National Electric Power Regulatory Authority

Islamic Republic of Pakistan

Registrar

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No.NEPRA/R/TRF-123/GPL-2008/6594-6596
June 26, 2009

Subject: **Determination of the Authority in the Matter of Tariff Petition filed by Grange Power Ltd. (GPL) [Case # NEPRA/TRF-123/GPL-2008]**
Intimation of Determination of Tariff pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997)

Dear Sir,

Please find enclosed the subject Determination of the Authority along with Annexure-I, II (30 pages) in Case No. NEPRA/TRF-123/GPL-2008.

2. The Determination is being intimated to the Federal Government for the purpose of notification of the approved tariff in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997) and Rule 16(11) of the National Electric Power Regulatory Authority Tariff (Standards and Procedure) Rules, 1998.

3. Please note that only Order of the Authority at para 20.2 of the Determination relating to the reference tariff, adjustments & indexation along with Annexure-I & II needs to be notified in the official gazette. The Order is reproduced for the purpose of clarity and is attached herewith.

Enclosure: As above

(Arshad Mehmood)

The Secretary
Cabinet Division
Government of Pakistan
Cabinet Secretariat
Islamabad

CC:

1. Secretary, Ministry of Water & Power, Islamabad.
2. Secretary, Ministry of Finance, Islamabad.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

ORDER OF THE AUTHORITY
IN CASE NO. NEPRA/TRF-123/GPL-2008
TO BE NOTIFIED IN THE OFFICIAL GAZETTE

Pursuant to Rule 16 (11) of the NEPRA Licensing (Generation) Rules, Grange Power Limited (GPL) is allowed to charge, subject to adjustment of Capacity Purchase Price on account of net dependable capacity and net thermal efficiency as determined by test jointly carried out by the Central Power Purchasing Agency (CPPA) of the National Transmission and Dispatch Company (NTDC) and the Petitioner, the following is approved as specified tariff for GPDL for delivery of electricity to the CPPA of the NTDC for procurement on behalf of Ex-WAPDA Distribution Companies:

Specified Reference Tariff

Tariff Components	Year 1 to 10	Year 11 to 25	Indexation
Capacity Charge PKR/kW/Hour)			
O&M Foreign	0.1116	0.1116	US$ /PKR & US CPI
O&M Local	0.0840	0.0840	WPI
Cost of Working Capital	0.1031	0.1031	KIBOR
Insurance	0.1391	0.1391	US$ /PKR
Debt Service – Local	2.0820	----	KIBOR
Return on Equity	0.5107	0.5107	US$ /PKR
ROE during Construction	0.0551	0.0551	US$ /PKR
Total Capacity Charge	**3.0855**	**1.0036**	
Energy Charge on Operation on Furnace Oil Rs./kWh			
Fuel Cost Component	5.4625	5.4625	Fuel Price
Variable O&M			
Foreign	0.4691	0.4691	US$/PKR & US CPI
Local	----	----	

Note: i) Component wise proposed tariff for operation on RFO is indicated at Annex-I.
ii) Debt Servicing Schedule is attached as Annex-II.

The following adjustments /indexations shall be applicable to reference tariff;

I. **One Time Adjustments**

I.(i) **Adjustment in EPC Cost**

The Authority has assessed offshore EPC cost as US$ 136.350 million and onshore as US$ 28 million (to be incurred in PKR). Since the exact timing of payment to EPC

POWER REGULATORY NATIONAL ELECTRIC AUTHORITY NEPRA AUTHORITY contractor is not known at this point of time therefore an adjustment for relevant foreign currency fluctuation for the portion of payment in the relevant foreign currency will be made. In this regard the sponsor will be required to provide all the necessary relevant details along with documentary evidence. The adjustment shall be only for currency fluctuation against the reference parity values. Based upon such information the relevant currency of EPC cost components shall be adjusted and applied to the corresponding EPC cost components. The relevant tariff components i.e. Insurance, ROE, ROEDC, Principal Repayment and Interest Charges shall be adjusted accordingly.

I. (ii) **Adjustment due to Variation in Net Capacity**

The reference tariff has been determined on the basis of minimum net capacity of 146.5 MW at delivery point at mean site conditions. All the tariff components except fuel cost component shall be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) tests to be carried out for determination of contracted capacity in the presence of NEPRA representative. Adjustment shall not be made if IDC is established less than 146.5 MW net capacity at reference site conditions. The adjustments shall be made according to the following formula:

$$CC_{(Adj.)} = CC_{(Ref)} \times 146.5MW / NC_{(IDC)}$$

Note: Above formula shall be applicable to all the individual relevant components of Capacity Charges and variable O&M as well.

Where;

$CC_{(Adj)}$	=	Adjusted relevant Capacity Charge components of tariff
$CC_{(Ref}$	=	Reference relevant Capacity Charge components of tariff
$NC_{(IDC)}$	=	Net Capacity at reference site conditions established at the time of IDC test

Note:-Reference capacity charge components of Tariff i.e. Revised O&M Foreign, Revised O&M Local, Insurance, Debt Servicing, Return on Equity and ROEDC and Variable O&M to be adjusted as per IDC test.

Reference Conditions:

• Ambient Air Temperature	25 degree C.
• Relative humidity	60%
• Site Altitude	600 ft above Sea level

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

- Ambient Air pressure 1 bar

I. (iii) Adjustment due to Variation in Net Efficiency

The reference tariff has been determined on the basis of minimum net efficiency of 45%. The fuel cost component shall be adjusted at the time of COD based upon Heat Rate Test to be carried out in the presence of NEPRA representative. The adjustment shall not be made if the net efficiency is established less than 45%. The adjustment shall be made according to the following formula;

$$FC_{(Adj)} = \text{Rs.}5.4625 \text{ per kWh} / 7582 \times HR_{(T)}$$

Where;

$FC_{(Adj)}$	=	Adjusted fuel cost component at the time of heat rate test at COD
$HR_{(T)}$	=	Heat Rate in Btu per kWh established after Heat Rate Test at the time of COD

I.(iv) Adjustment Based on Actual Interest During Construction & Financing Fees

Debt Service, Return on Equity and ROE during construction shall be adjusted at the time of COD on account of actual variation in drawdown and Interest During Construction and financing fees with reference to the estimated figures of US$ 29.495 million and US$ 5.229 million respectively. Adjustment on account of financing fees is restricted to the extent of 3% of total financing.

I.(v) Adjustment due to Custom Duties & Withholding Taxes

Debt Service, Return on Equity and ROE during construction shall be adjusted at the time of COD on account of actual variation in custom duties & withholding Taxes with reference to the estimated figures of US$ 8.181 million and US$ 1.680 million respectively.

I.(vi) Adjustment for variation in Rupee/Dollar parity

Relevant reference tariff components shall be adjusted at COD on account of variation in Dollar/Rupee parity.

II. Adjustment in Insurance as per actual

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

The actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser not exceeding 1.35% of the EPC cost will be treated as pass-through. Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon production of authentic documentary evidence by GPL according to the following formula;

$$Insurance_{(Adj)} = AIC / P_{(Ref)} * P_{(Act)} / 80.45 * ER_{(Rev)}$$

Where;

AIC	=	Adjusted Insurance Component (Rs. kW/hr) as per IDC Test
$P_{(Ref)}$	=	Reference Premium US$ 2.219
$P_{(Act)}$	=	Actual Premium or 1.35% of the adjusted EPC which ever is lower
$ER_{(Rev)}$	=	The revised TT and OD selling rate of US$ as notified by the National Bank of Pakistan at invoice date

III. <u>Adjustment in Return on Equity (ROE)</u>

Return on Equity will be quarterly adjusted on account of variation in PKR/US$ parity according to the following formula:

$$ROE_{(Rev)} = ROE_{(Ref)} * ER_{(Rev)} / 80.45$$

Where;

$ROE_{(Rev)}$	=	Revised ROE
$ROE_{(Ref)}$	=	Reference ROE
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

IV. <u>Adjustment in Return on Equity during Construction (ROEDC)</u>

Return on Equity during Construction will be quarterly adjusted on account of variation in PKR/US$ parity according to the following formula:

$$ROEDC_{(Rev)} = ROEDC_{(Ref)} * ER_{(Rev)} / 80.45$$

Where;

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

$ROEDC_{(Rev)}$	=	Revised ROEDC
$ROEDC_{(Ref)}$	=	Reference ROEDC
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

V. Adjustment of Withholding Tax

Withholding tax will be adjusted on account of exchange rate variation according to the following formula:

$$WT_{(Rev)} = WT_{(Ref)} * ER_{(Rev)}/80.45$$

Where;

$WT_{(Rev)}$	=	Revised Withholding tax
$WT_{(Ref)}$	=	Reference Withholding tax
$ER_{(Rev)}$	=	The revised TT&OD selling rate of US dollar as notified by the National Bank of Pakistan

VI. Pass-Through Items

i) "No provision for income tax, workers' profit participation fund and workers' welfare fund, any other tax, excise duty or other duty, levy, charge, surcharge or other governmental impositions, payable on the generation, sales, exploration has been accounted for in the tariff. If GPL is obligated to pay any tax on the income purely generated from its operation i.e. Electricity Generation of power producer, the exact amount should be reimbursed by CPPA on production of original receipts. This payment may be considered as pass-through (as Rs./kW/hour) hourly payment spread over a 12 months period in addition to the capacity purchase price in the Reference Tariff. Furthermore, in such a scenario, GPL may also submit to CPPA details of any tax shield savings and CPPA will deduct the amount of these savings from its payment to GPL on account of taxation.

ii) Withholding tax on dividend is also a pass-through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. In a reference tariff table withholding tax number is indicated as reference and CPPA (NTDC) shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 15% reference equity i.e. hourly payment (Rs./kW/hour) spread over a 12 month period according to the following formula:

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

8

Withholding Tax Payable = $[\{15\% * (E_{(Ref)} - E_{(Red)}\} + ROEDC_{(Ref)}] * 7.5\%$

Where:

$E_{(Ref)}$	=	Adjusted Reference Equity at COD
$E_{(Red)}$	=	Equity Redeemed
$ROEDC_{(Ref)}$	=	Reference Return on Equity During Construction

iii) In case Company does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the Net Return on Equity) would be carried forward and accumulated so that the Company is able to recover the same in hourly payments spread over 12 months period as a pass through from the Power Purchaser in future on the basis of the total dividend pay out.

