National Electric Power Regulatory Authority

Islamic Republic of Pakistan

Registrar

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No.NEPRA/R/TRF-122/UCH-II-2008 /1744-1746
April 24, 2009

Subject: **Determination of the Authority in the Matter of Tariff Petition filed by Uch-II Power (Pvt.) Ltd. (UCH-II) Case # NEPRA/TRF-122/UCH-II-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 (48 pages) in Case No. NEPRA/TRF-122/UCH-II-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 16.2 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

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CC:

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

ORDER OF THE AUTHORITY
TO BE NOTIFIED IN THE OFFICIAL GAZETTE
IN CASE NO. NEPRA/TRF-122/UCH-II-2008

Pursuant to Rule 16(11) of the NEPRA Licensing (Generation) Rules, Uch-II Power Limited (Uch-II) 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 Uch-II for delivery of electricity to the CPPA of the NTDC for procurement on behalf of Ex-WAPDA Distribution Companies:

REFERENCE SPECIFIED TARIFF

Tariff Components	Year 1 to 10	Year 11 to 14	Year 15 to 25	Indexation
Capacity Charge PKR/kW/Hour				
O&M Foreign	0.1285	0.1285	0.1285	US$ /PKR & US CPI
O&M Local	0.0621	0. 0621	0. 0621	WPI
Insurance	0.0852	0.0852	0.0852	US$ /PKR
Debt Service	1.2577	0.1191	-	LIBOR/EuriBOR/KIBOR
Return on Equity	0.4324	0.4324	0.4324	US$/PKR
ROE during Construction	0.0886	0.0886	0.0886	US$ /PKR
Total Capacity Charge	**2.0545**	**0.9159**	**0.7968**	
Energy Charge on Operation on Gas Rs./kWh				
Fuel Cost Component	3.0347	3.0347	3.0347	Fuel Price
Variable O&M - Foreign	0.1275	0.1275	0.1275	US$ /PKR & US CPI
Local	0.0221	0.0221	0.0221	WPI

Note:

i) The levelized tariff over the life of 25 years at a notional 60% plant factor and 10% discount factor has been determined as Rs.6.0231/kWh.
ii) The applicable component wise tariff is indicated at Annex-I.
ii) Debt Servicing Schedule is attached as Annex-II.
iii) The Annex I&II are the inherited part of this Order.

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

I. One Time Adjustments

I.(i) Adjustment in EPC Cost

The Authority has assessed EPC cost as US$ 366.764 million out of which US$ 318.753 million (Offshore-I US$ 235.938 million and Offshore-II US$ 82.814 million)

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and US$ 48.011 million is as onshore to be incurred in Pak Rupees. Since the exact timing of payment to EPC contractor is not known at this point of time, therefore, an adjustment for foreign currency fluctuation for the portion paid 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. Based upon such information the relevant currency of EPC cost components shall be established 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 only for currency fluctuation against the reference parity values.

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

The reference tariff has been determined on the basis of minimum net capacity of 375.20 MW at delivery point, at following reference site conditions;

- Ambient temperature 27.3° C
- Relative humidity 48.5%
- Atmospheric pressure 1006 mbara

All the relevant tariff components shall be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) to be carried out for determination of contracted capacity. Adjustments shall be made according to the following formula:

$$CC_{(Adj)} = CC_{(Ref)} \times 375.20\ MW / NC_{(IDC)}$$

No Adjustment shall be made if IDC is established at less than the net capacity of 375.20 MW at reference site conditions.

Note: Above formula shall be applicable to all the individual relevant components of Capacity Charges.

Where;

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 to be adjusted as per IDC test.

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

The reference tariff has been determined on the basis of minimum net efficiency of 50.258%. However the fuel cost component shall not be adjusted if the net thermal efficiency is established less than efficiency of 50.258 %. Based upon the heat rate test of the complex to be carried out jointly by the CPPA and the Petitioner at the time of COD, the reference fuel cost component of tariff shall be adjusted in case the net efficiency is established at higher than 50.258%. The adjustment shall be made according to the following formula;

$FC_{(Adj)}$ = Rs. 3.0347 per kWh / 6789 x $HR_{(T)}$

Where;

$FC_{(Adj)}$	=	Adjusted fuel cost component at the time of heat rate test at COD
$HR_{(T)}$	=	Net Efficiency 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, ROE and ROEDC shall be adjusted on account of actual variation in drawdown and Interest During Construction & Financing Fees with reference to the estimated figure of US$ 38.360 million and US$ 21.751 million respectively. Adjustment on account of financing fees is restricted to the extent of 3% of total financing except ECA premium.

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

Debt Service, Return on Equity and ROE during construction shall be adjusted on account of actual variation in custom duties and withholding taxes with reference to the estimated figure of US$ 18.600 million.

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

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

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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 the production of authentic documentary evidence by Uch-II 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$ 3.4801 million
$P_{(Act)}$	=	Actual Premium or 1.35% of the adjusted EPC whichever is lower
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan at Invoice date

III. Adjustment in Return on Equity (ROE)

The Petitioner also requested to allow quarterly adjustment on account of US$/PKR exchange rate based on the revised TT &OD selling rate of US dollar notified by the National Bank of Pakistan (NBP). The Petitioner request is inline with the decision of the Economic Coordination Committee (ECC) and is, therefore, being allowed subject to adjustment on account of exchange rate variation according to the following formula;

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

Where:

$ROE_{(Rev)}$	=	The revised ROE component of the Capacity Purchase Price
$ROE_{(Ref)}$	=	The reference ROE component of the Capacity Purchase Price determined at the time of COD
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US$ as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	The reference exchanges rate of PKR 80.45 = 1 US$.

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

ROEOC component of tariff will be adjusted subject to exchange rate variation according to the following formula;

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

Where:

$ROEDC_{(Rev)}$	=	The revised ROEDC component of the Capacity Purchase Price
$ROEDC_{(Ref)}$	=	The reference ROEDC component of the Capacity Purchase Price determined at the time of COD
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US$ as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	The reference exchanges rate of PKR 80.45 = 1 US$.

V. Adjustment of Withholding Tax

Withholding tax on dividend is a pass-through item, which is allowed in accordance with 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% equity at the time of hourly payment (Rs./kW/hour) spread over a 12 months period according to the following formula:

$$\text{Withholding Tax Payable} = [\{15\% * (E_{(Ref)} - E_{(Red)}\} + ROEDC_{(Ref)}] * 7.5\% * ER_{(Rev)} / 80.45$$

Where:

$E_{(Ref)}$	=	Adjusted Reference Equity at COD
$E_{(Red)}$	=	Equity Redeemed
$ROEDC_{(Ref)}$	=	Reference Return on Equity During Construction
$ER_{(Rev)}$	=	The revised IT & OD selling rate of US dollar as notified by the National Bank of Pakistan

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In case the 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 payout.

VI. **Pass-Through Items**

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, has been accounted for in the tariff. If Uch-II 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 (Rs./kW/hr) payment spread over a 12 months period in addition to the capacity purchase price in the Reference Tariff. Furthermore, in such a scenario, Uch-II may also submit to the CPPA details of any tax shield savings and the CPPA will deduct the amount of these savings from its payment to Uch-II on account of taxation.

VII. **Indexations:**

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

a) **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**

$$F\ O\&M_{(FREV)} = Rs.\ 0.1285 / kW / Hour * US\ CPI_{(REV)} / 212.193 * ER_{(REV)} / 80.45$$

$$F\ O\&M_{(LREV)} = Rs.\ 0.0621 / kW / Hour * WPI_{(REV)} / 138.38$$

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Where:

$F\ O\&M_{(FREV)}$	=	the revised foreign Fixed O&M Foreign Component of tariff
$F\ O\&M_{(LREV)}$	=	the revised local Fixed O&M Local Component of tariff
$WPI_{(REV)}$	=	the revised Wholesale Price Index (manufactures)
$WPI_{(REF)}$	=	The reference WPI (manufactures) of 138.38 of February 2009
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$US\ CPI_{(REF)}$	=	Reference US CPI of 212.193 for February 2009
$ER_{(REV)}$	=	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:

$V\ O\&M_{(FREV)}$ = Rs. 0. 1275/kWh * $US\ CPI_{(REV)}$/ 212.193 * $ER_{(REV)}$/ 80.45

$V\ O\&M_{(LREV)}$ = Rs. 0.0221/kWh * $WPI_{(REV)}$ /138.38

Where:

$V\ O\&M_{(FREV)}$	=	the revised foreign Variable O&M Foreign Component of tariff
$V\ O\&M_{(LREV)}$	=	the revised local variable O&M Local Component of tariff
$WPI_{(REV)}$	=	the revised Wholesale Price Index (manufactures)
$WPI_{(Ref)}$	=	Reference WPI (manufactures) of 138.38 of February 2009
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$US\ CPI_{(REF)}$	=	Reference US CPI of 212.193 for February 2009
$ER_{(REV)}$	=	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.

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iii) Adjustment for KIBOR and LIB OR 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 and LIBOR according to the following formula;

Δ I(L)	=	$P_{(LREV)}$ * ($KIBOR_{(REV)}$ – 12.81%) / 4
Δ II(Foreign Debt-US$)	=	$P_{(FREV)}$ * ($LIBOR_{(REV)}$ – 4%) / 4
Δ III (Foreign Debt-Euro)	=	$P_{(FREV)}$ * ($EURIBOR_{(REV)}$ - 4%) / 4

Where:

Δ I(local debt)	=	the variation in interest charges applicable corresponding to variation in quarterly KIBOR. Δ I can be positive or negative depending upon whether $KIBOR_{(REV)}$ > or < 12.81%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment applicable on quarterly basis.
Δ II(US$ debt)	=	the variation in interest charges applicable corresponding to variation in quarterly LIBOR. Δ II can be positive or negative depending upon whether $LIBOR_{(REV)}$ > or < 4%. The interest payment obligation will be enhanced or reduced to the extent of ΔII for each quarter under adjustment applicable on quarterly basis.
Δ III(Euro debt)	=	the variation in interest charges applicable corresponding to variation in quarterly EURIBOR. Δ III can be positive or negative depending upon whether $EURIBOR_{(REV)}$ > or < 4%. The interest payment obligation will be enhanced or reduced to the extent of ΔIII 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 I shall commence on the date on which the 1st installment is due after availing the grace period.

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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 as agreed between OGDCL and the petitioner and approved by the competent Authority. In this regard, the fuel cost component of tariff shall be revised according to the following formula:

$FC_{(Rev)} = FC_{(Adj)}$ per kWh * $FP_{(Rev)} / FP_{(Ref)}$

Where:

$FC_{(Rev)}$	=	The revised fuel cost component of Variable Charge on low BTU gas.
$FP_{(Rev)}$	=	The new price of gas as agreed between OGDCL and the petitioner and approved by the competent Authority
$FP_{(Ref)}$	=	The reference price of gas as indicated by the petitioner of US$ 5.0102 / MMBTU adjusted for HHV-LHV factor of 1.109 and exchange rate of Rs. 80.45/US$.
$FC_{(Adj)}$	=	Adjusted fuel cost component subsequent to heat rate test at COD

Adjustment on account of local inflation, foreign inflation, foreign exchange variation, KIBOR, LIBOR and EURIBOR variation and fuel price variation will be approved and announced by the Authority for immediate application within seven working days after receipt of Uch-II 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, Uch-II shall submit the relevant documents to NEPRA within 30 days of COD for adjustment.

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) Use of Low BTU Gas is allowed as single fuel for operation of the plant.

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

v) The plant availability shall be 90%.

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

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

viii) NTDC/CPPA will be responsible for constructing the interconnection to the grid.

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

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

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

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

The above tariff and terms and conditions are to be incorporated in the PPA between Uch-II and CPPA.

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DETERMINATION OF THE AUTHORITY
IN THE MATTER OF GENERATION TARIFF
IN CASE NO. NEPRA/TRF-122/UCH-II-2008

PETITIONER

Uch-II Power (Pvt.) Ltd.
48, Khayaban-e-Iqbal Main Margalla Road, F-7/2, Islamabad

INTERVENERS

1. Mr. Shams-ul-Arfin, Office Manager, 164-U, Street 4, Phase-II, DHA, Lahore
2. Mr. Riaz Hanif Rahi, Advocate/President Citi Council for Welfare (Regd.) Plot No. 67, I&T Centre, G-10/1, Islamabad.

AUTHORITY

Zafar Ali Khan
Member

24/4/09

Ghiasuddin Ahmed
Member

24/4

Maqbool Ahmad Khawaja
Member

Khalid Saeed
Chairman

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1. Background

1.1 Uch-II Power (Pvt.) Ltd. (hereafter the "Petitioner) filed petition on November 27, 2008 before the National Electric Power Regulatory Authority (the "**NEPRA**" or the "**Authority**") pursuant to Rule 3 of the NEPRA (Tariff Standards and Procedure) Rules, 1998, and the applicable provisions of the Government of Pakistan's Policy for Power Generation Project, 2002 (the "**2002 Power Policy**") for approval of generation tariff for its 404 MW Gross (ISO) capacity Low Btu Gas-fired Power Plant to be located near Dera Murad Jamali, Baluchistan. The tariff petition was filed on the direction of PPIB vide letter No.7(708)PPIB/08/FIN, dated August 16, 2008. In the aforementioned communication the Petitioner was also advised to conclude the issues in the Gas Supply Agreement and Power Purchase Agreement at the earliest. The Petitioner has also submitted Generation Licence Application on November 27, 2008. According to the Petitioner the net output of 375.20 MW at mean site conditions will be delivered to Central Power Purchasing Agency (CPPA) within National Transmission and Desptach Co. (NTDC). The Petitioner stated that the following objectives were pursued by it during the preparation of the proposal:

- High plant efficiency and low operating cost;
- Utilization of proven design directed toward extended plant life and total system reliability;
- Redundancy of specific system and control to assure a high degree of plant availability;
- Operational flexibility under various operating conditions; and
- Equipment layout for easy maintenance.

