National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/TRF-342/CPHGCL-2016/2043-2045
February 12, 2016

Subject: **Approval of National Electric Power Regulatory Authority in the matter of Application of China Power Hub Generation Company (Private) Limited (CPHGCL) for Unconditional Acceptance of Upfront Coal Tariff for 2 x 660 MW Coal Power Plant** [Case No. NEPRA/TRF-342/CPHGCL-2016]

Dear Sir,

Please find enclosed herewith the subject Approval of the Authority along with Annexure-I & II (18 pages) in Case No. NEPRA/TRF-342/CPHGCL-2016.

2. The Decision 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).

3. Order of the Authority along with Annexure-I & II will be notified in the official Gazette.

Enclosure: As above

12/2/16

(Iftikhar Ali Khan)

Secretary
Ministry of Water & Power
'A' Block, Pak Secretariat
Islamabad

CC:

1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
2. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad.

APPROVAL OF NATIONAL ELECTRIC POWER REGULATORY AUTHORITY IN THE MATTER OF APPLICATION OF CHINA POWER HUB GENERATION COMPANY (PRIVATE) LIMITED FOR UNCONDITIONAL ACCEPTANCE OF UPFRONT COAL TARIFF FOR 2x660 MW COAL POWER PLANT

1. China Power Hub Generation Company (Pvt) Limited (hereinafter "CPHGCL") submitted application vide letter No. nil received on 1st December 2015 under Regulation 4 of NEPRA Upfront Tariff (Approval and Procedure) Regulations, 2011 (hereinafter "Upfront Tariff Regulations") for unconditional acceptance of upfront coal tariff for upto 660 MW imported coal on foreign financing determined by the National Electric Power Regulatory Authority (hereinafter "The Authority") vide its determination dated 26th June 2014 notified vide SRO No. 942(I)/2014 dated 15th October 2014 with all the terms, conditions and assumptions provided therein (hereinafter "Upfront Tariff Determination"), for its proposed coal power plant of 2x660 MW capacity located at Hub Baluchistan. CPHGCL has filed an application for the grant of Generation License vide letter dated 17th December 2015 which is under process.

2. The application was processed in accordance with the relevant provisions of Upfront Tariff Regulations and Upfront Tariff Determination. The Applicant provided all necessary and relevant information/documents and was considered eligible for grant of Upfront Tariff determination. Accordingly, the Authority has decided to grant the upfront coal tariff for 660 MW on foreign financing to the applicant.

3. **Order**

I. The Authority hereby determines and approves the following upfront tariff for China Power Hub Generation Company (Pvt) Limited at Hub Baluchistan and adjustments/indexations for imported coal power generation for delivery of electricity to the power purchaser:

Reference Tariff for 660 MW
Imported Coal on Foreign Financing

Tariff Components	**Years**	
Capacity Charges (PKR/kW/Hour	**1-10**	**11-30**
Fixed O&M - Local	0.1435	0.1435
Fixed O&M - Foreign	0.1435	0.1435
Working Capital	0.2276	0.2276
Insurance	0.1021	0.1021
Return on Equity	1.1872	1.1872
Debt Servicing	1.6691	0.0000
Total Capacity Charges	**3.4731**	**1.8040**
Energy Charges Rs./kWh		
Fuel cost Component	4.2913	4.2913
Ash Disposal	0.2200	0.2200
Lime Stone	0.0900	0.0900
Variable O&M - foreign	0.0684	0.0684
Variable O&M - Local	0.0456	0.0456
Total Energy Charges	**4.7153**	**4.7153**

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i. The Tariff Table and Debt Service Schedule are attached as Annex-I and Annex-II to this determination.

ii. The tariff control period is 30 Years.

iii. In case of CPHGCL's proposed power complex of 2x660MW, the tariff of 660 MW will apply however, the heat rate and IDC tests will be conducted on the basis of complex as a whole and relevant tariff components will be adjusted accordingly.