VII. Indexations:

The following indexation shall be applicable to the reference tariff as follows;

Indexation applicable to O&M

The Fixed O&M local component of Capacity Charge will be adjusted on account of Inflation (WPI) and Fixed O&M foreign component on account of variation in US CPI and dollar/Rupee exchange rate. Quarterly adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January and 1st April based on the latest available information with respect to WPI notified by the Federal Bureau of Statistics (FBS), US CPI issued by US Bureau of Labor Statistics and revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan. The mode of indexation will be as under:

i) **Fixed O&M**

$F\ O\&M_{(LREV)}$	=	Rs. 0.0840/kW/Hour $* WPI_{(REV)} / 137.8$
$F\ O\&M_{(FREV)}$	=	Rs. 0.1116/kW/Hour $* US\ CPI_{(REV)} / 210.228 * ER_{(REV)} / 80.45$

Where:

$F\ O\&M_{(LREV)}$	=	the revised applicable Fixed O&M Local Component of tariff
$F\ O\&M_{(FREV)}$	=	the revised applicable Fixed O&M Foreign Component of tariff
$WPI_{(REF)}$	=	the reference WPI (manufactures) of December 2008
$US\ CPI_{(REF)}$	=	the reference US CPI (All Urban Consumers) of December 2008

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

$WPI_{(REV)}$	=	the revised Wholesale Price Index (manufactures)
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$ER_{(REV}$	=	the Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

Note: The reference numbers indicated above shall be replaced by the revised numbers after incorporating the required adjustments at COD.

ii) Variable O&M

The formula for indexation of variable O&M component will be as under:

$V\ O\&M_{(REV)}$ = Rs. 0.4691/kWh * $US\ CPI_{(REV)}$/ 210.228* $ER_{(REV)}$ / 80.45

Where:

$V\ O\&M_{(FREV)}$	=	the revised applicable Variable O&M Foreign Component of tariff
$US\ CPI_{(REF)}$	=	the reference US CPI (All Urban Consumers) of December 2008
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$ER_{(REV)}$	=	the Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

Note: The reference Variable O&M indicated above shall be replaced with the revised number at COD after incorporating the required adjustment based upon the IDC Test.

iii) Adjustment for KIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variations in interest rate as a result of variation in quarterly KIBOR according to the following formula;

$\Delta I_{(L)}$ = $P_{(LREV)}$ * ($KIBOR_{(REV)}$ - 13.23%) / 4

Where:

$\Delta I_{(L)}$ = the variation in interest charges on local loan applicable corresponding to variation in quarterly KIBOR. Δ I can be positive or negative depending upon whether $KIBOR_{(REV)}$ > or < 13.23%. The interest payment obligation will be enhanced or

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

reduced to the extent of Δ I for each quarter under adjustment applicable on quarterly basis

$P_{(REV)}$ = is the outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculations date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

iv) Fuel Price Variation

The Variable Charge Part of the tariff relating to fuel cost shall be adjusted on account of the fuel price variations according to the mechanism given below:

$FC_{(Rev)}$ = Rs. 5.0004 per kWh * $FP_{(Rev)}$ / Rs. 25,427 per ton + Rs. 0.4621 per kWh * $Ft_{(Rev)}$ / Rs. 2,350 per ton

Where:

$FC_{(Rev)}$	Revised fuel cost component of Variable Charge on RFO.
$Ft_{(Rev)}$	Revised Freight Charges
$FP_{(Rev)}$	The new price of RFO per Metric Ton.

A. HSFO/LSFO Arab Gulf Average Price for applicable Fortnight (From Platt's Oilgram Report)

B. Premium/Freight based on weighted average of import of IPP grade of RFO.

C. C&F Price (A + B)

D. Import incidentals

- a. Ocean losses maximum 0.5% of C&F
- b. Marine Insurance 0.071% of C&F
- c. War Risk Insurance actual 0.05% of C&F
- d. Bank L/C Commission 0.15% of C&F
- e. Bank Service Charges 0.10% of C&F
- f. Local handling charges 0.15% of C&F
- g. Land port surveyor charges
- h. FOTCO charges prevailing at the time of import.
- i. Wharfage charges actual
- j. 1% import advalorem duty or any other duty imposed or levied by the GOP by time to time.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

E. Import landed cost (C + D)
F. Calorific Value Parity Discount Factor %
G. Discounted Landed Cost [E * (1-F)]
H. OMC margin (3.5% of G)
I. Inland Frieght
J. Value of supply (G + H + I)
K. GST **(16% of J)**

US$ Pak Rupee Exchange Rate-NBP Selling TT/OD at the date of applicable fuel price
Fuel supplier shall provide item wise actual incidental charges prevailing at the time of receiving payment for fuel supply.

The fuel cost component will be adjusted after the commercial operation date, at the time of revision in RFO price.

Adjustment on account of local inflation, foreign inflation, foreign exchange rate variation, KIBOR variation and fuel price variation will be approved and announced by the Authority for immediate application within seven working days after receipt of GPL request for adjustment in accordance with the requisite indexation mechanism stipulated herein.

For one time adjustment of relevant tariff components at COD according to the mechanism laid down in this order, GPL shall submit the relevant documents to NEPRA within 30 days of COD for adjustment.

VIII. <u>Terms and Conditions of Tariff:</u>

i) Capacity Charge Rs./kW/hour applicable to dependable capacity at the delivery point.
ii) The tariff is applicable for a period of 25 years commencing from the date of the Commercial Operation.
iii) All new equipment will be installed and the plant will be of standard configuration.
iv) Dispatch criterion will be based on the Energy Charge.
v) Internal consumption has been assumed to be approximately 5.5 MW.
vi) Scheduled Outage periods per annum shall be in accordance with the 2006 standardized PPA.
vii) NTDC will be responsible for constructing the interconnection to the grid.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

viii) All invoicing and payment terms are assumed to be in accordance with the 2006 standardized PPA.

ix) Tolerance in Dispatch shall be in accordance with 2006 standardized PPA.

x) If there is any change in any assumption that may lead to change in the tariff shall be referred to NEPRA for approval.

xi) If IPP is required by the power purchaser to deliver power above 132 kV, any additional cost to be incurred by the IPP shall be submitted to NEPRA for adjustment. The adjustment request by the IPP shall be duly verified by the power purchaser.

xii) 100% of debt has been assumed to be local provided however that in the event GPL uses a mix of foreign and local loan, the future benefits of the lower interest rates shall be passed on to the Power Purchaser.

xiii) No corporate income tax and no minimum turnover tax have been assumed.

xiv) Working capital has been financed by a separate Working Capital facility, and is not included in the project cost.

xv) Minimum loading of the Complex shall be according to the manufacturer's technical limits to allow for combined cycle operations.

xvi) All fuel during plant tests after synchronization of the Complex to the grid is assumed to be paid for by the Power Purchaser.

The above tariff and terms and conditions shall be incorporated in the Power Purchase Agreement between GPL and CPPA.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Annexure - I

Grange Power Limited (GPL)
Reference Tariff Schedule Based on RFO

Year	Energy Charge (PKR/kWh)			Capacity Charge (PKR/kW/Hr)										Capacity Charge	Tariff
	Fuel	Variable O&M	Total	Fixed O&M-Local	Fixed O&M-Foreign	Insurance	Cost of Working Capital	Return on Equity	Return on Equity during Constructio	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total	60% Plant Factor PKR/kWh	PKR per kWh
1	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.4507	1.6313	3.1280	5.2133	11.1449
2	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.5284	1.5535	3.1280	5.2133	11.1449
3	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.6195	1.4624	3.1280	5.2133	11.1449
4	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.7264	1.3556	3.1280	5.2133	11.1449
5	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.8516	1.2303	3.1280	5.2133	11.1449
6	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.9985	1.0835	3.1280	5.2133	11.1449
7	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.1707	0.9113	3.1280	5.2133	11.1449
8	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.3726	0.7094	3.1280	5.2133	11.1449
9	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.6093	0.4727	3.1280	5.2133	11.1449
10	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.8868	0.1952	3.1280	5.2133	11.1449
11	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
12	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
13	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
14	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
15	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
16	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
17	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
18	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
19	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
20	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
21	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
22	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
23	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
24	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
25	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
Levelized Tariff (1-25 Years)			**5.9317**	**0.0840**	**0.1116**	**0.1391**	**0.1031**	**0.5107**	**0.0551**	**0.0424**	**0.6116**	**0.7978**	**2.4554**	**4.0923**	**10.0239**

Net Capacity	146.5 MW	
Reference Exchange Rate	PKR	80.45 = 1 US$
Reference Fuel Price (Inclusive of Freight)	27,777.00 Rs./Mtone	
Reference US CPI	210.228 for December 2008 as notified by the US Labour Bureau of Labor Statistics	
Reference WPI (Manufacturer)	137.8 for December 2008 as notified by the Federal Bureau of Statistics	
Efficiency	45.00%	
Levelized Tariff (at 60% plant factor) per kWh	US Cents	12.4598

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Grange Power Limited (GPL)
Debt Servicing Schedule

