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GHC

NORTHERN POWER GENERATION COMPANY LIMITED
MEHMOOD KOT ROAD
TPS MUZAFFAR GARH
Phone# 066-9200165
Fax # 066-9200166

Chief Executive Officer

No: CEO/FD/NPGCL/TRF-46/1984 Dated: 20/05/2014

The Registrar
National Electric Power Regulatory Authority
NEPRA Tower, Ataturk Avenue (East), G-5/1
Islamabad.

Subject: Tariff Petition for 425-460 MW CCPP at Nandipur of NPGCL (Licensee No. GL/03/2002)

Through this petition, submitted in one original and two copies, we wish to present our case for approval of tariff for our proposed 425-460 MW Combined Cycle Power Project at Nandipur of NPGCL. We reaffirm that this petition has been prepared as per NEPRA Tariff Standards and Procedure Rules, 1998. Care has been taken to provide all information required by the rules accurately and in a methodical fashion. As such we bring to your kind attention the following

a. 425-460 MW CCPP at Nandipur District Gujranwala is the project of Northern Power Generation Company Limited (NPGCL)
b. A demand draft No. 11089232 dated 19/05/2014 in the sum of Rs. 1,266,444/- (Rupees: One Million Two Hundred Sixty Six Thousand Four Hundred Forty Four Only), withholding tax of Rs.80,836/- has been deducted @ 6%, (the CPR of the same will be sent in due course); being non-refundable tariff petition fee is attached herewith.
c. Other formalities like the affidavit and board resolution etc. are also attached with this petition.

In light of the above, and considering the impending power shortages, may we request that the tariff be determined expeditiously.

Kindly acknowledge receipt.

Yours sincerely,

20/05/14
(Muhammad Khalid Alvi)
Chief Executive Officer (Acting)

Enel: As stated above.

For information & n/a pl.

- D/Reg/AR-I

Copy to:

- DG (Tech)/(M&E)
- SAT-I
- Dir (Lic)
- M/F

21.05.14

cc: VC/M (Lic)
M(T)
M(CA)

Dy No. 1112
Dated 21-05-14

Pl. find enclosed herewith demand draft # 11089232 dated 19-05-14 amounting Rs. 1,266,444/- for n/a.

ORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY (NEPRA)

TITION FOR TARIFF DETERMINATION ON BEHALF OF RTHERN POWER GENERATION COMPANY LIMITED- NDIPUR POWER PROJECT

THE 425-460 MW COMBINED CYCLE POWER PLANT (CCPP) AT NANDIPUR
RICT GUJRANWALA

20, 2014

hern Power Generation Company Limited

nal Power Station, Mehmood Kot Road, Muzaffargarh.

ial Consultants: Remarque Techno Consultants, 561-G Johar Town Lahore. Contact # 17 1880,042370427 57

List of Documents

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Part I -Payment and Approval Documents

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E/D

Allied Bank

0251
MUZAFFARGARH

ALLIED BANKERS CHEQUE

ASC No. BBB 1108923

Date 19 MAY 2014

Payees A/C Only

PAY NEPRA ISLAMABAD .... OR ORDER

RUPEES ONE MILLION TWO HUNDRED AND SIXTY SIX THOUSAND FOUR HUNDRED AND FORTY FOUR ONLY

Rs. ***1,266,444.00

Payable at any branch in Pakistan

FOR ALLIED BANK LIMITED

Authorized Signatory 8023

Authorized Signatory 5706

Finance/Debit Account No. PK51757100010291 0251

"1108923"0110000:00017574000100000"010"

0251 MUZAFFARGARH

Date 19 MAY 2014

Instrument Type & No ABL BBB1108923

Beneficiary Name NEPRA ISLAMABAD

Applicant Name

On Account Of

Instrument Amount ***1,266,444.00

Commission/Charges

Transaction No

Debit Account No: PK51757100010291

Transaction Mode: ACCOUNT

FED Amount

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NORTHERN POWER GENERATION COMPANY LIMIT
Thermal Power Station, Mehmood Kot Road Muzaffargarh, Pu
Phone# 066-9200171/9200173 Fax: 066-920(

Office of the Company Secretary

Subject: Approval of the Competent Authority of Northern Power Generation Company Limited on May 20, 2014

The Competent Authority of Northern Power Generation Company Ltd. has approved:-

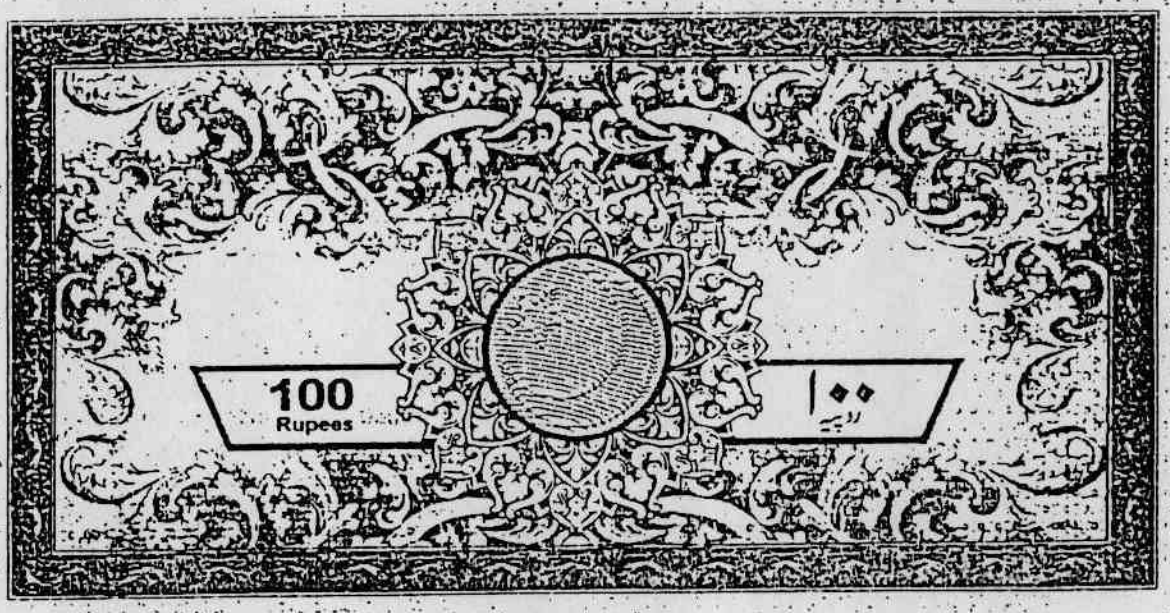
"that Application for Determination of Tariff be filed by and on behalf of Northern Po Generation Company Limited (the "**Company**") with the National Electric Power Regula Authority ("NEPRA") for 425-MW on HSFO and 460-MW on Gas, at Mean Site Condition respect of Combined Cycle Power Plant, Nandipur, Distt. Gujranwala (the "**Project**").

