. exchange rate variation over time.

b) Fixed O&M Costs (Local) - 35% of the Total

This fixed O&M component represents the fixed costs of all the O&M staff including the remuneration to the staff and other administration costs including rents, utilities, fee for maintaining consents and local taxes. It also includes costs such as NEPRA fees, audit fees, legal retainer-ship and consultancy fees, environmental monitoring and reporting fees, etc. This component is subject to local CPI indexation/adjustment.

c) 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's stipulated requirements. Insurance policies are required to be maintained for the plant life as specified in the standardized PPA.

Since the Pakistan Insurance/Reinsurance industry do not have sufficient capacity and expertise to manage such risks entirely on their own, the local industry normally retains only about 5% of the risk while 95% is insured/reinsured internationally. As machinery breakdown, natural calamities (like earthquake), sabotage and consequential business interruption are the biggest threat to the life of the CCPP and the Company, it is imperative that all aspects of the risks are covered adequately. This component would also be subject to indexation both for Euro CPI inflation as well as to Euro/Rs. exchange rate variations.

d) Return on Equity

The Return on Equity (ROE) component includes return on invested equity giving an IRR of 15% net of withholding tax on the basis of maximum dividends payouts possible to the shareholders during each particular year and for the whole of the 30 year period.

The equity investment is expected to be 100% foreign. In case 100% foreign equity could not be managed, then the balance will be arranged locally. Therefore, the following indexations will be applicable:

Return on Foreign Equity:	Rs./Euro and/or Rs./USD Exchange Rate variation plus Euro/US CPI
Return on Local Equity:	Local CPI

e) Working Capital

A working capital of Rs.227.372 million at present day rate of HSD is required on account of financing cost for maintaining HSD inventory for 7 days plant operation at full load during unforeseen gas interruptions. This will be retained throughout the Term of the PPA. The interest rate used is 3 months KIBOR plus 2% per annum. Working Capital requirements shall be recalculated at the time of COD based on the prevailing market price of HSD. Therefore, it will be subject to indexation for increase in fuel price and variation in the interest rate. It is assumed that the Plant operation on backup fuel will be restricted up to 7 days per year. Any gas interruption beyond seven days in any operational year shall be treated as a Force Majeure event.

f) Debt Servicing Component

The debt servicing including principal and interest payments would be on quarterly basis for a 10 year period. There would no charge under this category for the next 20 years of plant operation. The debt portion is presently estimated to be 80% of the project cost. Financing structure is as under:

- Project cost USD215.481 million

- Debt portion USD172.3841 million
- Foreign Debt USD118.5276 million
- Local Debt USD53.8565 million

The interest rates used in the tariff calculations are 3 months LIBOR plus 3% per annum and 3 months KIBOR plus 3% per annum. The repayment terms and interest rate benchmarks and the debt service component of the Reference Tariff shall be adjusted on actual basis at COD.

It is added that the lenders may require an equity contribution higher than 20%. If the lenders insisted on this, the financing structure shall be adjusted to meet the lenders requirement. In such event, the Reference Tariff shall be adjusted at financial close accordingly.

The Reference Tariffs for Plant operation on primary fuel i.e. Low Btu Gas and backup fuel i.e. HSD are placed at Attachment IV and V respectively.

12. Determination Sought

The Petitioner requests the National Electric Power Regulatory Authority (NEPRA) to kindly approve / determine:

- a) two-part Tariff as proposed in the Reference Tariff Tables for the proposed power generation project to remain effective for the Term of the PPA starting from the date of Commercial Operations; and
- b) the proposed provisions for indexation/adjustment of Tariff components and other terms and conditions for the Term of the PPA.

GREEN ELECTRIC (PRIVATE) LIMITED
REFERENCE TARIFF FOR 191.5 MW COMBINED CYCLE POWER PLANT ON LOW BTU GAS ON BOO BASIS-PHASE I
PLANT OPERATION ON LOW BTU GAS

Year	Variable Charge (Rs./kWh)				Capacity Charge (Rs./kW Per Hour)										Total Tariff at 60% P.F.		
	Fuel	Variable O&M at 60% P.F.		Total	Financing Cost for Working Capital	Insurance	Return on Equity	Return on Equity for Construction Period	Withhold- ing Tax @ 7.5%	Loan Repay- ment	Interest Charges	Total	Capacity Charge at 60% P.F. (Rs./kWh)	Rs. / kWh	¢ / kWh		
		Foreign	Local														
																Foreign	Local
1	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.4160	0.6596	1.6169	2.6948	4.6642	7.7736
2	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.4565	0.6191	1.6169	2.6948	4.6642	7.7736
3	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.5011	0.5744	1.6169	2.6948	4.6642	7.7736
4	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.5504	0.5252	1.6169	2.6948	4.6642	7.7736
5	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.6048	0.4708	1.6169	2.6948	4.6642	7.7736
6	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.6649	0.4107	1.6169	2.6948	4.6642	7.7736
7	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.7313	0.3443	1.6169	2.6948	4.6642	7.7736
8	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.8047	0.2708	1.6169	2.6948	4.6642	7.7736
9	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.8860	0.1896	1.6169	2.6948	4.6642	7.7736
10	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.9759	0.0996	1.6169	2.6948	4.6642	7.7736
11	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
12	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
13	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
14	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
15	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
16	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
17	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
18	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
19	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
20	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
21	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
22	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
23	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
24	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
25	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
26	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
27	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
28	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
29	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
30	1.7729	0.1572	0.0393	1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	-	-	0.5413	0.9022	2.8716	4.7860
Levelized Tariff (1-30 Years)				1.9694	0.0770	0.0415	0.0192	0.0885	0.2510	0.0421	0.0220	0.3990	0.3021	1.2424	2.0706	4.0400	6.7334
Levelized Tariff per kWh at 60% P.F.				1.9694	0.1284	0.0691	0.0321	0.1476	0.4183	0.0701	0.0366	0.8650	0.5034	2.0706	2.0706	4.0400	6.7334