Period	Local Debt					Annual Principal Repayment Rs./kW/ hr.	Annual Interest Rs./kW/ hr.	Annual Debt Servicing Rs./kW/ hr
	Principal Million Rs.	Repayment Million Rs.	Mark-up Million Rs.	Balance Million Rs.	Debt Service Millin Rs.			
	13,108.48	136.09	531.88	12,972.40	667.96			
	12,972.40	141.61	526.36	12,830.79	667.96			
	12,830.79	147.35	520.61	12,683.43	667.96			
	12,683.43	153.33	514.63	12,530.10	667.96			
1	13,108.48	578.38	2,093.47	12,530.10	2,671.86	0.4507	1.6313	2.0820
	12,530.10	159.56	508.41	12,370.54	667.96			
	12,370.54	166.03	501.93	12,204.52	667.96			
	12,204.52	172.77	495.20	12,031.75	667.96			
	12,031.75	179.78	488.19	11,851.97	667.96			
2	12,530.10	678.13	1,993.73	11,851.97	2,671.86	0.5284	1.5535	2.0820
	11,851.97	187.07	480.89	11,664.90	667.96			
	11,664.90	194.66	473.30	11,470.24	667.96			
	11,470.24	202.56	465.41	11,267.68	667.96			
	11,267.68	210.78	457.19	11,056.91	667.96			
3	11,851.97	795.07	1,876.79	11,056.91	2,671.86	0.6195	1.4624	2.0820
	11,056.91	219.33	448.63	10,837.58	667.96			
	10,837.58	228.23	439.73	10,609.35	667.96			
	10,609.35	237.49	430.47	10,371.86	667.96			
	10,371.86	247.13	420.84	10,124.73	667.96			
4	11,056.91	932.18	1,739.68	10,124.73	2,671.86	0.7264	1.3556	2.0820
	10,124.73	257.15	410.81	9,867.58	667.96			
	9,867.58	267.59	400.38	9,599.99	667.96			
	9,599.99	278.44	389.52	9,321.55	667.96			
	9,321.55	289.74	378.22	9,031.80	667.96			
5	10,124.73	1,092.93	1,578.93	9,031.80	2,671.86	0.8516	1.2303	2.0820
	9,031.80	301.50	366.47	8,730.31	667.96			
	8,730.31	313.73	354.23	8,416.57	667.96			
	8,416.57	326.46	341.50	8,090.11	667.96			
	8,090.11	339.71	328.26	7,750.40	667.96			
6	9,031.80	1,281.40	1,390.46	7,750.40	2,671.86	0.9985	1.0835	2.0820
	7,750.40	353.49	314.47	7,396.91	667.96			
	7,396.91	367.83	300.13	7,029.08	667.96			
	7,029.08	382.76	285.20	6,646.32	667.96			
	6,646.32	398.29	269.67	6,248.03	667.96			
7	7,750.40	1,502.37	1,169.48	6,248.03	2,671.86	1.1707	0.9113	2.0820
	6,248.03	414.45	253.51	5,833.58	667.96			
	5,833.58	431.27	236.70	5,402.31	667.96			
	5,402.31	448.77	219.20	4,953.55	667.96			
	4,953.55	466.97	200.99	4,486.57	667.96			
8	6,248.03	1,761.46	910.40	4,486.57	2,671.86	1.3726	0.7094	2.0820
	4,486.57	485.92	182.04	4,000.65	667.96			
	4,000.65	505.64	162.33	3,495.01	667.96			
	3,495.01	526.15	141.81	2,968.86	667.96			
	2,968.86	547.50	120.46	2,421.36	667.96			
9	4,486.57	2,065.22	606.64	2,421.36	2,671.86	1.6093	0.4727	2.0820
	2,421.36	569.72	98.25	1,851.64	667.96			
	1,851.64	592.83	75.13	1,258.81	667.96			
	1,258.81	616.89	51.08	641.92	667.96			
	641.92	641.92	26.05	0.00	667.96			
10	2,421.36	2,421.36	250.50	0.00	2,671.86	1.8868	0.1952	2.0820

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
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NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
(NEPRA)

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DETERMINATION OF THE AUTHORITY
IN THE MATTER OF GRANGE POWER [redacted] LIMITED (GP[redacted]L)
(CASE NO. NEPRA/TRF-123/GP[redacted]L-2008)

PETITIONER

Grange Power Company Limited.
2nd Floor, 65-Z, Commercial Area, DHA, Lahore

AUTHORITY

Zafar Ali Khan
Member

17/6/09

Ghiasuddin Ahmed
Member

18/6

Shaukat Ali Kundi
Member

19.06.09

Maqbool Ahmad Khawaja
Member

Khalid Saeed
Chairman

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

1. Background

1.1 Grange Power Limited (GPL) (hereinafter the "Petitioner"), a special purpose company registered in Pakistan, filed the tariff petition on December 15, 2008 (received on December 19, 2008) for determination of generation tariff for its Combined Cycle Power Plant having Gross Capacity of 163.353 MW at ISO conditions to be located at Kamair village, Tehsil Arifwala, District Pakpattan, Province of Punjab. The Petitioner has filed tariff petition in accordance with Rule 3 of NEPRA Tariff Standards and Procedure Rules – 1998 (Tariff Rules). The Petitioner has also submitted Generation Licence application. The electricity to be generated will be sold to Central Power Purchasing Agency (CPPA) within National Transmission & Despatch Company (NTDC). The Gross Capacity of the plant on RFO at Mean Site Conditions would be 152 MW whereas the Net Capacity at site after deducting the Auxiliary of 5.5 MW would be 146.5 MW. The project site is 12 km from Arifwala Grid Station and conveniently located from the main road. The major advantages of the site are the availability of the drainage and all other necessary facilities.

1.2 According to the Petitioner the Private Power Infrastructure Board (PPIB) approved the project in September 2008 and advised to approach NEPRA for approval of its tariff vide letter No. 1(102) PPIB-1052/08/PRJ dated September 13, 2008. The main sponsors in the instant case are Grange Holding Limited based in UK, which own 95% of the equity. Out of the remaining 5% equity, Albario holds 1% while 4% is shared among four individual businessmen. The petitioner stated that Albario Engineering Pakistan Ltd. is a strategic partner of GE Energy in Pakistan, which has a unique experience of being O&M sub-contractor to GE for over 275 MW power Projects. The Albario is also involved as construction contractor in 450 MW projects at Balloki and Muridke.

1.3 The Authority admitted the tariff petition on December 31, 2008. Notice of admission/public hearing was published in the major national newspapers on January 20, 2009 inviting participation of the stakeholders in order to assist the Authority for arriving at just and informed decision. Invitations were also sent to the concerned Federal & Provincial Government Ministries, Chambers of Commerce and Industries, Representatives of Professional Bodies and Experts, soliciting their views on the petition. In response to the notice of admission of the petition neither comments nor intervention request was received. A public hearing on the petition was held on February 4, 2009 at NEPRA Main Office, Islamabad. The hearing was participated by the applicant and the key stakeholders.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

2. RELIEF SOUGHT

2.1 The Petitioner requested for a two-part tariff structure with an energy charge for the energy actually dispatched and a capacity charge based on contracted capacity for a period of 25 years. The following tariff for delivery of electricity to CPPA of NTDC has been proposed by GPL:

REFERENCE TARIFF PROPOSED BY GPL

25 Years Tariff	PKR / kWh	US Cents/kWh
Total Levelized	10.8570	13.9193
EPP Levelized Tariff	5.8572	7.5092
CPP Levelized Tariff	4.9999	6.4101
Average Tariff (1-25)	9.7555	12.5070
Average Tariff (1-10)	12.1420	15.5667
Average Tariff (1-25)	8.1645	10.4673

2.2 The Petitioner's above requested tariff is based on the capital structure of the Project indicated as follows:

	US$ in Million
Total Project Cost (incl. IDC)	251.433
Project Debt	188.575
Project Equity	62.858
Debt: Equity ratio	75:25

2.3 The Petitioner requested to allow the indexations like Pak WPI, US CPI, Quarterly-KIBOR interest rates and dollar /rupee parity, which according to the Petitioner are similar to the ones allowed by NEPRA in the cases of other IPPs.

3. ISSUES

3.1 Following main issues have emerged from the proceedings;

- Technology Configuration
- Net Capacity and Thermal Efficiency
- Project Cost
  - EPC Cost
  - Non-EPC Cost
  - Startup & preparations cost
  - Administrative cost
  - Customs duties & taxes

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

- Financing Fees & Costs
- Interest During Construction (IDC)
- Capacity Charge
- Energy Charge
- Plant Availability
- Start up Charges
- Timeline of the Project

3.2 Issue wise discussion is given in following paragraphs:

4. Technology Configuration

4.1 The Petitioner stated that the proposed Power Plant is based on combined cycle technology with an installed capacity of approximately 163.353 MW at ISO conditions. The plant configuration consists of one gas turbine with a Heat Recovery Steam Generator (HRSG) and a steam turbine driven generator giving a Combine Cycle Gross Output of 152 MW at plant reference conditions and 146.5 MW net when operated on RFO. The Power Plant comprises of the following:

- 1 GE PG 9171 E Gas turbine
- 1 Heat Recovery Steam Generator (HRSG)
- 1 Steam Turbine
- 1 Turbo Generator50 HZ, 13.8 KV, 0.85 power factor with rated capacity of 158.8 MVA, coupled with gas turbine
- 1 Turbo Generator, 50 HZ, 13.8 KV, 0.8 power factor with rated capacity of approximately 60 MVA coupled with Steam Turbine
- 1 Step Up transformer of 13.8/132 KV, connected with steam turbine generator
- 1 Step Up transformers of 13.8/132 connected with each gas turbine generator
- 132 outdoor switchyard with all essential protection
- Main Cooling Water System (Cooling Tower)
- Closed Cooling Water System
- Common Control Room

4.2 According to the Petitioner although the GTs are designed for tri-fuel firing but RFO is the primary fuel whereas startups and shutdowns are on distillate oil (HSD). The petitioner stated that the gas turbine exhaust gas is diverted to Heat Recovery Steam Generator (HRSG) through diffuser to produce steam for supplying steam-to-steam turbine. The HRSG is dual pressure, natural circulation type with two drums, 1 for

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

high-pressure steam and 1 for low pressure steam. The closed cooling water system supplies gas turbine, steam turbine, generators, lube oil coolers, feed water pumps, and gas compressor with necessary cooling. The closed cooling water system is connected to main cooling water system via a heat exchanger. The power to NTDC electrical system will be supplied through 132 transmission line. The reference conditions indicated by the petitioner are as under:

• Ambient Air Temperature	25 degree C.
• Relative humidity	60%
• Site Altitude	600 ft above Sea level
• Ambient Air pressure	1 bar

4.3 While justifying the selection of GE 9E gas turbine based on RFO fuel, the Petitioner stated that the same turbines are already operating in Guddu since 1986, KAPCO and Uch Power. Among all the three projects referred by the Petitioner only KAPCO units operate on LSFO fuel. The Petitioner in support of its argument has also referred the upcoming projects i.e. Nandipur, Chicho Ki Malyan, Foundation Power, KESC Bin Qasim, Japan Power expansion and Ruba with the same technology. According to the Petitioner these machines have the reputation of robust machines in Pakistani market.