1.2 The Authority admitted the tariff petition on December 4, 2008. Notice of admission/public hearing and the salient features of the petition were published on December 16, 2008 in the major national newspapers inviting comments along with evidence (if any) from interested persons. In response two intervention requests were received. Central Power Purchasing Agency (CPPA) also submitted its written comments. A public hearing on the petition was held on January 6, 2009 at NEPRA Main Office, Islamabad. The hearing was participated by the Petitioner, stakeholders and the interveners.

2. Tariff Structure & Summary

2.1 The Petitioner proposed a two-part tariff, comprising Capacity and Energy charges, based on a 25 year term, covered under the PPA to be signed in due course between the Petitioner and NTDC. According to the Petitioner, the term of the agreement is

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expected to coincide with the guarantee of adequate supply of gas expected to be agreed in the GSA. The Petitioner stated that their Petition contains detailed assumptions and adjustment formulae to form part of the Schedule 1 to the PPA.

2.2 The Petitioner has stated that its tariff has been calculated in terms of the Federal Government's Policy for Power Generation Projects, 2002 and the guidelines issued there-under. The Petitioner requested for approval of the total tariff at both 60% and 80% load factors as shown in the consolidated tariff tables (pages 25-26 of the tariff petition). Summary is given hereunder:

	Submission of Petition		**Revised Submission**	
	PKR/kWh	**US Cents / kWh**	**PKR/kWh**	**US Cents / kWh**
Levelized Tariff-25 years on 60% load factor	6.6838	8.9117	6.2121	8.2828
Levelized Tariff-25 years on 80% load factor	5.8213	7.7617	5.4145	7.2193

2.3 The Petitioner has submitted that the reduction in Project and operational costs in certain key areas of the Uch II expansion have resulted in cost savings that have been reflected in the tariff proposed for Uch II.

3 Interveners

3.1 Mr. Riaz H. Rahi Advocate (hereafter the"Intervener-I") submitted that the approval of tariff for Uch-11 Power (Pvt) Limited must be equal as for other power generation companies due to the following reasons:

a. That this Authority under section 3(c) of the NEPRA Regulation of Generation, Transmission and Distribution of Electric Power Act 1997 has to encourage uniform industrial standard, code of conduct for the generation, transmission and distribution companies. Under section 36, the Authority is required to prescribe a uniform system of accounts;

b. That under section 31(2) of the Act, guideline is provided for the companies, but the company has gone beyond the prescribed standard in the manner:-
   i. Contribution of Rs.136.58 million for socio-economic development has been mentioned which can be only permissible from the personal pocket of the employees. Socio Economic purpose can be served only if the company may work for charitable purpose.
   ii. Access right charges and use of land are also unreasonable cost and for the lavish life style of the company employees beyond the law.

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iii. Loan repayment cost must also not be included in a tariff increase request.

iv. That the rate of energy supply in all over the world is decreasing as 2009 is expected economic recession year.

v. The request of tariff is unreasonable, arbitrary and illegal.

3.2 The EMR consultant (the "Intervener-II) submitted the following comments:

i) The high tariff of more than 10 Cents in the 1st four years, and levelized tariff of 8.9 cents for 25 years will result in about Rs. 8/kwh cost of electricity purchased by CPPA and will exceed Rs.10/kwh to consumers. This is inherently unsustainable as neither domestic nor industrial tariff is at this level currently. Consequently the government will have to subsidize the tariff, further adding to the deficit of the power sector, which currently exceeds Rs. 300 billion.

ii) The essential grounds of intervention are the high costs given by the Petitioner for various items in section 4.1. Clearly with the current downturn in the world's economic environment, all prices (steel, machinery equipment) etc. are falling and have reduced 10% - 30%. The Petitioner must obtain and negotiate new prices (reduced) for the EPC contract.

iii) The development cost (S. No. 17) at US$ 9.224 million is excessive and no details have been provided. Similarly costs for arrangement and commitment fee of US$ 22.357 million are very excessive.

iv) The Interest charges of US$ 52.317 million are contrary to ground realities and overly excessive in view of the current interest rate in US$ of less than 1%.

3.3 The Intervener-II suggested that in the larger public interest and interest of the citizens of Pakistan, business and industry, NEPRA must obtain all bases of all costs so as to reduce total project cost as per current market parameters, and reduce the tariff accordingly in the best interest of the consumers. The Intervener-II further submitted that evidence backed by current market rates, costs etc for similar projects/inside and outside Pakistan, various items, cost heads, EPC etc must be submitted by the Petitioner to justify the cost/tariff basis.

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3.4 In addition to the comments presented by the PPIB during the hearing, following additional comments were submitted by the PPIB:

a) The Petition assumes 5% Custom Duty on all imported equipment, machinery, etc. whereas actually 5% Custom Duty is applicable for imported equipment and machinery which is not manufactured locally.

b) The Petition does not include cost of Back-up Fuel (HSD) inventory in the Working Capital/ whereas it should be included.

c) The Petitioner has asked for European CPI and Euro/PKR indexation on O&M cost which is not permitted under 2002 Policy.

d) The Tariff is based on preliminary and non-firm project costs and financing terms and is conditional to a number of assumptions.

e) The Petition assumes hedging of foreign exchange and interest rate risks from Financial close (FC) to COD which are not permitted by NEPRA in earlier tariff determinations. However, in case NEPRA allows hedging for exchange rates and interest rates, then the indexation/adjustment for these two elements should not be allowed.

f) Exemption from all taxes and Withholding Tax on payments to EPC Contractor has been assumed whereas WHT is applicable on payments to contractors as per applicable law.

g) The petition assumes exemption from various taxes, levies, surcharges, etc. and considers these as pass-through. However, the usual practice is that all taxes, duties, levies, surcharges, etc. as applicable at the date of tariff determination are considered inclusive in the tariff. Only additional taxes, duties, levies, surcharges, etc. levied after the determination are considered pass-through.

h) There are some conditions in the Tariff Petition which are required to be addressed in the respective project agreements (IA, PPA and GSA) e.g. shareholding of the new company, Uch-II exclusive right on the gas field, gas reservoir risk, minimum plant loading, plant availability & forced outage hours, tolerance in dispatch, etc.

3.5 During the hearing, PPIB representative clarified that the size of the power plant will be dictated by the availability of gas while thermal efficiency required to be reviewed in view of the specifications of gas because the gas turbines would burn the low Btu gas from Uch gas field.

3.6 Director Generation Irrigation and Power department Government of Balochistan stated that the surrounding areas of Uch-II Power House are D.M, Jamali, Majoshori, Rojhan Jamali, Usta Muhammad, Sui and Dara Bughti are being supplied through 66

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KV transmission lines which is coming from HESCO. According to him, the present maximum Demand of QESCO was approximately 1100 MW while only 650 MW was available with QESCO. He further requested that the power generated by Uch-II should be provided to QESCO for onward supply to surrounding areas as well as to meet the maximum demand of QESCO. DG Irrigation and Power further suggested for executing an agreement with Uch-II Power (Pvt) Ltd for social uplift for the poor people of the area with regard to education, health and drinking water facilities.

4 ISSUES

4.1 Following main issues have emerged from the proceedings;

- Technology and Net Capacity
- Plant & Equipment Procurement
- Project Cost
  - EPC Cost
  - Non-EPC
- Energy Charge
  - Fuel Component
  - Foreign Variable O&M
  - Local Variable O&M
- Capacity Charge
  - Escalable Capacity Component
    - Fixed O&M (Local and Foreign)
    - Insurance
    - Cost of Working Capital
    - ROE and ROEDC
  - Non-Escalable Capacity Component
- Adjustments at Financial Close
- Adjustments at Commercial Operation Date
- Modification/Addition to be treated as Pass-Through
- Escalations and Indexations
- Inflation Indexation
  a. Currency Indexation
  b. Interest Rate Indexation
- Assumptions

5 Technology, Net Capacity & Net Heat Rate

5.1 According to the information provided by the Petitioner, the Plant consists of two (2) GE PG9171E Gas Turbine Generators (127.4 MW each Gross at Mean Site

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Conditions), one (1) Steam Turbine Generator (131.4 MW Gross at Mean Site Conditions), two (2) Heat Recovery Steam Generators, one (1) condenser and multi-cell cooling tower and Balance of Plant equipment, which are the efficient and proven machines utilizing the state-of-the-art technology. The Petitioner stated that its primary fuel would be low BTU gas from Uch Gas Field (UGF), while the project will use Low BTU gas / HSD dual fuel combustion system. The Petitioner further stated that distillate liquid fuel would be used for start up and shut down because with this low BTU gas start up and shut down is not possible. According to the Petitioner the electricity generated from the plant would be stepped up to 220 kV for supply of power directly to the NTDC.

5.2 The Appendix 5 of the EPC Term Sheet signed between the Petitioner and its EPC contractor sets out the following Guaranteed Performance Levels to be achieved by the Contractor during the course of the Project;

- Facility Net Maximum Capacity shall be not less than 375.2 MW within Environmental permitted limits;
- Facility Net Heat Rate at Net Maximum Capacity shall be not greater than 7,163 kJ/kWh;

- The guaranteed Facility Net Maximum Capacity and Facility Net Heat Rate will be based on operation under the following Site Reference Conditions:

• Electrical Load	Steady state base load
• Ambient dry bulb temperature	27.3 °C
• Relative humidity	48.5%
• Atmospheric pressure	1006 mbara
• Low BTU Gas LHV at receiving station	12,515 kJ/kg
• Low BTU Gas Pressure at receiving station	35.5 barg
• Low BTU Gas Temperature at receiving station	13.3 °C
• Power Factor at Generator Terminal Point	0.8 lagging
• Grid Frequency	50Hz
• Evaporation Cooler	On
• HRSG Blowdown	0%
• Hours of CCPP degradation	New & Clean (OH<200hr)
• Auxiliary consumption	11 MW

5.3 The Petitioner submitted that its proposed tariff was on the basis of net output of 375.2 MW as guaranteed by the EPC contractor. The Petitioner's fuel cost component was initially calculated on the basis of thermal efficiency of 48.67% or

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net heat rate of 7396.62 kJ/kWh. The Petitioner subsequently revised its thermal efficiency to 48.91% or 7,360.71 kJ/kWh, which was still lower against the guaranteed net heat rate of 7163 kJ/kWh or thermal efficiency of 50.258%. In response to the Authority's observation with respect to using greater heat rate as against the guaranteed heat rate, the Petitioner submitted that the higher heat rates were used due to the following reasons:

- The EPC heat rate does not take into consideration any operation losses such as boiler blow down, cooling tower make-up water temperature, filter fouling, etc.
- The degradation factors are fixed at the beginning of the year and do not change during the year.
- The PPA does not allow for ambient correction.

5.4 The Authority considers that in the EPC Contract the Performance Levels have been clearly laid down in Section-2 of the Appendix-5 of the EPC Term Sheet according to which;

> *"NMC shall be not less than 375.2 MW & NHR at NMC shall be not greater than 7,163 kj/kWh".*

5.5 In the Authority's opinion there is a sufficient margin in the guaranteed values and the EPC Contractor has already taken into considerations the abovementioned parameters affecting the Guaranteed Performance Levels. The Authority, therefore considers that the quantity of Boiler Blow Down, Cooling Tower make-up water temperature, filter fouling, etc adverse effects can be mitigated with the optimization of O&M of plant. The Authority is of the view that in the presence of evaporative Cooler output of the GTs become independent of the ambient temperature, as it maintains the pre-set value of the temperature of Air entering the Inlet Guide Vanes (IGV) of the air compressor, irrespective of hot or cold ambient conditions. The Authority considers that by using better quality Turbine Air Inlet Filters (TAIF) and using automatic pulse air cleaning system, frequent fouling of the filters can be minimized. The Petitioner's response does not quantify the loss in NMC and increase in NHR due to each factor mentioned above. The Authority observes that there is no change at all in the other key parameters of the plant including NMC with the change in NHR. In view of the aforementioned reasons, the Authority considers that the Petitioner's clarifications are not convincing and are of least significance; therefore, has decided to use NHR as indicated in the EPC Term Sheet for calculating fuel cost component.

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5.6 The Authority has noted that the tolerance of ±1% in NMC & ±1.5% in NHR on account of uncertainty are on higher side. Since the Petitioner did not provide the Appendix-1 along with its EPC Term Sheet; therefore, in the absence of such information the Authority is constrained to disallow such tolerances. The Authority also considers that for transparent testing of the Plant at the time of Commercial Operation Date (COD) Comprehensive Test Procedure Documents are required; therefore, the Petitioner is directed to provide the same to the Authority at the earliest but not later than the commencement of tests under Section 8.2 of the PPA.

5.7 Based on the discussion in the preceding paragraphs and having considered the documentary evidence presented before the Authority the Net Capacity and the Plant Heat Rate as per the Appendix 5 of the EPC Term Sheet is being accepted with the provision of adjustment in the relevant tariff components in case the Net Plant Capacity is established higher than 375.2 MW and Plant Net Heat Rate is established lower than 7,163 kJ/kWh.