II. Basis for Determination

The above tariff is worked out on the following basis:

i) Design Coal (Quality of Coal)

(1) In Pakistan lower calorific value of coal other than Thar is as follows:

Balochistan	
Khost/Sharig	9,637-15,499 BTUs/Lb
Sorange-Degari	11,245-13,900 BTUs/Lb
Dukki	10,131-14,164 BTUs/Lb
Mach	11,110-12,937 BTUs/Lb
Pir Ismail Ziarat	10,786-11,996 BTUs/Lb
Chamalong-Bela Dhaka	12,500-14,357 BTUs/Lb
Sindh	
Lakhra	5,503-9,158 BTUs/Lb
Sonda-Thatta	8,878-13,555 BTUs/Lb
Jherruk	8,800-12,846 BTUs/Lb
Ongar	5,219-11,172 BTUs/Lb
Indus East	7,782-8,660 BTUs/Lb
Jhumpir	7,734-8,612 BTUs/Lb
Badin	11,415-11,521 BTUs/Lb
Thar	6,244-11,054 BTUs/Lb
Punjab	
Salt Range	9,472-15,801 BTUs/Lb
Makarwal	10,688-14,029 BTUs/Lb
Khyber PakhtoonKhwa	
Hangu Orakzai	10,500-14,149 BTUs/Lb
Cherat/Gulla Khel	9,388-142,171 BTUs/Lb

Source: Geological Survey of Pakistan

(2) The following is the reference Lower Calorific Value (LCV) of the coal for the

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proposed coal projects;

Imported Coal (sub-bituminous)	
South Africa (6,600 Kcal/Kg)	26,190.91 BTU/Kg
Australia (6,000 Kcal/Kg)	23,809.92 BTU/Kg
Indonesia (6,500 Kcal/Kg)	25,794.08 BTU/Kg
Weighted Average Calorific Values	
Imported Coal	25,555.98 BTU/Kg
Local Coal (sub-bituminous)	22,046.00 BTUs/Kg

ii) **Plant Size**

(1) The applicable upfront tariff is for the following plant size;

660 MW Gross 607 MW Net

(2) The actual net capacity of the complex will be determined on the basis of Initial Dependable Capacity (IDC) Test at the time of COD and the relevant tariff components will be adjusted downward. However, upward adjustment in tariff will not be allowed if the IDC established lower than the benchmarks stated above.

iii) **Site of Plant**

For site selection, following factors should be kept in view;

- Should be near the load centre.
- Near the source of fuel in case of local coal and near the coastal area in case of imported coal.
- Transportation of coal is manageable for ensuring uninterrupted supply of coal.

iv) **Plant Specifications**

The sponsors of the plant will be at liberty to select plant of any technology based on the quality of coal as far as the minimum efficiency thresholds are ensured.

v) **Auxiliary Consumption**

The auxiliary power consumption factor shall be 8% for 660MW and above.

vi) **Exchange Rate**

Reference exchange rate of Rs. 97.10/US$ has been used in calculating the reference tariff and the same shall be used for indexations/adjustments where applicable.

vii) **Capital Cost including EPC Cost**

(1) The capital cost for coal based power project includes cost of Main Plant Equipment System, Boiler including Auxiliaries, STG &Auxiliaries, Balance of Plant Equipment System, Other Mechanical Equipment System, Electrical Equipment System and C&I, Coal Handling Infrastructure, Engineering & Project Management, Erection & Commissioning, land, site development and civil works, transportation and evacuation cost up to inter-connection point.

(2) The following capital cost for CPHGCL coal based power project has been determined by the Authority; FY 2014-15 will be the first year of validity period. The capital cost shall be linked to the specified indexation mechanism.

660 MW US$ 767.868 Million

(3) Incremental cost of European boiler @ US$ 0.1 million per MW has been assumed in the overall project cost on account of capital cost, financing fees & IDC. The sponsor will submit verifiable documentary evidence at the time of COD regarding installation of European boiler for entitlement of this cost. The projects which do not install European boiler will not be eligible for this cost.

Capital Cost Indexation Mechanism

The following indexation mechanism shall be applicable for adjustments in capital cost during the validity period with the changes in Producers Price Index (PPI) for Steel and Electrical Machinery.

$CC_{(n)}$	=	$(CC_{(0)} * 51\% * \Delta SI) + (CC_{(0)} * 38\% * \Delta EI) + (CC_{(0)} * 11\%)$
Where:		
$CC_{(n)}$	=	Capital Cost at the time of opting the tariff during the validity period
$CC_{(0)}$	=	Capital Cost at the beginning of the validity period
ΔSI	=	Variation in US PPI for Steel i.e. $SI_{(n)}/SI_{(0)}$
$SI_{(n)}$	=	PPI Steel at the time of opting the tariff
$SI_{(0)}$	=	PPI Steel for the month of June 2014
ΔEI	=	Variation in US PPI for Electrical Machinery i.e. $EI_{(n)}/EI_{(0)}$
EI(n)	=	PPI Electrical Machinery at the time of opting the tariff
EI(0)	=	PPI Electrical Machinery for the month of June 2014

viii) **Customs Duties, Cess and Withholding Tax**

Customs duties & cess @ 5.95% of the 66.75% of the capital cost has been assumed in the project cost which will be adjusted at the time of COD on actual basis. No withholding tax on local foreign contractors, sub-contractors, supervisory services and technical services provided by foreign (non-residents) entities has been assumed. Actual expenditure, if any, on this account will be included in the project cost at the time of COD on the basis of verifiable documentary evidence.