4.4 The Petitioner could not provide any evidence in support of performance of the proposed machines on RFO as the most of the referred plants are yet to come while the existing plants are operating on gas fuel in Pakistan. The performance on RFO has not been established as yet. The Authority considers that in view of acute shortage of power when the country is in dire need of additional power capacity the proposed technology on RFO is being accepted reluctantly. The Authority further considers that since these plants can be operated more efficiently on gas fuel therefore in future they should be given priority in gas allocation whenever the gas is available.

5. Net Capacity and Thermal Efficiency

5.1 On the Issue of net capacity the Petitioner stated that the GE frame 9E machine has a nominal ISO rating of 126 MW on gas fuel. After adjusting for site condition, the site rating on gas is approximately 112 MW. When run on RFO, the gas turbines are further de-rated because the firing temperature has to be lowered because of higher flame radiation of oil. Accordingly the contractor has guaranteed a net output of 97 MW for gas turbine. The overall net output at Mean Site Conditions guaranteed by the EPC Contractor is 146.5 MW.

NEPRA AUTHORITY
NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

5.2 The CPPA objected to the proposed net output of 146.5 MW, which according to it was about 20% less than the net capacity of 175 MW in the case of Foundation Power a similar plant on gas operation. In CPPA's opinion all the adjustments in the capacity with respect to plant operation on RFO were based on just assumptions and were not supported with the literature from the manufacturer like degradation and correction curves, which are available in the case of operation on gas. The CPPA stated that in order to evaluate whether the output and efficiency is as per the standards and norms the heat balance diagram should be provided. According to CPPA the degradation of GT with RFO firing is frequent which will involve forced shutdown for cleaning of HGP section of GT.

5.3 As pointed out by the CPPA there is no track record of the proposed technology on RFO based operation either in Pakistan or in the world, therefore, the figure of net output indicated by the petitioner cannot be verified. In the absence of any benchmark in this regard, the Authority is constrained to accept the net output of 146.5 MW as proposed by the petitioner for the purpose of calculating different components of the generation tariff. In order to establish a realistic benchmark for net capacity, Initial Dependable Capacity Test shall be carried out at the time of Commercial Operation Date (COD) in the presence of NEPRA representative. In case the net output and net efficiency as a result of tests is established higher than the minimum net output of 146.5 MW and minimum net efficiency of 45% then the relevant tariff components shall be adjusted accordingly. In case the net output and net efficiency as a result of tests are established less than the aforementioned output and heat rates no adjustment shall be allowed.

5.4 The Petitioner indicated 82% plant availability. The CPPA supported the Petitioner's request in this regard. The Authority in the case of Combined Cycle Gas Turbines determined 90% availability on gas. Similarly in the case of Reciprocating Engines Technology based on RFO fuel, the Authority fixed benchmark plant availability 88%. The Authority considers that the proposed plant availability of 82% in the instant case is much lower as against the already approved availability of 85% in other similar case; therefore, without any cogent reason the Authority is constrained to accept 82% plant availability. The Authority has, therefore, decided to allow 85% plant availability in the instant case.

6. Engineering, Procurement and Construction (EPC) Cost

6.1 The petitioner requested an EPC Cost of US$ 187 million, the breakup of which is given hereunder:

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

	US$ (Million)
EPC Contract- offshore	151.250 million
EPC Contract- onshore	35.750 million
Total EPC Contract	**187.000**

6.2 The Petitioner claimed that the above EPC cost was very competitive considering the economic and law & order situation in the country. According to the petitioner the project is unique in many respects e.g. the onshore part of the project will be executed by the local contractors unlike other projects where Chinese are EPC Contractors, which will give boost to the local engineering industry. The Petitioner further stated that out of the onshore portion US$23 million is the cost of civil works, which will be executed by the Habib Rafique, one of the most experienced civil work company.

6.3 In order to substantiate its claim the Petitioner was directed to provide detailed break up of EPC cost. The Petitioner provided partial break up of the costs. Without complete information the Authority could not carry out the item wise cost comparison with the already approved projects of similar technology and size. The Authority however observed that the cost of the major items was substantially high when compared with the similar plant having similar technology and size recently decided by the Authority indicated that the requested costs. According to the original submission of the Petitioner the overall EPC cost in terms of per MW works out US$ 1.27 million as against US$ 1.10 million per MW allowed in other similar case.

6.4 Subsequent to the observations made by the Authority's during the hearing the Petitioner revised the original EPC cost of US$187 million to US$ 178.35 million. The Authority considers that keeping in view the global economic recession and decline in steel and copper prices the revised EPC cost is still substantially high. The Authority further considers that in the instant case the benefit of local onshore contractor in the shape of reduction in overall EPC cost has not been reflected. According to Rule 17 sub-rule 3(i) of the Tariff Standards & Procedure Rules-1998, the Authority can allow to recover only prudently incurred costs. The Authority has also been informed that the Power Purchaser has reduced the number bays from four to two at the interconnection, which will result in cost saving. In view of the aforementioned in Authority's opinion the agreed EPC cost cannot be considered as prudent and needs to be rationalized. Accordingly on the principle of equity and fairness, the Authority has assessed US$ 136.350 million on account of off-shore EPC as allowed in the case of an identical IPP.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

6.5 As regards the onshore portion of the EPC the Authority in the instant case has assessed US$ 28 million which will be incurred in Pak Rupees therefore equivalent amount in terms of Pak Rupees @Rs.80.45/US$ works out as Rs. 2,252.6 million to be adjusted with WPI (Building Materials); the reference month in this regard will be April, 2009.

7. Project Development Cost

7.1 The petitioner requested US$ 3.718 million as the project development cost that included US$2.000 million for non-EPC construction works.

7.2 The Authority having examined the item wise details of the Project Development Cost observed that the non-EPC construction cost under this head was not supported with any documentary evidence and was not justified. The petitioner's request except non-EPC construction cost being reasonable and comparable with other similar projects is allowed. Since this cost will be incurred in local currency therefore is being assessed as Rs. 134 million at exchange rate of Rs. 78/$. For the purpose of tariff calculation this amount at the exchange rate of Rs. 80.45/US$ works out as US$ 1.666 million.

8. Administrative Costs

The petitioner requested US$ 1.333 million for staff salaries, fixed assets and office running expenses. The Petitioner's request is considered reasonable therefore is accepted as such.

9. Insurance during construction

9.1 The petitioner stated that they are negotiating insurance fees with AON for phases, construction as well as operation. The insurance for both the phases is quoted as 1.35% of EPC contract. According to the Petitioner the insurance costs have gone up tremendously because of two reasons (i) financial distress in the international market; (ii) terrorism and sabotage activities in the region. According to the Petitioner the quote is comprehensive as it covers all-risk insurance/re-insurance, third party liability; marine cargo, terrorism, etc. and would be subject both to US$ CPI as well as to US$/PKR adjustment/indexation. The Petitioner estimated US$ 2.408 million as insurance cost during construction based on the aforementioned assumptions.

9.2 The Authority in all other cases has allowed this cost as per the actual to cover all those risks which are agreed in the Power Purchase Agreement; therefore the Petitioner is

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

allowed to cover the same with a maximum cap of 1.35% of the EPC to be adjusted at the time of COD. Accordingly, on the basis of revised EPC the reference insurance cost during construction in the instant case has been worked out as US$2.219 million and the same is allowed.

10. Un-recovered Fuel & Utility Costs during Testing

10.1 The petitioner has requested US$ 2 million as un-recovered fuel & utility costs during testing.

10.2 The Petitioner was asked to provide rationale/working in support of its claim. The Petitioner in response has provided only calculation assuming 8 testing days, fuel consumption 0.20 Kg/kWh, RFO price of Rs. 26.64 per Kg and exchange rate of Rs.78/$. During the testing the cost of fuel is paid by the Power Purchaser on the basis of units delivered. The Authority in the other similar cases only allowed fuel costs for pre-synchronization tests. Since no fuel cost break-up in terms of pre-synchronization and post-synchronization was available in the instant case therefore the Authority is constrained to accept the Petitioner's claim as such. In the absence of any documentary evidence the Authority had to rely on the benchmark established in the cases already decided. In view thereof, in the instant case under this head US$ 0.500 million is being allowed.

11. Mobilization Advance

11.1 The petitioner originally requested US$ 4.77 million on account of mobilization advance. Subsequently the Petitioner revised this amount to US$ 3.00 million.

11.2 The Authority has considered the Petitioner's request and in its opinion the staff for Operation & Maintenance is not required 12 months before the commencement of COD. Although the Petitioner has submitted a proposal from Albario but without justification for US$3.00 million as Mobilization Advance. The requested amount is significantly high as compared to the allowed cost in the range of US$0.60 million to US$ 0.90 million depending upon the size of the plant. The Authority considers that allowing higher cost than the cost allowed in other comparable projects would not only be unfair to the other IPPs but would be against the interest of the consumers. In order to make fair assessment on this account and keeping in view the size of the plant US$ 0.60 million is considered reasonable assessment.

12. Lenders, Independent & Owner Engineer

12.1 The petitioner in its original petition requested US$ 2.55 million on account of Lenders, Independent & Owner Engineers, which it subsequently revised to US$ 2.47 million.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

According to the Petitioner the major portion of this cost is Owner's engineers, which is about 1% of EPC cost. The Petitioner stated that it received Owner's Engineer proposal from OMS indicating US$ 2.2 million that included the cost of pre-feasibility study and agreements, which were not required. The Petitioner stated that the cost for Owner's Engineer would not be more than 1% of the EPC cost. The Petitioner further stated that the costs of Lenders' and Independent Engineer were not expected to be more than US$ 0.70 million, which according to it was as per standard.

12.2 Based on the information provided and the cost allowed in the comparable projects having similar technology and fuel, the Petitioner's request has been evaluated. The Authority considers that in the instant US$ 2.00 million as cost of Lenders', Independent and Owner's Engineers is a fair assessment.

13. Custom Duties and Taxes

13.1 The petitioner requested US$ 9.350 million (6.25% on offshore EPC) on account of custom duties & taxes on import. The Petitioner in its revised submission revised this cost to US$7.969 million.