6 PROJECT COST

6.1 EPC Costs

6.1.1 The Petitioner submitted that it agreed and signed an EPC Term Sheet on a turnkey basis with the Consortium of Hyundai Engineering Co. (assuming responsibility as the Consortium leader); FZE Hamriyah, UAE and Descon Engineeing Ltd. (acting as a Consortium member); and General Electric Company responsible for supplying gas and steam turbines. According to the Petitioner, the EPC cost is the lump sum cost of US$ 245.745 million and €96.223 million. The Petitioner provided the following break up of EPC costs:

- **Offshore-I (Hyundai Engineering Company Ltd. Korea)**

	Requested in Petition	Revised
Euro	83.624 million	77.448 million
US$	134.407 million	131.516 million
Total in US$	**238.936 million**	**228.326 million**

* *Exchange Rate € / US$ 1.25*

- **Offshore-II (Descon Engineering FZE Hamriyah, UAE)**

Euro	18.910 million	18.775 million
US$	63.004 million	62.729 million
Total in US$	**86.641 million**	**86.197 million**

* *Exchange Rate € / US$ 1.25*

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- **Onshore (Descon Engineering Limited, Pakistan)**

US$	53.000 million	51.5 million
Total EPC - Euro	102.534 million	96.223 million
US$	250.411 million	245.745 million
Total EPC in equivalent US$	**378.578 million**	**366.023 million**

- **Optional Item**

STG building/overhead crane **US$** 3.000 million

6.1.2 According to the Petitioner, both parties are jointly and severally liable to the Owner for any and all obligations, liabilities and indebtedness incurred by the Consortium in connection with the project. The Petitioner stated that it signed EPC Term Sheet with the consortium on November 20, 2008 on a fixed price contract basis with a validity period until the 15th February 2009. The sponsors and the EPC contractor assumed Limited Notice to Proceed by January 31, 2009 and early payments to meet the COD dates as outlined in the EPC term sheet. According to the Petitioner if the validity period expired before the EPC Contract was executed; the contractor has the right to review both price and schedule for the project. In support of its claim the Petitioner provided copy of the signed EPC Term Sheet.

6.1.3 The Petitioner has stated that in the scope of the Offshore-I Hyundai Engineering Company Korea includes procurement, construction and testing/commissioning of the Gas Turbines (GTG), Steam Turbine (STG), Heat Recovery Steam Generators (HRSG)/Bypass Stack, Balance Of Plant (BOP) mechanical work, Switchyard/Transformers, Electrical, C&I, Ocean Transportation, Supervision and Inspection, Finance expenses (Bond Insurance, L/C etc), Training and Commissioning services for Offshore-I portion and Management/Engineering. The scope under Offshore-II pertaining to Descon Engineering FZE Hamriyah UAE covers the fuel gas system, compressed air system, fire fighting system, main/auxiliary cooling water system, cooling tower, water supply/treatment system, waste water treatment system, telephone/PA/clock, others (workshop equipment/spare etc) unit /auxiliary transformer, black start/emergency D/G, MV/LV SWGR, cabling/wiring/panel and others (CCTV/ LCD/ Fire Alarm /etc). In the Onshore scope of Descon Engineering Ltd. Pakistan includes fuel oil system, portable water system, sewerage/storm water system, civil/building works, installation mechanical, and installation electrical. The Petitioner has also included an optional item STG building/overhead crane.

6.1.4 Central Power Purchasing Agency (CPPA) in its written comments objected to the

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Petitioner's requested EPC cost of US$ 378.578 Million (US$ 0.937Million per MW) According to CPPA, this is exorbitant as compared to US$ 0.811 million per MW determined by NEPRA in the case of other similar projects and contrary to the fact that large size plants are cheaper than smaller ones.

6.1.5 While agreeing to the CPPA's comments, the Authority during the hearing also observed that the EPC cost agreed by the Petitioner did not reflect the impact of international decline in the fuel, steel and equipment prices and asked the Petitioner to renegotiate the EPC price with its EPC contractor. Subsequently the Petitioner informed that it managed to reduce its EPC price by US$ 12.55 million i.e. from US$378.573 million to US$ 366.023 million (US$ 0.906 million per MW). The Authority considers that with the revision of EPC price the validity date is also extended, although the Petitioner has not indicated the same. The Petitioner also informed that it was in the process of negotiation with its EPC contractor for manufacturing HRSG in Pakistan by Descon, which can further save about US$10 million.

6.1.6 The evaluation of the detailed scope of the EPC contract revealed that in the EPC scope the Petitioner has included the Black Start Facility. The Authority considers that this facility is already available the Uch-I, therefore, the Black Start Facility in the instant case is not required. The Authority further considers that the Petitioner's request for Black Start facility is not in line with the merits and advantages envisaged in the shape of savings in capital cost as a result of synergy of Uch-I. In the Authority's opinion allowing this cost would be a sheer waste of resources and would unnecessarily add to the burden of the poor consumers. In view thereof, the Authority has decided not to allow the cost of Black Start Facility to the extent of US$5.228 million.

6.1.7 The Authority has noted that the Petitioner has indicated its onshore EPC cost of 51.5 million in US Dollar term, while this cost will be incurred in Pak Rupees. The Authority has, therefore, decided to fix in Rs. 3,862.5 million (US$ 51.5 million converted at an exchange rate of Rs. 75/US$). This cost will be adjusted for variation in WPI (building, material). For the purpose of adjustment the reference WPI (building, material) is for the month of December 2008.

6.1.8 After incorporating the abovementioned adjustment and applying the latest Euro/US$ exchange rate of 1.3483 to the Euro portion of EPC cost, the EPC cost of US$ 366.764 million has been assessed and is being allowed.

6.2 Non-EPC Cost

6.2.1 Mobilization Cost

6.2.1.1 The Petitioner requested US$ 44.741 million as mobilization cost. The cost

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items comprising mobilization are discussed in the succeeding paragraphs:-

6.2.2 <u>O&M Mobilization</u>

6.2.2.1 The Petitioner requested US$7.07 million as O&M Mobilization, which according to it was based on its experience gained with the existing Uch Power Ltd. (UPL) and the O&M budgetary quotation obtained from ESBI. According to the Petitioner the budget estimate was arrived at considering the benefits to be gained from the existing UPL facility and jointly run O&M operation between the existing UPL facility and the Uch-II facility. The Petitioner stated that the quotation received from ESBI International (a wholly owned subsidiary of Irish Electricity Supply Board) (ESB) was used in the petition which was also the existing O&M Operator of UPL. According to the Petitioner the scope of the ESBI during the pre-operational phase includes review operational design, recruiting staff, provide training in plant safety and similar areas, preparation of O&M manuals, development of integrated Business Management System, and provide operational support to EPC contractor.

6.2.2.2 CPPA objected to the Petitioner's request for allowing O&M Mobilization Cost of US$ 7.707 million and referred the case of Green Electric (Pvt.) Ltd. which was allowed 0.6 million US$ on this account. In CPPA's opinion the mobilization cost in the instant case should be at the minimum level because the Petitioner intends to have O&M contract with the existing O&M contractor of UCH-I.

6.2.2.3 The Authority agrees with the CPPA comments and considers that the Petitioner's request is also not in line with the objective of capital and O&M cost saving as a result of sharing of facility and manpower. Even the Petitioner's requested O&M mobilization cost is on higher side as compared to the cost allowed by the Authority in other similar cases. The information provided by the Petitioner also does not support the Petitioner's request because the additional professionals to be added to the existing team of about 100 professionals are in very small number and will be inducted at the lower levels of the Organogram. The Authority considers that the most of the already trained professionals are working on Uch-I and most of the activities like preparation of O&M manuals, integrated management system are already in place; therefore, asking for such a huge amount of O&M Mobilization is not justified. Having considered the information provided by the Petitioner and the decisions in other IPPs, the Authority's considers US$ 1 million as a fair assessment on account of O&M mobilization cost.

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6.2.3 Start-up and production

6.2.3.1 The Petitioner stated that the Start-up and production cost was not in the scope of its EPC contractor, therefore, US$ 7.269 million (comprising HSD cost of US$ 6.563 million and electricity cost of Rs. 52,919,284) might be allowed in this regard. In support of its claim the Petitioner did provide a detailed calculation, which according to the Petitioner were based on the reasonable fuel quantities required for commissioning and testing Uch-II agreed with the EPC contractor. The Petitioner further stated that the extra cost of fuel and electric power quantities in excess of those mutually agreed will be born by the EPC contractor.

6.2.3.2 CPPA although has objected to the amount of US$ 8.202 million (subsequently revised to US$ 7.269 million) requested by the Petitioner for the start up and production but has recommended the Authority to allow a fair sum to the Company in line with the tariff determination of other IPPs.

6.2.3.3 The Authority has evaluated the calculation submitted by the Petitioner and in its opinion the consumption of 6,915 tons of HSD estimated by the Petitioner during start-up and commissioning of Uch-II is unrealistic. The Authority considers that some scheduled tests such as 20% and 50% load tests being outside the scope of PPA cannot be allowed. The Authority also considers that the plant tests at 75% and 100% load are also scheduled and can be conducted with gas fuel. These tests at the most require HSD consumption for one start-up and one shutdown, which is allowed to this extent. The Authority is of the view that by virtue of synergy, steam required for steam blowing out and Vac-up test and gland seal should be utilized from auxiliary steam header of Uch-I which is operating with gas fuel. The Authority considers that Uch-II gas turbine should only be run when alternate steam supply does not sufficient to serve the purpose such as safety valve test, steam turbine testing etc. preferably on gas fuel. The tests which are integral part of start-up, commissioning and performance be conducted and completed successfully in first attempt, otherwise, repeat test should be carried out at the risk and cost of EPC contractor. Having considered the aforesaid, the Authority has assessed HSD quantity of 800 tons for each gas turbine, which can be further reduced by execution of activities at GTs, ST, HRSG & BOP in a well coordinated manner. The Authority has therefore decided to allow Gas fuel and HSD as per actual consumption up to a maximum of HSD consumption 800 tons/GT. This assessment is also comparable with the Authority's assessment in the case of other power projects.

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6.2.3.4 The Authority decided to allow the cost of HSD and electricity, which is the responsibility of the owner as per the actual based on the rate of HSD prevailing at the time of COD. In the instant case, based on the above assessment of the HSD requirement and using the existing rate of HSD Rs. 57.14/Litre and specific gravity of 0.87, the cost of HSD has been assessed as US$ 1.306 million. The cost of the electricity as per actual consumption but not exceeding Rs. 52.919 million being reasonable is also allowed as such. The Authority has accordingly assessed US$ 1.964 million as the overall cost on account of start-up and production.

6.2.4 Mobile Equipment Purchase

6.2.4.1 The Petitioner submitted that although it expects some benefits to be gained through the joint use of specialized vehicles (40 ton crane), but, mobile equipment and vehicles would still be required for the site, e.g. fork lifter truck, store stacker, pickup trucks, site vehicles, etc.

6.2.4.2 According to CPPA the Company's demand of US$ 0.745 million (revised to US$ 0.638 million by the Petitioner) for Mobile Equipment Purchase is not justified because UCH-II is extension of UCH-I and facilities available at UCH-I will be shared. The Authority considers that the Petitioner's request is partially not justified and it needs to be rationalized. In the Authority's opinion additional vehicles like pick up trucks and site vehicles would be required. Thereof, the Authority considers US$ 0.25 million would be a fair assessment for purchase of mobile equipment and has decided to allow the same.

6.2.5 Insurance during Construction

6.2.5.1 The Petitioner requested an amount of US$ 7.428 million on account of cost of insurance premium during construction phase. The Petitioner in support of its request also provided the details of risks, which it intended to cover.

6.2.5.2 The examination of the information and details provided by the Petitioner revealed that the insurance premium estimates included the cost for delay in start-up US$ 2.433 million and marine delay in start-up US$ 0.95 million. The Authority considers that both the costs for insurance premium requested by the Petitioner are not legitimate because the Petitioner is liable to pay penalty in case of delay in COD agreed in the Power Purchase Agreement (PPA). Through these risk covers, the Petitioner plans to recover the penalty from the Power Purchaser in case of delay in COD, which is entirely against the spirit of PPA. In view of the aforementioned,

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the Authority considers that the Petitioner's request for allowing US$ 3.383 million on account of delay in start up and marine delay in start up is not justified; therefore has decided to disallow the insurance cost to this extent. After adjusting the amount disallowed the assessed amount of US$ 4.043 million is allowed to the Petitioner.

6.2.6 Land Lease and Office Rent

6.2.6.1 The Petitioner requested to allow US$ 2.577 million as land lease and office rent which according to it will be leased to Uch-II under a lease agreement for at least 25 years life of the Project. According to the Petitioner office (Islamabad) expenditure, i.e. rental, staff, etc. has also been built into the costing for the Facility and Services Sharing Agreement.

6.2.6.2 The CPPA opposed to allow this cost on the ground that it had already paid to UCH-I as the infrastructure cost.

6.2.6.3 In response to CPPA's comments, the Petitioner stated that the amount of US$ 2.53 million included incremental payroll, rent cost and other administrative expenses like utilities, communications, consumables, printing and stationary, head office maintenance, vehicles maintenance and travel, boarding and lodging etc. According to the Petitioner, only the additional cost of Facilities and Services Sharing was included while UPL will lease land to Uch-II on a nominal value.

6.2.6.4 Having examined the information provided by the Petitioner, the Authority observed that some items like staff salaries etc. were already covered under different heads like general and administration and project development costs. In this regard the Authority considers that the cost for additional staff should be taken care-of in the project development cost. The Authority, however, considers that the costs like rent, electricity, utilities and communication, repair, security, janitorial etc consumables, stationary, postage, conveyance, vehicle maintenance and fuel, travel boarding and lodging, cost of facilities and services sharing and renovation cost are genuinely required. Based on the item wise cost analysis of the information, the Authority has accordingly assessed US$ 1 million on this account and is being allowed.

6.2.7 Owner's Engineer

6.2.7.1 The Petitioner requested US$ 6 million on account of the owner's engineer, for

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the duration of the commissioning period which, according to the petitioner, is based on previous project experience and budgetary quotes and considering the scope of Uch-II project, current political condition of the country and the Balochistan factor, 40% of these quoted prices, was used for the tariff petition, i.e. US$ 6 million. In support of its claim, the Petitioner provided the Owner's Engineer Contract for an assignment done in the Middle East for US$ 15 million.