"that Mr. Muhammad Khalid Alvi, Chief Executive Officer (Acting) of the Company, be an hereby authorized to sign all documents, including petition and review petitions, if any; documentation, pay all filing fees, appear before NEPRA and provide any information requ by NEPRA in respect of the Project, and do all acts and things necessary for the process completion and finalization of the aforementioned petition".

"that the Chief Executive Officer is allowed to nominate the respective engineer(s) / officer(consultant(s), who may accompany and assist him during the hearing process in NEPRA addressing the queries raised by Authority from time to time till the determination of tariff."

This is issued with the approval of competent authority.

Company Secret



AFFIDAVIT

BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

I, Muhammad Khalid Alvi, Chief Executive Officer (Acting), Northern Power Generation Company Limited (Generation Licensee # GL/03/2002) being duly authorized representative / attorney of Northern Power Generation Company Limited, hereby solemnly affirm and declare that the contents of the accompanying Petition / application No. CEO/TD/NPGCL/TRF-46/1984 dated 20/05/2014 including all supporting documents are true and correct to the best of my knowledge and belief and that nothing has been concealed. I also affirm that all further documentation and information to be provided by me in connection with the accompanying petition shall be true to the best of my knowledge and belief.

DEPONENT

20/05/14

(Muhammad Khalid Alvi)
Chief Executive Officer (Acting)

Verified on oath this 20th Day of May 2014 that the contents hereof are true and correct to the best of my knowledge and belief and nothing has been concealed.

DEPONENT

20/05/14

(Muhammad Khalid Alvi)
Chief Executive Officer (Acting)

M. EJAZ
CAMP VENDER

Part II -Tariff Summary

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A. Glossary

CC	Combined Cycle
CEO	Chief Executive Officer
CPI	Consumer Price Index
CPP	Capacity Purchase Price
CPPA	Central Power Purchasing Agency of NTDC
EURO	Euro Currency
HSD	High Speed Diesel (Light Fuel oil)
EPC	Engineering Procurement and Construction
FSA	Fuel Supply Agreement
IPP	Independent Power Producer
IRR	Internal Rate of Return
ISO	International Standards Organization
KIBOR	Karachi Inter Bank Offered Rate
KV	KiloVolt
KW	KiloWatt
KWH	KiloWatt Hour
LC	Letter of Credit
LHV	Lower Heating Valve
LIBOR	London Inter-Bank Offered Rate
MW	MegaWatt
MWH	MegaWatt Hour
NEPRA	National Electric Power Regulatory Authority
NPGCL	Northern Power Generation Company Limited
NTDC	National Transmission and Despatch Company

LESCO	Lahore Electric Supply Company
GEPCO	Gujranwala Electric Power Company
SNGPL	Sui Northern Gas Pipelines Ltd.
LCC	Local Cost Component
FCC	Foreign Cost Component
O&M	Operation and Maintenance
OMC	Oil Marketing Company
PKR	Pakistani Rupees
POE	Panel of Experts
PPA	Power Purchase Agreement
Project	Nandipur Power Project
RFO	Residual Fuel Oil
ROE	Return on Equity
ROEDC	Return on Equity during Construction
M. Ton	Metric Ton i.e. 1000 kg
US $	United State Dollars
DEC	Dongfang Electric Corporation Limited
WAPDA	Water and Power Development Authority
WC	Working Capital
GOP	Government of Pakistan
ECNEC	Executive Committee of National Economic Council
ECC	Economic Coordination Committee

B. Introduction and Basis of Petition:

1.1. The main objective of the Project is to install a Combined Cycle Power Plant of about 425-460 MW capacity comprising three (03 Nos.) Gas Turbines and one (01 No.) Steam Turbine unit in the existing site of Nandipur small Hydel Power Station.

1.2. The project was conceived as a result of directive of GOP, issued in 3rd meeting of the Committee on Power Demand/Supply, held on 01-09-2005. PC-I for installation of 450 MW Combined Cycle Power Plant at Nandipur was submitted to GOP on 15-09-2005 which was cleared by CDWP on 24-10-2005.

1.3. Due to prospects of power generation by IPPs, the proposal for installation of 450 MW CCPP by public sector was not approved in the meeting held on 02-12-2005, chaired by the then Prime Minister.

1.4. Consequently, to cater for the ever-growing electric energy requirements / deficit particularly within the load centers of GEPCO and LESCO, it was envisaged to embark upon installation of 3x200 MW Diesel Engine RFO based Combined Cycle Power Plants at Faisalabad, Chichoki Mallian & Nandipur on fast track basis as per directives of the then Prime Minister of Pakistan. International tenders for said power plants were invited and publically opened on 08-11-2006. Following the evaluation of the tenders, the prices of 3x200 MW Diesel Engine RFO based Combined Cycle Power Plants at Faisalabad and Chichoki Mallian were found to be on the higher side. Recommendation/proposal to abandon the projects of Diesel Engines Combined Cycle Power Plants and in lieu, installation of 450-500 MW RFO based Gas Turbine Combined Cycle Power Plant at Nandipur, was submitted to the Ministry of Water & Power Islamabad on 23-02-2007. ECC in its meeting held on 10-05-2007 approved WAPDA's proposal and it was decided to abandon Diesel Engines Project and to install 450-500 MW RFO based Gas Turbine Combined Cycle Power Plant at Nandipur.