13.2 The Petitioner's request is in line with the Authority's earlier decisions. Since the EPC cost consequent to the adjustments made in the EPC cost has been revised therefore the amount of custom duties and taxes would also be revised. The Authority, based on the revised EPC cost, has assessed US$ 8.181 million (6% of offshore EPC), which will be adjusted as per actual at the time of COD.

14. Withholding Tax on Onshore EPC contract

14.1 The petitioner requested US$ 2.805 million as withholding tax on onshore EPC contract, which was subsequently revised by the Petitioner to US$ 2.046 million.

14.2 Based on the adjusted EPC cost an amount of US$ 1.680 million (6% of onshore EPC) as against requested US$ 2.046 million on account of withholding tax on onshore EPC contract has been assessed, which is subject to adjustment as per actual at the time of COD.

15. Financing Cost

15.1 Upfront & Commitment Fees and Other Charges

15.1.1 The petitioner requested on account of Upfront Fees Commitment fees, L/C Fees, L/C Retiring Charges and CED on Financing Costs, an amount of US$ 5.053 million, which it subsequently revised to US$ 4.649 million based on the revised EPC cost.

POWER REGULATORY AUTHORITY NATIONAL ELECTRIC
NEPRA
AUTHORITY

15.1.2 In the instant case certain adjustments in the EPC cost have been made, consequently, the debt amount has been reduced. Based on the adjusted EPC and revised debt amount the Authority on this account has assessed US$ 5.229 million subject to adjustment as per actual at COD with a cap of 3% of the borrowing.

16. Interest During Construction (IDC)

16.1 The petitioner initially requested an amount of US$ 29.857 million on account of Interest During Construction, which was calculated on the basis of debt requirement of US$188.575 million. Subsequently, based on the revised debt amount of US$ 176.971 million, it was revised to US$ 28.020 million.

16.2 Consequent to the adjustments in the different costs along with adjustment for exchange rate variation, the overall CAPEX of US$ 182.53 million has been assessed. Based on the assessed CAPEX, proposed disbursement plan and interest rate of 16.23% (KIBOR 13.23%+35), the IDC in the instant case works out as US$ 29.495 million to be adjusted at the time of COD as per actual loan disbursement.

17. CAPACITY CHARGE

17.1 Fixed O&M Cost

17.1.1 The Petitioner in its original petition requested to allow Rs.0.3208/kW/hr as fixed O&M Cost comprising of Rs. 0.1642/kW/hr local and Rs. 0.1378/kW/hr foreign. The requested overall annual fixed O&M on the basis of net capacity of 146.5 MW works out as US$ 4.97 million. Since the Petitioner had not signed any O&M contract therefore its request was not supported with any documentary evidence to justify such high cost. The Petitioner was accordingly advised to substantiate its request with documentary evidence. The Petitioner vide its letter dated May 12, 2009 has provided a copy of the Preliminary O&M contract signed with it partner Albario. According to the terms of the contract the Operator shall be paid lump sum Mobilization Period Fee for the services to be performed by the O&M Operator during the Mobilization Period, which shall be payable 100% at the time of issuance of Notice to Proceed not later than Twelve (12) months prior to the COD). The Owner shall pay to the O&M Operator Fixed O&M Foreign (to be adjusted for USCPI & Rs/$ parity) and Fixed O&M Local (indexed to Pakistan WPI) in addition to a Fixed Annual Fee to be paid to OEM or other approved suppliers for provision of maintenance services for Gas Turbines and Steam Turbine.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

17.1.2 On the basis of the O&M contract the overall per annum fixed O&M requested by the Petitioner works out as US$ 5.277 million, which is higher by about 69% against US$ 3.12 million allowed in other similar cases.

17.2 **Fixed O&M Cost (Local)**

17.2.1 The Petitioner requested Rs.0.1523/kW/hr as fixed O&M (local) cost in the revised submissions, which translates in to US$ 2.50 million when converted at an exchange rate of Rs. 78/$. The Petitioner stated that this component included the remuneration to employees and Executive Directors, Administration costs including rents, utilities, and local taxes. The Petitioner further stated that it also included the costs such as NEPRA annual fees and bank's yearly commission upon opening of Letter of Guarantee in favor of WAPDA/NTDC, audit fees, legal retainer-ship and consultancy fees, environmental monitoring and reporting fees, etc. This component is subject to local WPI indexation/adjustment.

17.2.2 The Authority observed that the amount of US$ 2.50 million requested by the Petitioner as fixed O&M local almost double the US$ 1.34 million allowed in the other comparable cases. In Authority's opinion the evidence provided by the Petitioner is just a Preliminary Agreement and its has not attained finality as is evident from the language of the contract that "the ***following fee structure ("LTSA Fee") will be used for payments to OEM or other approved suppliers, which has agreed with O&M Contractor to provide maintenance services for Gas Turbines and Steam Turbine", which means that the agreement is still not final.*** The Authority considers that the Fee agreed in the Preliminary Agreement is not prudent and allowing this cost would establish high benchmark, which would be against the interest of end-consumers. In view of aforementioned the fixed O&M local cost of US$ 1.34 million as allowed in the other comparable projects is being allowed in the instant case. This amount translates as Rs 0.0840/kW/hr. In future the local cost component shall be adjusted for variation in WPI. The reference WPI (Manufactures) for indexation of local component will be 137.8 for December 2008.

17.3 **Fixed O&M Costs (Foreign):**

17.3.1 The petitioner requested Rs.0.1685/kW/hr on account of foreign fixed O&M, which works out as US$ 2.77 million. According to the Petitioner this component includes the Management Fee of the O&M Operator, which would be subjected both to US CPI inflation as well to US$/PKR adjustment/indexation. Fixed O&M component represents the fixed cost of all staff for O&M, power plant administration, security, transportation, overheads, office costs, professional fees etc.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

17.3.2 The Petitioner's request has been evaluated on the basis of information provided by it and the information available in other similar cases. The Authority finds no cogent reason to allow higher O&M foreign than the already established benchmark for similar projects. In view thereof, the Authority has decided to allow the same amount of US$ 1.78 million or Rs. 0.1116/kW/hr as approved in other similar case. This component of O&M fixed cost will be adjusted for exchange rate variation and US CPI, against the reference exchange rate of Rs. 80.45/US$ (Selling rate on April 27, 2009 as per National Bank of Pakistan) and reference US CPI 210.228 (All Urban Consumers for the month of December 2008 as per Bureau of Labor Statistics USA).

17.4 **Insurance**

17.4.1 The petitioner requested Rs. 0.1501/kW/hr on account of cost of insurance. While justifying its request the Petitioner stated that it was currently negotiating insurance fees with AON for both construction phase as well as operation phase. The Petitioner further stated that for construction phase as well as operational phase insurance quoted is 1.35% of EPC contract. According to the Petitioner the insurance costs have gone up tremendously because of two reasons (i) financial distress in the international market (ii) terrorism and sabotage activities in the region; as a result this price may even increase in future. The Petitioner attached with the petition a quote from AON, which according to it was comprehensive as it covered all-risk insurance/re-insurance, third party liability, marine cargo, Terrorism, etc. The Petitioner requested to index this cost both with US CPI as well as to US$/PKR parity.

17.4.2 The Authority considers that the Petitioner's request can be accepted to the extent the risks are covered under the Power Purchase Agreement subject to adjustment on the basis of actual documentary evidence at COD and annually thereafter up to maximum of 1.35% of EPC. Based on the revised EPC cost the insurance component has been assessed as Rs. 0.1391/kW/hour in the instant case.

17.5 **Cost of Working Capital**

17.5.1 The petitioner in its tariff petition has requested to allow financing cost of working capital of Rs. 0.1046/kW/hour to finance fuel inventory of RFO for 30 days at 60% plant factor, accounts receivables from NTDC, and mandatory stores/spares as well as emergency spares. The Petitioner has based its calculation for working capital requirement of US$ 12.840 million (Rs.1,001.525 million) at current fuel price and 3 months KIBOR + 2.00% per annum. The Petitioner requested to recalculate the working capital requirement at the time of COD based on the prevailing fuel prices and

NEPRA AUTHORITY

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

exchange rates at the time of COD. The petitioner revised its cost of working capital and requested to allow Rs. 0.1098/kW/hr.

17.5.2 The Authority considers that Petitioner request for allowing mandatory stores/spares or emergency spares as part of working capital requirement is not consistent with its earlier decisions as these have not been allowed to any other similar IPP. The working capital cost allowed to other IPPs includes cost of financing for maintaining 30 days fuel inventory at 100% load, average receivables for 15 days at 60% load factor and sales tax @ 16% on stored fuel and receivables. Based on these parameters and recent fuel cost as well as KIBOR + 200 bps, the Authority has assessed the reference cost of working capital in the instant case as Rs.0.1031/kWh.

17.6 **Return on Equity (ROE)**

17.6.1 The petitioner requested Return on Equity of Rs. 0.5916/kW/hr @15% per annum on its equity investment of US$ 58.990 million.

17.6.2 The petitioner's request is in line with the return allowed by the Authority to other projects. The project cost in the instant case has been rationalized; as a result thereof the amount of equity investment has been revised against the estimates of the Petitioner. Based on the assessed equity of US$ 54.313 million the ROE component of has been assessed as Rs. 0.5107/kW/hour. ROE will be adjusted for exchange rate variation i.e. Rs./US$. The reference exchange rate parity for this adjustment is Rs. 80.45/US$.

17.7 **Return on Equity During Construction (ROEDC)**

17.7.1 The petitioner has also requested a return on equity of Rs. 0.1075/kW/hr during the construction period so that it is ensured 15% IRR for the period of 25 years of project life. The Petitioner based its calculation assuming 4 years construction period starting from the year 2008.

17.7.2 The Authority considers that the Petitioner's working of return during construction on the basis of four years construction period is not justified because the construction period for the purpose of calculating return on equity during construction is taken from the date of Financial Close. In the instant case the Financial Close is yet to be achieved. In order to calculate 15% IRR based on the similar approach as adopted in the all other IPPs, the Return on Equity During Construction (ROEDC), in the instant case, has been worked out as Rs.0.0551/kW/hour. This would be subject to adjustment at the

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

time of COD on account of actual drawdown of equity. The IRR has been calculated on the basis of maximum dividend payouts to the shareholders during each year of operation for the period of 25 years. ROEDC will be adjusted for exchange rate variation i.e. Rs./US$. The reference exchange rate parity for this adjustment is Rs. 80.45/US$.