6.2.7.2 CPPA objected to the Petitioner's requested amount of US$ 6.0 million being on the higher side as compared to the NEPRA determined cost in this respect of other IPPs.

6.2.7.3 The examination and analysis of the information provided by the Petitioner indicated that the Petitioner in addition to US$6.0 million also requested some costs for technical consultancy, technical advisory, O&M engineer and independent engineer under the head of project development.

6.2.7.4 The Authority considers that the Petitioner's request cannot be accepted as such because it is not supported with reliable documentary evidence. In other cases, the Authority has allowed the cost for Owner's Engineer in the range of US$0.75 million to US$1.3 million. In the instant case considering the bigger size of the plant, the Authority considers that US$ 2 million would be a fair assessment on account of owner's engineer. The Petitioner is accordingly being allowed US$2.0 million in this regard.

6.2.8 General and Administration

6.2.8.1 The Petitioner requested US$ 1.327 million on account of general and administration expenses to cover the insurance (excluding plant related), site office expenditure, travel and subsistence from city to site and professional fees (audit and tax).

6.2.8.2 In CPPA's opinion, the amount requested by the Petitioner on account of general & administration, was on the higher side and needed to be rationalized. In response to CPPA's comments, the Petitioner stated that in addition to the aforementioned services, this cost also covers the training cost outside the scope of EPC and non-EPC training, health and safety and personal protective equipment.

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6.2.8.3 Having examined the information/details provided by the Petitioner, the information available and the costs allowed by the Authority in the other cases, the Authority considers that the cost requested by the Petitioner is reasonable, therefore, is being allowed as such.

6.2.9 <u>IT and Special Equipment</u>

6.2.9.1 The Petitioner requested US$ 1.243 million to cover all IT infrastructure required for the site and the Islamabad office as well as some special purpose equipment, e.g., non-EPC tools, vibration monitoring, I&C calibration kits, mechanical special purpose tools, electrical testing tools, etc.

6.2.9.2 Considering the Petitioner's request as reasonable, the Authority has decided to allow US$ 1.243 million on this account.

6.2.10 <u>Long Term Service Agreement Spares</u>

6.2.10.1 The Petitioner has requested US$ 4.945 million on account of LTSA spares including duties, as cost of initial spares. The CPPA in its comments did not support the Petitioner's request for allowing LTSA spares because in its opinion the LTSA spares were included in the EPC cost.

6.2.10.2 The Petitioner was directed to justify its request for allowing the cost for LTSA spares in the project cost. The Petitioner was also asked to provide the detailed list of LTSA spares along with cost details. The Petitioner in response stated that it could not provide the details of the LTSA spares as the list will be available close to the COD. The Petitioner further stated that the LTSA scope mainly deals with the Planned Maintenance (Scheduled Outages) of the power block equipment including Gas Turbines (GTs) as well as the Steam Turbine (ST) and their associated Generators. According to the Petitioner under this agreement, Original Equipment Manufacturer (OEM) of these machines will be responsible for the Combustion Inspection (CI); Hot Gas Path Inspection (HGPI) and Major Inspection (MI) at the recommended intervals. The Petitioner further stated that the LTSA Contractor is responsible for all the costs associated with these inspections including the cost of required combustion and hardware parts, parts, refurbishment and technical services (Technical Advisors and other skilled/semi-skilled manpower). The Petitioner also provided a copy of Contractual Services Agreement-Budgetary Quotation received from GE.

6.2.10.3 The Authority based on the information/explanation and Contractual Services

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Agreement-Budgetary Quotation provided by the Petitioner noted that the cost of initial spare parts for two MI cycle or 96,000 FFH was already included in the O&M cost. The Authority, therefore, considers that the Petitioner's request for allowing this cost in the project cost is in duplication and is not justified. The Authority has accordingly decided not to allow this cost as part of the project cost.

6.2.11 Non-LTSA Spares

6.2.11.1 The Petitioner has requested US$ 5.108 million on account of Non-LTSA spares. According to the Petitioner, the spares not covered under the scope of the EPC Contract comprise this category to ensure smooth running of the facility. According to the Petitioner, the basis of such cost is the UPL experience and is approximately 2.5% of the Hyundai Off-Shore portion cost of EPC.

6.2.11.2 In order to establish the requirement of the non-LTSA spares the petitioner was directed to provide detailed list of the spares along with cost break up. The Petitioner was also asked to provide the justification for maintaining such a huge inventory particularly in view of claimed synergy of sharing Capital and O&M Costs. The Petitioner did provide the list of non-LTSA spares but with lump sum cost. The Petitioner stated that this cost component would cater for maintenance of all plant area not covered under the scope of LTSA (i.e. GTs and ST with Generators). The petitioner further stated that these included (without limitation), cost of parts, refurbishment, specialized OEM services (in case it is outside the expertise of the O&M Contractor staff) for the GTs and ST auxiliaries, HRSGs, Distributed Control System, Electrical systems including Switchyard, Cooling Towers, Condenser, Feed Water Systems, Water Treatment System, Fire System and Other Balance of Plant (BOP) auxiliaries.

6.2.11.3 In the Authority's opinion the supporting analysis provided by the Petitioner is not valid because it represents different configuration of the plant. The Authority considers that proper backup is required to analyze the requirement of spares and any inter-adjustment made with relevant spares under LTSA as indicated by the Petitioner. The Authority further considers that the plant is new and of standard quality, therefore, no substantial unplanned maintenance is anticipated after COD. The Authority considers that the plant will be under warranty and the unforeseen minor maintenance cost up to US$0.6 million in a calendar year and will be born by the EPC contractor. The Authority further considers that the requirement of the non-LTSA spares is not justified. On the basis of documentary evidence at the time

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of COD, the Authority can however consider this cost substantiated by documentary evidence.

6.2.12 WAPDA Standby L/C

The Authority has considered the Petitioner's request for allowing US$ 0.499 million on account of WAPDA Standby L/C. The request being reasonable is accepted as such.

6.3 Project Development

6.3.1.1 The Petitioner requested US$ 13.95 million as project development cost. According to the Petitioner its project development cost was meant to cover the following;

- Staff Time Cost;
- Technical Consultancy;
- Legal Cost;
- Financial Advisory and Technical Advisory;
- Studies; and
- Proposal Fee

6.3.1.2 In order to make fair assessment of the project development cost, item wise cost has been examined on the basis of available information in the instant case as well as in the other comparable projects. Having examined the information it was noted that the most of the cost items were without any satisfactory evidence. The major item of the project development cost was the Staff Time cost, which according to the Petitioner, included staff salaries, wages and benefits to the Company employees engaged in the development of the project. The Petitioner requested US$ 9.224 million on this account. According to the Petitioner till January 2009, it had allocated US$ 1.5 million and US$ 1.475 million to the International Power Project team and other staff respectively. The Petitioner estimated an additional cost of more than US$ 6 million till financial close under this head.

6.3.1.3 When compared with the other similar projects the Petitioner's request was not considered realistic. The petitioner's request also is not fully justified because the Petitioner has already been allowed part of the cost of salaries, wages, head office overheads and other administrative costs under different heads. The Authority considers that the additional cost of the professional staff in addition to the existing about 100 professionals already employed on Uch-I, that too, has

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been overestimated. Keeping in view the costs allocated up to January 2009, the Authority considers that an additional amount of US$2.025 million should be a reasonable assessment on this account. Accordingly the petitioner is being allowed an overall cost of US$5.0 million as Staff Time Cost.

6.3.1.4 The Authority has evaluated all the remaining costs of the project development and in the Authority's opinion some of costs requested by the petitioner like Owner's Engineer, Technical Advisor, Insurance Advisor, Tax Accounting & Audits and Insurance were either in duplicate or unjustified. The Authority has therefore decided to disallow these costs to the extent of US$ 0.675 million.

6.3.1.5 The Authority also observed that costs of Legal International Counsel, Local Counsel and Financial Advisory were overestimated. The Petitioner has also not provided any documentary evidence in support thereof. In the absence of any evidence the Authority is constrained to apply its best judgment for assessing this cost. Accordingly, the Authority has decided to allow US$1.0 million subject to provision of documentary evidence at the time of COD.

6.3.1.6 All the other cases under this head except above mentioned costs are considered reasonable and allowed as such. After incorporating the above adjustments the overall Project Development Cost has been assessed as US$8.474 million against the requested US$13.950 million.

6.3.2 Residential Colony

6.3.2.1 The Petitioner requested for US$ 12.5 million on account of residential colony. Subsequently in its revised submission it reduced this cost to US$ 10 million. While justifying its requirement for residential colony, the Petitioner stated that the staff working at the plant would have to be accommodated on site.

6.3.2.2 The Authority is cognizant of the security requirement at plant site that necessitated the residential colony for the staff within the project premises. The analysis of the information provided by the Petitioner indicated that the construction cost per square feet assumed was about Rs. 8,000/Sq.ft. In order to make fair assessment in the instant case, the cost requested by the Petitioner was compared with the cost allowed by the Authority in other cases. In this regard the cost allowed in the cases of Star Power and Foundation Power both being in remote area, were considered more relevant. The Authority after adjusting for the cost increase in building material, in the instant case has decided to allow Rs. 2,500/Sq. ft for A type and Rs. 2,000/Sq.ft for B type

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construction. Based on the adjusted per square ft, the cost of residential colony including interfacing and furnishing has been assessed as US$ 3.857 million.

6.3.3 Importation Cost

6.3.3.1 The Petitioner requested US$ 18 million on account of importation cost. The Petitioner submitted that the importation cost is assumed at 6% (5% custom duty and 1% federal excise duty) and is included in the Project cost and not part of the EPC cost. The operational costs take account of the importation costs for spares.

6.3.3.2 Based on the adjusted EPC price, the importation costs has been assessed as US$ 18.600 million. Since the cost is subject to adjustment as per actual at the time of COD, therefore, for the purpose of tariff calculation US$ 18.600 million has been allowed to the Petitioner on this account subject to adjustment as per actual at the time of COD.

7 Financing Cost

7.1 The Petitioner requested US$ 28.569 million on account of Financing Fee and charges including Stamp duty on Loan and security documents, Upfront / Arrangement Fee and Commitment Fee.

7.2 The Petitioner's request was based on borrowing of US$ 394.13 million. The cost for ECA financing (premium) was US$ 15.75 million @ 22.5%. Since the Petitioner has not achieved its financial close, therefore, the exact amount cannot be established at this point of time.

7.3 For the purpose of tariff calculations, the interest/premium rates indicated by the Petitioner have been adopted as such. Based on the adjusted EPC cost, the amount of borrowing has been revised as US$ 352.98 million. Accordingly, the financing fees and charges in the instant case have been assessed as US$ 21.751 million including US$ 11.25 million on account of ECA financing (premium). This assessed amount is subject to adjustment as per actual at the time of COD on provision of documentary evidence with a maximum of 3% of the borrowing other than ECA premium.

8 Interest During Construction (IDC)

8.1 The petitioner requested an amount of US$ 43.260 million as Interest During Construction (IDC) on the basis of proposed disbursement of CAPEX of US$ 452.71 million.

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8.2 Based on the assessed CAPEX of US$ 411.02 million and proposed disbursement plan, the IDC is being allowed as US$ 38.360 million to be adjusted at the time of COD as per actual loan disbursement.

9 Energy Charges

9.1 The Petitioner has stated that its Energy Charge is based on the actual net electrical output measured in kWh, and consists of:-

- Fuel Cost Component
- Variable O&M component (Foreign)
- Variable O&M component (Local)

9.2 Fuel Component

9.2.1 The Petitioner stated that Low BTU gas for Uch-II will be transmitted from UGF to the Project site through OGDCL's existing 26 inch diameter pipeline. According to the petitioner it would also save a lot of time in achieving COD due to reduced construction costs and time. The Petitioner submitted that OGDCL is the sole lease owner and operator of the UGF till the year 2026. A recent reservoir study carried out by IPR International Ltd., Irving, Texas has confirmed that sufficient gas is available for the proposed 400MW power station for duration of over 25 years. UPL and OGDCL have therefore requested the Ministry of Petroleum and Natural Resources through Director General Petroleum Concessions to extend the existing development and production lease of UGF up to year 2040. The Petitioner explained that the reason for requesting an extension up to year 2040, i.e., 4 years beyond the proposed GSA tenor of 25 years was to ensure sufficient cushion in the UGF lease to adjust for unforeseeable events resulting in force majeoure events (FMEs) under the PPA (during the life of the Project) which may or may not qualify as FMEs under the GSA or more specifically under the gas field lease itself. The Petitioner pointed out that the PPA term automatically extends on a pro-rata basis to adjust for FMEs. This would also help in reducing the overall tariff of Uch-II besides ensuring OGDCL commitment to provide gas throughout the life of the Project.

9.2.2 In response to the Authority's observation, the Representative from OGDCL stated that the maximum quantity that OGDCL can provide is 72,000 MMBtus. It was further stated that it was already supplying 106,000 MMBtus to Uch I. According to OGDCL, with both productions from the same reservoir, the aforesaid maximum quantity is the quantity of gas that can be supplied with compression facility. The

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Representative of OGDCL was unable to confirm the availability of gas for the proposed Uch-II project because OGDCL were still in negotiation with Uch. The OGDCL promised to provide indicative figures in few days which have not yet been provided. The OGDCL informed that the lease is valid up to 2026 which means around 15 years of production life. According to OGDCL a summary had been submitted to the government for extension of leave up to 25 years and in case of extension, the average daily quantity would be around 56,000 MMBtus and the same was conveyed to UPL.