1.5. In view of the above decision of ECC, Proforma PC-I already prepared / submitted in September-2005 was updated for obtaining the approval of ECNEC since the original PC-I for Nandipur Project was prepared considering Natural Gas as main fuel & furnace oil as backup fuel and the costs of the plant equipment for CCPP were estimated on the basis of prices indicated in "Gas Turbine World 2004 GTW Hand Book". The same PC-I was updated by escalating the base cost @ 6.5% per annum for LCC & FCC and brought to the year 2007-08 and also considering furnace oil as main fuel and HSD for starting, initial testing, operation & stopping only.

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1.6. However, in anticipation of the availability of gas fuel in future, the conversion to gas fuel has been made part of the revised PC-I. On gas firing, the gross capacity of the Nandipur CCPP will be enhanced from 425 MW to 460 MW.

1.7. This Tariff Petition is being filed before NEPRA pursuant to rule 3 of the NEPRA (Tariff Standards and Procedure) Rules, 1998.

1.8. The project will operate under the umbrella of NPGCL (GENCO III) as a separate block on the same lines as other Power Projects are operating in the country.

1.9. On February 04, 2014, the Company has also filed the application for modification in its current generation license # GL/03/2002, for addition of a new Generation Block i.e. Nandipur Power Project, which is under process in NEPRA. It is therefore requested that this Tariff Petition may kindly be processed accordingly, in parallel to the Modification in Generation License application.

1.10. The Tariff so approved by NEPRA and accepted by NPGCL will be integrated into the Power Purchase Agreement (the "PPA") to be entered into between Northern Power Generation Company Limited (NPGCL) and CPPA of NTDC. The PPA shall be within the approved and prevailing guidelines and practice in the power sector of Pakistan. We respectfully request NEPRA to kindly ensure consistency between the adjustment formulae and indexations to be applied to the reference tariff generally allowed to the Petitioner in NEPRA's tariff determination order since these formulae and indexations also form part of Schedule 1 to the PPA. Consistency must therefore be maintained between NEPRA's tariff determination order and Schedule 1 to the PPA.

1.11. Additional information, if any, shall be submitted by Northern Power Generation Company Limited, as and when required by NEPRA.

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C. Particulars of Petition

1. Details of the Petitioner

Name: Northern Power Generation Company Limited

Registered Office: WAPDA House, Shahrah-e-Quaid-e-Azam, Lahore.

Authorized Representatives:

i. Mr. Muhammad Shoaib Rasheed, Chief Executive Officer
Assisted by:-
ii. Mr. Muhammad Mahmood Rai, Managing Director (PMU) Nandipur Power Project
iii Mr. Masood Ahmad, Finance Director
iv Mr. Muhammad Ahmad, Project Engineer, Nandipur Power Project

Co-Assisted by:-

Mr. Salman Arshad of M/s Remarque Techno Consultants, Lahore.

2. Background

2.1. The Economic Coordination Committee (ECC) of the Cabinet approved 425 MW Combined Cycle Power Plant at Nandipur on December 27, 2007 at an EPC price of USD 164.915 million, EUR 78.000 million and PKR 3,050.062 million (converted into single currency equal to US$ 329 million). Accordingly, NPGCL entered into an Engineering Procurement and Construction (EPC) Contract on January 28, 2008 with M/s Dongfang Electric Corporation Ltd., China (DECL).

2.2. The Executive Committee of National Economic Council (ECNEC) approved the Nandipur Project in its meeting held on 06.02.2008. Copy of ECNEC approval is annexed at Appendix-I. Letters of Credit for the Project were established by local banks' syndicate, led by Habib Bank Ltd., on September 15, 2008. Work on the Project commenced in October 2008 with the scheduled / targeted completion date of April 16, 2011.

2.3. For the retirement of project LCs, two (02) Buyer's Credit Facilities for EUR 68.968 million and US$ 150.152 million backed by COFACE, France and SINOSURE, China were signed with the syndicate of foreign banks led by BNP Paribas, Paris, France.

2.4. Project shipments started as per schedule but foreign loans could not be availed due to holding of legal opinion by Ministry of Law, Justice & Parliamentary Affairs, which was a major condition precedent. The availability period of the foreign loans was August 31,

2011 but the said legal opinion was issued on October 19, 2011, after the expiry of the availability period of foreign credit facilities.

2.5. A loan facility of PKR 5,300 million was signed with syndicate of local banks to meet the local currency requirements. As the foreign credit facilities didn't become effective, the syndicate of local banks (the LC opening banks), continued to make forced payment against LC documents. The exposure of the local syndicate reached up to PKR 14,923 million, against committed sum of PKR 5,300 million, resulting in an over exposure of PKR 9,623 million. Resultantly, the syndicate started to withhold Bills of Lading, causing stuck up of shipments at Karachi Ports. Consequently, the EPC Contractor demobilized its resources.

2.6. Owing to the non-clearance of the project equipment and material stored at Karachi ports, the ECC granted waiver in its decisions dated July 20, 2011 and July 03, 2012 on account of demurrage and detention charges incurred up to August 2012.

2.7. A petition No.67/2011 was filed in Supreme Court of Pakistan on October 05, 2011 by Khawaja Muhammad Asif, Member of the National Assembly of Pakistan. He submitted that two thermal power projects, namely Nandipur and the Chichoki Mallian were deliberately delayed.

2.8. The Honorable Supreme Court of Pakistan vide order dated 26.10.2011, constituted a commission headed by Mr. Justice Rehmat Hussain Jafferi, former judge of the Supreme Court of Pakistan to conduct an inquiry and determine the negligence on the part of the authorities causing delay in the completion of both the projects, and how much loss had been caused to the national exchequer in terms of opportunity costs and other losses.