17.8 **Withholding Tax**

17.8.1 The petitioner submitted that Withholding tax on dividends (currently at 7.5%) 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. The petitioner based on the revised return requested withholding tax of Rs. 0.0567/kW/hr.

17.8.2 The Petitioner's request for allowing withholding tax is consistent with the Authority's earlier decision. Based on the assessment of ROE & ROEDC the amount of withholding tax in the instant case has been assessed as Rs. 0.0424/kW/hr.

17.9 **Debt Servicing**

17.9.1. The Petitioner requested debt servicing of Rs. 2.2397/kW/hr based on annual interest rate of 15% based on debt amount of US$ 176.971 million.

17.9.2. Consequent to the revision in the project cost in the instant case the debt amount was revised to US$ 162.939 million. Based on the revised amount of debt and interest rate of 16.23% (KIBOR 13.23%+3%), the debt service has been assessed as Rs. 2.0820/kW/hr

18. Energy Charge

18.1 **Fuel Cost**

18.1.1 The Petitioner requested Rs.5.2910/kWh, which is based on a gross Calorific Value of 40,088 (Btu/kg) HHV, HHV/LHV conversion factor of 1.05, Combined Cycle Net Thermal Efficiency of 45.00% on RFO at 132 KV bus bar, RFO price of Rs.24,289/M.Ton and inland freight of Rs.2,350/M.Ton. According to the Petitioner on RFO operation, the assumed Thermal Efficiency is on optimum loading on a brand new machine and the following factors need to be applied to the Fuel Component which would need to be incorporated in the PPA as well:

(a) Degradation Factor for Heat Rate (Recoverable and Non-Recoverable) as per Manufacturer's data table/curves; and

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

(b) Partial Load Heat Rate Adjustments as per manufacturer's data table.

(c) The fuel component would be subject to indexation/adjustment on any changes in fuel price on a pass through basis.

18.1.2 During the hearing the CPPA stated that for standard machines running on gas all the degradation and adjustment curves are available but the operating parameters on RFO operation of such plants are not available. The CPPA further stated that for evaluating the thermal efficiency of the plant the correction factors for determining net capacity from gross capacity are required, which are not available. According to the CPPA since this project is the first on RFO therefore certain baselines are required to be set; the most important thing in this regard is the efficiency degradation curve. CPPA informed that the issue was deliberated with the various stakeholders and it was agreed that for such type of plant the thermal efficiency of the combined power plant should be 44% average over the life of the project on full load.

18.1.3 Having considered the Petitioner's submission and CPPA's comments during hearing it is observed that without any concrete evidence and authentic information regarding the correction in the thermal efficiency the judicious average efficiency for the life cycle of the plant cannot be assessed at this point of time. The average efficiency of 44% over the life of the project as recommended by the CPPA is without any basis therefore cannot be accepted particularly when compared with efficiency of about 49-50% in case of plant operation on gas. On the principle of fairness, equity and justice the thermal efficiency shall be determined based on the Heat Rate Test at the time of COD in the presence of NEPRA personnel.

18.1.4 For the purpose of calculating fuel cost component the net efficiency of 45%, RFO price of Rs. 27,777/ton including freight, RFO calorific value of 40,483 Btu/kg and LHV-HHV factor of 1.05, the fuel cost component is assessed as Rs. 5.4625/kWh and the same is allowed. The Fuel Cost Component will be subject to adjustment on account of variation in fuel price.

19. Variable O&M Cost

19.1.1 The Petitioner requested Rs. 0.4578/kWh as variable O&M cost applying a factor of 3 for each factored fired hour on RFO, Hot Path Inspection Charges and Major Overhauling Charges etc. based on the exchange rate of Rs. 78/US$. The requested variable O&M if adjusted for exchange rate (Rs.80.45/US$ as on April 27, 2009) works out as Rs. 0.4722/kWh. According to the Petitioner this consists of the service fees of

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

the O&M operator on a kWh basis for the day-to-day management of the Plant, lubricants, chemicals, consumables, and technical services needed for replacement of spare parts on completion of service life of such parts as well as replacement on account of premature failure of parts. The Petitioner stated that the actual timings of the parts replacements and overhaul would depend upon the actual factored fired hours. The Petitioner further stated that it also includes cost of unscheduled maintenances, which are separate from the major overhauls. The Petitioner requested to adjust this component for both Rs./US Dollar variation and US CPI.

19.1.2 Responding to an objection raised by the CPPA with respect to mobilization advance and the O&M related issues the Petitioner informed that they were in the process of discussion with GE. According to the Petitioner 18 years O&M contract was the most complicated contract; therefore the numbers indicated were those, which it got from the GE.

19.1.3 During the hearing Country Executive GE Energy stated that unlike gas turbine the O&M contract is purely tailor made based on the customer's requirement, operational parameters and the site conditions; therefore no O&M contract can be the same in terms of technical perspective as well as commercial perspective. According to GE Representative since the O&M Contractor has to operate and maintain plant on a long term basis therefore it becomes partner with the owner from the day the foundation is laid and the Gas Turbines arrive at site. The GE representative also stated that there may be required two to three people initially but the number keeps on growing and by the time the project reaches it COD the full O&M team is trained and familiar with the site.

19.1.4 Responding to the Authority's observation, the Petitioner stated that the reason for not finalizing the O&M contract is that it had not finalized it equipment like steam turbine, HRSG etc. Once the model numbers and manufactures are finalized the technical and designed data will be provided to GE, thereafter, the O&M contract will be signed.

19.1.5 As regards the application of 3 Fired Factored Hours (FFH) on RFO operation as against one FFH on Gas operation, the Petitioner did not substantiate with any documentary evidence. The representative of GE himself stated that the O&M contract is tailor made according to the requirement of the customer, which means that there is no hard and fast rule for applying 3 RFO factor for each factored fired hour on RFO as compared to an hour fired on gas depending upon the technology of the plant, origin of the plant and spares to be used for plant operation.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

19.1.6 Based on the above analysis and comparison with other similar projects, in the instant case the Authority has decided to allow the same variable O&M cost of Rs. 0.4660/kWh as allowed in the similar case, which after exchange rate adjustment i.e. from Rs. 79.90/US$ to Rs. 80.45/US$ works out as Rs.0.4691/kWh. This will be adjusted for exchange rate variation (Rs./US$) and US CPI. The reference exchange rate and USCPI for future adjustment shall be Rs. 80.45/US$ and 210.228 (US Urban December 2008) respectively.

20. Summary

20.1 Based on the above discussion, the financial parameters have been determined as follows:

Plant Capacity (Gross)	152 MW
Auxiliary	5.5 MW
Plant Capacity (Net)	146.5 MW
EPC cost	US$ 164.350 Million
Project Development cost	US$ 1.666 Million
Administrative Expenses	US$ 1.333 Million
Un-recovered Fuel cost for testing	US$ 0.500 Million
Insurance during Construction	US$ 2.219 Million
Mobilization Advance	US$ 0.600 Million
Lenders, Independent & Owner Engineer	US$ 2.000 Million
Customs duties & taxes	US$ 8.181 Million
Withholding Tax on Construction Costs	US$ 1.680 Million
Financing fees and charges	US$ 5.229 Million
Interest during construction	US$ 29.495 Million
Total Project Cost	**US$ 217.253 Million**
Capital Structure	75:25
Loan	US$ 162.939 Million
Equity	US$ 54.313 Million
Reference Exchange Rates:	Rs. 80.45/US$ Rs.105.98/Euro
Reference WPI (manufactures)	137.8 December 2008
Reference US CPI (all urban):	210.228 December 2008
Cost of Debt:	KIBOR + 300 bps
Reference KIBOR (3 months):	13.23%

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

IRR (net of Withholding tax):	15%
Reference Fuel Price:	Rs. 25,427/M.Ton (Without GST)
Reference inland freight	Rs. 2,350/M. Ton
Reference Calorific Value of HSFO	40,483 BTUs/Kg
HHV/LHV Adjustment Factor	1.05
Reference Thermal Efficiency (Net LHV)	45%
Reference Conditions:	
• Altitude:	215 meter above sea level
• Ambient Temperature	25°C
• Relative Humidity	60%
• Site Altitude	600 ft above Sea level
• Ambient Air pressure	1 mbar

20.2 In view of the above, the reference tariff of Grange Power Company Limited (GPL) has been determined as set out in the following order;

ORDER

Pursuant to Rule 16 (11) of the NEPRA Licensing (Generation) Rules, Grange Power Limited (GPL) is allowed to charge, subject to adjustment of Capacity Purchase Price on account of net dependable capacity and net thermal efficiency as determined by test jointly carried out by the Central Power Purchasing Agency (CPPA) of the National Transmission and Dispatch Company (NTDC) and the Petitioner, the following is approved as specified tariff for GPDL for delivery of electricity to the CPPA of the NTDC for procurement on behalf of Ex-WAPDA Distribution Companies:

Specified Reference Tariff

Tariff Components	Year 1 to 10	Year 11 to 25	Indexation
Capacity Charge PKR/kW/Hour)			
O&M Foreign	0.1116	0.1116	US$ /PKR & US CPI
O&M Local	0.0840	0.0840	WPI
Cost of Working Capital	0.1031	0.1031	KIBOR
Insurance	0.1391	0.1391	US$ /PKR
Debt Service – Local	2.0820	----	KIBOR
Return on Equity	0.5107	0.5107	US$ /PKR
ROE during Construction	0.0551	0.0551	US$ /PKR
Total Capacity Charge	**3.0855**	**1.0036**	

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Energy Charge on Operation on Furnace Oil Rs./kWh Fuel Cost Component	5.4625	5.4625	Fuel Price
Variable O&M Foreign Local	0.4691 ----	0.4691 ----	US$/PKR & US CPI

Note: i) Component wise proposed tariff for operation on RFO is indicated at Annex-I.
ii) Debt Servicing Schedule is attached as Annex-II.