ix) **Construction Period**

Construction period for the generation facility having capacity of 660MW and above shall be 48 months.

x) **Financing of Coal Projects**

(1) The sponsor of the project can arrange foreign financing in American Dollar ($), British Pound Sterling (£), Euro (€), Japanese Yen (¥) and Chinese Yuan (¥) or in any currency as the Government of Pakistan may allow.

(2) The upfront tariff has been determined on the basis of debt equity ratio of 75:25;

(3) The minimum equity shall be 20% and the maximum equity shall be 30%; if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as loan;

Financial Charges

(1) For the purpose of determination of upfront tariff loan tenure of 10 years plus grace period equivalent to construction period has been considered.

(2) Interest Rate

(a) The reference Karachi Inter Bank Offer Rate (KIBOR) of 11.91% plus 350 basis points has been used for calculating the financial charges.

(b) The reference London Inter-Bank Offer Rate (LIBOR) of 0.45% plus 450 basis points has been used for calculating the financial charges.

(c) The interest calculated in the reference debt service schedule shall be subjected to adjustment for variation in quarterly-KIBOR in the case of local loan and quarterly-LIBOR in the case of foreign loan on quarterly basis. The adjustment shall be made on 1st July, 1st October, 1st January and 1st April based on latest available TT&OD selling rate and KIBOR notified by the National Bank of Pakistan and Reuters for the purpose of LIBOR.

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(d) The maximum allowed premium on LIBOR and KIBOR is 4.5% and 3.5% respectively and there will be no adjustment on the basis of actual higher premium than the maximum allowed limit. In case spread negotiated is less than the said limit, the saving will be shared in the ratio of 60:40 between power purchaser and the power producer respectively.

(e) The repayment of loan shall be considered from the first year of commercial operation.

Financing Fees & Charges

Financing fee & charges are taken @3.5% of the borrowing to cater for the upfront fee, commitment fee, lenders' technical, financial and legal consultants' fee etc.

Sino sure Fee

Under the foreign financing originating from Chinese banks, upfront Sino sure fee @7% on the total debt servicing has been included in the project cost. Project cost will be adjusted at the time of COD on the basis of actual Sino sure fee subject to maximum of 7%. In case the sponsor managed better alternative Sino sure fee arrangement, the same will be considered at the time of COD.

Interest During Construction (IDC)

(1) Interest During Construction (IDC) has been calculated on the basis of 75% of the CAPEX including customs duties as per the following reference parameters;

Year	660MW
Ist Year	33.33%
2nd Year	33.33%
3rd Year	13.33%
4th Year	20.00%

(2) IDC shall not be adjusted for any variation on account of actual expenditure percentage during the construction period.

(3) At the time of COD, IDC shall be reestablished on the basis of indexed capital cost, actual custom duties & cess, withholding tax on contracts/services, actual premium on LIBOR & KIBOR subject to maximum of 4.5% and 3.5% respectively and the impact of Sino sure fee, if any.

(4) In case of more than one financing plans, separate IDC shall be calculated for each

plan on reference parameters.

(5) IDC shall be recalculated on the basis of weighted average quarterly LIBOR/KIBOR during the construction period plus actual premium subject to maximum limit on reference parameters.

xi) Summary of Project Cost

The following project cost for 660MW has been assumed in the upfront coal tariff which will be subject to adjustments at the time of COD in accordance with the methodology prescribed in the preceding paragraphs:

	Million US$
Capital Cost	767.9
Custom Duties & Cess	30.5
Sub-Total	**798.4**
Financial Charges:	
Financing Fees & Charges	21.0
Sino sure Fee	63.9
IDC	72.8
Sub-Total	**157.7**
Total	**956.1**

xii) Return on Equity (ROE)

The Return on Equity shall be 27.2%.
In case of use of mix coal the ROE will be adjusted according to the following formula;