2.9. The Commission submitted its report to Supreme Court of Pakistan on 24.04.2012, comprising 95 pages. The Commission concluded that:-

2.9.1. *The Ministry of Law, Justice, and Parliamentary Affairs Government of Pakistan is responsible for causing delay in completion of the documents.*

2.9.2 *The negligence on the part of the executive authorities of the Ministry of Law, Justice and Parliamentary Affairs, Government of Pakistan, which has caused the delay and approximately loss of more than PKR 113 billion, has been caused to the National Exchequer up to April 2012.*

2.10. In view of the severity of power crisis in the country, the Honorable Supreme Court of Pakistan directed the concerned authorities for the early resumption of project work, remobilization of the resources and completion of the projects at the earliest. Appendix-II

2.11. In March 2012, the Contractor submitted the draft of Amendment No.2 to the Contract Agreement for the implementation of the project work. Ultimately, owing to the prolonged detention of the project material/equipment at Karachi ports and suspension of works at site, the EPC Contractor on 17th of August 2012 served notice for the Termination of the Contract Agreement.

2.12. In order to persuade the EPC Contractor to withdraw the Termination Notice, efforts at various levels were made. After several rounds of meetings between the Project Authorities and the Contractor, the latter conditionally agreed for the resumption of project work subject to the payment of additional costs on account of the Extension of Time (EoT) claims and other costs' escalations and assurance by the NPGCL for the full financing arrangement till the completion of the Project.

2.13. On January 11, 2013, the revised PC-I was submitted with the total cost of Rs. 57.380 billion. Further, the ECC of the cabinet was again approached for the waiver of demurrage and detention charges, amounting to Rs. 786 million accrued beyond August 2012 till June 2013.

2.14. The ECNEC approved the Nandipur Project in its meeting held on 4th July 2013 at the revised cost of Rs. 57.380 million plus Rs. 1,036 million to cover the demurrage & detention charges and Federal Excise Duty from the period 1st of September 2012 to September 30th 2013, thus making total cost of Project as Rs. 58,416 million. Copy of ECNEC approval is annexed at **Appendix-III**.

2.15. With the support of the Ministry of Water & Power, the Amendment No. 2 to the Contract Agreement was signed on August 02, 2013. The Amendment is at **Appendix-IV**. The Contractor mobilized at site and formally resumed the project works from Oct 21, 2013.

2.16. Till December 2013 all the detained material from Karachi ports had been shifted to site and shipments from China are underway. Project activities are progressing on fast track basis for early trial operation of the first unit by May 30, 2014, through accelerated schedule, and subsequently, the complete plant upto June 2015. However, management is hopeful for an early completion by the end of 2014.

3. PROJECT DESCRIPTION:

Major Components

3.1. Three heavy duty industrial type combustion Gas Turbine Generator units of 95.4 MW Gross capacity (under reference conditions at 4.10.3).

3.2. Three Nos. Heat Recovery Steam Generators (HRSGs) for recovery of heat from exhaust flue gases of combustion turbines.

3.3. One Steam Turbine Generator unit of 138.8 MW Gross capacity (under reference conditions at 4.10.3).

3.4. Four 15/132 kV Unit Transformers of suitable capacity.

3.5. Three Auxiliary Transformers of suitable capacity.

3.6. One lot of electrical protection and control equipment.

3.7. One lot of batteries, rectifiers and inverters.

3.8. One lot of earthing system and lightning protection

3.9. One lot of 132 kV switchyard equipment including breakers, C.Ts, P.Ts, Isolators, post insulators, lightning arrestors, PLC equipment & gantries etc.

3.10. Main structure for machine hall, exhaust stack, control building and other associated buildings.

3.11. MCC and Control Room Equipment and Accessories

3.12. Structures for outdoor switch yard.

3.13. Cooling water supply system with cooling towers

3.14. Other miscellaneous items to make the plant operationally complete.

3.15. Ten (10) oil storage tanks, each of 10,000 M. Tons capacity, (8 storage tanks for RFO and 2 for HSD), supported with a fuel oil treatment plant, fuel oil piping and firefighting system etc.

Further, cost of conversion of project from current RFO fuel to Gas fuel which amounts to US$ 25 Million has been included.

This cost also includes costs of US$ 58.644 Million (PKR 3,970,260,000) for dedicated pipe line and other infrastructure required for transmission of Gas. Proposal attached at **Appendix VI.**

4.2. **Taxes and Duties**

Taxes and Duties cover all important taxes and duties as per the 2002 Power Policy said to be 5% of EPC cost.

4.3. **Mandatory spare parts**

Mandatory spare parts cover the costs of standard lot of spare parts aimed to reduce the outages for maintenance of the plant as much as possible. Originally, it was not included in the EPC Contract, therefore, this is being added to the Project cost. The estimated cost is based on best discounted price from GTs parts as well as provision for BOP has been taken. These are the parts which are recommended by the manufacturer and EPC Contractor to ensure availability of the plant. The estimates are in-line with the inventories provided for IPP's of the similar configuration/capacity.

4.4. **O&M mobilization**

O&M mobilization covers the mobilization of O&M Contractor's personnel, i.e. hiring local personnel for operational and maintenance, training on GTG, Steam turbine, BOP, FOTP and auxiliaries etc.

4.5. **NON-EPC Costs**

Non EPC Costs include the following:

4.5.1. **Land Preparation and Civil work:** It Includes land preparation costs and civil work other than included in EPC costs. This cost amounts to US $ 7.4 Million.

4.5.2. **Fuel for Testing:** This includes costs of fuel required for testing before start of commercial operation of the Project, which will remain unbilled to power purchaser. This cost has been estimated as US $ 10 Million.

4.5.3. **Power Dispersal:** This includes cost of US $ 11.33 million incurred by the Company for transmission lines for interconnection with transmission system of GEPCO and NTDC.

4.5.4. **Transport and Telecommunication:** It includes vehicles purchased for the Project and SCADA system installation. This cost amounts to US$ 1.734 Million.

4. INVESTMENT/PROJECT COST

The estimated investment of the Project is presented below in US dollars ("US$"). At this time we have assumed total EPC cost in foreign exchange.