9.2.3 On the basis of availability of gas indicated by OGDCL, an analysis has been done by the Authority which indicates that on the basis of average daily quantity, the average daily plant output would be 333 MW. On the basis of maximum available gas quantity, the maximum daily output can be achieved up to 428 MW. The Authority noted that the gas availability indicated by the OGDCL does not support the proposed plant size. The Authority considers that the GSA issue is also very critical. In the wake of power shortage prevailing in the country the Authority however cannot wait till finalization of the GSA. Having given the observations on the issues of gas availability the Authority has decided to rely on the assurance given by the petitioner on the issue of sufficient gas availability for the entire project life.

9.2.4 According to the Petitioner, the fuel component of the Energy Purchase Price (**"EPP"**) is driven by the gas price of US$ 5.3905/MMBTU quoted by OGDCL for 25 years. In the revised submissions, the petitioner quoted gas price of US$ 5.0102/MMBTU and it stated that the final gas price, as available, will be used at COD along with the price adjustment mechanism. The Petitioner further stated that a revision in the key assumptions, namely, OGDCL's desire for a minimum of 20% IRR, 80% MDQ, use of compression cost upfront, etc. is likely to assist in reducing the EPP component and thus the aggregate tariff. Pricing structure, proposed by OGDCL, comprises of two components:

a. Fixed Monthly Demand Charge: This pricing structure assumes a monthly demand charge to OGDCL whether or not OGDCL delivers gas to the Company. Provided, however, that if on any day OGDCL fails to make available to the Company the required quantity of gas, the Company will be entitled to deduct Demand Charges on a pro-rata basis.

b. Monthly Commodity Charge for gas and transportation: The pricing structure assumes a monthly commodity charge for gas and transportation to OGDCL in arrears each month.

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9.2.5 The Petitioner assumed that the gas pricing mechanism would be compatible with the requirements of the PPA. According to the Petitioner, this component represents the fuel consumption at a guaranteed efficiency level for the power plant based on 100% plant loading. The main assumptions used to derive this component by the Petitioner are as follows:

(a)	Gas Price:	US$ 5.0102 /MMBTU
(b)	Thermal efficiency:	48.91 % (life-cycle net at mean site conditions at 100% load).
(c)	Net Output:	375.2 MW.
(d)	Heat Rate:	7360.71 kJ/kWh (LHV), new plant
(e)	Plant Loading:	100% loading assumed while calculating Fuel Cost Component.
(f)	Partial Loading:	Partial load heat rate curves to be agreed with the Power Purchaser and applied to the Fuel Cost Component.
(g)	Ambient Correction	Ambient conditions correction curves to be agreed with the Power Purchaser and applied to the Fuel Cost Component.

9.2.6 CPPA in its comments referred to the details (para 4.9.1 of the petition) wherein the Petitioner has stated that OGDCL has proposed two part tariff for fuel supply i.e. fixed monthly demand charge and monthly commodity charge for gas and transmission but the same has not been reflected in the tariff stream of the tariff table. According to CPPA the Petitioner has requested Rs./kWh 3.1408 on the basis of 48.67% thermal efficiency. CPPA observed that the energy price for UCH-I during November 2008 was Rs. 1.8468 with the thermal efficiency of 38.6%. In CPPA's opinion in the instant case with the more efficient Power Plant, the Energy price should have been much lower than the UCH-I because the major pipeline/infrastructure cost has already been paid for the power purchaser to UCH-I and of UCH-II.

9.2.7 The Authority observed that the gas price indicated by OGDCL is an indicative figure, which is on the higher side as compare to the price agreed in the case of Uch-I. The issue of gas price has yet to be finalized between the Petitioner and OGDCL. The Authority considers that in the instant case the fuel cost component in the overall tariff is about 50% and has major financial implications. The electricity rates due to high generation costs are already beyond the affordable limit of the end-consumer. In the current scenario of global economic recession, the high

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electricity cost has already adversely affected the economic activities in the country. The Authority considers that in order to fix fair and judicious gas price, government intervention is inevitable. In this regard it is recommended that the Ministry of Petroleum and Natural Resources should intervene to resolve the gas pricing issue at the earliest, which would help in avoiding project delay to minimize the demand/supply gap.

9.2.8 The fuel being pass-through cost and is subject to adjustment according to the gas price variation, therefore, for the purpose of tariff calculation, the Authority has decided to adopt the indicative price of US$ 5.0102 per MMBTUs as submitted by the Petitioner. Any reduction as a result of lower gas price agreed by the Petitioner and OGDCL shall be automatically passed on to the Power Purchaser. The Authority has accordingly, determined fuel cost component of Rs.3.0347/kWh on the basis of heat rate of 7,163 kj/kWh or 6,789 BTUs/kWh (50.258% thermal efficiency).

9.3 Foreign Variable O&M

9.3.1 The Petitioner requested levelized variable foreign O&M cost of Rs. 0.0794/kWh over the life of the project. According to the Petitioner variable O&M component primarily includes lubricant consumption, chemicals, consumables, imported spare parts to be changed on normal scheduled maintenance and unscheduled maintenance. The Petitioner further stated that it also included specialized technical services from the manufacturer during maintenance of the Power Plant. The equipment has manufacturer-recommended overhauling schedules that are based on actual running hours and the actual timing of the major overhaul. The Petitioner submitted that the gas turbines are expected to be made in France; therefore, the spare parts and specialized technical services will be supplied from Europe. The Petitioner assumes that the foreign component would be indexed to the European and US CPI as required. The Petitioner has requested to adjust the tariff component for currency indexation on a quarterly basis.

9.3.2 The Authority has examined the proposals of O&M Contractor and GE. The Authority has also analyzed the item wise details provided by the Petitioner. On the basis of information provided by the Petitioner, the Authority observed that the Petitioner's calculation also included the cost of Crane Rent which is not justified. The Authority also noted that the cost of initial spares for 2 MI cycles were included in the GE proposal while the Petitioner included the same in the

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project cost. Since this cost is being considered in the assessment of variable O&M foreign cost component therefore is not considered in the project cost.

9.3.3 The Petitioner also assumed performance bonus cost in the variable O&M foreign cost component, which in the Authority's opinion is not justified, therefore, disallowed. The Authority also observed that the allocation of costs in term of fixed and variable components was not according to the nature of the costs and proposals submitted by the service contractors. The costs are, therefore, being re-aligned according to the nature of the costs. On the basis of GE proposal and assessment made by the Authority, the variable O&M foreign cost has been assessed as US$ 4.758 million and tariff component of Rs. 0.1275/kWh which will be adjusted for US CPI and Rupee/US$ exchange rate variation.

9.4 Local Variable O&M

9.4.1 The Petitioner requested levellized variable local O&M cost of Rs. 0.0373/kWh over the life of the project. The Petitioner stated that this component primarily includes chemicals, consumables, balance of plant maintenance, monitoring and waste disposal. The Petitioner requested to index the variable O&M (local component) with Pakistan Wholesale Price Index (WPI).

9.4.2 Having evaluated the Petitioner's request on the basis of information provided, the Authority considers that the Petitioner's cost estimates are reasonable, therefore, has decided to allow as such. The costs are however being re-adjusted according to its fixed and variable nature. The Authority has accordingly assessed the variable O&M local cost as US$ 0.8241 million and tariff component of Rs. 0.0221/kWh which will be adjusted for WPI variation.

10 CAPACITY CHARGES

10.1 Fixed O&M (Local and Foreign)

10.1.1 The Petitioner has requested levelized fixed O&M of Rs. 0.2493/kW/hr comprising foreign component of Rs. 0.1352/kW/hr and local component Rs. 0.1141/kW/hr. The Petitioner stated that the fixed O&M component of capacity payment represented the fixed costs of all the staff for O&M, Contractual Services Agreement (CSA), power plant administration, security, transportation, overheads, office costs, professional fees such as audit, tax and legal, as well as some minor fixed operational costs such as environmental monitoring, that do not change with dispatch levels. The Petitioner has stated that its fixed O&M is

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bifurcated in foreign and local components.

10.1.2 CPPA submitted that the proposed Fixed O&M Costs is on the higher side keeping in view the size of plant and economy of scale. CPPA submitted that this component should be rationalized in line with the NEPRA tariff determination in case of other IPPs.

10.1.3 The Petitioner's request has been evaluated on the basis of information provided by the Petitioner. The Authority observed that the Petitioner did not place the cost items according to their nature and were required to be placed at the proper place. The Authority also noted that the supporting data and information also did not support the Petitioner's calculation. Having made the necessary adjustment and realignment of costs and on the basis of Contractual Services Agreement (CSA) and the detailed information provided by the Petitioner, the fixed cost (foreign) has been assessed as US$ 5.248 million as against requested cost of US$ 6.000 million. Similarly the Authority has assessed the fixed O&M local cost of US$ 2.538 million as against US$ 5.077 million requested by the Petitioner. The fixed cost to the extent of US$ 2.597 million has been accounted for under variable O&M cost, while US$ 0.650 million was not considered legitimate and disallowed.

10.1.4 Based on the above assessment, the fixed O&M foreign and local components have been determined as Rs. 0.1285/kW/hr and Rs. 0.0621/kW/hr respectively. These components will be adjusted on account of variation in WPI and US CPI.

10.2 Insurance

10.2.1 The Petitioner requested US$ 4.1189 million or Rs. 0.0940/kW/hr on account of insurance cost to cover plant all-risk insurance, business interruption, plant third party liability, terrorism, etc. based on the quote from Marsh (insurance broker) at existing market conditions.

10.2.2 The Authority considers that the insurance cost is a pass-through to cover the risks allowed in the PPA on actual basis. The Petitioner's requested insurance premium has been adjusted to the extent of revised EPC price. Accordingly, the insurance cost has been assessed as US$ 3.4801 million or Rs. 0.0852/kW/hr. This cost component shall be adjusted at the time of COD as per the actual permissible under PPA, subject to maximum of 1.35% of the EPC price.

10.3 Cost of Working Capital

10.3.1 The Petitioner requested Rs. 0.0483/kW/hr on account of cost of working capital

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to cover the cost impact of a working capital loan to finance the net accounts receivable. In support of its request the Petitioner has provided a detailed working.

10.3.2 CPPA disagreed with the Petitioner's request on the ground that CPPA will make all the payments for EPP & CPP on 30th day from the date of invoice received by the power purchaser and for any delay in payment, interest charges @ KIBOR + 450 basic points shall be paid by the CPPA. In view of the aforementioned, in CPPA's opinion, there is no need of financing cost of working capital to be allowed to the Petitioner.

10.3.3 The Authority has examined the detailed working provided by the Petitioner. The Authority has also considered the CPPA's comments along with the payment terms of Power Purchase Agreement (PPA). The Authority is convinced that there will be no requirement for working capital because the payments received from the power purchaser and payments made to the fuel supplier are likely to match. The Authority, therefore, has decided not to accept Petitioner's request in this regard.

10.4 ROE and ROEDC

10.4.1 The Petitioner requested in its petition Rs. 0.4803/kW/hr and Rs.0.1120/kW/hr on account of Return on equity (ROE) and Return on Equity during Construction (ROEDC) respectively. Subsequently the Petitioner revised these numbers to Rs. 0.4587/kW/hr and Rs.0.0994/kW/hr on account of ROE and ROEDC. The Petitioner expects that this will give an annual Internal Rate of Return (IRR) of 15% after deduction of withholding tax.

10.4.2 The Authority considers that the Petitioner's request is in line with the Authority's decision in the cases of other IPPs. Since the Authority has made certain adjustments in the different costs that has resulted in a change in equity amount; therefore the components of ROE and ROEDC would have to be adjusted. Accordingly on the basis of revised project cost, the Authority has assessed Rs. 0.4324/kW/hr and 0.0886/kW/hr on account of ROE and ROEDC respectively, which shall be adjusted at the time of COD.

10.5 Debt Service

10.5.1 According to the Petitioner, its interest and repayment of principal calculations on debt of US$ 394.131 million is based on the following assumptions:

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(a)	Amount of Debt:	US$ 394.131 million (75% of total Project cost including IDC)
(b)	Term of Loan:	30 months of construction period (grace); quarterly debt service after the COD PKR Commercial Facility: 10 year repayment equal quarterly ECA Facility – USD: 14 year repayment equal quarterly DFI Facility – USD: 10 year repayment equal quarterly DFI Facility – Euro: 10 year repayment equal quarterly USD Commercial Facility: 10 year repayment equal quarterly
(c)	Interest Rates:	3 months KIBOR (reference rate = 17%) 3 months LIBOR (reference rate = 4%) 3 months EURIBOR (reference rate = 4%) LIBOR/ EURIBOR hedged rate during construction (reference = 3.82%) PKR Commercial Facility: 3.0% interest margin ECA Facility – USD: 0.6% interest margin DFI Facility – USD: 4.0% interest margin DFI Facility – Euro: 4.0% interest margin USD Commercial Facility: 5.5% interest margin (includes MIGA premium)
(d)	Currencies:	US$; PKR; Euro
(e)	Reserves	No debt or maintenance reserve has been assumed
(e)	Indexation:	Funding in PKR: interest component would be indexed to the 3 month KIBOR Funding in USD: interest component would be indexed to the 3 month LIBOR Funding in Euro: interest component would be indexed to the 3 month EURIBOR

10.5.2 The Authority has considered the Petitioner's request on the basis of above assumptions. The Authority considers that all these terms are just indicative and would be firmed up at the time of financial close. Considering the financial implications of the financing costs on the tariff, the Authority has decided to adopt all the above assumptions for tariff determination. The relevant tariff components however will be adjusted on the basis of final agreement with the lenders. The adjustment in the project cost has changed the debt amount to US$ 353.349 million. Based on the revised debt amount, the Authority has assessed

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the debt service as Rs. 1.2577/kW/hr during first ten years and Rs. 0.1191/kW/hr for next four years. The debt service component shall be adjusted for exchange rate variation, 3-monthly KIBOR and 3-monthly LIBOR/EuriBOR.