$ROE_{(Mix)}$	=	$ROE_{(L)} \times ((Q(L) \times CV(L))/ (Q(L) \times CV(L) + Q(I) \times CV(I))) + ROE_{(I)} \times ((Q(I) \times CV(I))/(Q(L) \times CV(L) + Q(I) \times CV(I)))$
Where:		
$ROE_{(Mix)}$	=	Return on Equity for mix fuel i.e. Local and Imported
$ROE_{(L)}$	=	Return on Equity component on local coal i.e. 29.5%
$ROE_{(I)}$	=	Return on Equity component on imported coal i.e. 27.2%
Q(L)	=	Quantity in Metric Ton of local coal consumed during the month
CV(L)	=	Weighted average CV of local coal consumed during the month
Q(I)	=	Quantity in Metric Ton of imported coal consumed during the month
CV(I)	=	Weighted average CV of imported coal consumed during the month

xiii) Thermal Efficiency

(1) The minimum reference net LHV thermal efficiency of 39% has been established for calculating reference fuel cost component.

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(2) The fuel cost component will be subject to downward revision on the basis of actual heat rates established as a result of heat rate test conducted at the time of COD in accordance with the established benchmarks in the presence of the representatives of the power purchaser. For acceptance of the test, approval of the power purchaser will be mandatory. Upward revision in the fuel cost component will not be allowed in case the net LHV heat rates are established lower than the minimum thermal efficiency specified above and the financial impact, if any, of lower thermal efficiency over the term of the Agreement will be borne by the power producer. However the following sharing mechanism will be applicable only in case the efficiency, approved by the Authority for different capacities is established higher as a result of heat rate tests carried out at the time of COD.

Efficiency net (LHV) achieved At COD	**Sharing Ratio Power Purchaser : Sponsor**
39% (min)	100% : 0%
39.01% - 39 50%	70% : 30%
39.51% - 40 00%	50% : 50%
40.01% - 40.50%	30% : 70%
>40.5%	0% : 100%

xiv) **Price of Coal**

(1) The following reference coal price has been used for determining the upfront tariff;

Imported coal (sub-bituminous)		
Richard Bay (South Africa)-FOB	40%	US$93.40/M.Ton
Newcastle -Australia-FOB	20%	US$89.00/M.Ton
Newcastle -Indonesia-FOB	40%	US$87.55/M.Ton
Marine Freight		US$20.00/M.Ton
Marine Insurance		0.10% of FOB price
Other Costs		10% of FOB price
Weighted Average CIF Price		US$119.60/M.Ton
Cost of common Jetty facility		US$ 9.46/M.Ton
Total Imported Coal Price		US$129.06/M.Ton

Note: *The above figures will be replaced with the actual numbers to arrive at actual fuel cost component. Since the project is based on dedicated jetty, the cost of common jetty facility shall be excluded from the price of coal and the cost of*

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dedicated jetty will be added to the respective components of tariff at the time of COD.

Local Coal (sub-bituminous)

(22,046 BTU / 25,555.98 BTU *US$119.60/M.Ton) US$103.17/M.Ton

(2) For each shipment there shall be third party verification by Surveyors at two ports i.e. delivery and landing port. The verification report shall be verified by CPPA.

(3) The basis of coal price shall be provided in the Power Purchase Agreement.

(4) The price of local coal will be LCV based linked with the price of Imported coal in the corresponding month.

xv) **Losses on Transportation of Coal**

The power producer will be allowed losses on transportation of imported coal up to 2%, whereas on local coal these losses will be allowed up to 1%. If the Coal Supply Agreement caters for the transportation losses in the price, there will be no adjustment in coal pricing on account of transportation losses.

xvi) **Insurance Cost During Operation**

During the term of the Agreement, insurance component of tariff will be adjusted on the basis of actual insurance cost with maximum of 1% of the 70% of Capital Cost determined under (vii) above converted into Pak Rupees on the basis of Rs.-US$ parity prevailing on the 1st day of the start of each Agreement Year. The reference insurance premium used in the calculation of insurance component of tariff is Rs. 542.65 million.

xvii) **Interest on Working Capital**

(1) The Working Capital requirement has been worked out in accordance with the following:

a) In case of imported coal the inventory will be equivalent to 90 days at 100% plant load.

b) Receivables equivalent to one month of fuel charges at 100% plant load.

(2) Interest on Working Capital has been calculated on the basis of quarterly-KIBOR of 11.91% plus 200 basis point, which will be adjusted for variation in quarterly-KIBOR and weighted average cost of coal inventory.