No.	Item	US$ (in millions)
1.	EPC & Related costs	502.318
2.	Taxes & Duties	21.773
3.	Mandatory Spare parts	15.000
4.	O&M Mobilization	5.000
5.	Non EPC Costs	56.750
	Total Capex	617.525
6.	Financing fees & Charges	16.838
7.	Interest during Construction (IDC)	229.491
	Total Project Cost	817.016

4.1. EPC Costs

"EPC" covers power generation sets together with all the necessary auxiliary machinery, equipment and systems including the erection, testing and commissioning of the equipment and construction of buildings. The Engineering, Procurement and Construction (EPC) Contract of the Project was signed on 28.1.2008 between Northern Power Generation Co. Ltd (NPGCL), the Employer, and Dongfang Electric Corporation Ltd. China (DECL), comprising US$ 164.914 Million, Euro 78.000 Million and PKR 3.050.062 Million along with price escalation in PKR component, with scheduled completion date of April 2011. Agreement attached at Appendix V.

Due to the stoppage of construction material at Karachi ports, the EPC Contractor demobilized and subsequently served the notice for the termination of the Contract Agreement on 17.8.2012. For the resumption of work the EPC Contractor agreed on additional cost of US $ 19 Million on account of extension of time claims, US$ 08 million against remobilization and provisioning of US$ 50 million for the inspection/testing/repair/replacement etc. of defective parts as per actual joint inspection/testing by the Contractor, the Engineer and the Employer.

The insurance during construction was responsibility of the EPC Contractor. However, owing to inordinate halt of the project activities such insurance policy was expired and Contractor's responsibility to maintain the insurance policy during construction period was over. Consequently, upon resumption of project work, pursuant to Amendment No.2, the Employer agreed to bear the cost of maintaining insurance policy. The Company has incurred additional cost of US$ 0.707 million for insurance which is also included in the EPC price. No costs under this head are incurred and claimed under Non-EPC.

4.5.5. Security: Special security arrangements are made for security of foreign workers by hiring the services of separate security company. This cost has been estimated as US $ 1.549 million.

4.5.6. Admin and Overhead: This includes expenses incurred and to be incurred on administration and other overheads. These expenses will amount to US $ 8.2 million.

4.5.7. Employer's Engineer: It's the cost of Employer's Engineer i.e. M/s. NESPAK hired to supervise the construction activities. This cost amounts to US$ 5.9 million.

4.5.8. Demurrage and Detention Charges. This is the cost incurred by the Company for demurrage and detention of containers at Karachi ports. Costs from April 2012 to August 2013 were waived off by the Government but the amount of US $ 10.5 million remained payable and was paid by the Company.

4.6. Financing Fees & Charges

Includes the up-front fee, commitment fee, lenders' consultant's fee, agency commission, LC charges etc. This cost is assumed to be 3% of borrowing as standard.

4.7. Interest During Construction

Interest During Construction is calculated on the basis of actual expenses to date and anticipated interest rates, which will be subject to adjustment on Commercial Operation Date (COD) as per actual.

4.8. Financial Analysis

The financial calculations for the Project are based on the:

a) Investment cost estimate, including a firm turnkey price.
b) Power plant operation & maintenance costs
c) Financing, taxation, depreciation and other obligations and terms regulated by the law or lending institutions
d) Proposed 30-year tariff, based on real life-time costs. NPGCL model is based upon the Build-Own-Operate concept
e) Assumption that the Project will qualify for tax incentives as per the 2002 Power Policy, including an exemption from corporate income taxes as well as turnover and withholding tax on imports.

4.9. Capital Structure

The capital structure of the Project is as follows:

	US $ Million
Equity	290.888
Debt	556.128
Total Project Cost	847.016
Debt Equity Ratio	66:34

4.10. Other Considerations

4.10.1. The power plant is situated in load center of GEPCO where there is no worth mentioning other power generation facility in and around the area. Power need of the area is met through long transmission lines which is one of the major causes of system losses. It is expected that power produced from the facility will be distributed in the near vicinity. This will provide relief to the transmission and transformation system of the area besides some reduction in the transmission and transformation losses. The Project will be completed and commissioned by June 2015, and it is expected that soon the Project will start contributing in reduction of supply gap of Power in GEPCO region.

4.10.2. Costs claimed are mostly already incurred with very minimal factor of estimation, except the repair/replacement estimations caused due to long detention of the equipment. Physical activities are in full swing at site.

4.10.3. After thorough examination of all available technologies and Gas/ Steam Turbine manufacturers, it became clear that the plant configuration discussed thereinafter would offer the best and most economical performance for Northern Power Generation Company Limited and to the system. The plant concept is based on Three PG9171E GE Turbines of 95.4 MW (Gross) each with a heat recovery steam generator (HRSG) to provide steam to one condensing type Steam Turbine of 138.8 MW (Gross) in combined cycle mode. The model of the steam turbines is N200-8.54/522 manufactured by Dongfang Electric Corporation, China. When all the turbines run, the plant will generate 425 MW (Gross) output and 411.351 MW (Net) on RFO and 447.672 MW (Net) on Gas fuel at reference conditions as mentioned below.

Reference Ambient Air Temperature for performance	*30.0 degree C*
Mean Relative Humidity	*60%*
Mean Barometric Pressure	*989 mbar*

Maximum Ambient Temperature	*48.9 degree C*
Design Ambient Temperature	*50 degree C*
Power factor	*0.85*
Frequency	*50 Hz*

Note: NPGCL's indicated net output of 411.351 MW & 447.672 MW on RFO/HSD and Gas fuel respectively, is to be considered the reference net output for purposes of capacity charge calculations and adjustment formulas; however that net contracted capacity will be established after IDC tests.

		RFO/HSD	Gas Fuel
Gross Capacity (Each Turbine)	=	95.4 MW	103.23 MW
Gross Capacity (Steam Turbine Unit)	=	138.8 MW	150.29 MW
Gross Capacity (Complex)	=	425 MW	460 MW
Auxiliary Consumption (Complex)	=	13.649 MW	12.328 MW
Net Capacity (Complex)	=	411.351 MW	447.672 MW

4.10.4. Based on the requirement of the project for full load factor RFO will be transported to the site through oil tank lorries and Gas will be transported to site through dedicated pipeline from the system of SNGPL under Fuel/Gas Supply Agreements. The efforts for allocation of gas quota through SNGPL network are being undertaken with Ministry of Petroleum and Natural Resources through Ministry of Water & Power. The Gas Supply Agreement with SNGPL will be negotiated and signed after allocation of gas quota.