ATTACHMENT NO. V

Reference Tariff for Plant operation on HSD

GREEN ELECTRIC (PRIVATE) LIMITED
REFERENCE TARIFF FOR 191.5 MW COMBINED CYCLE POWER PLANT ON LOW BTU GAS ON BOO BASIS-PHASE I
PLANT OPERATION ON HSD

Year	Variable Charge (Rs./kWh)			Capacity Charge (Rs./kW Per Hour)								Total Tariff at 60% P.F.	
	Fuel	Variable O&M at 60% P.F.		Financing Cost for Working Capital	Insurance	Return on Equity	Return on Equity for Construction Period	Withholding Tax @ 7.5%	Loan Repayment	Interest Charges	Total	Capacity Charges at 60% P.F. (Rs./kWh)	Rs. / kWh
		Foreign	Local										
1	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.4361	0.8914	1.6940	2.8234	9.9466
2	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.4785	0.8490	1.6940	2.8234	9.9466
3	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.5253	0.8022	1.6940	2.8234	9.9466
4	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.5770	0.7505	1.6940	2.8234	9.9466
5	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.6340	0.6935	1.6940	2.8234	9.9466
6	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.6970	0.6305	1.6940	2.8234	9.9466
7	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.7666	0.5609	1.6940	2.8234	9.9466
8	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.8436	0.4836	1.6940	2.8234	9.9466
9	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	0.9288	0.4087	1.6940	2.8234	9.9466
10	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	1.0231	0.3338	1.6940	2.8234	9.9466
11	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
12	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
13	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
14	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
15	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
16	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
17	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
18	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
19	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
20	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
21	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
22	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
23	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
24	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
25	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
26	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
27	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
28	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
29	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
30	6.8874	0.1886	0.0472	7.1232	0.0928	0.2631	0.0441	0.0230	-	-	0.5665	0.9442	8.0674
Levelized Tariff (1-30 Years)				7.1232	0.0928	0.2631	0.0441	0.0230	0.4183	0.3167	1.3015	2.1691	9.2923
Levelized Tariff per kWh at 60% P.F.				7.1232	0.1547	0.4385	0.0735	0.0384	0.6971	0.5278	2.1691	2.1691	15.4871

ATTACHMENT NO. VI

Debt Servicing Schedule

GEL - 191.5 MW COMBINED CYCLE POWER PLANT ON LOW BTU GAS

Debt Servicing Schedule

Period	Foreign Debt						Local Debt				
	Principal (Million \$)	Repayment (Million \$)	Mark-Up (Million \$)	Balance (Million \$)	Debt Service (Million \$)		Principal (Million \$)	Repayment (Million \$)	Mark-Up (Million \$)	Balance (Million \$)	Debt Service (Million \$)
	118.5276	8.0430	9.9092	110.4846	17.9522		53.8565	2.8357	7.3406	51.0208	10.1764
2	110.4846	8.7154	9.2368	101.7692	17.9522		51.0208	3.2222	6.9541	47.7986	10.1764
3	101.7692	9.4440	8.5082	92.3252	17.9522		47.7986	3.6614	6.5149	44.1372	10.1764
4	92.3252	10.2336	7.7186	82.0916	17.9522		44.1372	4.1605	6.0159	39.9767	10.1764
5	82.0916	11.0891	6.8631	71.0025	17.9522		39.9767	4.7275	5.4488	35.2492	10.1764
6	71.0025	12.0162	5.9360	58.9863	17.9522		35.2492	5.3719	4.8045	29.8773	10.1764
7	58.9863	13.0208	4.9314	45.9655	17.9522		29.8773	6.1041	4.0723	23.7732	10.1764
8	45.9655	14.1094	3.8428	31.8561	17.9522		23.7732	6.9361	3.2403	16.8371	10.1764
9	31.8561	15.2889	2.6632	16.5671	17.9522		16.8371	7.8815	2.2949	8.9557	10.1764
10	16.5671	16.5671	1.3851	0.0000	17.9522		8.9557	8.9557	1.2207	0.0000	10.1764