(3) In case of mix usage of coal Interest on Working Capital shall be adjusted according to the following mechanism;

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$IWC_{(Mix)}$	=	$IWC_{(L)}\times((Q(L)\times CV(L))/(Q(L)\times CV(L)+Q(I)\times CV(I)))+$ $IWC_{(I)}\times((Q(I)\times CV(I))/(Q(L)\times CV(L)+Q(I)\times CV(I)))$
Where:		
$IWC_{(Mix)}$	=	Interest on Working Capital for mix fuel i.e. Local and Imported
$IWC_{(L)}$	=	Interest on Working Capital Component for Local Coal
$IWC_{(I)}$	=	Interest on Working Capital Component for Imported Coal
Q(L)	=	Quantity in Metric Ton of local coal consumed during the month
CV(L)	=	Weighted average CV of local coal consumed during the month
Q(I)	=	Quantity in Metric Ton of imported coal consumed during the month
CV(I)	=	Weighted average CV of imported coal consumed during the month

xviii) Operation and Maintenance (O & M) Expenses

(1) Operation and Maintenance or O&M expenses comprise of repair and maintenance, establishment including employee expenses, administrative & general expenses.

(2) Reference O&M expenses shall be Rs. 401 per MWh for 660MW.

(3) The following shall be the breakup of O&M expenses for the different plant size:

Plant Size	Fixed O&M	Variable O&M
660 MW	Rs.0.287/kW/h	Rs.0.114/kWh

(4) 50% of the fixed O&M expenses shall be indexed with local CPI whereas 50% shall be indexed with USCPI and Exchange rate (PKR/US$) variation.

(5) 40% of the variable O&M shall be indexed with local CPI whereas 60% shall be indexed with USCPI and exchange rate (PKR/US$) variation.

(6) The reference WPI and US CPI will be of June 2014.

(7) The following costs with respect to lime stone and ash handling have been determined, which are shown separately in the reference tariff table;

Cost of Lime Stone

Cost of Lime Stone including Transportation	Rs.1250.00/M.Ton
Consumption	Kg.0.07/kWh
Cost of Lime Stone	Rs.0.09/kWh

Cost of Ash Disposal

Ash produced	Kg. 0.22/kWh
Ash Transportation cost	Rs.1000.00/M.Ton
Ash Disposal Cost	Rs.0.22/kWh

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xix) **Fuel Cost**

During the tariff period the fuel cost shall be calculated according to the following formula on monthly basis;

$$FCC = \left(\left(\left(CP_{(RB)} + Ft_{(M)} + MI + OC \pm Premium/Discount\right) \times \frac{HR}{HV_{(RB)}} \times \frac{Q_{(RB)}}{Q_{(T)}}\right) \times FC_{(Exch)} + \left(\left(CP_{(NCA)} + Ft_{(M)} + MI + OC \pm Premium/Discount\right) \times \frac{HR}{HV_{(NCA)}} \times \frac{Q_{(NCA)}}{Q_{(T)}}\right) \times FC_{(Exch)} + \left(\left(CP_{(NCI)} + Ft_{(M)} + MI + OC \pm Premium/Discount\right) \times \frac{HR}{HV_{(NCI)}} \times \frac{Q_{(NCI)}}{Q_{(T)}}\right) \times FC_{(Exch)} + \left(CP_{(Local)} \times \frac{HR}{HV_{(Local)}} \times \frac{Q_{(Local)}}{Q_{(T)}}\right)\right) + Ft_{(Inland)}$$

Where;

CP(RB) = Actual Weighted Average Richard Bay (South Africa) coal prices on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Global coal

HV(RB) = Actual Weighted Average Heating Value of the coal imported from South Africa

CP(NCA) = Actual Average Newcastle (Australia) coal prices on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Global coal

HV(NCA) = Actual Weighted Average Heating Value of coal imported from Australia

CP(NCI) = Actual Average Newcastle (Indonesia) coal prices on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Global coal

HV(NCI) = Actual Weighted Average Heating Value of coal imported from Indonesia

CP(Local) Actual Coal price of local coal expressed in US$/M.Ton calculated according to the following formula;

$$CP_{(Local)} = \left(\frac{HV_{(Local)}}{\left(\frac{Q_{(RB)}}{Q_{(T)}} \times HV_{(RB)}\right) + \left(\frac{Q_{(NCA)}}{Q_{(T)}} \times HV_{(NCA)}\right) + \left(\frac{Q_{(NCI)}}{Q_{(T)}} \times HV_{(NCI)}\right)}\right) \times \left(\left(\frac{Q_{(RB)}}{Q_{(T)}} \times CP_{(RB)}\right) + \left(\frac{Q_{(NCA)}}{Q_{(T)}} \times CP_{(NCA)}\right) + \left(\frac{Q_{(NCI)}}{Q_{(T)}} \times CP_{(NCI)}\right)\right)$$