11 Adjustments at Financial Close

11.1 The Petitioner requested to revise the various base figures (e.g. fuel price, O&M and insurance prices, adjusted by actual exchange rates compared to the Reference Exchange Rates (PKR/US$=75, US$/€= 1.25 and PKR/€= 93.75, and Interest During Construction adjusted by prevailing LIBOR + applicable spread or KIBOR + applicable spread, to arrive at the reference tariff table to be used in the PPA at the time of Financial Closing. The Petitioner also requested to include the upfront exposure fee, commitment fees and all other financing costs and fees in the capital cost. The Petitioner assumed interest rate based on LIBOR + applicable spread as passed through.

11.2 The Authority has not allowed any adjustment at the time of financial close; therefore finds no justification to allow the same in the instant case. All the adjustments allowed by the Authority in the relevant tariff components shall be made at the time of COD only in accordance with the prescribed mechanism in the tariff determination.

12 Adjustments at Commercial Operations Date

12.1 The Petitioner requested to update the total US Dollar Project cost at COD based on changes in exchange rates. The Petitioner also requested to adjust the Debt Service, ROE and ROEDC on account of actual variation in debt and equity drawdown, actual interest during construction and financing costs/fees, actual custom duties and taxes. The Petitioner further requested to calculate the relevant Capacity Charges once the Debt Service, ROE and ROEDC are updated. It requested to adjust the relevant reference tariff components at COD on account of variation in US$/PKR, Euro/US$ and Euro/PKR parity.

12.2 The Authority considers that all the relevant adjustments requested by the Petitioner have already been addressed under the relevant heads of the determination.

13 Modification / Additions to be Treated as Pass Through

13.1 The monetary impact of all or any modifications or additions required by the Power Purchaser that are not considered in the Project shall be treated as pass-through and the changes reflected in the tariff components.

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13.2 The Authority considers that any modifications or additions leading to change or modification in tariff are required to be referred to the Authority for approval. The Authority after considering the merits on case to case basis on the basis of documents duly certified by the power purchaser would allow or disallow as the case may be.

14 INFLATION INDEXATION

14.1 The Petitioner requested for allowing the following indexation/adjustments:

Fuel Cost component	As per price notification by relevant Authority
Variable O&M – Local	Pakistan WPI
Variable O&M - Foreign	European CPI and US CPI
Fixed O&M - Local	Pakistan WPI
Fixed O&M – Foreign	European CPI and US CPI
Fuel	PKR/US$ based on price notification by relevant Authority
Variable O&M – Foreign	PKR/Euro and PKR/US$ exchange rates
Fixed O&M – Foreign	PKR/Euro and PKR/US$ exchange rates
Insurance	PKR/US$ and on the basis of actual insurance payment
ROE	PKR/US$ exchange rate
ROEDC	PKR/US$ exchange rate
Withholding tax @7.5%	PKR/US$ exchange rate
Foreign Loan principal	PKR/US$ and PKR/Euro exchange rates
Foreign Loan interest	PKR/US$ and PKR/Euro exchange rates
Financing cost on working capital	3 months KIBOR+ actual spread (reference KIBOR = 17%)
Interest Charge - Local Loan	3 months KIBOR+ actual spread (reference KIBOR = 17%)
Interest Charge - Foreign Loan (USD)	3 months LIBOR + actual spread (reference LIBOR = 4%)
Interest Charge - Foreign Loan (Euro)	3 months EURIBOR + actual spread (reference EURIBOR = 4%)

14.2 CPPA recommended to allowing all the indexation/adjustments available under GOP Power Policy 2002 and the Guidelines for Tariff Determination.

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14.3 All the indexation/adjustment available under the GOP Power Policy 2002 and the Guidelines for Tariff Determination will be allowed to the Petitioner.

15 Assumptions

15.1 The Authority has based its above determination on the following assumptions and the reference tariff will be changed accordingly in case there is any change in any of the following:

15.2 Reference mean site conditions for the net output and heat rate;

- Ambient temperature 27.3° C
- Relative humidity 48.5%
- Atmospheric pressure 1006 mbara

15.3 Construction period 30 months as agreed with EPC contractor as the EPC Term Sheet. For any change in the construction period NEPRA's prior approval shall be required.

15.4 Every maintenance cycle shall be as per manufacturer's recommendations.

15.5 Output degradation curve from the GT manufacturer and EPC contractor and duly approved by the Authority shall be applied to adjust the Capacity Cost component of the tariff.

15.6 A correction curve for changes in ambient conditions will be based on curves provided by manufacturers as in other GT based plants and approved by the Authority.

15.7 Fuel cost component shall be as per the net efficiency at 100% plant load duly approved / determined by NEPRA. Heat rate degradation due to aging will only be allowed if the reference fuel cost component is adjusted at the time of COD as a result of Heat Rate Test and the aging allowance is not considered.

15.8 Minimum loading for Combined Cycle operation of the Complex will be at 40%, load of gross capacity of the Complex.

15.9 The Sponsor will be responsible to install all electric communication equipment on the Complex as approved/desired by the Power Purchaser.

15.10 Tolerance of +1.5% in dispatch will be allowed in accordance with the PPA executed under Power Policy 2002.

15.11 HSD shall only be used for startup and the plant operation shall be on gas. There

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shall be no limit on gas turbine startups and all startups shall be free of cost. The maximum number of steam turbine free startups shall be as per following criteria approved by GOP:

Hot Starts	=	52
Warm Starts	=	24
Cold Starts	=	5

15.12 Only the fuel cost component of the energy charge as approved by the Authority will be paid for the energy delivered to NTDC network before COD.

15.13 Scheduled Outage days for Combustion inspection and hot gas path inspection will be 22 days per agreement year. Major inspection, every sixth year, will be 60 days.

15.14 Forced outage hour allowance for 348 hours will be allowed.

15.15 No back-up fuel other than starting / shutdown of the machines will be allowed.

15.16 Any costs incurred with regards to utilizing NTDC telecom media will be treated as 'pass through'.

15.17 The sponsor will provide dedicated set of CTs & PTs for metering system as part of the EPC cost/contract. NTDC shall procure meters for recording the NEO of Complex and the Sponsor shall be responsible for their installation in addition to their backup- metering arrangement.

15.18 LC cost for GSA shall not be considered as pass through item under PPA.

15.19 All payments for EPP & CPP will be made on 30th day from the date of invoice received by the power purchaser, however, for any delay in payment, interest charges @ KIBOR + 450 basic points shall be paid by NTDC .

15.20 Actual equity investment profile will be used to update Return on Equity During Construction and Return on Equity components, at the time of COD.

16 Summary

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

Plant Capacity (Gross)	386.20 MW
Auxiliary	11.00 MW
Plant Capacity (Net)	375.20 MW

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EPC cost –Euro portion	€ 96.223 million
- USD portion	US$ 237.028 million
	(Equivalent US$ 366.764 million)
Non-EPC cost	US$ 25.657 Million
Customs duties & taxes	US$ 18.600 Million
Financing fees and charges	US$ 21.751 Million
Interest during construction	US$ 38.360 Million
Total Project Cost	US$ 471.132 Million
Capital Structure	75:25
Loan	US$ 353.349 Million
Equity	US$ 117.783 Million
Reference Exchange Rates:	Rs 80.45/USD
	Rs.108.47/Euro
Reference WPI (manufactures)	138.38 February 2009
Reference US CPI (all urban):	212.193 February 2009
Cost of Debt:	
ECA Facility USD	4% LIBOR plus 60 basis points
USD Commercial	4% LIBOR plus 550 basis points
DFI USD	4% LIBOR plus 400 basis points
DFI Euro	4% EuriBOR plus 400 basis points
Local	12.81% plus 300 basis points
IRR (net of Withholding tax):	15%
Construction Period:	30 months
Reference Fuel Price:	US$ 5.0102 per MMBTUs
HHV/LHV Adjustment Factor	1.109
Reference Thermal Efficiency (Net LHV)	50.258%
Reference Conditions:	
• Ambient temperature	27.3° C
• Relative humidity	48.5%
• Atmospheric pressure	1006 mbara

16.2 In view of the above, the reference tariff of Uch-II Power Limited (Uch-II) has been determined as set out in the following order;

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ORDER

Pursuant to Rule 16(11) of the NEPRA Licensing (Generation) Rules, Uch-II Power Limited (Uch-II) 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 Uch-II for delivery of electricity to the CPPA of the NTDC for procurement on behalf of Ex-WAPDA Distribution Companies:

REFERENCE SPECIFIED TARIFF

Tariff Components	Year 1 to 10	Year 11 to 14	Year 15 to 25	Indexation
Capacity Charge PKR/kW/Hour				
O&M Foreign	0.1285	0.1285	0.1285	US$ /PKR & US CPI
O&M Local	0.0621	0. 0621	0. 0621	WPI
Insurance	0.0852	0.0852	0.0852	US$ /PKR
Debt Service	1.2577	0.1191	-	LIBOR/EuriBOR/KIBOR
Return on Equity	0.4324	0.4324	0.4324	US$/PKR
ROE during Construction	0.0886	0.0886	0.0886	US$ /PKR
Total Capacity Charge	**2.0545**	**0.9159**	**0.7968**	
Energy Charge on Operation on Gas Rs./kWh				
Fuel Cost Component	3.0347	3.0347	3.0347	Fuel Price
Variable O&M - Foreign	0.1275	0.1275	0.1275	US$ /PKR & US CPI
Local	0.0221	0.0221	0.0221	WPI

Note:

i) The levelized tariff over the life of 25 years at a notional 60% plant factor and 10% discount factor has been determined as Rs.6.0231/kWh.

ii) The applicable component wise tariff is indicated at Annex-I.

ii) Debt Servicing Schedule is attached as Annex-II.

iii) The Annex I&II are the inherited part of this Order.

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

I. One Time Adjustments

I.(i) Adjustment in EPC Cost

The Authority has assessed EPC cost as US$ 366.764 million out of which US$ 318.753 million (Offshore-I US$ 235.938 million and Offshore-II US$ 82.814 million) and US$ 48.011 million is as onshore to be incurred in Pak Rupees. Since the exact

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timing of payment to EPC contractor is not known at this point of time, therefore, an adjustment for foreign currency fluctuation for the portion paid 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. Based upon such information the relevant currency of EPC cost components shall be established 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 only for currency fluctuation against the reference parity values.

I.(ii) <u>Adjustment due to Variation in Net Capacity</u>

The reference tariff has been determined on the basis of minimum net capacity of 375.20 MW at delivery point, at following reference site conditions;

- Ambient temperature 27.3° C
- Relative humidity 48.5%
- Atmospheric pressure 1006 mbara

All the relevant tariff components shall be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) to be carried out for determination of contracted capacity. Adjustments shall be made according to the following formula:

$$CC_{(Adj)} = CC_{(Ref)} \times 375.20\ MW\ /\ NC_{(IDC)}$$

No Adjustment shall be made if IDC is established at less than the net capacity of 375.20 MW at reference site conditions.

Note: Above formula shall be applicable to all the individual relevant components of Capacity Charges.

Where;

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 to be adjusted as per IDC test.

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

The reference tariff has been determined on the basis of minimum net efficiency of 50.258%. However the fuel cost component shall not be adjusted if the net thermal efficiency is established less than efficiency of 50.258 %. Based upon the heat rate test of the complex to be carried out jointly by the CPPA and the Petitioner at the time of COD, the reference fuel cost component of tariff shall be adjusted in case the net efficiency is established at higher than 50.258%. The adjustment shall be made according to the following formula;

$$FC_{(Adj)} = \text{Rs. } 3.0347 \text{ per kWh} / 6789 \times HR_{(T)}$$

Where;

$FC_{(Adj)}$	=	Adjusted fuel cost component at the time of heat rate test at COD
$HR_{(T)}$	=	Net Efficiency 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, ROE and ROEDC shall be adjusted on account of actual variation in drawdown and Interest During Construction & Financing Fees with reference to the estimated figure of US$ 38.360 million and US$ 21.751 million respectively. Adjustment on account of financing fees is restricted to the extent of 3% of total financing except ECA premium.

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

Debt Service, Return on Equity and ROE during construction shall be adjusted on account of actual variation in custom duties and withholding taxes with reference to the estimated figure of US$ 18.600 million.

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

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

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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 the production of authentic documentary evidence by Uch-II 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$ 3.4801 million
$P_{(Act)}$	=	Actual Premium or 1.35% of the adjusted EPC whichever is lower
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan at Invoice date

III. Adjustment in Return on Equity (ROE)

The Petitioner also requested to allow quarterly adjustment on account of US$/PKR exchange rate based on the revised TT &OD selling rate of US dollar notified by the National Bank of Pakistan (NBP). The Petitioner request is inline with the decision of the Economic Coordination Committee (ECC) and is, therefore, being allowed subject to adjustment on account of exchange rate variation according to the following formula;

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

Where:

$ROE_{(Rev)}$	=	The revised ROE component of the Capacity Purchase Price
$ROE_{(Ref)}$	=	The reference ROE component of the Capacity Purchase Price determined at the time of COD
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US$ as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	The reference exchanges rate of PKR 80.45 = 1 US$.

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

ROEOC component of tariff will be adjusted subject to exchange rate variation according to the following formula;

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

Where:

$ROEDC_{(Rev)}$	=	The revised ROEDC component of the Capacity Purchase Price
$ROEDC_{(Ref)}$	=	The reference ROEDC component of the Capacity Purchase Price determined at the time of COD
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US$ as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	The reference exchanges rate of PKR 80.45 = 1 US$.