4.10.5. The RFO shall be stored in Eight (8) oil storage tanks of 10,000 M. Tons capacity each within the plant with combined capacity of around 80,000 M. Tons. This capacity is dimensioned for 30 days of full load operation of all the Turbines.

Oil tankers are considered a suitable means of transportation of fuel to the plant. Since the proposed site for the plant is situated on main road with a few kilometers distance from Main GT Road therefore, the approach roads to the proposed site can support all kind of heavy loads including loads of fuel or machinery transportation.

4.10.6. Net thermal efficiency of the Project was envisaged as 44.47% on RFO and 48.54% on Gas fuel. However, due to the sensitive project material remained stranded at Karachi ports, Nandipur site and in China for almost three years

bearing harsh environmental conditions and rough treatment at Karachi ports causing negative impacts on reliabilities of the operation of plant and may lead to diluted contractual efficiencies and may increase outages. In this situation no guarantees remained intact as agreed in Amendment No.2 signed with EPC Contractor that actual efficiencies shall be established during COD. Plant engineers and consultants M/s. NESPAK consider that it will effect on the performance of the Project and it is estimated that the Net Thermal Efficiencies of 44% on RFO/HSD and 48 % on Gas Fuel on reference conditions which is still a better performance if looked at comparable projects in the country. This is subject to further validation at COD.

4.10.7. On availability of Gas in the country the Project will permanently switch from RFO to Gas fuel for regular operations. It is difficult at this stage to access the Project capacity on gas fuel as it is dependent on various undeterminable factors. It is requested that provision be made in determination for adjustment of capacity on Gas fuel at later stage i.e. switching of fuel to Gas on the bases of IDC at that time.

4.10.8. It is expected that project will operate continuously on open cycle before the COD on RFO or HSD fuel. Keeping in mind this scenario it is requested that provision be made in Tariff Determination for recovery of fuel cost at the turbine efficiency on open cycle operations, which is 30.72%. Energy tariff in open cycle mode on RFO and HSD operation is given at 6.3. It will also be helpful if plant operation is required on open cycle mode even after COD on non-availability of Steam Turbine.

4.10.9. Project costs may seem to be on higher side at first glance due to the significant increase in construction period for reasons stated above but the Government took a prudent decision by revamping the project due to following reasons:

a) Project will add net capacity of 411.351 to 447.672 MW in the national grid. This will provide significant benefit to national economy.

b) According to the estimates by Pakistan Institute of Development Economics (PIDE) for increase in 1% in GDP of Pakistan, we need 1.25% increase in power supply. The Project will contribute significantly by increasing total GDP by 2% as the project will increase the electricity supply by 2.5% approx.

c) Up-till June 2013 the actual expenditure of PKR 33 billion (including interest expenses) was incurred on the Nandipur project. Further, if the EPC contract would have been terminated, as the notice was served by

the EPC Contractor, additional cost of USD 161 million would have been incurred, hence, making a total loss of PKR 50 billion (approximately), without adding any Megawatts in the system. So, the Govt. of Pakistan and Project authorities prudently decided to negotiate with the Contractor to remobilize and complete the Project with a nominal additional cost of USD 27 million. If additional investments had not been made, initial investment would have been wasted.

For successful operation of the project it is necessary that all the costs incurred or estimated for completion of the project be allowed in full so that project remains financially viable, pay its obligations and could operate independently without the help/intervention of the Government.

5. TARIFF SUMMARY

5.1. Assumptions elaborated in article 9 of the tariff petition are supposed to be mandatory part of the tariff determination order.

5.2. The Tariff has a typical two part structure with an energy charge for the energy actually despatched and a capacity charge based on available capacity. The energy charge is based on the actual KWH off take and consists of the fuel component and the variable O&M component.

5.3. The Turbines being used for the project are advanced technology machines proving high thermal efficiencies. After factoring the impact of fuel cleaning and average plant aging that may translate approximately 44% net efficiency of RFO/HSD and 48% net efficiency on Gas Fuel at reference condition and 100% load running.

5.4. The proposed tariff figures appended herein (below) are the result of a detailed financial analysis. Technical, economical, financial, legal and fiscal aspects have been considered in the evaluation of NPGCL's financial performance. The financial analysis is based on a notional 60% plant factor and a 30-year PPA.

5.5. Based on the RFO price of Pak Rs. 62,545.34 per M.Tons as of April 16, 2014 and freight of Pak Rs. 5,468 per M. Ton totaling Pak Rs. 68,013.34 per M. Ton (RFO Price excluding GST), output of 411.351 MW (net at reference conditions) detailed financial analyses, the following tariff has been established.

	Capacity Charge USD/KWH	Energy Charge USD/KWH	Total Tariff USD/KWH	Total Tariff Pak Rs. /KWH
Levelized tariff	.0540	.2143	.2683	18.1680
Average (1-15 years)	.0579	.2143	.2722	18.4289
Average (16-30 years)	.0358	.2143	.2501	16.9303

5.6. Based on the HSD price of Pak Rs. 98.15 per Liter as of April 2014 (Excluding GST), output of 411.351 MW (net at reference conditions) detailed financial analyses, the following tariff has been established.

	Capacity Charge USD/KWH	Energy Charge USD/KWH	Total Tariff USD/KWH	Total Tariff Pak Rs. /KWH
Levelized tariff	.0540	.3583	.4123	27.9146
Average (1-15 years)	.0579	.3583	.4162	28.1755
Average (16-30 years)	.0358	.3583	.3940	26.6769

5.7. Based on the Gas price of Pak Rs. 588.23 per MMBTU as of April 2014, output of 447.672 MW (net at reference conditions) detailed financial analyses, the following tariff has been established

	Capacity Charge USD/KWH	Energy Charge USD/KWH	Total Tariff USD/KWH	Total Tariff Pak Rs. /KWH
Levelized tariff	.0497	.0751	.1247	8.4448
Average (1-15 years)	.0532	.0751	.1283	8.6860
Average (16-30 years)	.0329	.0751	.1079	7.3066

Indexation and Escalation

The fuel cost component shall be adjusted fortnightly on account of fuel price variation of fuel consumed using FIFO method during operation period and the actual transportation charges and GST. The fuel consumed during Pre-COD operations shall be recovered from the Power Purchaser.