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HV(Local)	=	Heating Value of Local Coal
Ft(M)	=	Actual Weighted Average Contracted Marine Freight per ton from South Africa, Australia and Indonesia
Q(RB)	=	Actual quantity of coal (Tons) purchased from South Africa during the month immediately preceding the invoice month
Q(NCA)	=	Actual quantity of coal (Tons) purchased from Australia during the month immediately preceding the invoice month
Q(NCI)	=	Actual quantity of coal (Tons) purchased from Indonesia during the month immediately preceding the invoice month
Q(Local)	=	Actual Quantity of local coal purchased during the month immediately preceding the invoice month
QT	=	Total quantity of coal purchased during the month immediately preceding the invoice month
Ft(Inl)	=	Actual Inland Freight expressed in Rs./M.Ton
OC	=	Other cost Include Bunker Fuel, Port Charges, Insurance & common Jetty facility in $/Ton
FC(Exch)	=	PKR/$ exchange rate average for the month

III. Monitoring Mechanism for the use of coal fuel

The Power Producer shall furnish a monthly coal usage and coal procurement statement duly verified and certified by the Central Power Purchasing Agency (CPPA) for each month, along with the monthly energy bill. The statement shall cover details such as -

a) Quantity of fuel (tons) consumed and procured for each source along with heating value during the month for power generation purposes,

b) Cumulative quantity (tons) of coal consumed and procured till the end of that month during the year source wise,

c) Actual (gross and net) energy generation (denominated in units) during the month,

d) Cumulative actual (gross and net) energy generation (denominated in units) until the end of that month during the year,

e) Opening fuel stock quantity (tons),

f) Receipt of fuel quantity (tons) at the power plant site and

g) Closing fuel stock quantity (tons) for available at the power plant site.

IV. Tariff Structure

The tariff for coal based generation technologies shall be two-part consisting of the following:

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A. **Energy Purchase Price**
(a) Fuel Cost Component;
(b) Variable O&M Local;
(c) Variable Foreign;
(d) Cost of Lime Stone; and
(e) Cost of Ash Disposal

B. **Capacity Purchase Price**
(a) Fixed O&M (Local);
(b) Fixed O&M (Foreign);
(c) Insurance Cost
(d) Cost of Working Capital;
(e) Return on equity; and
(f) Debt Service (Principal Repayment and Interest Charges);

V. Tariff Design

(1) The upfront tariff has been determined for two periods i.e. for the period of first ten years when the project will be paying its debt and the remaining period of twenty years without debt servicing.

(2) For the purpose of comparison, levelized tariff assuming 10% discount factor has also been worked out.

(3) Levelization has been carried out for the "useful life" of the project which in the instant case is equivalent to "Tariff Period".

VI. Dispatch Criteria:

(1) The sole criterion for dispatch of all the coal based power plants shall be the "merit order dispatch".

(2) The coal based generation facility shall be subjected to scheduling and dispatch code as specified under NEPRA Grid Code.

(3) The generation plant having capacity up to 220MW shall be connected at 132/220kV connection point and above shall be subjected to scheduling and dispatch code as specified under NEPRA Grid Code (IEGC) -2010, as amended from time to time.

VII. Plant Availability

The guaranteed availability of the plants will be 85%.

VIII. General Conditions

(1) In case of mix financing, separate debt service schedules shall be developed using the annuity method at COD;

(2) At the time of COD, project cost will be converted into Pak Rupees using the

Average of the Exchange Rates prevailing on 1st day of each month during construction period.

(3) During life of the project operations, Quarterly adjustments/indexations for local inflation, foreign inflation, exchange rate variations and interest rate variations will be made on 1st July, 1st October, 1st January and 1st April each year based on latest available date with respect to CPI notified by the Federal Board of Statistics (FBS), USCPI issued by US Bureau of Labor Statistics and revised TT&OD selling rate of foreign currencies (US Dollar, British Pound Sterling, Euro, Japaense Yen and Chinese Yuan or any other currency as the Government of Pakistan may allow) notified by the National Bank of Pakistan. The method of indexation will be as follows:

Tariff Components	Tariff Indexation & Adjustment
Fuel Cost component	Delivered Fuel Price (inclusive of transportation) at the Power Plant
Variable O&M (Foreign)	US$ to Pak Rupees & US CPI
Variable O&M (Local	Pakistan CPI
Fixed O&M (Foreign)	US$ to Pak Rupees & US CPI
Fixed O&M (Local	Pakistan CPI
Cost of Working Capital	Adjustments for relevant KIBOR variations
Return on Equity	US$ to Pak Rupees
Principal Repayment (Foreign Currency	US$/Euro/Yen/Pound to Pak Rupees (based on borrowing by the Company)
Interest//Mark-up Payments (Foreign Currency Loan)	• Adjustments for relevant LIBOR or other applicable Interest Rate benchmark • Adjustment for variation in Rs./Foreign Currency (US$/Euro/Yen/Pound) rates as applicable
Interest/Mark-up Payments (Local Currency Loan)	Adjustments for relevant KIBOR variations