The following adjustments /indexations shall be applicable to reference tariff;

I. One Time Adjustments

I.(i) Adjustment in EPC Cost

The Authority has assessed offshore EPC cost as US$ 136.350 million and onshore as US$ 28 million (to be incurred in PKR). Since the exact timing of payment to EPC contractor is not known at this point of time therefore an adjustment for relevant foreign currency fluctuation for the portion of payment in the relevant foreign currency will be made. In this regard the sponsor will be required to provide all the necessary relevant details along with documentary evidence. The adjustment shall be only for currency fluctuation against the reference parity values. Based upon such information the relevant currency of EPC cost components shall be adjusted and applied to the corresponding EPC cost components. The relevant tariff components i.e. Insurance, ROE, ROEDC, Principal Repayment and Interest Charges shall be adjusted accordingly.

I. (ii) Adjustment due to Variation in Net Capacity

The reference tariff has been determined on the basis of minimum net capacity of 146.5 MW at delivery point at mean site conditions. All the tariff components except fuel cost component shall be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) tests to be carried out for determination of contracted capacity in the presence of NEPRA representative. Adjustment shall not be made if IDC is established less than 146.5 MW net capacity at reference site conditions. The adjustments shall be made according to the following formula:

$$CC_{(Adj.)} = CC_{(Ref)} \times 146.5MW / NC_{(IDC)}$$

Note: Above formula shall be applicable to all the individual relevant components of Capacity Charges and variable O&M as well.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Where;

$CC_{(Adj)}$	=	Adjusted relevant Capacity Charge components of tariff
$CC_{(Ref}$	=	Reference relevant Capacity Charge components of tariff
$NC_{(IDC)}$	=	Net Capacity at reference site conditions established at the time of IDC test

Note:-Reference capacity charge components of Tariff i.e. Revised O&M Foreign, Revised O&M Local, Insurance, Debt Servicing, Return on Equity and ROEDC and Variable O&M to be adjusted as per IDC test.

Reference Conditions:

- Ambient Air Temperature — 25 degree C.
- Relative humidity — 60%
- Site Altitude — 600 ft above Sea level
- Ambient Air pressure — 1 bar

I. (iii) Adjustment due to Variation in Net Efficiency

The reference tariff has been determined on the basis of minimum net efficiency of 45%. The fuel cost component shall be adjusted at the time of COD based upon Heat Rate Test to be carried out in the presence of NEPRA representative. The adjustment shall not be made if the net efficiency is established less than 45%. The adjustment shall be made according to the following formula;

$FC_{(Adj)}$ = Rs.5.4625 per kWh / 7582 x $HR_{(T)}$

Where;

$FC_{(Adj)}$	=	Adjusted fuel cost component at the time of heat rate test at COD
$HR_{(T)}$	=	Heat Rate in Btu per kWh established after Heat Rate Test at the time of COD

I.(iv) Adjustment Based on Actual Interest During Construction & Financing Fees

Debt Service, Return on Equity and ROE during construction shall be adjusted at the time of COD on account of actual variation in drawdown and Interest During Construction and financing fees with reference to the estimated figures of US$ 29.495

NEPRA AUTHORITY

million and US$ 5.229 million respectively. Adjustment on account of financing fees is restricted to the extent of 3% of total financing.

I.(v) Adjustment due to Custom Duties & Withholding Taxes

Debt Service, Return on Equity and ROE during construction shall be adjusted at the time of COD on account of actual variation in custom duties & withholding Taxes with reference to the estimated figures of US$ 8.181 million and US$ 1.680 million respectively.

I.(vi) Adjustment for variation in Rupee/Dollar parity

Relevant reference tariff components shall be adjusted at COD on account of variation in Dollar/Rupee parity.

II. Adjustment in Insurance as per actual

The actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser not exceeding 1.35% of the EPC cost will be treated as pass-through. Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon production of authentic documentary evidence by GPL according to the following formula;

$$\text{Insurance}_{(Adj)} = AIC / P_{(Ref)} * P_{(Act)} / 80.45 * ER_{(Rev)}$$

Where;

AIC	=	Adjusted Insurance Component (Rs. kW/hr) as per IDC Test
$P_{(Ref)}$	=	Reference Premium US$ 2.219
$P_{(Act)}$	=	Actual Premium or 1.35% of the adjusted EPC which ever is lower
$ER_{(Rev)}$	=	The revised TT and OD selling rate of US$ as notified by the National Bank of Pakistan at invoice date

III. Adjustment in Return on Equity (ROE)

Return on Equity will be quarterly adjusted on account of variation in PKR/US$ parity according to the following formula:

$$ROE_{(Rev)} = ROE_{(Ref)} * ER_{(Rev)} / 80.45$$

NEPRA AUTHORITY

Where;

$ROE_{(Rev)}$	=	Revised ROE
$ROE_{(Ref)}$	=	Reference ROE
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

IV. Adjustment in Return on Equity during Construction (ROEDC)

Return on Equity during Construction will be quarterly adjusted on account of variation in PKR/US$ parity according to the following formula:

$$ROEDC_{(Rev)} = ROEDC_{(Ref)} * ER_{(Rev)} / 80.45$$

Where;

$ROEDC_{(Rev)}$	=	Revised ROEDC
$ROEDC_{(Ref)}$	=	Reference ROEDC
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

V. Adjustment of Withholding Tax

Withholding tax will be adjusted on account of exchange rate variation according to the following formula:

$$WT_{(Rev)} = WT_{(Ref)} * ER_{(Rev)}/80.45$$

Where;

$WT_{(Rev)}$	=	Revised Withholding tax
$WT_{(Ref)}$	=	Reference Withholding tax
$ER_{(Rev)}$	=	The revised TT&OD selling rate of US dollar as notified by the National Bank of Pakistan

VI. Pass-Through Items

i) "No provision for income tax, workers' profit participation fund and workers' welfare fund, any other tax, excise duty or other duty, levy, charge, surcharge or other governmental impositions, payable on the generation, sales, exploration has been accounted for in the tariff. If GPL is obligated to pay any tax on the income purely

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

generated from its operation i.e. Electricity Generation of power producer, the exact amount should be reimbursed by CPPA on production of original receipts. This payment may be considered as pass-through (as Rs./kW/hour) hourly payment spread over a 12 months period in addition to the capacity purchase price in the Reference Tariff. Furthermore, in such a scenario, GPL may also submit to CPPA details of any tax shield savings and CPPA will deduct the amount of these savings from its payment to GPL on account of taxation.

ii) Withholding tax on dividend is also a pass-through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. In a reference tariff table withholding tax number is indicated as reference and CPPA (NTDC) shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 15% reference equity i.e. hourly payment (Rs./kW/hour) spread over a 12 month period according to the following formula:

$$\text{Withholding Tax Payable} = [\{15\% * (E_{(Ref)} - E_{(Red)})\} + ROEDC_{(Ref)}] * 7.5\%$$

Where:

$E_{(Ref)}$	=	Adjusted Reference Equity at COD
$E_{(Red)}$	=	Equity Redeemed
$ROEDC_{(Ref)}$	=	Reference Return on Equity During Construction

iii) In case Company does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the Net Return on Equity) would be carried forward and accumulated so that the Company is able to recover the same in hourly payments spread over 12 months period as a pass through from the Power Purchaser in future on the basis of the total dividend pay out.

VII. Indexations:

The following indexation shall be applicable to the reference tariff as follows;

Indexation applicable to O&M

The Fixed O&M local component of Capacity Charge will be adjusted on account of Inflation (WPI) and Fixed O&M foreign component on account of variation in US CPI and dollar/Rupee exchange rate. Quarterly adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January and 1st April based on the latest available information with respect to WPI notified by

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

the Federal Bureau of Statistics (FBS), US CPI issued by US Bureau of Labor Statistics and revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan. The mode of indexation will be as under:

i) <u>Fixed O&M</u>

$F\ O\&M_{(LREV)}$ = Rs. 0.0840/kW/Hour * $WPI_{(REV)}$ /137.8

$F\ O\&M_{(FREV)}$ = Rs. 0.1116/kW/Hour * $US\ CPI_{(REV)}$/ 210.228* $ER_{(REV)}$/80.45

Where:

$F\ O\&M_{(LREV)}$	=	the revised applicable Fixed O&M Local Component of tariff
$F\ O\&M_{(FREV)}$	=	the revised applicable Fixed O&M Foreign Component of tariff
$WPI_{(REF)}$	=	the reference WPI (manufactures) of December 2008
$US\ CPI_{(REF)}$	=	the reference US CPI (All Urban Consumers) of December 2008
$WPI_{(REV)}$	=	the revised Wholesale Price Index (manufactures)
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$ER_{(REV}$	=	the Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

Note: The reference numbers indicated above shall be replaced by the revised numbers after incorporating the required adjustments at COD.

ii) <u>Variable O&M</u>

The formula for indexation of variable O&M component will be as under:

$V\ O\&M_{(REV)}$ = Rs. 0.4691/kWh * $US\ CPI_{(REV)}$/ 210.228* $ER_{(REV)}$ / 80.45

Where:

$V\ O\&M_{(FREV)}$	=	the revised applicable Variable O&M Foreign Component of tariff
$US\ CPI_{(REF)}$	=	the reference US CPI (All Urban Consumers) of December 2008
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$ER_{(REV)}$	=	the Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

Note: The reference Variable O&M indicated above shall be replaced with the revised number at COD after incorporating the required adjustment based upon the IDC Test.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

iii) Adjustment for KIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variations in interest rate as a result of variation in quarterly KIBOR according to the following formula;

$\Delta I_{(L)} \quad = \quad P_{(LREV)} * (KIBOR_{(REV)} - 13.23\%) / 4$

Where:

$\Delta I_{(L)}$ = the variation in interest charges on local loan applicable corresponding to variation in quarterly KIBOR. Δ I can be positive or negative depending upon whether $KIBOR_{(REV)}$ > or < 13.23%. The interest payment obligation will be enhanced or reduced to the extent of Δ I for each quarter under adjustment applicable on quarterly basis

$P_{(REV)}$ = is the outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculations date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

iv) Fuel Price Variation

The Variable Charge Part of the tariff relating to fuel cost shall be adjusted on account of the fuel price variations according to the mechanism given below:

$FC_{(Rev)}$ = Rs. 5.0004 per kWh * $FP_{(Rev)}$ / Rs. 25,427 per ton + Rs. 0.4621 per kWh * $Ft_{(Rev)}$ / Rs. 2,350 per ton

Where:

$FC_{(Rev)}$	Revised fuel cost component of Variable Charge on RFO.
$Ft_{(Rev)}$	Revised Freight Charges
$FP_{(Rev)}$	The new price of RFO per Metric Ton.