6.5. Local Variable O&M

This component includes the cost of lubricants' consumption and other direct local consumables, which is directly related to electricity actually generated.

Indexation and Escalation

This cost will be indexed quarterly to the prevailing Pakistan Consumer Price Index (General) ("CPI") by using Pakistan Consumer Price Index (General) ("CPI") of May 13, 2008 as base.

6.6. Foreign Variable O&M

This component primarily includes imported spare parts to be changed on normal scheduled maintenance and unscheduled maintenance. It also includes chemicals as well as specialized technical services from manufacturer, during the maintenance of the plant. The turbines and associated equipment have manufacturers' recommended over hauling schedules that are based on actual running hours. The actual timing of the major overhauling depends on the actual dispatch provided to the plant. The labor for the variable O&M is on fixed O&M.

As the manufacturer is American so the spare parts will be supplied from US sources as well as the specialized technical services, based on that variable O&M foreign component will be indexed quarterly to current US CPI by using US CPI of May 13, 2008 as base. This tariff component will also be adjusted quarterly by variation in US$ exchange rate through 30 year life of the project on quarterly basis.

Indexation and Escalation

The Foreign Variable O&M Cost Component of the energy Purchase Price shall be quarterly indexed to both:

a) The USD/PKR exchange rate, based on the revised TT & OD selling rate of USD as notified by the National Bank of Pakistan, using the reference rate of PKR/USD 67.7 as base.

b) US CPI, as issued by the Bureau of Labor Statistics, by using US CPI, as issued by the Bureau of Labor Statistics of May 13, 2008 as base.

7. CAPACITY CHARGES

7.1. The capacity charges for the project are payable on basis of available capacity as tested at the COD, and periodically thereafter. This payment is calculated on a Pak Rs./KWH basis of the capacity.

7.2. The key assumption factors in the capacity charge are the total capacity cost of the project the debt equity ratio, the cost of funding and currency thereof, together with the exchange rate.

The following assumptions have been used.

a)	*Total Project cost:*	*US$ 847.016 million*
b)	*Debt-equity Ratio:*	*66:34*
c)	*Exchange rate:*	*1 US$ = 67.7 Rupees 1 Euro = 1.5536 US$*
d)	*Funding:*	*Debt: 66%. Equity 34%*
e)	*Taxes & Duties:*	

Customs duty at 5% on imported machinery as per 2002 power policy
Dividend Withholding tax of 7.5%
Customs duty at 5% on imported Spare Parts
0% corporate tax rate
0% minimum turnover tax rate

7.3. At the time of COD the tariff figure shall be updated for the various base figures (e.g. fuel price, EPC Cost, the O&M and insurance prices, adjusted by actual exchange rate compared to the reference rates (Pak Rs. /US$ =67.7, Pak Rs. /Euro = 105.19 and US$/ Euro = 1.5536), and the interest during the construction adjusted by KIBOR, to arrive at the reference tariff table to be used in PPA.

7.4. At the COD the tariff figure will be updated on the basis of actual interest incurred during construction and variation in the reference exchange rate during construction.

7.5. Any modification or additions required by the power purchaser that are not considered in the Project shall be treated as pass-through.

7.6. The capacity charge is further broken down into two components:

7.6.1. The Escalable Component

This component represents the Fixed O&M cost, Insurance cost, cost of Working Capital, ROE, ROEDC and tax. Since there is no recovery of original equity capital invested, the plant remains the property of the NPGCL after the 30 years contract period and PPA may be extended to another agreed period.
Summary of the charges provided below:

RFO/HSD Operations (in PKR)

Period	Fixed O&M	Insurance	Cost of WC	ROEDC	ROE	Withholding Tax	Total
1 to 30 Years	.2172	.1369	.2648	.8562	.8198	.1257	2.4206

GAS Operations (in PKR)

Period	Fixed O&M	Insurance	Cost of WC	ROEDC	ROE	Withholding Tax	Total
1 to 30 Years	.1995	.1258	.2433	.7868	.7533	.1155	2.2242

7.6.1.1. The fixed O&M component of escalable capacity payment represent the fixed cost for all staff for O&M, land rent, plant administration, security, transportation, overheads, office costs, professional fee such as audit tax and legal fee as well as some other operational costs such as environmental monitoring that don't change the dispatch level. The fixed O&M cost component has been prepared based on the following local and foreign parts:

Local Fixed O&M Component	30%
Foreign Fixed O&M Component	70%

Indexation and Escalation

The following quarterly indexation shall be applicable to the fixed O&M cost component:

a. The Local Fixed O&M Cost Component shall be quarterly indexed to the CPI (General), as notified by the Pakistan Federal Bureau of Statistics; and

b. The Foreign Fixed O&M Cost Component shall be quarterly indexed to both:

i. The USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan, using the reference rate of Rs./USD 67.7 as base.

ii. The US CPI, issued by the US Bureau of Labor Statistics US CPI, by using US CPI, as issued by the Bureau of Labor Statistics of May 13, 2008 as base.

7.6.1.2. The insurance components consist of all risk insurance / reinsurance for the Project as well as business interruption insurance (which are a lender stipulated requirement).

Indexation and Escalation

The following indexation shall be applicable to the Insurance Cost Component:

The Insurance Cost Component shall be quarterly indexed to both:

a. The USD/PKR exchange Rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan, using the reference exchange rate of PKR/USD 67.7 as base and

b. The US CPI, issued by the US Bureau of Labor Statistics US CPI, by using US CPI, as issued by the Bureau of Labor Statistics of May 13, 2008 as base.