IX. Validity of Tariff

This tariff shall remain in force for a period of 2 years from the date of notification in the official gazette. The revision in upfront tariff for next validity period shall be undertaken at least six months prior to the end of the validity period and in case upfront tariff for the next validity period is not notified until the commencement of next validity period, the reference tariff parameters as per this determination shall continue to remain applicable until notification of the revised upfront tariff.

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X. Scope and extent of application

This tariff shall apply in all cases for a generating facility or a unit thereof based on imported/local coal other than Thar coal subject to fulfillment of eligibility criteria.

XI. Eligibility Criteria

The upfront tariff shall be only available for the brand new machinery only.

XII. Definitions and Interpretations

(a) "Auxiliary energy consumption" means the quantum of energy consumed by auxiliary equipment of the generating facility, and transformer losses within the generating facility, expressed in Megawatts as well as in percentage of the sum of gross output at the generator terminals of all the units of the generating plant;

(b) "Capital cost" means the cost of all capital work including plant and machinery, civil work, erection and commissioning and evacuation infrastructure up to inter-connection point;

(c) "Control Period" means the period required to achieve the financial close and complete the construction of generation facility. The Control Period shall be of six years starting from the date of unconditional opting of the upfront tariff.

(d) "Design Coal" means the ideal type of coal or fuel that is selected to be used during performance testing of steam generators in power plant engineering;

(e) "Grace Period" means a period equivalent to the construction period of the coal project.

(f) "Installed capacity" means the summation of the name plate capacities of all the units of the generating facility or the capacity of the generating facility (reckoned at the generator terminals), approved by the Authority from time to time as indicated in the generation license;

(g) "Inter-connection Point" shall mean interface point of energy generating facility with the transmission system or distribution system, as the case may be:

(h) "Operation and maintenance expenses" or 'O&M expenses' means the expenditure incurred on operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables and overheads;

(i) "Project" means a generating facility or the evacuation system up to inter-connection point;

(j) "Tariff period" means the period for which the upfront tariff has been determined by the Authority on the basis of reference parameters which in the instant case is 30 years. The tariff period shall commence from the date of commercial operation.

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(k) 'Useful Life' in relation to a unit of a generating facility including evacuation system shall mean the period during which the generating facility including evacuation system is expected to be usable for the purpose of generating electricity from the date of commercial operation (COD) of such generation facility, namely coal based power project is 30 years;

(l) "Year" means a period of 12 months.

4. The provisions of the Order of the Authority notified vide SRO No. 15(I)/2015 Dated 13-01-2015 will also apply in the matter as and where applicable.

5. The above order of the Authority along with Annex-I&II shall be notified in the official gazette in accordance with Section 31(4) of the Act.

Authority

(Khawaja Muhammad Naeem)
Member

(Himayat Ullah Khan)
Member

(Masood-ul-Hassan Naqvi)
Member

(Maj (Rtd). Haroon Rashid)
Vice Chairman

(Brig (R) Tariq Saddozai)
Chairman

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Annex - I

Chine Power Hub Generation Company Limited
Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 85%	Total Tariff Rs /kWh	Total Tariff Cents/kWh
	Fuel Component	Ash Disposal	Lime Stone	Var. O&M Foreign	Var. O&M Local	Total EPP	Fixed O&M Local	Fixed O&M Foreign	Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP			
1	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.0397	0.6295	3.4731	4.0861	8.8014	9.0642
2*	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.0921	0.5771	3.4731	4.0861	8.8014	9.0642
3	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.1472	0.5220	3.4731	4.0861	8.8014	9.0642
4	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.2050	0.4641	3.4731	4.0861	8.8014	9.0642
5	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.2658	0.4034	3.4731	4.0861	8.8014	9.0642
6	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.3296	0.3396	3.4731	4.0861	8.8014	9.0642
7	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.3966	0.2725	3.4731	4.0861	8.8014	9.0642
8	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.4671	0.2021	3.4731	4.0861	8.8014	9.0642
9	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.5410	0.1281	3.4731	4.0861	8.8014	9.0642
10	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.6188	0.0504	3.4731	4.0861	8.8014	9.0642
11	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
12	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
13	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
14	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
15	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
16	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
17	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
18	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
19	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
20	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
21	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
22	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
23	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
24	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
25	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
26	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
27	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
28	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
29	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
Average																	
1-10	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	1.3103	0.3589	3.4731	4.0861	8.8014	9.0642
11-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.0000	0.0000	1.8040	2.1224	6.8377	7.0419
1-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.4368	0.1196	2.3604	2.7769	7.4922	7.7160
Levelized																	
1-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.1872	0.8219	0.2661	2.8920	3.4023	8.1176	8.3601