A. HSFO/LSFO Arab Gulf Average Price for applicable Fortnight (From Platt's Oilgram Report)

B. Premium/Freight based on weighted average of import of IPP grade of RFO.

NEPRA AUTHORITY
NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

C. C&F Price (A + B)

D. Import incidentals

   a. Ocean losses maximum 0.5% of C&F
   b. Marine Insurance 0.071% of C&F
   c. War Risk Insurance actual 0.05% of C&F
   d. Bank L/C Commission 0.15% of C&F
   e. Bank Service Charges 0.10% of C&F
   f. Local handling charges 0.15% of C&F
   g. Land port surveyor charges
   h. FOTCO charges prevailing at the time of import.
   i. Wharfage charges actual
   j. 1% import advalorem duty or any other duty imposed or levied by the GOP by time to time.

E. Import landed cost (C + D)

F. Calorific Value Parity Discount Factor %

G. Discounted Landed Cost [E * (1-F)]

H. OMC margin (3.5% of G)

I. Inland Frieght

J. Value of supply (G + H + I)

K. GST **(16% of J)**

US$ Pak Rupee Exchange Rate-NBP Selling TT/OD at the date of applicable fuel price Fuel supplier shall provide item wise actual incidental charges prevailing at the time of receiving payment for fuel supply.

The fuel cost component will be adjusted after the commercial operation date, at the time of revision in RFO price.

Adjustment on account of local inflation, foreign inflation, foreign exchange rate variation, KIBOR variation and fuel price variation will be approved and announced by the Authority for immediate application within seven working days after receipt of GPL request for adjustment in accordance with the requisite indexation mechanism stipulated herein.

For one time adjustment of relevant tariff components at COD according to the mechanism laid down in this order, GPL shall submit the relevant documents to NEPRA within 30 days of COD for adjustment.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

VIII. Terms and Conditions of Tariff:

i) Capacity Charge Rs./kW/hour applicable to dependable capacity at the delivery point.

ii) The tariff is applicable for a period of 25 years commencing from the date of the Commercial Operation.

iii) All new equipment will be installed and the plant will be of standard configuration.

iv) Dispatch criterion will be based on the Energy Charge.

v) Internal consumption has been assumed to be approximately 5.5 MW.

vi) Scheduled Outage periods per annum shall be in accordance with the 2006 standardized PPA.

vii) NTDC will be responsible for constructing the interconnection to the grid.

viii) All invoicing and payment terms are assumed to be in accordance with the 2006 standardized PPA.

ix) Tolerance in Dispatch shall be in accordance with 2006 standardized PPA.

x) If there is any change in any assumption that may lead to change in the tariff shall be referred to NEPRA for approval.

xi) If IPP is required by the power purchaser to deliver power above 132 kV, any additional cost to be incurred by the IPP shall be submitted to NEPRA for adjustment. The adjustment request by the IPP shall be duly verified by the power purchaser.

xii) 100% of debt has been assumed to be local provided however that in the event GPL uses a mix of foreign and local loan, the future benefits of the lower interest rates shall be passed on to the Power Purchaser.

xiii) No corporate income tax and no minimum turnover tax have been assumed.

xiv) Working capital has been financed by a separate Working Capital facility, and is not included in the project cost.

xv) Minimum loading of the Complex shall be according to the manufacturer's technical limits to allow for combined cycle operations.

xvi) All fuel during plant tests after synchronization of the Complex to the grid is assumed to be paid for by the Power Purchaser.

The above tariff and terms and conditions shall be incorporated in the Power Purchase Agreement between GPL and CPPA.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Annexure - I

Grange Power ~~Company~~ Limited (GP~~C~~L)
Reference Tariff Schedule Based on RFO

Year	Energy Charge (PKR/kWh)			Capacity Charge (PKR/kW/Hr)										Capacity Charge	Tariff
	Fuel	Variable O&M	Total	Fixed O&M-Local	Fixed O&M-Foreign	Insurance	Cost of Working Capital	Return on Equity	Return on Equity during Constructio	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total	60% Plant Factor PKR/kWh	PKR per kWh
1	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.4507	1.6313	3.1280	5.2133	11.1449
2	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.5284	1.5535	3.1280	5.2133	11.1449
3	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.6195	1.4624	3.1280	5.2133	11.1449
4	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.7264	1.3556	3.1280	5.2133	11.1449
5	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.8516	1.2303	3.1280	5.2133	11.1449
6	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	0.9985	1.0835	3.1280	5.2133	11.1449
7	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.1707	0.9113	3.1280	5.2133	11.1449
8	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.3726	0.7094	3.1280	5.2133	11.1449
9	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.6093	0.4727	3.1280	5.2133	11.1449
10	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	1.8868	0.1952	3.1280	5.2133	11.1449
11	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
12	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
13	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
14	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
15	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
16	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
17	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
18	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
19	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
20	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
21	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
22	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
23	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
24	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
25	5.4625	0.4691	5.9317	0.0840	0.1116	0.1391	0.1031	0.5107	0.0551	0.0424	-	-	1.0460	1.7433	7.6750
Levelized Tariff (1-25 Years)			**5.9317**	**0.0840**	**0.1116**	**0.1391**	**0.1031**	**0.5107**	**0.0551**	**0.0424**	**0.6116**	**0.7978**	**2.4554**	**4.0923**	**10.0239**

Net Capacity	146.5 MW
Reference Exchange Rate	PKR 80.45 = 1 US$
Reference Fuel Price (Inclusive of Freight)	27,777.00 Rs./Mtone
Reference US CPI	210.228 for December 2008 as notified by the US Labour Bureau of Labor Statistics
Reference WPI (Manufacturer)	137.8 for December 2008 as notified by the Federal Bureau of Statistics
Efficiency	45.00%
Levelized Tariff (at 60% plant factor) per kWh	US Cents 12.4598

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

8

Grange Power ~~Company~~ Limited (GP~~C~~L)
Debt Servicing Schedule

Period	Local Debt					Annual Principal Repayment Rs./kW/ hr.	Annual Interest Rs./kW/ hr.	Annual Debt Servicing Rs./kW/ hr.
	Principal Million Rs.	Repayment Million Rs.	Mark-up Million Rs.	Balance Million Rs.	Debt Service Millin Rs.			
	13,108.48	136.09	531.88	12,972.40	667.96			
	12,972.40	141.61	526.36	12,830.79	667.96			
	12,830.79	147.35	520.61	12,683.43	667.96			
	12,683.43	153.33	514.63	12,530.10	667.96			
1	13,108.48	578.38	2,093.47	12,530.10	2,671.86	0.4507	1.6313	2.0820
	12,530.10	159.56	508.41	12,370.54	667.96			
	12,370.54	166.03	501.93	12,204.52	667.96			
	12,204.52	172.77	495.20	12,031.75	667.96			
	12,031.75	179.78	488.19	11,851.97	667.96			
2	12,530.10	678.13	1,993.73	11,851.97	2,671.86	0.5284	1.5535	2.0820
	11,851.97	187.07	480.89	11,664.90	667.96			
	11,664.90	194.66	473.30	11,470.24	667.96			
	11,470.24	202.56	465.41	11,267.68	667.96			
	11,267.68	210.78	457.19	11,056.91	667.96			
3	11,851.97	795.07	1,876.79	11,056.91	2,671.86	0.6195	1.4624	2.0820
	11,056.91	219.33	448.63	10,837.58	667.96			
	10,837.58	228.23	439.73	10,609.35	667.96			
	10,609.35	237.49	430.47	10,371.86	667.96			
	10,371.86	247.13	420.84	10,124.73	667.96			
4	11,056.91	932.18	1,739.68	10,124.73	2,671.86	0.7264	1.3556	2.0820
	10,124.73	257.15	410.81	9,867.58	667.96			
	9,867.58	267.59	400.38	9,599.99	667.96			
	9,599.99	278.44	389.52	9,321.55	667.96			
	9,321.55	289.74	378.22	9,031.80	667.96			
5	10,124.73	1,092.93	1,578.93	9,031.80	2,671.86	0.8516	1.2303	2.0820
	9,031.80	301.50	366.47	8,730.31	667.96			
	8,730.31	313.73	354.23	8,416.57	667.96			
	8,416.57	326.46	341.50	8,090.11	667.96			
	8,090.11	339.71	328.26	7,750.40	667.96			
6	9,031.80	1,281.40	1,390.46	7,750.40	2,671.86	0.9985	1.0835	2.0820
	7,750.40	353.49	314.47	7,396.91	667.96			
	7,396.91	367.83	300.13	7,029.08	667.96			
	7,029.08	382.76	285.20	6,646.32	667.96			
	6,646.32	398.29	269.67	6,248.03	667.96			
7	7,750.40	1,502.37	1,169.48	6,248.03	2,671.86	1.1707	0.9113	2.0820
	6,248.03	414.45	253.51	5,833.58	667.96			
	5,833.58	431.27	236.70	5,402.31	667.96			
	5,402.31	448.77	219.20	4,953.55	667.96			
	4,953.55	466.97	200.99	4,486.57	667.96			
8	6,248.03	1,761.46	910.40	4,486.57	2,671.86	1.3726	0.7094	2.0820
	4,486.57	485.92	182.04	4,000.65	667.96			
	4,000.65	505.64	162.33	3,495.01	667.96			
	3,495.01	526.15	141.81	2,968.86	667.96			
	2,968.86	547.50	120.46	2,421.36	667.96			
9	4,486.57	2,065.22	606.64	2,421.36	2,671.86	1.6093	0.4727	2.0820
	2,421.36	569.72	98.25	1,851.64	667.96			
	1,851.64	592.83	75.13	1,258.81	667.96			
	1,258.81	616.89	51.08	641.92	667.96			
	641.92	641.92	26.05	0.00	667.96			
10	2,421.36	2,421.36	250.50	0.00	2,671.86	1.8868	0.1952	2.0820

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
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8