7.6.1.3. The Return on Equity (ROE) and Return on Equity During Construction (ROEDC) Components include a return on invested equity giving an Internal Rate of Return (IRR) of 15% net after deduction of withholding tax.

Indexation and Escalation

The following quarterly indexation shall be applicable to the ROE and ROEDC Components:

The USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan, using the reference exchange rate of PKR/USD 67.7 as base.

(e) Indexation: Interest component would be indexed to the 6 month KIBOR rate.

8. ESCALATION AND INDEXATIONS

After the COD the tariff tables provided will be indexed to factors as described above. The Reference Exchange Rates being 105.19 Pak Rs./Euro 67.7 Pak Rs./USD and 1.5536 US$/Euro. The details are provided herein below:

8.1. Inflation Factors

The following components are subject to inflation factors:

Variable O&M—Local:	Pakistan CPI (General)
Variable O&M—Foreign:	US CPI
Escalable Capacity Payment:	
Fixed O&M:	70% US CPI and
	30% Pakistan CPI (General)
Insurance:	U.S. CPI

8.2. Currency Indexation

The following components are subject to exchange rate indexation. The Reference Exchange rates are 105.00 Pak Rs. /Euro 67.70 Pak Rs. /US$.

Variable O&M	70% Pak Rs. /Euro exchange rate
Insurance	Pak Rs. /US$ exchange rate
ROE	Pak Rs. /US$ exchange rate

8.3. Interest Rate Indexation

The following components are subject to interest rate indexation:

Non-Escalable Capacity Payment

Local Loan

Interest Charges	6 months KIBOR

Working Capital

Base Rate Component	3 Month KIBOR

8.4. Base Changes

Changes in the base price of fuel i.e. RFO shall be treated as a pass-through cost based on heat rate.

8.5. Pass-Through Items

Any taxes and levies etc. not factored in the tariff calculation shall be treated as pass-through items in the PPA.

8.6. Adjustments at Commercial Operations Date

8.6.1. The Escalable ROE and ROEDC Component and the Non-Escalable Components will be adjusted by the Inflation Factors, Reference Exchange Rates as defined and described in this Section 8 which prevail at the COD.

8.6.2. The Non-Escalable Component shall also be adjusted by the then prevailing 6-month KIBOR.

8.6.3. The working capital components shall also be updated with prevailing fuel price at the COD and KIBOR.

8.6.4. Project cost shall also be adjusted to actual Construction period and actual costs incurred.

8.6.5. No Contingency has been included in the Project costs.

9. ASSUMPTIONS

The following have been assumed while calculating the tariff. Changes in any of these assumptions will result in changes in the tariff.

9.1. Auxiliary consumption has been assumed to be approximately 13.649 MW on RFO/HSD Operations and 12.328 MW on Gas Operations.

9.2. Annual Unscheduled Outages (MHz) up to 500 hours x Available Capacity (MW) shall be without any liquidated damages. Liquidated damages for Unscheduled Outages in excess thereof, and their computation shall be in accordance with the standardized PPA of 2006.

9.3. Scheduled Outage periods shall be 30 Days per unit in any year, except in any Year in which a Major Overhaul is required, in such case Scheduled Outage periods shall be 60 Days per unit for such Operation Year.

9.4. A constant ROE is assumed, which results in an IRR of 15% over 30 years.

9.5. No hedging cost has been assumed for exchange rate fluctuations during construction.

9.6. All invoicing and payment terms are assumed to be in accordance with standardized PPA of 2006.

9.7. The tariff is calculated on the basis of a notional 60% plant factor without taking into consideration partial load of turbines/complex, starts/stops, heat rate correction for loads less than 100% and simple cycle operation. In case of partial loading of plant/complex/units load efficiency curve would prevail for calculation of fuel cost.

9.8. Tolerance of +/-3% in dispatch is assumed during normal operation.

9.9. The tariff table shall be further updated at COD of the Project in order to correct the tariff according to the prevailing KIBOR and exchange rates (Pak Rs. /US$ and Pak Rs. /Euro).

9.10. All fuel during plant tests after synchronization is assumed to be paid by the Power Purchaser as per standardized PPA of 2006. The details of the fuel consumption on testing before synchronization, as advised by the plant supplier, will be furnished on demand.

9.11. Working capital has been financed by a separate working capital loan, and is not included in the Project cost.

9.12. Project contingency/debt service/maintenance reserves are not included in tariff calculations. If required by lenders, there will be an adjustment in the tariff accordingly.

9.13. All other assumptions not expressly stated herein are based upon the standardized PPA of 2006. Subsequent change in any such assumption may lead to change in the tariff.

9.14. Duties & Taxes on the import of plant & equipment have been assumed for reference purposes, any change therein would be passed through.

9.15. Tax on any income of the Company including sales proceeds from NTDC, General Sales Tax and all other taxes will be treated as pass-through items

9.16. No withholding tax on local construction services and EPC/offshore contractors has been considered in tariff calculation.

9.17. 100% local debt is procured.

9.18. In case of load below 100% and/or simple cycle mode (including during startups/stops per peaking operation), heat rate and efficiency will be different; accordingly energy component of tariff will be adjusted.

9.19. Withholding tax on dividends (currently at 7.5%) as required to be deducted under the Income Tax Ordinance, 2001 or any other law for the time being in force at the time of such payment is considered as pass-through.

9.20. No working capital for bridge financing is accounted for in the tariff model; any times gap as per NTDC/Fuel supplier payment terms may result in working capital requirement. Cost of L.C for power purchase has not been included in tariff calculation.

9.21. Freight on RFO has been assumed in the tariff and will be finalized at the time of Fuel Supply Agreement and incorporated in the tariff accordingly.

E/C

10. DETERMINATION SOUGHT

10.1 In light of the foregoing submissions, the learned Authority is kindly requested to approve the Company's generation tariff together with pertinent indexation to remain effective for the period of 30 years from the COD.

10.2 The company would be pleased to provide any further information, clarification or explanation that may be required by the Authority during its evaluation process.

Northern Power Generation Company Limited

Through

20/05/14

(Muhammad Khalid Alvi)
Chief Executive Officer (Acting)

Date: 20.05.2014