Levelized Tariff = 8.1176 Rs./kWh 8.3601 US Cents/kWh

Annex-II

Chine Power Hub Generation Company Limited
Debt Servicing Schedule

Gross Capacity	659 34	MWs	US$/PKR Parity		97 10	
Net Capacity	606.59	MWs	Equity	75%	23,208.34	PKR Million
LIBOR	0.45%		Debt	25%	717 04	US$ Million
Spread over LIBOR	4.50%		Debt in Pak Rupees		69,625 01	PKR Million
Total Interest Rate	4.95%					

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/h	Interest Rs./kW/h	Debt Servicing Rs./kW/h
1	717 04	13.96	8.87	703 08	22.84			
2	703 08	14.14	8.70	688 95	22.84			
3	688 95	14.31	B.53	674 64	22.84			
4	674 64	14.49	8.35	660.15	22.84	1 0397	0.6295	1.6691
1st Year		**56.89**	**34.45**		**91.34**			
5	660 15	14.67	8.17	645.48	22.84			
6	645 48	14.85	7.99	630.63	22.84			
7	630 63	15.03	7.80	615.60	22.84			
8	615.60	15 22	7 62	600.39	22.84	1 0921	0.5771	1.6691
2nd Year		**59.76**	**31.58**		**91.34**			
9	600.39	15.41	7.43	584 98	22.84			
10	584.98	15.60	7.24	569 38	22.84			
11	569.38	15.79	7.05	553 59	22.84			
12	553.59	15.99	6.85	537 61	22 84	1.1472	0.5220	1.6691
3rd Year		**62.78**	**28.57**		**91.34**			
13	537.61	16.18	6 65	521.42	22.84			
14	521.42	16.38	6.45	505.04	22.84			
15	505.04	16.59	6.25	488.46	22.84			
16	488.46	16.79	6 04	471 66	22 84	1 2050	0 4641	1.6691
4th Year		**65.94**	**25.40**		**91.34**			
17	471.66	17.00	5.84	454.67	22.84			
18	454.67	17.21	5.63	437.46	22.84			
19	437.46	17.42	5.41	420.03	22 84			
20	420.03	17.64	5.20	402.40	22.84	1.2658	0 4034	1.6691
5th Year		**69.27**	**22.07**		**91.34**			
21	402.40	17.86	4.98	384.54	22 84			
22	384.54	18 08	4.76	366.46	22 84			
23	366.46	18 30	4.53	348.16	22 84			
24	348.16	18 53	4.31	329.63	22 84	1 3296	0 3396	1.6691
6th Year		**72 76**	**18.58**		**91 34**			
25	329.63	18 76	4.08	310.88	22.84			
26	310.88	18 99	3.85	291.89	22.84			
27	291.89	19.22	3.61	272.67	22.84			
28	272.67	19.46	3.37	253 20	22.84	1 3966	0.2725	1.6691
7th Year		**76.43**	**14.91**		**91.34**			
29	253 20	19 70	3.13	233 50	22.84			
30	233.50	19.95	2.89	213 56	22.84			
31	213.56	20.19	2.64	193.36	22 84			
32	193.36	20.44	2.39	172.92	22.84	1 4071	0.2021	1.6691
8th Year		**80.28**	**11 06**		**91.34**			
33	172.92	20.70	2 14	152.22	22.84			
34	152.22	20.95	1 88	131.27	22.84			
35	131.27	21.21	1 62	110.06	22 84			
36	110.06	21.47	1.36	88.59	22.84	1.5410	0.1281	1.6691
9th Year		**84.33**	**7 01**		**91.34**			
37	88 59	21.74	1 10	66.85	22.84			
38	66 85	22.01	0 83	44.84	22.84			
39	44 84	22.28	0 55	22.56	22.84			
40	22.56	22.56	0.28	(0.00)	22.84	1.6188	0.0504	1.6691
10th Year		**88.59**	**2.76**		**91.34**			

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