V. Adjustment of Withholding Tax

Withholding tax on dividend is a pass-through item, which is allowed in accordance with 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% equity at the time of hourly payment (Rs./kW/hour) spread over a 12 months period according to the following formula:

$$\text{Withholding Tax Payable} = [\{15\% * (E_{(Ref)} - E_{(Red)}\} + ROEDC_{(Ref)}] * 7.5\% * ER_{(Rev)} / 80.45$$

Where:

$E_{(Ref)}$	=	Adjusted Reference Equity at COD
$E_{(Red)}$	=	Equity Redeemed
$ROEDC_{(Ref)}$	=	Reference Return on Equity During Construction
$ER_{(Rev)}$	=	The revised IT & OD selling rate of US dollar as notified by the National Bank of Pakistan

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In case the 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 payout.

VI. Pass-Through Items

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, has been accounted for in the tariff. If Uch-II 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 (Rs./kW/hr) payment spread over a 12 months period in addition to the capacity purchase price in the Reference Tariff. Furthermore, in such a scenario, Uch-II may also submit to the CPPA details of any tax shield savings and the CPPA will deduct the amount of these savings from its payment to Uch-II on account of taxation.

VII. Indexations:

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

a) 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

$$F\ O\&M_{(FREV)} = Rs.\ 0.1285 / kW / Hour * US\ CPI_{(REV)} / 212.193 * ER_{(REV)} / 80.45$$

$$F\ O\&M_{(LREV)} = Rs.\ 0.0621 / kW / Hour * WPI_{(REV)} / 138.38$$

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Where:

$F\ O\&M_{(FREV)}$	=	the revised foreign Fixed O&M Foreign Component of tariff
$F\ O\&M_{(LREV)}$	=	the revised local Fixed O&M Local Component of tariff
$WPI_{(REV)}$	=	the revised Wholesale Price Index (manufactures)
$WPI_{(REF)}$	=	The reference WPI (manufactures) of 138.38 of February 2009
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$US\ CPI_{(REF)}$	=	Reference US CPI of 212.193 for February 2009
$ER_{(REV)}$	=	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:

$$V\ O\&M_{(FREV)} = \text{Rs. } 0.\ 1275/kWh * US\ CPI_{(REV)} / 212.193 * ER_{(REV)} / 80.45$$

$$V\ O\&M_{(LREV)} = \text{Rs. } 0.0221/kWh * WPI_{(REV)} / 138.38$$

Where:

$V\ O\&M_{(FREV)}$	=	the revised foreign Variable O&M Foreign Component of tariff
$V\ O\&M_{(LREV)}$	=	the revised local variable O&M Local Component of tariff
$WPI_{(REV)}$	=	the revised Wholesale Price Index (manufactures)
$WPI_{(Ref)}$	=	Reference WPI (manufactures) of 138.38 of February 2009
$US\ CPI_{(REV)}$	=	the revised US CPI (All Urban Consumers)
$US\ CPI_{(REF)}$	=	Reference US CPI of 212.193 for February 2009
$ER_{(REV)}$	=	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.

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iii) Adjustment for KIBOR and LIB OR 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 and LIBOR according to the following formula;

Δ I(L)	=	$P_{(LREV)}$ * (KIBOR$_{(REV)}$ – 12.81%) / 4
Δ II(Foreign Debt-US$)	=	$P_{(FREV)}$ * (LIBOR$_{(REV)}$ – 4%) / 4
Δ III (Foreign Debt-Euro)	=	$P_{(FREV)}$ * (EURIBOR$_{(REV)}$ - 4%) / 4

Where:

Δ I(local debt)	=	the variation in interest charges applicable corresponding to variation in quarterly KIBOR. Δ I can be positive or negative depending upon whether KIBOR$_{(REV)}$ > or < 12.81%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment applicable on quarterly basis.
Δ II(US$ debt)	=	the variation in interest charges applicable corresponding to variation in quarterly LIBOR. Δ II can be positive or negative depending upon whether LIBOR $_{(REV)}$ > or < 4%. The interest payment obligation will be enhanced or reduced to the extent of ΔII for each quarter under adjustment applicable on quarterly basis.
Δ III(Euro debt)	=	the variation in interest charges applicable corresponding to variation in quarterly EURIBOR. Δ III can be positive or negative depending upon whether EURIBOR $_{(REV)}$ > or < 4%. The interest payment obligation will be enhanced or reduced to the extent of ΔIII 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 I shall commence on the date on which the 1st installment is due after availing the grace period.

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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 as agreed between OGDCL and the petitioner and approved by the competent Authority. In this regard, the fuel cost component of tariff shall be revised according to the following formula:

$FC_{(Rev)} = FC_{(Adj)}$ per kWh * $FP_{(Rev)} / FP_{(Ref)}$

Where:

$FC_{(Rev)}$	=	The revised fuel cost component of Variable Charge on low BTU gas.
$FP_{(Rev)}$	=	The new price of gas as agreed between OGDCL and the petitioner and approved by the competent Authority
$FP_{(Ref)}$	=	The reference price of gas as indicated by the petitioner of US$ 5.0102 / MMBTU adjusted for HHV-LHV factor of 1.109 and exchange rate of Rs. 80.45/US$.
$FC_{(Adj)}$	=	Adjusted fuel cost component subsequent to heat rate test at COD

Adjustment on account of local inflation, foreign inflation, foreign exchange variation, KIBOR, LIBOR and EURIBOR variation and fuel price variation will be approved and announced by the Authority for immediate application within seven working days after receipt of Uch-II 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, Uch-II shall submit the relevant documents to NEPRA within 30 days of COD for adjustment.

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) Use of Low BTU Gas is allowed as single fuel for operation of the plant.

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

v) The plant availability shall be 90%.

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

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

viii) NTDC/CPPA will be responsible for constructing the interconnection to the grid.

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

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

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

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

The above tariff and terms and conditions are to be incorporated in the PPA between Uch-II and CPPA.

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Annexure - I

UCH II Power (Private) Limited
Reference Tariff Schedule

Year	Energy Charge (PKR/kWh)				Capacity Charge (PKR/kW/Hr)									Capacity	Tariff
	Fuel	Variable O&M Local	Variable O&M Foreign	Total	Fixed O&M- Local	Fixed O&M- Foreign	Insurance	Return on Equity	Return on Equity during Constru- ction	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total	PKR per kWh	PKR per kWh
1	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.5463	0.7114	2.0936	3.4893	6.6736
2	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.5934	0.6642	2.0936	3.4893	6.6736
3	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.6450	0.6127	2.0936	3.4893	6.6736
4	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.7013	0.5563	2.0936	3.4893	6.6736
5	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.7630	0.4947	2.0936	3.4893	6.6736
6	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.8305	0.4272	2.0936	3.4893	6.6736
7	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.9044	0.3532	2.0936	3.4893	6.6736
8	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.9855	0.2721	2.0936	3.4893	6.6736
9	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	1.0745	0.1831	2.0936	3.4893	6.6736
10	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	1.1722	0.0854	2.0936	3.4893	6.6736
11	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.1009	0.0182	0.9550	1.5916	4.7759
12	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.1056	0.0135	0.9550	1.5916	4.7759
13	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.1105	0.0085	0.9550	1.5916	4.7759
14	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	0.1157	0.0033	0.9550	1.5916	4.7759
15	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
16	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
17	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
18	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
19	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
20	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
21	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
22	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
23	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
24	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
25	3.0347	0.0221	0.1275	3.1843	0.0621	0.1285	0.0852	0.4324	0.0886	0.0391	-	-	0.8359	1.3932	4.5775
Levelized Tariff (1-25 Years)				**3.1843**	**0.0621**	**0.1285**	**0.0852**	**0.4324**	**0.0886**	**0.0391**	**0.5350**	**0.3324**	**1.7033**	**2.8388**	**6.0231**

Net Capacity	375.20 MW
Reference Exchange Rate	PKR 80.45 = 1 US$
Reference US CPI	212.193 for February 2009 as notified by the US Labour Bureau of Labor Statistics
Reference WPI (Manufacturer)	138.38 for February 2009 as notified by the Federal Bureau of Statistics
Efficiency	50.258%
Levelized Tariff	Levelized tariff in US Cents translate: 7.4868 /kWh

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ANNEX - II

UCH II Power (Private) Limited
Debt Servicing Schedule

Period	Foreign Debt-USD Commercial Facility					Foreign Debt-DFI USD					Annual Principal Repayment Rs./kW/ hr.	Annual Interest Rs./kW/ hr.	Annual Debt Servicing Rs./kW/ hr.
	Principal Million $	Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Millin $	Principal Million $	Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Millin $			
	84.90	1.29	2.02	83.61	$3.31	69.15	1.14	1.38	68.00	2.53			
	83.61	1.33	1.99	82.28	3.31	68.00	1.17	1.36	66.83	2.53			
	82.28	1.36	1.95	80.93	3.31	66.83	1.19	1.34	65.64	2.53			
	80.93	1.39	1.92	79.54	3.31	65.64	1.21	1.31	64.43	2.53			
1	**84.90**	**5.37**	**7.88**	**79.54**	**13.25**	**69.15**	**4.72**	**5.39**	**64.43**	**10.11**	**0.2469**	**0.3248**	**0.5717**
	79.54	1.42	1.89	78.11	3.31	64.43	1.24	1.29	63.19	2.53			
	78.11	1.46	1.86	76.66	3.31	63.19	1.26	1.26	61.92	2.53			
	76.66	1.49	1.82	75.17	3.31	61.92	1.29	1.24	60.64	2.53			
	75.17	1.53	1.79	73.64	3.31	60.64	1.31	1.21	59.32	2.53			
2	**79.54**	**5.90**	**7.35**	**73.64**	**13.25**	**64.43**	**5.11**	**5.00**	**59.32**	**10.11**	**0.2693**	**0.3024**	**0.5717**
	73.64	1.56	1.75	72.08	3.31	59.32	1.34	1.19	57.98	2.53			
	72.08	1.60	1.71	70.48	3.31	57.98	1.37	1.16	56.61	2.53			
	70.48	1.64	1.67	68.84	3.31	56.61	1.40	1.13	55.22	2.53			
	68.84	1.68	1.63	67.16	3.31	55.22	1.42	1.10	53.79	2.53			
3	**73.64**	**6.48**	**6.77**	**67.16**	**13.25**	**59.32**	**5.53**	**4.58**	**53.79**	**10.11**	**0.2938**	**0.2779**	**0.5717**
	67.16	1.72	1.60	65.45	3.31	53.79	1.45	1.08	52.34	2.53			
	65.45	1.76	1.55	63.69	3.31	52.34	1.48	1.05	50.86	2.53			
	63.69	1.80	1.51	61.89	3.31	50.86	1.51	1.02	49.35	2.53			
	61.89	1.84	1.47	60.05	3.31	49.35	1.54	0.99	47.81	2.53			
4	**67.16**	**7.11**	**6.13**	**60.05**	**13.25**	**53.79**	**5.98**	**4.13**	**47.81**	**10.11**	**0.3206**	**0.2511**	**0.5717**
	60.05	1.89	1.43	58.17	3.31	47.81	1.57	0.96	46.24	2.53			
	58.17	1.93	1.38	56.24	3.31	46.24	1.60	0.92	44.63	2.53			
	56.24	1.98	1.34	54.26	3.31	44.63	1.63	0.89	43.00	2.53			
	54.26	2.02	1.29	52.24	3.31	43.00	1.67	0.86	41.33	2.53			
5	**60.05**	**7.81**	**5.43**	**52.24**	**13.25**	**47.81**	**6.48**	**3.63**	**41.33**	**10.11**	**0.3498**	**0.2219**	**0.5717**
	52.24	2.07	1.24	50.17	3.31	41.33	1.70	0.83	39.63	2.53			
	50.17	2.12	1.19	48.05	3.31	39.63	1.74	0.79	37.89	2.53			
	48.05	2.17	1.14	45.88	3.31	37.89	1.77	0.76	36.13	2.53			
	45.88	2.22	1.09	43.65	3.31	36.13	1.81	0.72	34.32	2.53			
6	**52.24**	**8.58**	**4.66**	**43.65**	**13.25**	**41.33**	**7.01**	**3.10**	**34.32**	**10.11**	**0.3817**	**0.1900**	**0.5717**
	43.65	2.27	1.04	41.38	3.31	34.32	1.84	0.69	32.48	2.53			
	41.38	2.33	0.98	39.05	3.31	32.48	1.88	0.65	30.60	2.53			
	39.05	2.38	0.93	36.67	3.31	30.60	1.92	0.61	28.68	2.53			
	36.67	2.44	0.87	34.23	3.31	28.68	1.95	0.57	26.73	2.53			
7	**43.65**	**9.43**	**3.82**	**34.23**	**13.25**	**34.32**	**7.59**	**2.52**	**26.73**	**10.11**	**0.4165**	**0.1552**	**0.5717**
	34.23	2.50	0.81	31.73	3.31	26.73	1.99	0.53	24.74	2.53			
	31.73	2.56	0.75	29.17	3.31	24.74	2.03	0.49	22.70	2.53			
	29.17	2.62	0.69	26.55	3.31	22.70	2.07	0.45	20.63	2.53			
	26.55	2.68	0.63	23.87	3.31	20.63	2.12	0.41	18.52	2.53			
8	**34.23**	**10.36**	**2.89**	**23.87**	**13.25**	**26.73**	**8.21**	**1.90**	**18.52**	**10.11**	**0.4545**	**0.1171**	**0.5717**
	23.87	2.74	0.57	21.13	3.31	18.52	2.16	0.37	16.36	2.53			
	21.13	2.81	0.50	18.32	3.31	16.36	2.20	0.33	14.16	2.53			
	18.32	2.88	0.44	15.44	3.31	14.16	2.24	0.28	11.91	2.53			
	15.44	2.94	0.37	12.50	3.31	11.91	2.29	0.24	9.62	2.53			
9	**23.87**	**11.38**	**1.87**	**12.50**	**13.25**	**18.52**	**8.89**	**1.22**	**9.62**	**10.11**	**0.4961**	**0.0756**	**0.5717**
	12.50	3.01	0.30	9.48	3.31	9.62	2.34	0.19	7.29	2.53			
	9.48	3.09	0.23	6.39	3.31	7.29	2.38	0.15	4.91	2.53			
	6.39	3.16	0.15	3.23	3.31	4.91	2.43	0.10	2.48	2.53			
	3.23	3.23	0.08	(0.00)	3.31	2.48	2.48	0.05	(0.00)	2.53			
10	**12.50**	**12.50**	**0.75**	**(0.00)**	**13.25**	**9.62**	**9.62**	**0.49**	**(0.00)**	**10.11**	**0.5414**	**0.0303**	**0.5717**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY

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Annex-II(a)

UCH II Power (Private) Limited
Debt Servicing Schedule

Period	Foreign Debt-DFI Euro: Principal Million €	Repayment Million €	Mark-Up Million €	Balance Million €	Debt Service Million €	Local Debt: Principal Million Rs.	Repayment Million Rs.	Mark-up Million Rs.	Balance Million Rs.	Debt Service Millin Rs.	Annual Principal Repayment Rs./kW/ hr.	Annual Interest Rs./kW/ hr.	Annual Debt Servicing Rs./kW/ hr.
	92.62	1.53	1.85	91.09	3.39	1,964.73	20.91	77.66	1,943.82	98.56			
	91.09	1.56	1.82	89.52	3.39	1,943.82	21.73	76.83	1,922.08	98.56			
	89.52	1.60	1.79	87.93	3.39	1,922.08	22.59	75.97	1,899.49	98.56			
	87.93	1.63	1.76	86.30	3.39	1,899.49	23.49	75.08	1,876.00	98.56			
1	**92.62**	**6.32**	**7.22**	**86.30**	**13.54**	**1,964.73**	**88.72**	**305.53**	**1,876.00**	**394.26**	**0.2356**	**0.3313**	**0.5669**
	86.30	1.66	1.73	84.64	3.39	1,876.00	24.42	74.15	1,851.59	98.56			
	84.64	1.69	1.69	82.95	3.39	1,851.59	25.38	73.18	1,826.21	98.56			
	82.95	1.73	1.66	81.22	3.39	1,826.21	26.38	72.18	1,799.82	98.56			
	81.22	1.76	1.62	79.46	3.39	1,799.82	27.43	71.14	1,772.40	98.56			
2	**86.30**	**6.84**	**6.70**	**79.46**	**13.54**	**1,876.00**	**103.61**	**290.65**	**1,772.40**	**394.26**	**0.2573**	**0.3096**	**0.5669**
	79.46	1.80	1.59	77.66	3.39	1,772.40	28.51	70.05	1,743.89	98.56			
	77.66	1.83	1.55	75.83	3.39	1,743.89	29.64	68.93	1,714.25	98.56			
	75.83	1.87	1.52	73.96	3.39	1,714.25	30.81	67.76	1,683.44	98.56			
	73.96	1.91	1.48	72.05	3.39	1,683.44	32.03	66.54	1,651.42	98.56			
3	**79.46**	**7.40**	**6.14**	**72.05**	**13.54**	**1,772.40**	**120.98**	**273.27**	**1,651.42**	**394.26**	**0.2812**	**0.2857**	**0.5669**
	72.05	1.94	1.44	70.11	3.39	1,651.42	33.29	65.27	1,618.12	98.56			
	70.11	1.98	1.40	68.13	3.39	1,618.12	34.61	63.96	1,583.52	98.56			
	68.13	2.02	1.36	66.10	3.39	1,583.52	35.98	62.59	1,547.54	98.56			
	66.10	2.06	1.32	64.04	3.39	1,547.54	37.40	61.17	1,510.14	98.56			
4	**72.05**	**8.02**	**5.53**	**64.04**	**13.54**	**1,651.42**	**141.27**	**252.98**	**1,510.14**	**394.26**	**0.3075**	**0.2594**	**0.5669**
	64.04	2.11	1.28	61.93	3.39	1,510.14	38.88	59.69	1,471.27	98.56			
	61.93	2.15	1.24	59.79	3.39	1,471.27	40.41	58.15	1,430.85	98.56			
	59.79	2.19	1.20	57.60	3.39	1,430.85	42.01	56.55	1,388.84	98.56			
	57.60	2.23	1.15	55.36	3.39	1,388.84	43.67	54.89	1,345.17	98.56			
5	**64.04**	**8.68**	**4.87**	**55.36**	**13.54**	**1,510.14**	**164.97**	**229.29**	**1,345.17**	**394.26**	**0.3365**	**0.2304**	**0.5669**
	55.36	2.28	1.11	53.08	3.39	1,345.17	45.40	53.17	1,299.78	98.56			
	53.08	2.32	1.06	50.76	3.39	1,299.78	47.19	51.37	1,252.59	98.56			
	50.76	2.37	1.02	48.39	3.39	1,252.59	49.06	49.51	1,203.53	98.56			
	48.39	2.42	0.97	45.97	3.39	1,203.53	50.99	47.57	1,152.54	98.56			
6	**55.36**	**9.39**	**4.15**	**45.97**	**13.54**	**1,345.17**	**192.64**	**201.62**	**1,152.54**	**394.26**	**0.3685**	**0.1984**	**0.5669**
	45.97	2.47	0.92	43.50	3.39	1,152.54	53.01	45.55	1,099.53	98.56			
	43.50	2.52	0.87	40.99	3.39	1,099.53	55.11	43.46	1,044.42	98.56			
	40.99	2.57	0.82	38.42	3.39	1,044.42	57.28	41.28	987.14	98.56			
	38.42	2.62	0.77	35.81	3.39	987.14	59.55	39.02	927.59	98.56			
7	**45.97**	**10.17**	**3.38**	**35.81**	**13.54**	**1,152.54**	**224.95**	**169.31**	**927.59**	**394.26**	**0.4039**	**0.1630**	**0.5669**
	35.81	2.67	0.72	33.14	3.39	927.59	61.90	36.66	865.69	98.56			
	33.14	2.72	0.66	30.41	3.39	865.69	64.35	34.22	801.34	98.56			
	30.41	2.78	0.61	27.64	3.39	801.34	66.89	31.67	734.45	98.56			
	27.64	2.83	0.55	24.80	3.39	734.45	69.54	29.03	664.91	98.56			
8	**35.81**	**11.00**	**2.54**	**24.80**	**13.54**	**927.59**	**262.68**	**131.58**	**664.91**	**394.26**	**0.4431**	**0.1239**	**0.5669**
	24.80	2.89	0.50	21.91	3.39	664.91	72.28	26.28	592.63	98.56			
	21.91	2.95	0.44	18.97	3.39	592.63	75.14	23.42	517.49	98.56			
	18.97	3.01	0.38	15.96	3.39	517.49	78.11	20.45	439.38	98.56			
	15.96	3.07	0.32	12.89	3.39	439.38	81.20	17.37	358.18	98.56			
9	**24.80**	**11.91**	**1.63**	**12.89**	**13.54**	**664.91**	**306.73**	**87.52**	**358.18**	**394.26**	**0.4864**	**0.0805**	**0.5669**
	12.89	3.13	0.26	9.76	3.39	358.18	84.41	14.16	273.77	98.56			
	9.76	3.19	0.20	6.57	3.39	273.77	87.74	10.82	186.03	98.56			
	6.57	3.25	0.13	3.32	3.39	186.03	91.21	7.35	94.82	98.56			
	3.32	3.32	0.07	(0.00)	3.39	94.82	94.82	3.75	0.00	98.56			
10	**12.89**	**12.89**	**0.65**	**(0.00)**	**13.54**	**358.18**	**358.18**	**36.08**	**0.00**	**394.26**	**0.5344**	**0.0325**	**0.5669**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY ★ NEPRA AUTHORITY

Annex-II(b)

UCH II Power (Private) Limited
Debt Servicing Schedule

Period	Foreign Debt-ECA Facility USD								Total for 5 Loan Facilites		
	Principal Million $	Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Millin $	Annual Principal Repayment Rs./kW/ hr.	Annual Interest Rs./kW/ hr.	Annual Debt Servicing Rs./kW/ hr.	Annual Principal Repayment Rs./kW/hr.	Annual Interest Rs./kW/hr.	Annual Debt Servicing Rs./kW/hr.
	50.00	0.64	0.58	49.36	1.22						
	49.36	0.65	0.57	48.71	1.22						
	48.71	0.66	0.56	48.05	1.22						
	48.05	0.66	0.55	47.39	1.22						
1	**50.00**	**2.61**	**2.26**	**47.39**	**4.86**	0.0638	0.0552	0.1191	0.5463	0.7114	1.2577
	47.39	0.67	0.55	46.72	1.22						
	46.72	0.68	0.54	46.04	1.22						
	46.04	0.69	0.53	45.36	1.22						
	45.36	0.69	0.52	44.66	1.22						
2	**47.39**	**2.73**	**2.13**	**44.66**	**4.86**	0.0668	0.0522	0.1191	0.5934	0.6642	1.2577
	44.66	0.70	0.51	43.96	1.22						
	43.96	0.71	0.51	43.25	1.22						
	43.25	0.72	0.50	42.53	1.22						
	42.53	0.73	0.49	41.80	1.22						
3	**44.66**	**2.86**	**2.01**	**41.80**	**4.86**	0.0700	0.0491	0.1191	0.6450	0.6127	1.2577
	41.80	0.74	0.48	41.07	1.22						
	41.07	0.74	0.47	40.32	1.22						
	40.32	0.75	0.46	39.57	1.22						
	39.57	0.76	0.46	38.81	1.22						
4	**41.80**	**2.99**	**1.87**	**38.81**	**4.86**	0.0732	0.0458	0.1191	0.7013	0.5563	1.2577
	38.81	0.77	0.45	38.04	1.22						
	38.04	0.78	0.44	37.26	1.22						
	37.26	0.79	0.43	36.48	1.22						
	36.48	0.80	0.42	35.68	1.22						
5	**38.81**	**3.13**	**1.73**	**35.68**	**4.86**	0.0767	0.0424	0.1191	0.7630	0.4947	1.2577
	35.68	0.81	0.41	34.87	1.22						
	34.87	0.81	0.40	34.06	1.22						
	34.06	0.82	0.39	33.23	1.22						
	33.23	0.83	0.38	32.40	1.22						
6	**35.68**	**3.28**	**1.59**	**32.40**	**4.86**	0.0803	0.0388	0.1191	0.8305	0.4272	1.2577
	32.40	0.84	0.37	31.56	1.22						
	31.56	0.85	0.36	30.70	1.22						
	30.70	0.86	0.35	29.84	1.22						
	29.84	0.87	0.34	28.97	1.22						
7	**32.40**	**3.43**	**1.43**	**28.97**	**4.86**	0.0840	0.0350	0.1191	0.9044	0.3532	1.2577
	28.97	0.88	0.33	28.09	1.22						
	28.09	0.89	0.32	27.19	1.22						
	27.19	0.90	0.31	26.29	1.22						
	26.29	0.91	0.30	25.38	1.22						
8	**28.97**	**3.59**	**1.27**	**25.38**	**4.86**	0.0879	0.0311	0.1191	0.9855	0.2721	1.2577
	25.38	0.92	0.29	24.45	1.22						
	24.45	0.93	0.28	23.52	1.22						
	23.52	0.95	0.27	22.57	1.22						
	22.57	0.96	0.26	21.61	1.22						
9	**25.38**	**3.76**	**1.10**	**21.61**	**4.86**	0.0921	0.0270	0.1191	1.0745	0.1831	1.2577
	21.61	0.97	0.25	20.65	1.22						
	20.65	0.98	0.24	19.67	1.22						
	19.67	0.99	0.23	18.68	1.22						
	18.68	1.00	0.21	17.68	1.22						
10	**21.61**	**3.94**	**0.93**	**17.68**	**4.86**	0.0964	0.0227	0.1191	1.1722	0.0854	1.2577
	17.68	1.01	0.20	16.67	1.22						
	16.67	1.02	0.19	15.64	1.22						
	15.64	1.04	0.18	14.60	1.22						
	14.60	1.05	0.17	13.56	1.22						
11	**17.68**	**4.12**	**0.74**	**13.56**	**4.86**	0.1009	0.0182	0.1191	0.1009	0.0182	0.1191
	13.56	1.06	0.16	12.50	1.22						
	12.50	1.07	0.14	11.42	1.22						
	11.42	1.08	0.13	10.34	1.22						
	10.34	1.10	0.12	9.24	1.22						
12	**13.56**	**4.31**	**0.55**	**9.24**	**4.86**	0.1056	0.0135	0.1191	0.1056	0.0135	0.1191
	9.24	1.11	0.11	8.13	1.22						
	8.13	1.12	0.09	7.01	1.22						
	7.01	1.14	0.08	5.88	1.22						
	5.88	1.15	0.07	4.73	1.22						
13	**9.24**	**4.52**	**0.35**	**4.73**	**4.86**	0.1105	0.0085	0.1191	0.1105	0.0085	0.1191
	4.73	1.16	0.05	3.57	1.22						
	3.57	1.17	0.04	2.39	1.22						
	2.39	1.19	0.03	1.20	1.22						
	1.20	1.20	0.01	0.00	1.22						
14	**4.73**	**4.73**	**0.14**	**0.00**	**4.86**	0.1157	0.0033	0.1191	0.1157	0.0033	0.1191

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